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Proxemics in Waiting Areas of Health Centres

A Cross-Cultural Study

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Proxemics
in
Waiting Areas of Health Centres

A Cross-Cultural Study

Ph.D. Thesis

By

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In the name of Allah, the most beneficent, the most merciful.

" O mankind! Lo!
We have created you male and female,
and have made you nations and tribes
that ye may know one another.
Lo! The noblest of you, in the sight of Allah, is the best in conduct.
Lo! Allah is Knower, Aware ".

[Quran; al-Hujurat 49:13]

source: M.M. Pickthall (Electronic edition).
Meaning of the Glorious Quran.
Islamic Computing Centre, London.

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Summary

The design of waiting areas in Malaysia's health centres appears to ignore human feelings and behaviour. This was observed by the present researcher; similar concerns about waiting areas in health centres in the U.K. have been voiced by other authors such as Beales (1978) and Cammock (1973, 1975. 1983).

'Proxemics' or the interpersonal distance relationship between people in conducting their daily activities within their cultural domain is broadly categorised under the study of human spatial behaviour. There is in abundance of studies on human spatial behaviour, but few have focussed on the cross-cultural aspects. Results from those few studies have not been consistent, the reason being methodological (see Hayduk (1983); Aiello (1987); Bell, et. al., (1996). However, those studies that can be categorised as 'truly' cross-cultural, that involved natives of the country when the study was conducted, and which used the *field / naturalistic unobtrusive observation* method - that is in conducting the research at the actual setting rather than in laboratories, and making the observations in an inconspicuous manner, have all supported the hypothesis that there are cross-cultural differences. This method, together with a new technique of measurement, was adopted for the present research. It was used to examine differences in proxemics behaviour between people of Western and Eastern cultures, specifically between the British and the Malaysians in health centre waiting areas.

This research is intended to uncover the basis on which subjects made their choices about where they would sit in a waiting room. The factors break down into three main classes: those about the subjects themselves, those that relate to the properties of the seating, and those which relate to the presence of other people. Following a literature review it was hypothesised that the observed behaviour of the British subjects would demonstrate a tendency to maintain inter-personal space in their choice of seats, whereas the Malaysian subjects would demonstrate an interest in using the opportunity for social intercourse. Within the limitations of the present research and the Eastern cultural background of the present researcher, the findings from the present study however remained inconclusive. While several of the findings seemed to suggest that the British subjects demonstrated a tendency to maintain inter-personal space in their choice of seats, there were also other findings that suggested otherwise.

1.0.0 Introduction

1.0.0 INTRODUCTION

"As long as we make assumptions about human behaviour rather than finding out about it, we are likely to continue to make similar errors".
Deasy and Lasswell (1985), Designing Places for People, p. 13.

"The human organism is at every moment in need of a basic minimum of his own exclusive physical space, and it is this need which lies at the root of the fact that all societies evolve norms and values about human privacy, personal space, crowding, and territoriality".
Groat (1995), Readings in Environmental Psychology: Giving places meaning, p. 94.

"What is valid in one culture may not be valid for another".
Serpel (1976), Culture's influence on behaviour, p. 118.

"In these days of multinational organisations, international conferences, and the general fall of barriers to travel, cultural differences in the use of personal space must be an important consideration".
Cassidy (1997), Environmental Psychology, p.131.

The present research topic on proxemics is broadly categorised under the study of human spatial behaviour or Environment-Behaviour (E-B) relationship. This category is now more popularly known as Environmental Psychology - the study of the transactions between individuals and their socio-physical environments (Bonnes and Secchiaroli, 1995, p.1). This chapter provides a brief historical background about the study on human spatial behaviour, explains the aim, purpose and importance of conducting this research, and the need for more 'truly' cross-cultural approaches.

1.1.0 Brief historical background

Research in human spatial behaviour began before the 1960s in the United States, but it was during that decade when social scientists showed increasing interest in the topic. Two influential books, that of anthropologist Edward T. Hall's *The Hidden Dimension* in 1966 and psychologist Robert Sommer's *Personal Space: The behavioural basis of design* in 1969, spurred considerable interest in that area. This is evident from the amount of research done, that is exceeding 700 studies up till 1987, and averaging about 50 studies per year on various aspects

of human spatial behaviour (Aiello, 1987, p. 389). In the late 60s it spread in the UK and Western Europe, and then to other parts of the world from the 70s (Bechtel, 1997 p. 77-95).

Various disciplines have contributed towards the study of human spatial behaviour. According to Aiello (1987, p. 390), the earliest works in this area was based primarily on the work of ornithologists (for example, Howard, 1920) and ethologists (for example, Hediger, 1950; Calhoun, 1962).

Other disciplines that contributed towards further research in this area included sociologists, ecologists, geographers, psychiatrists and architects. That is why synonymous with this area of study have been many, such as Architectural Psychology, Ecological Psychology, Man-Environment Relations, and lately Environmental Psychology, to name just a few (Bechtel ,1997 p. 76; Saarinen 1987, p.vii).

1.2.0 Aim and purpose of this research

Designers have been blamed for relying on assumptions about human spatial behaviour rather than finding out more about it. This has resulted in them continuously making similar errors in the design of buildings (Deasy and Lasswell, 1985, p. 13). For example, based from the present researcher's personal observations, the design of waiting areas in health centres in Malaysia seemed to have neglected the human aspects. Similarly, the same concern was also raised by several authors (e.g. Cammock, 1973, 1975, 1981, and Beales, 1978) about waiting areas in health centres in the U.K. Amongst their comments made include the lack of privacy (visual and acoustics) at the reception area and the waiting area. In the waiting area, people have been 'forced' to gather in large groups. This has created the problem of control in communications, greater disturbance from every cough and cry, and greater chance the neighbours and workmates will be present to make damaging inferences from what they see and hear.

As such, the aim of this study is to instil the much needed awareness, understanding, and appreciation amongst designers on the importance of proxemics in the design process. This could minimise or even eliminate the common practice amongst designers of relying too much on "assumptions" about human spatial behaviour during the design process, thus eliminating the possible avoidable mistakes in the design of buildings.

The purpose of this research is to conduct a 'truly' cross-cultural study on proxemics in waiting areas of health centres between people from the West and East, more specifically between the British and the Malaysians. " 'Truly' cross-cultural study " implies that the natives residing in their country are used as the subjects when conducting the research. As the cultural aspects are

are integral in the study of proxemics it is envisaged that by making a comparative study such as this could broaden and deepen one's understanding about the topic being researched.

1.3.0 The importance of conducting this research

It is anticipated that the problem with the designers' reliance on human spatial behaviour would be further magnified when the design is to cater the needs for people of different cultural backgrounds, as the validity in one culture may not be valid in another (Serpel, 1976, p.118). Designers must understand that all societies or cultures evolve norms and values about human spatial behaviour (Groat, 1995 p. 94). That is, human spatial behaviours do vary between people of different cultural backgrounds. The urgency for a better understanding in cross-cultural human spatial behaviour has been called for in more recent literatures, such as by Cassidy (1997, p.131), where he acknowledged that it is quite common nowadays for the interactions of people from different cultural background.

As such there is a need to instil awareness and understanding amongst designers not only about the importance of the knowledge on human spatial behaviour, but also the appreciation and understanding of different spatial behaviour amongst people of different cultural backgrounds.

1.4.0 The need for more 'truly' cross-cultural approach studies

This section is subdivided into two parts. The first part provides the current state of empirical studies while the second part provides the advantages in adopting the 'truly' cross-cultural approach.

1.4.1 Current state of empirical studies

Although there are in abundance of studies on various aspects of proxemics behaviour however, studies on the cultural aspects had remained sparse. Even sparser still is on the cross-cultural aspect (Aiello, 1987, p. 434). A review on more current literatures on human spatial behaviour (such as, Bechtel, 1997; Cassidy 1997; Bell, et.al. 1996; Bonnes, et.al., 1995; and Veitch, et.al., 1995) did not reveal any additional studies on the cross-cultural aspects from that listed by Aiello (1987, pp. 435-444). Based on the list compiled by Aiello, up till 1987 only 53 of the

studies (0.08%) involved the cultural aspects and only 12 of these studies (0.02%) involved the cross-cultural aspects. While the actual reason for this relative scarcity is not known, several assumptions could be made such as:- due to the inconclusive findings from previous studies or due to the complexity of such studies when involving human beings; etc. Due to this relative scarcity, it is envisaged to be worthwhile to conduct more studies in this field of research.

1.4.2 Advantages of the 'truly' cross-cultural approach

The scarcity of studies on the cross-cultural aspects of proxemics behaviour is quite surprising because there are advantages to be gained in adopting this approach as cited by Altman and Chemers (1980 p. 311).

Firstly, such a study increases the likelihood of a proper balance of emic and etic orientations. He elaborated that on many occasions, the behaviour of other cultures (example, privacy) has been interpreted from one's own value system, that is from an etic orientation, which is only appropriate in the search for general principles of human behaviour. A complete understanding of a phenomenon also calls for an emic orientation, in which one try to understand the phenomenon from the framework of the culture itself. Thus, to understand privacy, for example, not only should one compare privacy-regulation practices of other cultures with one's own cultural styles to see how they are alike and different (etic), but one also need to understand the functions and operations of privacy mechanisms within the culture being studied (emic).

Secondly, the study can also extend or change the explanation of a particular relation previously viewed from the perspective of a single culture.

Finally, cross-cultural research is also a fertile source of hypotheses and insights. The study of other cultures provides a backdrop against which to examine one's own culture and also can help one appreciate behavioural processes that might otherwise be ignored or considered unimportant.

In addition, by adopting a 'truly' cross-cultural approach, that is involving the natives residing in their particular country as subjects when conducting the research, could minimise or eliminate the problems of foreign cultural influence of the host culture if sojourners were involved as subjects (Noesjirwan, 1978, p. 334).

Summary

'Proxemics' or the interpersonal distance relationship between people in conducting their daily activities within their cultural domain is broadly categorised under the study of human spatial behaviour, now more popularly known as Environmental Psychology - the study of the transactions between individuals and their socio-physical environments.

Research in human spatial behaviour began before the 1960s in the United States, but it was during that decade when social scientists showed increasing interest in the topic. In the late 60s it spread in the UK and Western Europe, and then to other parts of the world from the 70s.

Various disciplines have contributed towards the study of human spatial behaviour, beginning with the works of the ornithologists, ethologists and later the sociologists, ecologists, geographers, psychiatrists and architects.

Designers have been blamed for their reliance on assumptions about human spatial behaviour during the design process and this has resulted in repeated avoidable mistakes in the design of buildings, such as the design of waiting areas in health centres in the U.K. and Malaysia. It is anticipated that the problem would be further magnified when the design is to cater the needs of people of different cultural backgrounds. The aim of this research is to instil the much needed awareness, understanding, and appreciation amongst designers on the importance of proxemics and cultural variations in relation to human spatial behaviour. The purpose of this research is to conduct a 'truly' cross-cultural study on proxemics in waiting areas of health centres between people from the West and East, more specifically between the British in the U.K. and the Malaysians in Malaysia.

Currently, there is a scarcity on empirical 'truly' cross-cultural studies on human spatial behaviour. As such it is envisaged that it would be worthwhile to conduct a study in this field of research. Furthermore there are advantages in adopting such an approach which include:- a proper balance of emic (similarities and differences) and etic (mechanisms) orientations; can modify understanding previously viewed from one culture; provides a fertile source of hypotheses and insights; and eliminate the problem of cultural assimilation of the sojourners.

2.0.0 Literature review

2.0.0 Literature review on human spatial behaviour.

This chapter discusses the aspects involved in the study on human spatial behaviour. More recent literatures reviewed such as by Bonnes, et. al., (1995), Bell, et. al., (1996), Bechtel, (1997), Cassidy, (1997) have identified four main aspects of human spatial behaviour which are inter-related, namely personal space / proxemics, territoriality, privacy and crowding. Although the present research focus on 'proxemics', it is felt necessary to also include a review on the other aspects of human spatial behaviour mentioned where relevant, for a complete understanding of the subject matter since they are all inter-related.

2.1.0 Personal space / Proxemics

2.1.1 Definition

1. Personal space

The concept of 'personal space' refers to the preferred distance from other people that an individual maintains within a given setting (Aiello and Thompson, 1980b, p. 113). The term was coined by Katz (1937). Subsequently, it was Hediger (1950) who then suggested the notion that each animal is surrounded by "bubbles or ballons" that allow proper spacing between it and other animals. It was Sommer (1969) who then popularised the term in relation to human beings. According to Sommer (1969, p. viii), there are two uses of the term.

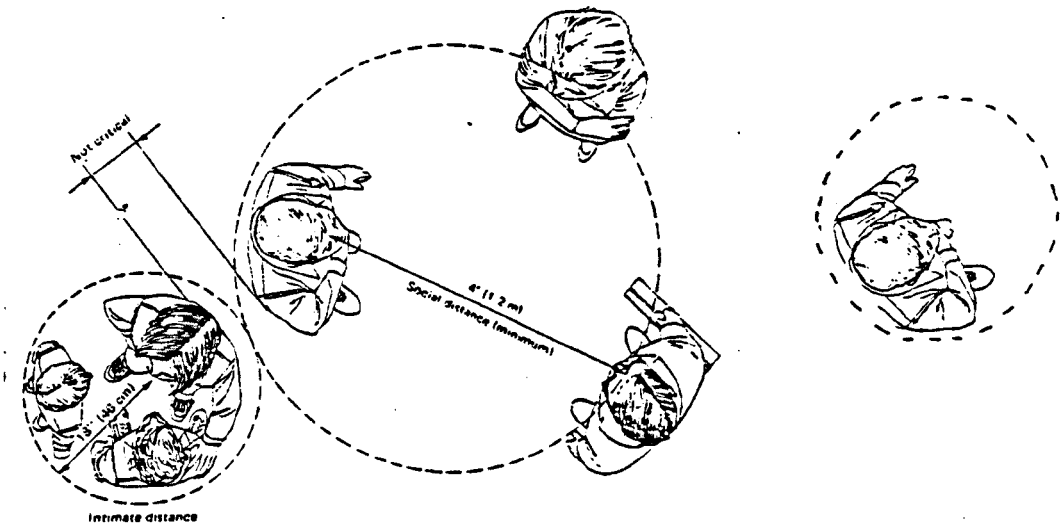
Firstly, it refers to:

"...the emotionally charged zone around each person, sometimes described as a soap bubble or aura, which helps to regulate the spacing of individuals".

Secondly it refers to

".....the processes by which people mark out and personalize the spaces they inhibit".

The 'portable bubble' which refers to the personal space is indicated by the dotted lines as shown in Figure 2.1.1.



Note: the dotted lines indicate the personal space 'bubble'.

Figure 2.1.1: Personal space
[source: Deasy, C.M. and Lasswell, T.E. (1985). Designing places for people: A handbook on human behaviour for architects, designers and facility managers, p. 25]

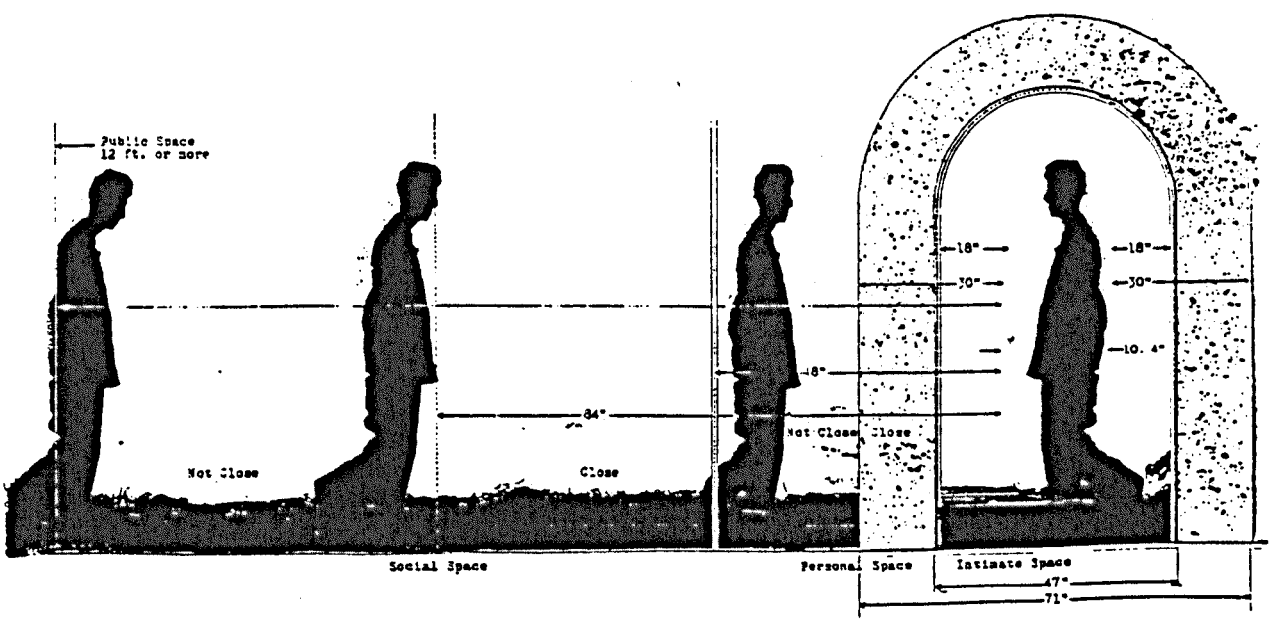


Figure 2.1.2: Hall's categorisation of interpersonal distances amongst Americans.
[source: Hall, E.T. (1971). Proxemics and design. Design and Environment, p. 25]

2. Proxemics

'Proxemics' is the term coined by Hall which he had defined it alternatively as:-

".....the study of how man unconsciously structures microspace - the distance between men in the conduct of daily transactions, the organisation of space in his houses and buildings, and ultimately the layout of his towns"
Hall (1963, p. 1003)

".....the study of ways in which man gains knowledge of the content of other men's minds through judgements of behaviour patterns associated with varying degrees of proximity to them"
Hall (1964,p.41)

".....the interelated observations and theories of man's use of space as a specialized elaboration of culture"
Hall (1966, p. 1)

and

"...the study of man's transactions as he perceives and uses intimate, personal, social and public space in various settings while following out-of-awareness dictates of cultural paradigms"
Hall (1974 p. 2).

Some other later definitions include the followings:-

" The study of space and its use in different social and cultural situations ".
Reber, A. S. (1985, p. 585).

" The study of the physical spacing of organisms and its effects including territoriality, interpersonal distance, and crowding ".
Sutherland, S. (1995, p. 368).

The essence of these definitions is on the interpersonal distance relationship between people in conducting their daily activities within their cultural domain. Hall had categorised the interpersonal distances of the Americans into four categories, namely, intimate distance, personal distance, social distance and public distance, as shown in Figure 2.1.2. Before embarking further on Hall's proxemics framework (discussed in Section 2.1.2 (1)) there is a need to address the argument on the primary term (personal space or proxemics) to be used to denote human spatial behaviour.

Argument on the primary term to be used to denote human spatial behaviour.

The term 'personal space' had continued to be the label most often used to refer to human spatial behaviour (Hayduk, 1983, p.293). However, there had been arguments on the *primary* term to

be used to denote human spatial behaviour, which is whether to use 'proxemics' or 'personal space'. For example, Aiello (1987, p. 391) argued that the definition by Sommer emphasised on the protection component of spatial behaviour but not the more active component that is linked to the communication function of spatial behaviour. Earlier, Patterson (1975, p. 67) had also argued that the personal space concept is unnecessary and misleading because the concept implies stability when actually it has been shown to change considerably based on setting, relationship and environmental conditions.

As the personal space concept has been misleading, Aiello preferred it not be used as the primary term for human spatial behaviour. Instead he suggested the use of Hall's proxemics concept or, under more specific circumstances, the term *interpersonal distance*, since the primary interest is the spatial context or more specifically *the distance between people*. Based on the arguments against using the term 'personal space' as the primary term for human spatial behaviour, the term 'proxemics' was adopted for the title of this research.

2.1.2 Theoretical frameworks

In a literature review on the theoretical frameworks of human spatial behaviour, Aiello (1987) acknowledged Hall's (1963,1966) proxemics framework "as the most important milestone for the development of human spatial behaviour research" (p.391). Consistent with Hall's perspectives on the communicative function of proxemics, other theorists have forwarded theoretical models to explain the relationships among spatial behaviour and verbal and other non-verbal variables (e.g., gaze, topic intimacy, body orientation), which for the sake of comparison have been grouped into three categories namely, Conflict or Intimacy Equilibrium models, Arousal or Attribution models, and Expectancy or Discrepancy models. In addition to these various models, Bechtel (1997, p. 180) had added another model which had surfaced recently, that of the Language and Forms of Address model. All these models shall be dealt with as follows.

1) Hall's proxemics framework

Hall's proxemics framework emphasised how people make active use of and manipulate space and the physical environment to achieve preferred degrees of closeness and attain desired levels of involvement during interaction. It dealt with both the protective, and communicative functions of proxemics within the context of one's culture.

Hall was much inspired by the works of ethologists such as Hediger (1950). Hediger had identified four types of distances used in the animal kingdom, which he referred to as flight distances, critical distances, personal distances, and social distances. Flight distance refers to the closeness that an animal permits an intruder before it flies. Critical distance refers to the narrow zone separating flight distance from attack distance beyond which penetration can result in a defensive attack by the invaded animal. Personal distance is what Hediger called the "normal spacing" or average distance that animals maintained between themselves and members of their own species. This distance is analogous to what has been termed "personal space" or the "personal bubble" in humans (Sommer, 1969). Finally, Hediger referred to social distances, or the maximum distance animals maintain in order to keep in contact with other members of their species.

Influenced by Hediger's idea on the personal and social distances amongst animals, Hall developed this notion into four spatial zones that are used in regulating social interactions amongst humans, namely, intimate distance, personal distance, social distance, and public distance as illustrated in Figure 2.1.2. The rationale of these four spatial distances was based largely on his qualitative, naturalistic observations and interviews (Hall, 1966, pp. 107-108).

Before describing further on these zones, it is important to state that Hall's emphasis on distance as a vehicle of communication is intimately linked with other sensory modalities, such as touch, smell, hearing, and vision. He viewed all sensory modalities as intrinsically related to space. Hall implied that space serves as a medium within which communication occurs. Thus, at very close distances, one can hear, see, smell, and touch another person in a very different way than at greater distances.

a) Spatial distances and zones

i) Intimate distance

This zone spans from 0-450 mm. (0-18 inches) and includes a close phase 0-150 mm. (0-6 inches). Hall described the intimate zone as follows: "At intimate distances the presence of the other person is unmistakable and may at times be overwhelming because of the greatly stepped up sensory input. Sight (often distorted), sound, heat from the other person's body, smell, and feel of the breadth, all continue to signal unmistakable involvement with another body" (Hall, 1966, p. 110).

Thus, communication possibilities are rich through all the sensory modalities such as touch, sight, smell, and hearing in both the near and far phases of the intimate distance. This distance is the range, which normally involves lovers (and also enemies), family, small children and very close friends.

ii) Personal distance

This zone spans from 450-1200 mm. (1.5-4 feet), with a close phase up to 750mm (2.5 feet) and a far phase covering the interval of 750-1200 mm. (2.5-4 feet). This is the zone that people commonly refer to as 'personal space'. Hall (1966) described this zone as analogous to the term originally used by Hediger to designate the distance consistently separating the members of noncontact species. It might be thought of as a small protective sphere or bubble that an organism maintains between itself and others" (p. 112).

The sensory modalities are still rich in this zone, although leser than in the intimate zone. In many respects, personal distance is a transition zone from which people can become either more intimate or more formal. One can touch another person quite easily in the close phase of the zone; in the far phase, which Hall described as "keeping someone at arm's length," people can touch hands if they extend their arms. Thermal or heat cues are not particularly evident in this zone, and most natural body odours are not easily detected, although strong ones may be picked up in the close part of the zone. Perfumes, deodorants, and other applied odours may be communicable, especially if they are used heavily or are coupled with unusual body heat. Visual detail continues to be rich in both near and far phases with little visual distortion.

iii) Social distance

This zone extends from 1200-3600 mm. (4-12 feet), with the close phase spanning 1200-2100 (4-7 feet) and the far phase encompassing 2100-3600 mm. (7-12 feet). Hall stated that this zone is acceptable for normal contacts in the American culture - sufficiently close to remain in communication but sufficiently separated to avoid unnecessary or undesired communication. The close phase range is the normal spacing for people who work together where speech and expressions are clear and communications are highly efficient and accurate. The far phase range is more formal and is used with strangers (although this distance might vary between different cultural background), and when one is talking to one's superior. The distance of 3000mm is not considered rude to ignore a visitor and to continue working.

Witnin this range begins a decrease in the sensory modalities. While touching is difficult, most olfactory and heat cues are also absent. Vision and audition are the major vehicles of communication in the social zone, although not to the same extent as in closer zones. Toward the middle of the social zone, it is still easy to see a person's face, trunk, and body clearly; visual contact can be easily maintained; and a considerable range of visual information can be observed,from small details to gross body movements and postures. Auditory cues are also important at this distance. Hall described the voice level in this zone as at a "normal" level, although he noted that speaking level is distinctly louder in the far phase.

iv) Public distance

This zone extends beyond 3600 mm. (12 feet), with a close phase of 3600-7500 mm (12-25 feet) and a far phase beyond 7500 mm. (25 feet). This is the formal distance that is used on public occasions and is reserved for high-status figures. It is the distance at which public speakers are typically located from the nearest members of the audience. This distance is the range where non-involvement between persons begins.

Within this range the sensory modalities of touch , thermal and olfactory cues are absent. Gross gestures, general body postures, and relatively holistic impressions about a person can be obtained visually, whereas eye colour and skin texture, and other fine visual details are not usually discernible. In addition, speech becomes more formal at this distance, pronunciations, and phrasings are often formalised, and affective expression is exaggerated in order to be understood. Hall noted, actors and actresses learn to accentuate their movements, expressions, and voice in order to compensate for these distances and to achieve closeness of contact with their audience. Thus, the public-distance zone is one in which people must make special efforts to remain in communication with each other.

b) Culture and proxemics

Being a cultural anthropologist, most of Hall's attention is focussed on how various cultures display different norms for spatial usage. He explicitly stated that spatial distances are not universal among people, cultures or settings (Hall, 1966, pp 110, 112). Hall maintained that cultures can be distinguished, in part, by members' preferences regarding interaction distances, body orientation, gaze patterns, and frequency of touch. According to this view, contact cultures prefer more immediate, affiliative, or involving behaviours (e.g., eye contact, touch, direct body orientation, close distances) than do noncontact cultures. He suggested that contact cultures are

characterised by an emphasis on tactile and olfactory modes of communication. While noncontact cultures rely primarily on the visual mode. Hall's observations led him to categorise the culture of North America and Northern Europe as "noncontact" culture, while the culture of Southern Europe and the Arab countries as "contact" culture (Hall, 1963, pp.1023; Hall, 1964, pp.44-45).

However, Hall's cultural descriptions did not always analyse a culture in relation to the four proxemics zones (Altman & Vinsel , 1977). Rather, he typically presented a qualitative analysis of a culture's use of space, while only occasionally touching on distance practices. For example, he observed that the Germans are extremely sensitive to invasion and that they go to great lengths to achieve physically privacy in the form of private rooms, fences, closed doors and heavy walls. He stated that for the Germans, the physical environment is an important aspect of the self and it provides a literal boundary for separating the self from others. The only reference to distance zones appeared in the report of a German student who indicated that an approach by someone at a distance less than 2.1metres (7 feet) would be an inappropriate intrusion. On the other hand, for the English, the physical environment played only a small role in privacy regulation, whereas cultural practices, etiquette, and non-verbal behaviour are quite important. His single reference to distance zones used by the English was in the context of voice modulation and eye contact: "Proper English listening behaviour includes immobilisation of the eyes at social distance" (Hall, 1966, p. 134). He regarded the French culture as highly sensory but again did not indicate how the French used distance zones. Similarly with the Japanese culture, rather than focussing on specific distance zones, Hall focussed on complex space usage such as the interior design of homes, the flexibility of space usage, and gardening and miniaturisation practices among the Japanese.

The only emphasis on distancing behaviour Hall repeatedly stated concerned the Arabic culture. Hall observed that the Arab societies expect and achieve high levels of contact with others through crowding, rich smells, and close physical contact, which naturally forces people to be within the intimate or close phase of the personal zone.

c) Empirical findings of Hall's proxemics framework

Altman & Vinsel (1977) conducted 200 empirical studies spanning between 1966-1976 that concerned Hall's proxemics framework. They found that the human spatial distancing was reasonably consistent and not overly discrepant from Hall's qualitative ideas. Their findings include the following: -

1. When standing, people did used either the far phase of the intimate zone 150-450 mm. (0.5-1.5 feet) or the close phase of the personal zone 450-750 mm. (1.5-2.5 feet). Although Hall did not distinguish between standing versus seating arrangement, one might expect a shift towards greater distances for seated participants. Generally this was the case, with seated people using the far phase of the personal zone 750-1200 mm. (2.5-4 feet) and the near phase of the social zone 1200-2100 mm. (4 - 7 feet). These results were consistent across a wide range of conditions: laboratory and field studies and other variables, such as sex, intrusion, individual differences, and interpersonal attraction. Thus, the data were in line with Hall's general propositions about ordinary day-to-day social communication and confirmed his qualitative observations.

2. The findings on spatial intrusion also supported Hall's proposition, especially pertaining to the intimate distances. When a person's intimate zone was intruded, negative reactions would result in the form of flight, non-verbal protective behaviours, and feelings of anxiety or stress. People also tended to avoid intruding upon others in public settings.

3. The findings also confirmed Hall's statement about the importance of social relationships in determining spatial distancing. People in friendly or positive relationship with each other did interact much more closely than those who were not.

4. Hall did stressed that spatial distancing was linked with other communication channels, for example, vision, olfaction, kinesthesis, audition, etc. According to him, distance was a medium within which various channels functioned as a system - amplifying, substituting, and compensating for one another. Argyle and Dean (1965) articulated this idea in an equilibrium theory (to be discussed in the next model), and the data were reasonably supportive of their hypotheses.

5. Another important aspect of Hall's proposition concerned cultural differences in proxemics behaviour as a reflection of cultural values, customs, and norms. Based on the limited studies conducted, this proposition was supported. For example, Mediterranean, Latin American, and Arabic societies did used closer spatial spacing than other cultures. However, there was inconsistent evidence regarding the distances used by the ethnic groups in the United States. The data did suggest that socio-economic and related variables were more important determinants of proxemics behaviour than ethnicity.

6. Most of the research conducted, including studies not explicitly designed to test Hall's ideas was still based on Hall's four spatial zones for their studies.

2) Conflict or Intimacy Equilibrium model

The Equilibrium theory states that in any interaction (or relationship) people have an optimal level of intimacy they want to maintain. If the level of intimacy in an interaction becomes too great, equilibrium will be restored through compensatory verbal and non-verbal behaviours.

Argyle and Dean (1965) was the first to propose this theory based on studies in relation to eye contact and proximity. According to them, eye contact is linked to affiliative motivation, and that approach and avoidance force produce an equilibrium level of physical proximity, eye contact and other aspects of intimacy. If one of these is disturbed, compensatory changes may occur along the other dimensions. In their study Argyle and Dean conducted two experiments. The first experiment required equal numbers of male and female subjects to stand as close as comfortable to an experimenter with the experimenter's eyes shut in the first occasion, and in another occasion with the experimenter's eyes open looking at the subject with a pleasant-to-neutral expression. They found that subjects stood closer to the experimenter in the first occasion. In the second experiment, each subject was involved in a conversation with a confederate (experimenter's alibi) gazing continually to the subject. They found that there was less eye contact, and exchange of glances was shorter when subjects were placed closer together. Based on this study Argyle and Dean concluded that people move towards an equilibrium distance, and adopt a particular level of eye contact.

In support of the Equilibrium theory in relation to increased proximity with decreased eye contact include studies by Patterson (1973a, 1977), Aiello, J.R. (1977), and Vaksman and Ellyson, (1979). For example, Patterson (1977) conducted both laboratory and field experiments to test the theory. The laboratory experiment involved the observation of seated equal numbers of male and female undergraduates involved in a conversation. The field experiment involved unobtrusive observation of standing paired adults in three different settings, that is at the university campus, shopping centre and church. Patterson found that closer approaches produced a reduction of eye contact in both cases.

Also in support of the Equilibrium theory are studies that concern body orientation in relation to proximity. These studies indicate that there is a decreased in directness of body orientation with increase in proximity. For example Watson & Graves (1966) in their studies involving Arab and American male students in a seated conversation found that with increased proximity, directness of body orientation decreased for both nationalities. In their field study Aiello & Jones (1971) observed that black and Puerto Rican children stood closer to each other than whites, but the body orientations of the blacks and Puerto Ricans tended to be less direct than whites. Sommer (1962) observed that in their choices for seats subjects preferred opposite seating over side

seating as long as opposite was equal to or closer than side seating. When the opposite seating became too distant, eye contact alone was not sufficient to maintain the desired level of intimacy, and the closer side seating became highly preferred. In a later study Sommer (1968) conducted a questionnaire study on intimacy rating which varied diagrammed seating arrangement on subjects from five different countries (USA, England, Sweden, Holland and Pakistan). They all rated opposite seating as the more intimate as compared to side seating. Felipe & Sommer (1966) conducted an experiment on subjects in a mental hospital and a college library. Most of the seated subjects left the setting when approached at a close side seating. The flight by most of the subjects here can be seen as the inability to restore some sort of equilibrium. Similar to Felipe & Sommer's study was a study by Patterson, et. al., (1971). However the emphasize here was more on the subtle responses of the invasion. It was found that subjects approached more closely exhibited more blocking behaviour and leaning away from intruder.

Even though there is ample evidence in support of the Equilibrium theory, however there are also studies which show that compensary reactions cannot be expected under all conditions. For example, both Kendon (1967) and Breed (1972) found that behaviours of a confederate designed to increase his immediacy (eye contact, body lean, etc) relative to the subject resulted in an increase in the level of the immediacy behaviours of the subject - directly opposing the predictions of equilibrium theory. In addition there are also studies which found no changes in amount of eye contact as a function of distance manipulations (e.g. Carr and Dabbs, 1974; Schneider & Hansvick, 1977; and Rogers, Rearden, & Hillner , 1981).

Amongst the critics of the equilibrium theory were Capella and Greene (1982) who commented that the theory was developed to account for compensatory rather than matching responses (that is, reciprocity). Therefore, it can account easily for compensatory reactions to increased proximity and increased question intimacy but not for reciprocity in objective speech, disclosure, and body movement. The theory could be applied to matching processes if the equilibrium level itself were permitted to vary, if the equilibrium level were itself a function of personal needs for affiliation and situational constraints on appropriate intimacy (rather than simply a function of the other's intimacy), and if it were assumed that the other's behaviours falling within the equilibrium level are reciprocated.

Argyle and Cook's (1976) amendment to the theory allowed that the equilibrium level is due in part to social normative and situational factors and permit the equilibrium level itself to change over the course of an interaction. This modification makes reciprocal responses possible in cases in which equilibrium increases as the other's affiliative expressions do. Even with these modifications. Capella and Greene argued that the theory remained indeterminate as to the

conditions which will cause equilibrium levels to increase versus those which will cause them to decrease or leave them unaffected. The theory cannot explain why increases in proximity are compensated while increases in disclosure are reciprocated, all other things being equal. Capella and Greene suggested that part of the reason for this indeterminacy is due to the theory's vague appeal to approach and avoidance forces as the basis for equilibrium levels. The psychological basis for these forces is left unexplicated so that they become useful only in post hoc interpretations and useless as generating mechanisms for a priori predictions.

3) Modifications of conflict / intimacy equilibrium models

Several investigators have developed conflict models that purport to explain situations that proceed in directions contrary to those described by an equilibrium model. For example, Kaplan's (1977) model attempted to explain why equilibrium levels change. It posits that attraction mediates an individual's likelihood of reciprocating or compensating. For example, if attitudinal outcomes of internal interaction are positive, a shift in equilibrium toward greater approach toward the other results. This can explain how in certain situations one person reciprocates the approach of another rather than compensating for it. However, this model cannot explain situations where experimenters have found a curvilinear relationship between distance and eye contact (e.g. Aiello, 1972; Aiello, 1977a; 1977b) and distance and topic intimacy (e.g. Baker & Shaw, 1980). Apparently, the relationship between distance and other variables is linear only up to a certain distance, past which it becomes uncomfortable regardless of attempts at compensation. Patterson (1973a) had suggested that this compensatory change process might not be observable when only small variations occur in immediacy behaviours. When this area of relatively minor variations during interaction is exceeded, however, compensation processes would be expected to occur.

Consistent with Patterson's viewpoint are many. Amongst them are Aiello, Epsteinn & Karlin's (1974) curvilinear "comfort" models of acceptable range, Altman's(1975) privacy regulation, Sundstrom & Altman's (1976) optimal distance, Burgoon (1978), and Burgoon & Jones (1976) proxemics violation., Knowles's (1980) affiliative conflict theory, and Aiello's (1977a; 1977b) and Aiello & Thompson's (1980a) modified equilibrium model. All these models maintained that there is an optimal range of distance preferred by interacting individuals and that deviations from this range, whether too large or too small, result in discomfort. When the optimal range of interpersonal distance is exceeded, compensatory reactions are used to restore the desired level of intimacy. In addition, these homeostatic models posit that that the degree of comfort or discomfort experienced varies not only as a function of interpersonal distance but also as a

function of the nature of the interaction situation, the relationship between interactants, and the individual characteristics of the participants.

Within the area of minor variation, only relatively minor deviations from the equilibrium point occur, and these are adapted to fairly easily. Outside of this area is a compensatory range of physical proximity that overlaps substantially. This area is similar to the optimal range of interpersonal interaction distance proposed by several of the curvilinear comfort models. Variations in distance that fall within the compensatory range but outside of the area of minor variation produce considerable discomfort. Typically, a series of compensatory mechanisms are set in motion to adjust interpersonal distance and other immediacy behaviours in order to restore the desired level of involvement. These compensatory adjustments become increasingly ineffective in reducing discomfort at distances further away from the equilibrium point and the compensatory range.

The areas falling outside of the compensatory range represent the critical regions of discomfort, wherein it becomes increasingly difficult, if not impossible, to employ any compensatory process to reduce the discomfort experienced and to re-establish the desired involvement level. At the present time, there is some behavioural evidence that clearly indicates that at extended distances people do attempt to use compensatory behaviours (e.g., leaning forward and increasing eye contact) but that these behaviours are not very effective regulators of the levels of intimacy that is desired (Aielo, 1972, 1977a, 1977b; Aiello & Thompson, 1980a). What is being hypothesised, therefore, is that approach forces will continue to predominate during interaction only as long as there is some possibility of relieving some of the discomfort. Once the deviations from the desired level of involvement become too great, avoidance forces are much more likely to predominate, and as a result individuals will be more likely to withdraw from the interaction.

Investigations focussing on the reactions of people that occur at inappropriately close interaction distances have demonstrated that individuals who cannot adjust this distance experience physiological arousal and anxiety and displays signs of discomfort (e.g., Aiello, De Risi, Epstein & Karlin, 1977; McBride, King & James, 1965; Stokols, Rall, Pinner & Scopler, 1973). In addition, individuals have been found to display non-verbal behavioural indications of discomfort at these distances. Both gaze and directness of body orientation have been found to decrease at very close distances (e.g., Aiello, 1972; Aiello & Jones, 1971; Goldberg, Kiesler & Collins, 1969). Moreover, although both sexes respond negatively when someone invades their proxemics by standing or sitting too close, males display more discomfort than females (e.g., Garfinkel, 1964; Patterson, Mullens, & Romano, 1971).

Few studies have examined the reactions that occur as a result of interaction distances that are too far. It is equally probable that these excessively large distances will be experienced as uncomfortable as well. Studies by Dinges & Oetting (1972), and Haase, (1970) that showed pictures of interactants at various distance to subjects yielded ratings of the largest distances as most uncomfortable. Similarly, in a videotape study of interactants at varying seated distances, subjects characterised a distance of 3000 mm as inappropriate and even less comfortable and less preferable than those of 300 to 600 mm.; they reported greatest comfort for moderate distances (Thompson, Aiello, & Epstein, 1979). There is also some behavioural evidence indicating that males and female will respond differently at inappropriately far distances. Studies of visual behaviour during interaction at extended distances (Aiello, 1972, 1977a, 1977b) have found that although males looked more as distance increased females looked less after an intermediate distance of 1950mm (6.5 ft). Aiello (1987) have suggested that this decrease in eye contact is representative of withdrawal due to the discomfort experienced at greater distance. These findings on the differential effects of distance on male and female visual behaviour lend only partial support for Argyle and Dean's (1965) linear equilibrium model, which posits that, for males and females, the greater the interaction distance, the greater the resulting looking behaviour. These data do support the proposed extension of the equilibrium model, which specifies that very uncomfortable interaction distances, whether too small or too large, may lead to decreases in the involvement level desired by an individual (which may then be reflected in these studies by decrease in eye contact).

4) The Arousal or Attribution models

The limitations of Argyle's & Dean's (1965) intimacy equilibrium model are particularly highlighted by those studies that have found reciprocity or matching of intimacy responses, rather than compensation, when an existing intimacy level is disturbed. Patterson(1976) developed an arousal model of intimacy exchange to overcome several limitations of Argyle's & Dean's (1965) model, especially those related to situations involving incidences of non-verbal reciprocation. Patterson postulated that any interaction involves arousal. An approach (increase in immediacy) by one of the interactants will often produce a change in the physiological arousal (if it is sufficiently strong) in the other. The interactant would reciprocate for positive arousal but compensate by withdrawing for negative arousal.

Several studies have supported this proposition. For example Schiffenbauer and Schiayo (1976) involved female students and confederates in an experiment to test the effects of both interaction distance and the quality of the interaction upon attraction. They found that close interaction distances amplified the quality of the interaction so that for a positive interaction there was more

liking for a close rather than a far partner, while for a negative interaction a close partner was liked less.

Foot, et.al., (1977) conducted a study on the social responsiveness of friends and strangers in an interactive humour situation. Pairs of children seven and eight years old were recorded on videotape while watching a comedy film. The intimacy of interactions was examined by analyses of expressive behaviours including laughing, smiling, and looking at the companion. They found that changes in intimacy behaviours initiated by one person (A) are reciprocated by a second person (B) if those changes produce in B positively valued arousal.

Smith and Knowles (1978) investigated the effects of proxemics invasion on pedestrians crossing the street in the campus area of Ohio State University. Results of the study indicated that the invaded pedestrians crossed the street faster, rated the invader's behaviour as less appropriate, and had negative impressions and attributes of the invader.

In spite of evidence that has supported this model, several authors have criticised it. For example, Capella and Greene (1982 commented that: First, the theory needs to be extended to behaviours indicative of generalised involvement (that is, involvement with the other, or affiliation, and involvement in the situation, or activity) and not to restrict it to affiliative behaviours alone. Second, it is too imprecise in its predictions about labelling conditions which will produce reciprocal and compensatory responses (as pointed also by Hayduk, 1983). Third, it is more suited for the longer term aspects of interaction and less suited for the very brief almost automatic reactions of respondents to the expressive overtures of others.

5) The Expectancy and Discrepancy models

These are models that comprise all of the possible outside variables that can affect the interactants' behaviour. These models include norms and situational factors, as well as interactants' personalities, experiences, and relationships. These factors all combine to form an expectancy. The deviation from this expectancy that occurs in the interaction determines the behaviour of the interactants. If intimacy is too much greater or too much lesser than the expected level, the person withdraws. If it is close to the expected level, there is reciprocation.

Patterson (1982) and Capella and Greene (1982) have proposed the two major expectancy-discrepancy models of interaction. Both models emphasised on the interpersonal aspect, that is, the exchange of interaction is affected by mutual feedback and stressed on the importance of arousal and affect in influencing the behaviour of the interactants. However, Capella and

Greene's discrepancy-arousal model differs from that of Patterson's by:- taking into account that the interactant's expectancies may be different, the arousal level resulting from the discrepancy between expected and actual involvement level of partner is said to cause both affect and behavioural changes, and it considered (realistically) the rapid reaction times necessary for the coordination of reciprocity and compensation processes in ongoing interactions. On the other hand, Patterson's sequential functional model, while not as specific or testable as the discrepancy-arousal model, is more comprehensive and incorporates multiple functions for non-verbal components of involvement, like interpersonal distance, and posits that arousal is not a neceassry cause of subsequent behavioural adjustments.

The Expectancy and Discrepancy models, while not ideal, would seem to have the best potential for explaining the process of non-verbal exchange (including of course the role of interpersonal distance) that occurs throughout the full range of human interactions. Both the Patterson's sequential model and the Capella and Greene's discrepancy-arousal models make an important contribution by pointing out that the level of non-verbal involvement in an interaction is not necessarily synonymous with the interactants' level of intimacy. Patterson indicated that the level of involvement may reflect nothing or very little about a social relationship. High non-verbal involvement (including a close interaction distance), for example may be associated not at all with high intimacy but instead with the managed and purposive function of social control (e.g. an attempt to persuade; a desire to create a favourable impression or sell a product) or the impersonal function of service or task (e.g. a physician examining a patient: two co-workers at a meeting reading from the same document). Further, this class of models can explain not only the positive relationships found between non-verbal variables (reciprocation) and the negative relationships (compensation) but also the nonlinear relationships. Stable exchanges occur when discrepancies between expectations and interactions are small, and unstable exchanges occur when those discrepancies are great.

The primary limitation of this set of models is similar to that of the arousal models: The Expectancy and Discrepancy models take into account a number of individual characteristics that are internal and hence difficult to measure. Therefore, since one can only measure some of the factors affecting expectancies (e.g. situational variables), one cannot always accurately predict behaviour with these models. However, they represent an important and significant improvement over early models for treating the complexities of interpersonal interactions.

Kaplan et. al. (1983) conducted an experiment, assessing female students' verbal and visual distancing responses while orthogonally manipulating interviewer attractiveness, question intimacy, disclosure personalness and visual gaze. The results support the norm of reciprocity with regard to verbal disclosure. With regard to visual gaze, an interaction with attractiveness

emerged, conforming to the attraction transformation hypothesis. Reciprocity occurred with a likeable interviewer while compensation occurred with an unlikeable interviewer.

In any case, expectancy has to deal with the unexpected and it does not do so very well. For example, Ruback (1987) conducted two studies on the effect of intrusion on people in library aisles at a university in southern India. In the first study he observed that individuals who were by themselves spent significantly less time in the aisles than did individuals who were intruded upon by one or more other persons. The second study involved an experimental investigation of the effect of a confederate on the amount of time the subjects spent in the library aisles. He found that subjects remained longer when they were intruded by the confederate as compared to subjects who were not intruded. He noted that the intrusion might have led to persistence because of distraction, arousal or reactance. Thus both his studies did indicated that proxemics invasion does not necessarily lead to retreat as expected.

6) The Language and Forms of Address model

It was Brown (1967) who conceptualised that distancing in social relationships is founded in language and forms of address. Several studies have provided evidences in support for this concept. For example, Reid (1980) made a study on teacher-pupil interactions in secondary schools in various parts of England. Amongst his findings he observed that it was the verbal interaction itself that determined the interpersonal distances.

Earlier, Birdwhistell (1970, p. 28) had reported that distance between speakers and listeners is at least partially controlled by language. He cited an example made during his stay in British Columbia. He observed that the Kutenai speakers moved differently when speaking Kutenai as compared to when they were speaking English. In a similar study, Sussman and Rosenfeld (1982) involved Japanese, Venezuelan and American students who were asked to converse in their native language and then English language (for the Japanese and Venezuelan students) in different sessions with a same-sex and same nationality confederate. Amongst the findings they made were that:- when speaking their native languages, the Japanese sat further apart than the Venezuelans, with the Americans at an intermediate distance; and when speaking the English both the Japanese and Venezuelan students approximated the American conversational distance than when speaking their native languages.

Smith and Cantrell (1988) made a study on factors that may increase or diminish patients' comfort within the nurse-patient relationship. Both physical and verbal aspects of proxemics served as independent variables to assess the effects of manipulation of these variables on

patient anxiety. They found that physical distance was only anxiety arousing if combined with verbal intrusion.

In another study, Meltzer (1983) reported that the social distances he measured were controlled by the use of vocabulary, refinement, and images. Similarly, Waller (1984) described how the perceived distance between speaker and listener was determined by the use of standard versus colloquial language.

Overview

Hall's proxemics framework was reviewed because of its direct bearing towards the appreciation and understanding on the present research topic. Also, in evaluating the other theoretical models, it can be said that forces for equilibrium, attribution, expectancy, and the use of language do affect proxemics behaviour.

2.1.3 Factors affecting personal space / proxemics

1) Gender differences

According to Aiello (1987, p.413) the result reported most often in the spatial behaviour is the differences in the interpersonal distances between the genders, with a common proposition that female dyads (involving two persons) maintained a closer interactional distance than male dyads. However, there were also studies non-supportive of such views. All these studies shall be reviewed as follows.

a) Gender differences amongst children

Amongst the studies that have found that female dyads interact at closer distance than males dyads that involved children include those by Aiello and Aiello (1974), and Tennis, and Dabbs (1975). For example, Aiello and Aiello (1974), involved white American children ranging from the age of six to sixteen. They found that males interacted at greater distances than did females, and that this differences was most prominent amongst the older children (male:mean distance=675mm; female: mean distance=425mm). A study by Tennis, et.al.,(1975) also supported this finding. Involving equal number of Caucasians from elementary, high school and university students he found that closer interpersonal distance was exhibited between females (mean distance=460mm) than between males (mean distance=600mm).

b) Gender differences amongst adults

Studies in support of the proposition that involved adults include those by Willis (1966), Dosey and Meisels (1969), Leibman (1970) and Barnard, et.al., (1982). For example, Willis (1966) studied the proxemics behaviour of Caucasians in homes. places of business and university halls. The results revealed that the interaction distance between female dyads were closer (mean distance=540mm) than male dyads (mean distance=612mm). Dosey and Meisels (1969) involved equal number of university students from both genders and investigated their interaction distance using the approach distance method, that is to approach another subject and to stop until the subjects felt uncomfortably close. Results revealed that female dyads interacted closer at a mean distance of 283mm as compared to the male dyads at 305mm. In another similar method of approach Barnard, et.al., (1982) used an unobtrusive apparatus called the Interpersonal Distance Mat (IDM) to measure the distance. Although the results were similar, in that female dyads stood closer than male dyads the mean interaction distance was much greater than that obtained by Dosey and Meisels, that is at 359mm between the female dyads and 647mm between the male dyads.

On the other hand, there are also evidence of female dyads interacting much further than male dyads. For example, Heshka and Nelson (1972) studied photographs taken of dyads interacting at streets, parks and markets in London. Stranger dyads involving females stood significantly apart (mean distance=448mm) than male strangers (mean distance=355mm).

In addition, there are also studies that reported of no differences in the proxemics behaviour between the genders. For example, Burgess (1983), who studied photographs taken of people walking along malls of shopping complexes and road-side pavements in California did not find any difference in interpersonal spacing between the genders.

c) Factors influencing gender differences

Differences in interaction distance between the genders are also affected by other factors. Factors such as age differences, personality differences, situational effects. cultural differences and physical determinants shall be reviewed in later parts of this section. Meanwhile other factors such as eye-contact (glances), facial expression, degree of acquaintanceship, and status shall be reviewed as follows. For example Argyle and Dean (1965) conducted an experiment on the relationship of interactional distance and eye-contact (glances). Subjects of both genders

were involved in a conversation with a confederate, who gazes continually at the subject. The conversation was held at a interactional distance of 600mm, 1800mm, and 3000mm accordingly. Results revealed that length of glances increased with distance from 5.5 sec. At 600mm to 8.8 sec at 1800mm and 9.6 sec at 3000mm, and that females showed more eye contact than males.

Mandal, et.al.,(1985) involved Indian adults of both genders as subjects and investigated their reactions to various life-size facial expressions projected on a screen. Subjects were told to approach as close as possible towards the expressions and to stop until they reach a comfortable interaction distance. Results revealed that males preferred to be closer to an expression of happiness (mean distance=700mm) than of sadness (mean distance=1048mm), while females approached both almost equally closer (sadness: mean distance=588mm; and happiness: mean distance=613mm). Although fearful expression were avoided by both genders, with females at a greater distance (males: mean distance=1285mm; females: mean distance=1978mm), however, the expression of fear in female faces was attended from a shorter interactional distance (mean distance=1408mm) than that of male faces (mean distance=1858mm). Female's interactional distance towards female's facial expression was closer (mean distance=905mm) than towards male's facial expression (mean distance=1213mm), while the males remained almost unbiased in this respect (towards male's facial expression: mean distance=1020mm; towards female's facial expression: mean distance=1003mm).

In the study by Willis (1966) mentioned above, he also found that interaction distance for females was influenced by the degree of acquaintanceship between the interactants. That is, their interaction distance was closest to those regarded as close friends (mean distance=444mm)and furthest towards those regarded as friends (mean distance=654mm), while an intermediate distance towards those regarded as acquaintance (mean distance=560mm). Differences in interaction distance of males in relation to the degree of acquaintanceships were negligible. Similarly, Heshka and Nelson's (1972) study mentioned above also reported that male dyads maintained an interaction distance that does not depend to any significant degree on relationship.

Young and Guile (1987) involved equal numbers of adults from both genders sitting alone on public benches in a large suburban shopping mall in the U.S. as subjects in an experiment to investigate their reactions on invasion of their interpersonal distance at a distance of 450mm. Results revealed that females but not males had shorter latencies of departure, that is they departed sooner (mean time: 3.65 mins.) than males (mean time: 5.99 mins.) when their space was invaded by low-status intruders (college student confederate) relative to high-status (business person confederate) and religious-status (Catholic clergy confederate).

d) Opposite-sex interactions

Results of studies involving opposite -sex dyads are also not clear. For example, studies that have found the interaction distances of same-sex dyads to be closer than opposite-sex pairs include studies mentioned above by Heshka and Nelson (1972) and Barnard, et.al., (1982). Heshka and Nelson (1972) found that opposite-sex dyads amongst strangers maintained the furthest distance (mean distance=498mm) as compared to the other same-sex dyads. Barnard, et.al., (1982) found that females approached males at a mean interaction distance of 455mm, while males approached females at 382mm, both of which are greater than when females approached females at a mean interaction distance of 359mm mentioned earlier. However, in his surveys and observational field studies in public houses and restaurants, Cook (1970) observed that opposite-sex pairs sat closer together than did same-sex pairs.

Meanwhile, in a study by Dosey and Meisels (1969) mentioned earlier, they found no difference in interaction distance when the approach was from an opposite gender.

Overview

One could infer that the differences in proxemics and interaction distances between the genders were due to the characteristics of a biological nature. However, Altman (1975) is of the opinion that the differences seemed to link more to the different socialisation of the two genders. Meanwhile, Severy, et.al. (1979) pointed out that gender on its own is not a good predictor of proxemics, and is only clearly observable in conjunction with other factors, such as age, relationship, situations, etc. In support, Remland, et.al., (1991) commented that research on sex-differences in proxemics behaviour can be characterised as methodologically diverse and inconclusive. They pointed out that the difficulty is due to the inability of researchers to isolate, especially in observational field studies, the intervening variables that combine with sex-role expectations to influence these behaviours (e.g., personality, relationship, topic of conversation, environment, etc.) Nonetheless, the evidence is substantial that, under certain circumstances, gender does influence proxemics behaviour in ways that can be attributed to sex-role socialisation processes which encourages females to be more affiliative and submissive than males (Henley and LaFrance, 1984). As gender differences could affect proxemics behaviour, for the purpose of this research, their distribution should be similar in proportion and thus comparable between the two countries.

2) Age differences

Studies have shown that there is a relationship between interaction distances and age (Hayduk, 1983). While results of studies concerning children had shown a linear relationship, studies concerning adults had suggested for a curvilinear relationship.

a) Age differences amongst children

Studies mentioned in Section 2.1.3 (1) by Aiello and Aiello, (1974), and Tennis, et.al.,(1975) also reported that interaction distances between pairs of children waiting in classrooms increased gradually between the ages of six and sixteen. Tennis, et.al.,(1975) found that the mean interpersonal distance increased from 300mm for the six years old to 530mm amongst the 16 year olds. Similarly Willis, et.al. (1979), who studied proxemics behaviour of children in school cafeteria lunch lines, found that social distances increased between kindergarten to ten years old

b) Age differences amongst adults

In a study based on photographs taken of people (75% of British nationality) in streets, parks and markets of London, Heshka and Nelson (1972) found closer interaction distances among young adults (19 years old) and the elderly (76 years old) than among those 40 years old, thus supporting a curvilinear relationship. Similar result was found by Burgess's (1983) study mentioned in Section 2.1.1.3 (1) who revealed that the mean interpersonal spacing amongst companions for young adults at 940mmm and the elderly at 990mm were much closer than the middle-aged adults at 1160mm. A similar trend appeared when it involved strangers, with distances amongst young adults at 3700mm and the elderly at 3160mm, being closer than the middle-aged adults at 4170mm.

c) Age similarity-proximity relationship

It has also been reported that there is an age similarity - proximity relationship, where interpersonal distance of people within the same age group tend to be much closer than those that belong to different age group. For example, in a study by Willis (1966) mentioned in Sectioned 2.1.3 (1), he also observed that the interaction distances amongst peers were closer (mean distance= 597mm) than the elderly (mean distance= 667mm). Latta (1978) involved male

undergraduate students in an experiment with male targets comprising three different age levels. that of thirty-six, twenty-one (peer group) and sixteen years old. He found that the mean interaction distances were 1610mm with the elder, 1202mm with the younger, and 913mm with the peer age group. Hence, confirming that peers stand closer to each other than to older (and younger) persons.

In addition, in their study on spatial distance between parents and children, Larson and Lowe (1990) involved middle-class families with young adolescents (ten to twelve years old) and old adolescents (thirteen to eighteen years old) from both genders. They found that the distance adults maintained from children become greater as the child's age increases. The mean distances being 357mm with the young adolescents and 397mm with the old adolescents.

Overview

The proxemics behaviour between children and adults are not the same. Studies have shown that the relationship of interaction distance is linear and progresses with age amongst the children, but more of a curvilinear relationship amongst adults. Studies have also revealed the existence of age similarity and proximity relationship. As age differences also affects proxemics behaviour, it is important that the distribution of the subjects' age group be similar in proportion and thus comparable between the two countries.

3) Personality differences

Each and every one of us has our own particular personality that is normally quite different from others. A person could either be normal or schizophrenic, introvert or extrovert, of high or low self-esteem, of high or in need of affiliation, etc. Studies have shown that there exist a relationship between personality and interaction distance. These shall be reviewed as follows.

a) Schizophrenics versus normals

Studies have shown that schizophrenics tend to require more space than normal people. Horowitz, et.al.,1964 conducted an experiment at the US Naval hospital at Oakland, involving equal number of schizophrenics patients and nonschizophrenics male of similar age, rank and cultural background. They found that the mean frontal approach distance of schizophrenics was 250mm while that of nonschizophrenics was 208mm. In another study, Srivastava and Mandal

(1990) obtained similar result. Their study involved three groups of psychiatric patients (anxiety neurotic, depressive, and schizophrenics) and a nonpatient group. Subjects were required to step forward at a most comfortable distance with life-size facial affect photographs depicting happiness, sadness, fear, anger, surprise, disgust and a neutral state. Their results revealed that schizophrenics demand greater interpersonal distance than depressive, anxiety neurotic, or normals. For example, for the neutral and happiness facial expression, interaction distance for normals was 1806mm and 1113mm respectively, but for the schizophrenics it was 1941mm for both cases; and for sadness, it was 1356mm for the normals but 2133mm for the schizophrenics.

b) High self-esteem versus low self-esteem

Studies have also shown that people with high self-esteem maintained smaller interaction distance than those with low self-esteem. For example, Frankel and Barret (1971) involved Caucasian, male, native-born Americans university students as subjects and two male students, one white and the other black as stimuli for the experiment. Their results revealed that high self-esteem individuals maintained a mean interaction distance of 1950mm with either black or white stimuli, but those low self-esteem individuals maintained a larger mean interaction distance of 5100mm with black and 3720mm with white stimuli.

c) Field dependent versus field independent

Field dependent persons are considered to be friendly, considerate, warm and affectionate, while field independent students are considered to be ambitious, interested in power, and manipulative of other people (Elliot, 1961; Loveless, 1972). Kline, et.al., (1984) conducted an experiment involving field dependent and field independent university students from both genders by measuring their approach distance towards a confederate. As expected, they revealed that field dependent individuals maintained closer approaching distance of 254mm as compared to the field independent ones of 459mm.

d) Isolation versus non-isolation work place

Gifford and Sacilotto, (1993) conducted an experiment which involved female employees, ages between twenty to sixty years old, of a government agency. Half of them worked at computer terminals with the other half working with other people. They found that those who worked in

relative isolation (eg computer terminals) maintained more approaching distance at 896mm, even outside of the work setting, than those who do not work in isolation at 785mm.

e) Anxious versus non-anxious

In another approach distance experiment by Karabenick and Meisels, (1972) involving male university students, they found that anxious individuals maintained more distance (mean distance=450mm)when approached as compared to the non-anxious (mean distance=350mm).

f) Personality and seat choices

Several studies involving seated subjects and their preferred interaction distances as regards to their personalities shall be discussed further in Section 2.1.3 (5). These include studies by Cook, (1970) who found that introverts tend to maintain more distance between themselves and others than extroverts; Mehrabian and Diamond (1971b) who revealed that people high in need for affiliation preferred closer distances than those low in need for affiliation; Gifford, (1982) who observed that extraverted and gregarious persons allowed smaller proximity, while cold and quarrelsome people maintained a larger interpersonal distance.

Overview

Studies have shown the existence of a relationship between proxemics behaviour and personality. Schizophrenics, people with low self-esteem, field independent people, people who worked in relative isolation, anxious individuals, introverts, people low in need of affiliation, and cold and quarrelsome people tend to require more space than normal people. As personality also influences one's proxemic behaviour, for the purpose of this research, only people regarded as 'normal' through the 'eye-ball' test would be considered as subjects for the analysis.

4) Cultural differences

Studies on Hall's (1966) notions regarding the different expressive styles in proxemics behaviour of the so-called contact and noncontact cultures described in Section 2.1.2 (1) is relatively sparse in comparison to the more than seven hundred studies on other aspects of proxemics behaviour (Aiello, 1987, p. 434). Aiello listed sixty studies conducted before the year 1987 relating to the influence of culture and subculture on proxemics behaviour (1987, pp. 435-

444). Although trends from such studies do indicate support of Hall's notions in the existence of cultural differences there are also studies that were non-supportive. In this section only examples of studies pertaining to non-seating interactions shall be reviewed. Examples of studies involving seating interactions shall be reviewed in Section 2.1.3 (6).

We shall first review examples of studies supportive of cultural differences. Amongst the earlier studies include that of the study conducted by Hall and Whyte (1966,p.572) who based on observation deduced that Americans adopted greater distances when interacting than the Latin Americans. In a later study, Baxter (1970) conducted an observation in a zoo (indoor and outdoor locations) on proxemics behaviour involving Anglo-, Black- and Mexican-American people of both genders and of all age groups as his subjects. His findings revealed that opposite-sex pairs interacted closer than same-sex pairs in indoor locations, and that female dyads maintained the closest interaction distance at outdoor locations across the three cultures. However, the distance maintained between the cultures differed greatly. In both locations, the Black Americans maintained the furthest distance (mean distance: indoor=831mm; outdoor=849mm), while the Mexican-Americans maintained the closest distance (mean distance: indoor=495mm; outdoor=501mm). The Anglo-Americans maintained the intermediate distance (mean distance: indoor=699mm; outdoor=738mm). Cultural differences were also found by Collet,(1971) in a study on intercultural communication amongst eighteen to twenty-five years old male Arabs and English students studying in London. He revealed that the Arabs better liked English men trained to stand closer and engage in more eye contact with Arab men. Similar results were obtained in a study by Aiello and Jones 's (1971) who involved equal number of six to eight year old white, black and Puerto Rican children interacting in the school playgrounds. They revealed that the mean interaction distance amongst white children at 298mm almost doubled the distance maintained by either the blacks or Puerto Ricans children. While the difference in distance was almost negligible between genders amongst black or Puerto Ricans, the difference was about 83mm amongst the whites. Similary, in an unobtrusive observation in field study by Shuter (1976), he found that the Costa Ricans used least space, engaged in more touching, followed by Panamanians, and then Colombians. Lomranz (1976) involved teenage male students from Argentina, Russia and Iraq who had migrated to Israel for one year, in a scaled standing figure placement experiment. He revealed that the overall mean interaction distances were greatest for Argentineans, followed by Russians, and then Iraqis. Thus, supporting cultural differences in proxemics behaviour.

However there were also studies partially supportive of cultural differences. For example Shuter's (1977) observations of interactants in Italy, Germany and America revealed that the body orientation of German males was more direct than it was among American males. While Italians tended to stand closer than the Americans. Germans also stood closer than the

Americans: but in mixed-sex dyads and in female dyads, no difference in spatial behaviour was found between Italians and Germans, contradicting Hall's thesis. Partial support for the expected influence of culture was also obtained in the analysis of touch. Although Italians touched more than the other groups, it was only true for male and mixed-sex dyads.

Remland et.al., (1991) video recorded unobtrusively in naturalistic settings the proxemics behaviour of interactants in three European countries, namely the Netherlands, France and England. Hall's hypothesis regarding the proxemics and haptic norms of contact and noncontact cultures was not well supported. They revealed that amongst seated interactants, Dutch dyads maintained greater distances than French and English dyads, but French dyads were less proximate than were English dyads. The body orientation of French dyads was more direct than it was for Dutch or English dyads. In addition, neither the gender-composition of the dyad nor the gender of the individual affected the distances or body orientations of the interactants as would be expected according to traditional sex-role socialization processes. Age as well, did not influence proxemics or haptic behaviour.

Contrary to expectation, several studies also revealed no cultural differences in proxemics behaviour. For example, Aiello and Jones (1971) investigated the proxemics behaviour amongst Puerto Ricans, Blacks and Whites children, ages from six to eight years old in different schools in New York. The results revealed no differences in interaction distance between blacks and Puerto Rican children. In another study, Jones (1971) also found no differences in the interpersonal distance maintained among blacks, Puerto Ricans, Italians, and Chinese living in New York. Similar findings were reported by Cade (1972) who involved the Americans, Filipinos and Japanese in a scaled figure placement experiment. He found no difference between the subcultures in the distances they placed family members from each other.

Overview

Results on the studies on cultural variations, specifically on non-seating interactions have not been consistent. While there were studies that revealed the existence of cultural differences, others were either partially or non-supportive. Several authors have blamed the methodology used as the reason for the inconclusiveness of the research on the influence of culture on proxemics behaviour (e.g. Hayduk, 1983, Aiello, 1987, and Remland et.al., 1991). According to them, studies should not be done using the laboratory method but rather by unobtrusive measures in natural setting for data obtained to be more realistic. In addition, it should be conducted at the subject's country of origin so as to avoid the problem of cultural assimilation by the subjects in a foreign country. Thus, a similar in approach of the present research.

5) Situational effects

Interpersonal distances are affected by the situations the people are in. As mentioned in Section 2.1.2 (1), Hall (1966) had shown that the Americans for example use all of the four proximity zones (intimate distance, personal distance, social distance, and public distance) in their interactions with others. Bell (1996, p. 279) commented that these zones vary in terms of the quality and quantity of stimulation that is exchanged. The situation could be due to degree of acquaintanceship and attraction, similarities, standing or seating, crowded environment, etc. While studies concerning seating arrangements are reviewed in more detail in Section 2.1.3. (5), other situations shall be reviewed as follows.

a) Degree of acquaintanceship and attraction

Where attraction between individuals is strong, where friendships exist and where the general tone of the interaction is friendly, we are more willing to decrease our proxemics requirement. Little (1965) investigated the effect of attraction and settings on interaction distances. Male and female students were asked to place actresses, in relation to the degree of acquaintanceship, that of 'very good friends', 'casual acquaintances', and 'strangers' against different changeable backgrounds depicting various scenes as the setting. He found that the actresses were placed closest when labelled as 'Friends', and furthest when labelled as 'Strangers', with that labelled as 'Acquaintance' somewhere in between. In terms of setting, actresses were placed furthest in an office setting as compared to an outdoor setting. For example, amongst 'Friends' the mean interaction distance with the street as background was found to be 343mm as compared to 463mm in an office; but amongst 'Strangers' the distance was 763mm and 1045mm respectively. In another related study, King (1966) investigated the effect that friendly and unfriendly interactions occurring in small groups of kindergarten children on their proxemics behaviour. He observed that the acquaintanceship between the children was strongly related to the mean distance maintained between themselves, that is those regarded as friendly maintained a much closer distance as compared to those regarded as less friendly.

Studies have shown that attracted pairs to each other maintain a closer physical distance together. For example Byrne, et.al., (1970) in his research on attraction selected opposite-sex pairs of maximal or minimal similarity and told them to have a 'date' for about thirty minutes together. After their 'date' they were told to attend an interview with the experimenter. It was found that both similarity and attraction were related to the physical proximity of the two individuals while they were talking to the experimenter after their 'date'. In addition, Byrne (1971) revealed that individuals with similar personality are more attracted to each other. In

another related study Allgeier and Byrne, (1973) involved equal numbers of male and female university students whose attitudes were already assessed, to choose seats whereby one of the seats was already occupied by an opposite-sex confederate. They found that subjects indicated greater attraction for and chose to sit closer to an opposite sex stranger with similar attitudes than to one with dissimilar attitude. At the same time, where people dislike each other, and where the tone of the attraction is unfriendly, people tend to move further apart (O'neal, et.al., 1980).

b) Standing versus seating

In a study by Altman and Vinsel (1977), mentioned in Section 2.1.2 (1), they also reported that people maintained closer distances when standing than while seated.

c) Crowded versus uncrowded

Studies on crowding (reviewed in Section 2.4.0) have revealed that people preferred greater distances in crowded than in non-crowded conditions (e.g. Jain, 1993).

d) Similar versus dissimilar

Studies also have shown that closer distances are maintained between individuals who are 'similar' rather than 'dissimilar'. By 'similar' here means in having some thing in common, which could be due to gender, age, personality, religion, status, preferences, race and subculture, Studies relating to gender, age, and personality have been covered in the earlier parts of Section 2.1.3 (1-3) while that on race and subculure shall be covered in section 2.1.3 (6). Other commonalties and individual preferences shall be reviewed here.

Studies have shown that there is a relationship between interpersonal distance and religion. For example, Balogun, (1991) investigated the proxemics behaviour of the Christians and Muslims university students in Nigeria. Subjects were required to sit on a bench being also occupied by the same or opposite religion. The results revealed that students sat closer to those belonging to the same religion. For example the mean distance for the Christians approaching another Christian was 816mm as compared to 1050mmm when they approach a Muslim, while the mean distance for the Muslims approaching another Muslim was 472mm as compared to 1091mm

when they approach a Christian. This study thus supports the proposition that people similar in religion would maintain a closer interpersonal distance with each other.

According to Burns (1964, p. 31), all societies are stratified, that is in having a class structure or social status of their own. Within this class structure it is normal for people of equal status to interact at closer distance than those who are not of the same status.

The relationship between interpersonal distance and sexual preferences has also been studied. For example Barrios, et.al., (1976) investigated the proxemics behaviour of normal versus bisexual. Involving equal number of male and female university students as subjects, they were told to place their seat and interview a confederate who was revealed to be either heterosexual or bisexual. The results revealed that for both genders, mean seating distances were closer with the normal than the bisexual confederates. For example, mean seating distance chosen by male subjects were 2616mm and 1468mm with bisexual male and female respectively, compared to 1951mm and 859mm with normal male and female respectively, while that for female subjects were 3261mm and 1936mm with bisexual male and female respectively, compared to 2063mm and 1250mm with normal male and female respectively.

There are also studies which had investigated the effect of facial disfigurement on the proxemics behaviour of people. For example, Rumsey, et.al., (1982) involved the pedestrians along a busy street in London as their subjects and observed their reactions towards confederates who were either facially disfigured or normal. The results revealed that the mean interpersonal distance was closer between the subjects and the 'normal' confederate at 560mm, as compared to the facially disfigured confederate at 1000mm.

Thus, all the above studies are supportive of the proposition that people maintained a closer interpersonal distance between similar rather than dissimilar.

Overview

Studies have shown that proxemics behaviour of people are affected by the situation they are in. Situations such as the degree of acquaintanceship and attraction between interactants, whether people are standing or seating, whether people are in crowded or uncrowded environment, and whether people share similarities amongst the interactants do have effects on people's interaction distance. As the environment also affect one's prooxemics behaviour, efforts were made in ensuring that the environment of the setting were similar and thus comparable between the two countries.

6) Seating

Evidence from the literatures reviewed in relation to seating and human behaviour suggests two main areas of concern. First, factors that influence the choice for seats. Second, how the seating type, position and layout influenced human behaviour. Before reviewing further on these areas, the seating pattern being referred to in this section is as illustrated in Figure 2.1.3. Seat positions B-C, C-D, F-G, and G-H denotes 'side' seating; A-B, D-E, E-F, and H-A denotes 'corner' seating; B-H, C-G, D-F denotes 'across' seating; and B-F and D-H denotes 'distant' seating.

A) Choice for seats

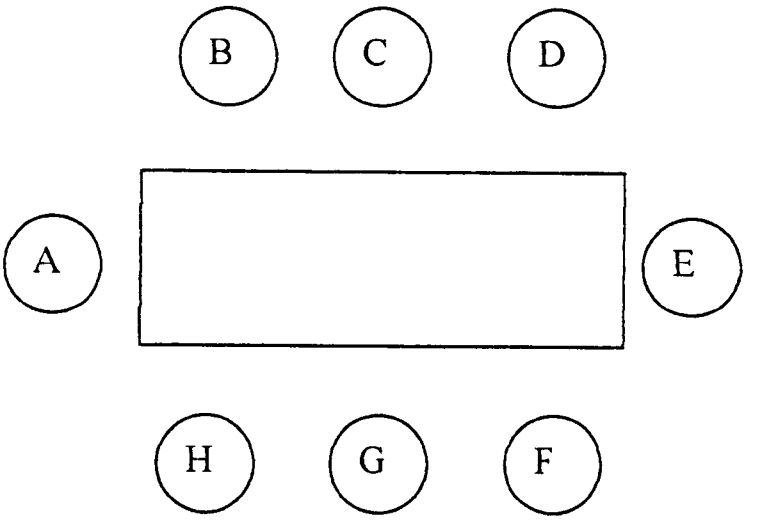
Several factors have been identified that influence the choice for seats. These include factors such as one's needs and activities, personal attributes, and group size.

a) Needs and activities

Studies have shown that one's needs and activities could influence the choice for seats. For example, in his analysis on the choice for seats, Sommer (1969, p. 49-52) found that when one is in need of privacy, the choice would be for seats row positioned at the ends and preferably adjacent to a wall, or seats facing away from the door, or seats situated at the rear of the room.

Sommer also found that when the need is to defend one's privacy, the choice would be for middle of row or centrally located seats, or seats facing the door, or by leaving a seat vacant adjacent to the already occupied seat. Haber (1980) involved students in a study on territorial invasion. He also found that spatially central humans defend territory upon invasion more than do the spatially peripheral (those occupying a front, back, or side seat).

In his study on seat preference in relation to activity, Sommer, (1969, p. 61-73) reported that people preferred side seating when the activity involved co-operation, distant seating when it involved co-acting, and across seating when it involved competition. In conversation, preference was for corner seating or across seating for rectangular table, and side seating for round table. He also noted that preference for across seating over side seating only holds when distance across is equal to or less than the side seating. Hendrik, et.al. (1974) involved equal number of university students from both genders in their study on seating distance in small discussion group. Subjects were required to choose seating positions of their choice facing a moderator.



Key:

B-C, C-D, F-G, G-H	: 'side' seating
A-B, D-E, E-F, H-A	: 'corner' seating
A-E, B-H, C-G, D-F	: 'across' seating
B-F, D-H	: 'distant' seating

Figure 2.1.3: Seating layout indicating seat positions on various seating patterns.

They also reported that the choice for seat is influenced by the need to maintain one's proxemics, plus the limit for comfortable conversation. They found that the mean distance amongst subjects was 1200mm (within Hall's, 1966, personal distance - far phase zone) while that between subjects and the moderator was 1825mm (within Hall's, 1966, social distance zone).

In the study by Cook, (1970, p. 71) mentioned in Section 2.1.3 (1), he also found that as motivation increases, people will sit closer and/or in a position where eye contact is greater. Where the motivation is affiliative, people will sit closer. Where it is competitive, people will choose a position that allows more eye contact.

b) Personal attributes

Amongst the personal attributes that could influence the choice for seats are one's gender, personality and cultural background.

i) Gender

It was mentioned in Section 2.1.3 (1) that results of studies relating to interaction distance on gender differences have been mixed. Similar mixed results are also revealed in studies involving seating distances between the genders. For example, amongst studies that have shown that females tend to sit much closer to another female as compared to males to another male include those by Sommer (1959, p. 260); Cline and Puhl (1984); Dosey and Meisels (1969); Sussman and Rosenfeld (1982, p.66). Sommer (1959) investigated on the choice of seat position in the staff dining hall involving both male and female staffs of a mental hospital. He revealed that females would sit closer to female confederates (choice of side seating) than male confederates; this was also closer than males would sit to confederates from either gender. Using the questionnaire method, Cline and Puhl (1984) investigated seating preference amongst male and female students from USA and teachers teaching English from Taiwan. They found that in interaction with a male partner, males were more likely than females to prefer opposite seating while females were more likely than males to prefer corner seating and side seating. In the study by Dosey and Meisels (1969) mentioned in Section 2.1.3 (1), they also revealed that females interacted much closer (mean distance=283mm) than males (mean distance=305mm). In the study by Sussman and Rosenfeld (1982) mentioned in Section 2.1.2 (6) they also found that females sat closer together (mean distance=851mm) than males (mean distance=1026mm) Mehrabian and Diamond (1971b) involved equal number of university students from both genders in their study on the effect of seating arrangement on conversation. They found that when joining an already formed mixed-sex group, females tend to sit much closer (mean distance=1533mm) to the group than males (mean distance=1680mm).

However, several studies did not support the notion that females sat closer than males. For example,in an investigation of the spatial ecology of groups Batchelor and Goethals (1972) involved equal numbers of genders of high school students in a discussion. Subjects were allowed to place their chairs anywhere in an empty room. They found that both genders sat closest between the same gender (mean distance=857mm). In the study by Hendrik, et.al. (1974) mentioned above, they also found mixed results to support the popular notion that females tend to sit much closer to another female.

Meanwhile in a study by Cook, (1970) mentioned in Section 2.1.3 (1), he argued that seat choices were clearly affected by the degree of intimacy between them. That is the more intimate the relationship, the closer they sit together. He observed that male-female pairs preferred side seating more than either female-female or male-male pairs. In a related study, Keating and Keating (1980) investigated bench seating patterns amongst adult male pairs Kenyans in Nairobi. Photographic evidence indicated that acquainted pairs sat at closer distance (mean distance= 580mm) than unacquainted pairs (mean distance= 1030mm).

Thus, the findings that there exist differences in the manner different genders orientated themselves in their choices for seats should have taken into account the relationship or degree of intimacy between the genders.

ii) Personality

Personalities of a person also tend to influence their choice for seats. For example, in the study by Cook, (1970) mentioned above, he also found that extraverts choose to sit opposite, across the table, or down the length of it, and avoided positions that place them at an angle to the other, whether close or at a distance. They also tend to choose side seating more often than introverts. On the other hand, introverts preferred corner seating. They choose positions that keep them more at a distance, visually and physically.

In the study by Sommer, (1959, p.260) mentioned above, he also observed that both schizophrenics male and female patients would sit alongside a male confederate rather than a female confederate.

Hare and Bales (1963) analysed data obtained from observations of small group discussion in the laboratory. They found that more dominant subjects tend to choose the central seats and were the most vocal.

Lott and Sommer (1967) investigated the connection between seating position and status involving university students from both genders. Results revealed that there is a connection between location and status. People sat further from both high- and low-status individuals than they did with their peers.

iii) Cultural

Studies on non-seating interactants in relation to cultural differences were reviewed in Section 2.1.3 (4). Mixed results were obtained from such studies, that is while some were supportive, others were either partially or non supportive. Studies relating to seating interactants shall be reviewed in this section.

Amongst studies in support of Hall's contention on contact and non-contact culture shall be reviewed first. For example, both Sommer, (1969, p. 61-73) and Cook, (1970, p. 64) found similar seating patterns amongst the British and the Americans, in the preference for corner seating or across seating (for rectangular table) and side seating (for round table) when engaged in conversation, side seating for co-operation, across seating for competition and distant seating for co-acting. In a study by Watson and Graves (1966) mentioned in Section 2.1.2 (2), they also found that the Arabs sat closer, confronting each other more directly, touched more, engaged in more eye contact, and talked louder than the Americans. In an extensive study on proxemics behaviour of various cultures Watson (1970) conducted an unobtrusive observation in laboratory of seated interactions amongst university students representing both the contact and noncontact cultures. His findings supported Hall's (1966) contention on cultural differences amongst the cultures. He elaborated further (p.115) that members of *contact culture* face one another more directly, interact closer to one another, touch one another more, look one another in the eye more, and speak in a louder voice than do members of the *non-contact* culture. He categorised the Arabs, Latin Americans, and Southern Europeans as the *contact* group, while Asians, Indians and Pakistanis, and Northern Europeans made up the *non-contact* group.

There are also several studies that supported cultural differences but not Hall's contention in the contact-noncontact culture distinction. For example, the Australians, Indonesians, Japanese, Americans, and Taiwanese had been categorised as non-contact culture. However, Noesjirwan, (1977, 1978) found that there were differences between the Australians and Indonesians.. She revealed that the Indonesians more than the Australians are more likely to be accompanied, sit adjacent to and talk to another stranger (1977, p. 367), and that the Indonesians more than the Australians used smaller interpersonal distance, with more touching and more smiling (1978, p.333). Similarly, in the study by Sussman and Rossenfeld (1982) mentioned in Section 2.1.2 (6) they revealed that when speaking their native languages, Japanese will sit farther apart than Venezuelans, with Americans at an intermediary distance. When speaking English, both the Japanese and Venezuelans will more closely approximate American conversational distance than when speaking their native languages. Also, in the study by Cline and Puhl (1984) mentioned above, they also revealed that the Americans were more likely than the Taiwanese to prefer corner seating during conversation, opposite seating when doing separate task, and side

seating when engaging in a joint task. The Taiwanese were much more likely than the Americans to choose side seating for both personal matters and for separate task.

Several studies also did not reveal cultural differences and thus non-supportive of Hall's contention. For example, Sommer (1968, p. 110) found that the American, English, Swedish, Dutch and Pakistani all rated the side seating as the most intimate type of seating, followed by corner seating, and lastly across seating. In another study, Mazur, (1977) observed unacquainted male pairs who sat on public benches in Spain and Morocco (representing "contact" culture) and USA (representing "noncontact" culture). The data he obtained provide no support for the contention that Arabs and Spaniards maintain closer interspersonal spacing than Americans. In fact he observed that pairs in the USA usually sat closer than pairs in Spain or Morocco. Similarly, it was revealed that there was no significant differences in spaces between persons on benches in San Francisco, Tangier, Seville and Nairobi (Keating and Keating, 1980). Also, Forston and Larson (1968) investigated a seated conversation involving equal numbers of Latin Americans and North Americans adults. Results revealed there was no significant differences.

Based on examples cited as above, it can be deduce then that results on cultural differences pertaining to seating interactants are also mixed, similar to that found on non-seating interactants reviewed in Section 2.1.3 (4).

c) Group size

Group size has a pronounced effect on seat choice. In a study conducted in an airport's waiting lounge Collet and Marsh (1980, p. 105) found that singles preferred the end seats in a row while most pairs preferred the side seating (adjacent to each other). Both group sizes chose areas with most vacant seats. A group of more than two people did not indicate any preferred seating location.

B) Influence of seat attributes, type, position and layout on human behaviour

Studies have shown that seat attributes, type, position and layout tend to influence human behaviour within the setting.

a) Seat attributes

Seat attributes of proximity and view from seats have been found to influence choices for seats. In terms of proximity of seats, Boucher (1972, p. 15) found that schizophrenic and alcoholic

male patients attracted to the male interviewer preferred the intermediate (Personal) distance seats, and far (Social) distance seats (schizophrenic patients only), as compared to the close (intimate) distance seats. In another study, Sommer (1969, p. 85) observed that the most popular seats in a dayroom ladies' ward hospital were those with close proximity to the dining hall, and also with outside view and view of the coming and going of people.

b) Seat type

In terms of type of seating, Sommer, (1969, p. 65) observed it is typical to find people occupying both ends of a standard 4.0m long bus stop bench leaving the middle positions vacant. Other persons who came later would rather sit somewhere else then occupying the vacant seat positions. Persons as defenders of seats will be elaborated further in Section 2.2.4 (3).

c) Seat position/location

In an earlier study in a cafeteria of a large mental hospital, Sommer, (1959, p. 259) reported that people in neighbouring chair interacted more than people in distant chairs. This was supported by Hare and Bales (1963) whose study was mentioned above; and Mehrabian and Diamond (1971a) who involved equal numbers of male and female students and non-students in a study on the effects of furniture arrangements on social interactions. Both of the studies revealed that in a "social" session, people tend to talk more to the person next to them as they turn away from the group for a more intimate conversation. At the same time, Sommer, (1959, p. 259) added that those in corner position interacted more than people alongside one another or facing each other. Mehrabian and Diamond (1971a, p.281) also found that less direct orientation such as side seating were less conducive to conversation.

Using the questionnaire method Russo, (1967) involved male and female university students in an experiment to rate different seating arrangement on various degree of acquaintanceship between dyads.

Results revealed that increased distance produced ratings of less acquaintance, less friendliness and lower talkativeness except where increased eye contact counteracted the effects of increased distance. He further added that even though the physical distance was greater between two people at the head and the foot of the table, there was more psychological closeness between them than between people in a distant seating.

In the study by Haber (1980) mentioned above, he also observed that people who occupied central seat positions verbalize more than those occupying peripheral seat positions (front, back, or side seat positions), and in a more constructive and polite way.

Patterson, et.al., (1979) involved equal numbers of males and females in a study on the effects of seating arrangement on the potential crowding conditions. Results revealed that L-shaped tables as compared to a circular shape created more nervousness in the form of self-manipulation, postural shifts, and pauses in communication.

d) Seating layout

Seating layout can either be sociopetal or sociofugal. Sociopetal layout tends to orient people towards the centre while sociofugal layout tend to disperse people away from the centre. According to Sommer (1969, p. 51) sociopetal layout makes it difficult for people to retreat and hence reducing once privacy. He added, a large homogenous area lacking lines of demarcation, barriers or obstructions make it difficult to mark out and defend one's territories.

Overview

Choices for seats have been influenced by several factors. On the personal level, it had been influenced by one's needs and activities involved, personal attributes, such as gender, personality, and cultural background, and group size. The other equally important factor is on the seat attributes, such as views and distance from the seats, seating type, position and layout. As such, these factors would be analysed in the present research.

7) Physical determinants

Apart from the presence of other people, one's proxemics behaviour may also be influenced or determined by the physical environment or architectural features of a setting (Cohen, 1968; Zifferblatt, 1972, p.54). Some of the studies on these physical determinants are reviewed as below.

a) Outdoor / indoor environment

In a study by Little, (1965) mentioned in Section 2.1.1.3 (4), he also revealed that people kept more distance between themselves and others when indoors than when outdoors. For example amongst friends, mean distance in an office was 463mm as compared to 343mm on the street.

b) Wall surround

In a study to investigate the effect of an object enhanced by wall surround on human behaviour, Baum, et. al. (1974) used two drinking fountains placed prominently in two academic buildings at a college in New York. The two drinking fountains differed along an important architectural dimension.; one was built into a wall with a wall screen surrounding it, while the other was just placed against a wall. He discovered that the presence of walls serving as screens surrounding the fountain increases the tendency to drink, and increased the length of time drinkers activate the fountain. The screens around the fountain seemed to have reduced the impact of the experimenter's presence by moderating a reaction to potential or actual spatial invasion and avoided the tendency to flee from the situation.

c) Room size and shape

A few studies have been made investigating the relationship of interpersonal distance with room size. For example, White (1975) involved equal number of American male and female college students individually in conversation with experimenter. He found that in a seated conversation, interpersonal distance was inversely related to the room size. That is, the larger the room, the closer the interpersonal distance. The mean interpersonal distance in the large room (size=4500mm x 9000mm) was 1700mm as compared to 1900mm in the small room (size=2700mm x 4500mm).

Daves and Swaffer (1971) investigated the effect of encroaching on to one's interpersonal distance in rooms of various sizes. Subjects were university students from both genders. They found that people tend to maintain greater distance when the physical space of the environment is very tight. For example mean interpersonal distance was found to be 300mm in a small room (size=1200mm x 1800mm) as compared to 150mm in a long and wide room (size=2250mm x 19500mm). They also found that individuals desire more space (mean distance=390mm) in a narrow space (along the narrow wall of room size=2250mm x 19500mm) than a large room (mean distance=360mm; room size=3600mm x 8700mm). In the study by Tennis and Dabbs

(1975) mentioned earlier in Section 2.1.1.3 (1), they also found that greater interpersonal distance was exhibited in the corner of a room (mean distance=470mm) than when in the centre (mean distance=430mm). Dabbs, et.al. (1973) suggested that this preference stems from a feeling of having one's escape prevented which "may arouse formidable and primitive feelings". In addition, Dabbs, et.al. also pointed out that there may be positive connotations associated with having one's back to a corner, since this may afford the security of protection against attack from the rear.

Desor (1972) involved an equal number of male and female university students on the effects of adding partitions and doors in a room in relation to occupancy. Using miniature figures and scaled room models, he found students placed more miniature figures in a rectangular shaped-space than a square-shaped space.

d) Partition and doors

In the study by Desor (1972) mentioned above, he also found that subjects placed more miniature figures in a space bisected by a partition than in an identical space without the partition. No differences were found between the three types of partitions used, i.e. a waist-high barrier, a glass wall, and a solid wall. All the partitions were equally effective in reducing the level of crowding. Desor also found that the presence of doors tended to reduce the number of miniature figures placed in these spaces.

e) Windows

Wools and Canter (1970) investigated the effect of different sizes windows on human perception. Based on slide presentation of the various windows sizes to architectural and psychologist students, the students judged larger windows as being more friendly than the smaller clerestory windows.

f) Ceiling

Humans seemed to have spatial needs in the vertical as well as the horizontal dimension. If available space is limited on one dimension, spatial need will increase on the other dimension. Savinar (1975) tested this notion individually on male and female university students in California for their comfort in relation to various ceiling heights. He found that the males'

interpersonal distance was greater (mean distance=495mm) when ceiling height was low (height=1800mm) than when it was high (height=2700mm; mean distances 187mm). Meanwhile the opposite is true for females with mean distances of 421mm and 490mm for low and high ceiling height respectively.

In the study by Wools and Canter (1970) mentioned above, they also found that the students judged sloping ceiling as being more 'friendly' than the flat ceiling.

g) Architectural features as spatial divisions

In a study on human behaviour in sitting room in three old people's homes in the UK Lipman (1968) found that status differences among residents were shown in many spheres of their social lives: the most evident division in the large sitting rooms (accommodating between 21-27 people) was the existence of small groups ('juniors' and 'seniors') with established prestige positions. The social boundaries of groups appeared to be related to physical factors such as positions of doors, windows, the furniture and fireplace projections. He also found that residents in smaller sitting rooms (accommodating 12 people) were not divided in group as in the larger sitting rooms. Social interaction in these smaller rooms were not as marked by verbal hostility as was the case in the larger room.

Overview

Apart from the presence of human beings, the physical environment or architectural features, such as indoor versus outdoor, wall surround, room size and shape, partition and doors, small windows versus large windows, ceiling height and inclination, all have effects upon our proxemics behaviour. Being beyond the scope of this present research, such factors would not be considered for analysis. The review was made to show that we are aware of other possible factors that could influence the proxemics behaviour of people.

Summary

'Personal space' has been popularly used as the primary term to denote human spatial behaviour. However, its emphasise on just the protection component of spatial behaviour has been heavily criticised. 'Proxemics' instead emphasises on the interpersonal distance relationship between people in conducting their daily activities within their cultural domain. As such, 'proxemics' should be the primary term to be used to denote human spatial behaviour.

While Hall's proxemics framework has direct bearing on this present research, based on other theoretical models proposed, it can be said that forces for equilibrium, attribution, expectancy, and the use of language do affect proxemics behaviour.

Studies on gender differences in proxemics behaviour can be characterised as methodologically diverse and inconclusive. Gender on its own is not a good predictor of proxemics, and is only clearly observable in conjunction with other factors, such as age, relationship, situations, etc. Nonetheless, under certain circumstances, gender does influence proxemics behaviour in ways that can be attributed to sex-role socialisation processes which encourages females to be more affiliative and submissive than males.

The proxemics behaviour between children and adults are not the same. Studies have shown that the relationship of interaction distance is linear and progresses with age amongst the children, but more of a curvilinear relationship amongst adults. Studies have also revealed the existence of age similarity and proximity relationship.

In terms of the relationship between proxemics behaviour and personality, schizophrenics, people with low self-esteem, field independent people, people who worked in relative isolation, anxious individuals, introverts, people low in need of affiliation, and cold and quarrelsome people all tended to require more space than normal people.

Results on the studies on cultural variations, specifically on non-seating interactions have not been consistent due to the methodology used. Rather than using the laboratory method, it has been suggested that the unobtrusive measures in natural setting are more realistic. In addition, it has been suggested that studies should be conducted in the subject's country of origin so as to avoid the problem of cultural assimilation by the subjects in a foreign country.

Proxemics behaviour of people are affected by the situation they are in. Situations such as the degree of acquaintanceship and attraction between interactants, whether people are standing or

seating, whether people are in crowded or uncrowded environment, and whether people share similarities amongst the interactants do have effects on people's interaction distance.

Choices for seats have been influenced by several factors. On the personal level, it had been influenced by one's needs and activities involved, personal attributes, such as gender, personality, and cultural background, and group size. The other equally important factor is on the seat attributes, such as views and distance from the seats, seating type, position and layout.

Apart from the presence of human beings, the physical environment or architectural features, such as indoor versus outdoor, wall surround, room size and shape, partition and doors, small windows versus large windows, ceiling height and inclination, all have effects upon our proxemics behaviour.

In sum, the study on proxemics is complex because of the many variables involved that have to be considered such as gender differences, age differences, personality differences, situational effects, physical determinants. That is why in a cross-cultural study such as the present research, these factors should be similar and thus comparable between the two countries.

The complexity of the study on proxemics behaviour is further enhanced when we have to take into account the other inter-related aspects of human spatial behaviour such as territoriality, privacy, and crowding that shall be reviewed in the following sections.

2.2.0 Territoriality

The function of human territoriality is in regulating social behaviour (Veitch and Arkkelin, 1995, p. 262). As such, a review of this section is relevant for the present research, especially in areas pertaining to the aspect of culture in complimenting territorial behaviour for the defence against unregulated interaction and also as defenders of territory.

This section is divided into four main parts. Part one provides definition of the term based on two different approaches, that of the more traditional biological approach, and the much newer social approach. In addition, an explanation is given to delineate the term 'territoriality' from other terms (especially 'proxemics') used in human spatial behaviour being wrongly associated with it. The origins of human territorial behaviour have long been debated, that is whether it is instinctive or learned. Part two discusses about this nature/nurture debate. It also determines the general difference in the functions between animal and human territoriality. Part three provides a model for human territoriality as proposed by Brower (1980), involving the elements of culture, occupancy, demarcation and defence of territory, and attachment or identity. Part four involves the issues of demarcation and defence of territory. Issues on the relationship of territoriality with identity, dominance and status shall not be covered since it is beyond the scope of this present research.

2.2.1 Definition

Much of what we know about territoriality had been derived from 'ethology' the study of animals in their natural habitat. The concept of territoriality was first described by Howard (1948) in his study about birds life. It was Ardrey (1966), who popularised this concept through his best seller "*The Territorial Imperative: A personal inquiry into the animal origins of property and nations*" (Veitch and Arkkelin, 1995, p. 257). Ardrey defined territoriality as the behaviour by which an organism characteristically lays claim to an area and defends it against intrusion by members of his or her own species (1966, p.3). He further emphasised the survival value that territory brings to a species, such as in terms of security from predators, security of food and drink supply, and in enabling the continuity of the species through mating (1966, p.5). Majority of studies that followed has also started from this rather reductive definition (that is, only in physical terms) of 'territory' and 'territoriality' (Bonnes and Secchiaroli, 1995, p.88).

Examples of such biological approach of definitions include the following:-

"The act of laying claim to and defending a territory is called territoriality."
Hall (1959, p. 146)

"I propose that any space-associated intolerance be called territoriality, where a 'territory owner' is that animal before which another conspecific must retreat."
Eibl-Eibesfeldt (1970, p.309)

"Territoriality involves the mutually exclusive use of areas and objects by persons and groups."
Altman, 1975, p. 106)

"Whenever individual animals or groups are spaced out more than would be expected from a random occupation of suitable habitats."
Davies (1978, p. 317)

"We define a territory as an area occupied more or less exclusively by an individual or group by means of repulsion through overt defence or some form of communication".
Dyson-Hudson and Smith (1978, p.22).

Central to these definitions is the concept of defensive demarcation, which is also emphasised in the definition of proxemics (to be delineated in the following section). In spite of its heuristic function, a solely adaptive-defensive interpretation of territoriality is rather reductive, limiting and in any case, is an inadequate framework for analysis (Stokols, 1978; and Russel and Ward, 1982).

The idea that it is not enough to define territoriality only in physical terms is prevalent among researchers because, even when there are no boundaries, territoriality is never only an abstract concept but is something operating primarily in the area of social interaction (Bonnes and Secchiaroli, 1995, p.93). A more profitable analysis of territoriality is proposed as the study of the ways in which places and things become part of both the identity of persons and the social processes they more or less directly participate in. In the more recent literature (for example, Brown, 1987), this perspective - defined by several authors as 'social', that is involving study between territoriality and characteristics of the social context - has only begun in this area of research. Amongst such definitions include the following: -

"Territoriality.....will indicate the inclination toward ownership.....Territory will refer to the object of ownership, be it a stretch of land, a particular object, an idea, or anything else that holds an individual's fancy to such a degree that he seeks to own it."
Bakker and Bakker-Rabdau (1973, p.3).

"Possession of valued objects and of space."
Austin and Bates (1974, p. 448).

"Territorial behaviour is a self-other boundary regulation mechanism that involves personalisation or marking of a place or object and communication that it is 'owned' by a person or group. Personalisation and ownership are designed to regulate social interaction and to help satisfy various social and physical motives. Defence responses may sometimes occur when territorial boundaries are violated".
Altman (1975, p. 107).

"Territoriality in human is largely a passive affair.....defined by the criterion of continuous association of person or person with specific place.....(It) is an important organiser in human life and behaviour."
Edney (1976, p. 33).

"The relationship between an individual or group and a particular setting, that is characterised by a feeling of possessiveness, and by attempts to control the appearance and use of the space."
Brower (1980, p. 180).

"Human behaviour territoriality is primarily a phenomenon of ethological ecology with an instinctive nucleus, manifested as more or less exclusive spaces, to which individuals or groups of human beings are bound emotionally and which, for the possible avoidance of others, are distinguished by means of limits, marks, or other kinds of structuring with adherent display, movements, or aggressiveness."
Malmberg (1980, pp. 10-11).

"By human territoriality I mean the attempt to affect, influence, or control actions and interactions (of people, things, and relationships) by asserting and attempting to enforce control over a geographic area."
Sack (1983, p. 55).

These definitions do not deviate from the definitions based on the biological approach mentioned earlier. They just emphasis that owners are not continuously involved in the demarcation and defence. The emphasis is also on the psychological identification with spaces, territory as organisational devices, feelings and thoughts of the owners, and the symbolic value of the personalisations. Such studies have now investigated the differences territorial behaviours can assume in relation to variables such as gender, composition of social groups occupying a certain space, and culture.

Delineating 'territoriality' from 'proxemics'

Although the terms ' territoriality ' and 'proxemics' involved the concept of defensive demarcation, the two terms do not mean the same thing (Bechtel, 1997, p. 185). For example, Becker and Mayo (1971) noted that the term ' territoriality ' had been loosely used by authors (e.g. Goffman, 1963) when they in fact were referring to 'proxemis'. To stress this point Becker

and Mayo (1971) conducted an experiment to delineate the concepts of proxemics and territoriality by unobtrusively observing male and female undergraduates in a large self-service cafetaria. They found that individuals moved to another seat both when their marked space is invaded and when their comfortable social distance is breached but not when that distance is maintained. Becker and Mayo concluded, in situations such as in a cafetaria, subjects were seeking to maintain distance between self and others rather than staking out a territory. As such, the term "territoriality" should be restricted to those situations in which both criteria - demarcation and defence - are present. Similar studies have also addressed this issues (examples: Sommer, 1966; Liebman, 1970; Brower, 1980).

Apart from 'proxemics', other terms misused for 'territoriality' are 'jurisdiction' and 'home range' (Brower, 1980, p.181). 'Jurisdiction' refers to the temporary control of a space where the origin and limits of authority are role related (eg. an actor's jurisdiction over the stage when performing). Thus, the concept of jurisdiction is more limited than that of territory. 'Home range' refers to the network of spaces that a person uses regularly. These are spaces that one is familiar with and feels at home in. Unlike territoriality, home range does not imply the active control of space.

2.2.2 Animal territoriality versus human territoriality

Before enduring further into this subject, there is a need to establish the fact whether humans are really territorial. Evidence from studies has suggested this to be the case. A few of such studies will be cited here. For example, there is evidence from anthropological studies (e.g., Tobias, 1965) that indicate the existence of such concept amongst the various primitive societies. They reported about the findings in the famous Olduvai Gorge of East Africa of a series of stones placed there in a circle during the Lower Pleistocene about one million years ago by *Homo habilis*, the closest primate relative of man ever to have lived. Another example involved the study in sitting room in three old people's homes in the UK by Lipman (1968) mentioned in Section 2.1.3 (7g). Territorial behaviour was found between the 'senior' and 'junior' residents who established social boundaries related to physical factors such as positions of doors, windows, the furniture and fireplace projections. In addition, certain chairs were also defended by the residents to be 'theirs only' even though such practice was against the policy of the people's homes.

In fact, territorial behaviour develops at an early age as reported by Malmberg (1980), a biologist-geographer. For example Hutt and Hutt (1970, pp. 150-154) investigated the effects of

group density upon social behaviour of children between ages three and eight years old. Initially no signs of territorial behaviour were seen when the children were left playing in an open, large rectangular playroom. However, when they were moved into new localities consisting of three smaller playrooms, territorial behaviours were shown, where an average of fifteen percent of their time was spent in trying to prevent any encroachment or intrusion upon the area of their possession.

Hence, the evidence from the several studies mentioned above does suggest that humans are territorial. The next question then is human territoriality instinctive? There have been diverse opinions about the origins of human territorial functioning. That is whether it is instinctive, learned, or the interaction of the two. According to Cassidy (1997, p. 136) part of the debate hinges on the nature-nurture controversy. That is while some theorists from the sociobiological perspective such as Ardrey (1966) and Lorenz (1958) were of the opinion that it is inherited and is a carry-over from our evolutionary past, other theorists based on cognitive psychology were of the opinion that it serves as an organising function and is learned.

1. Earlier findings

Earlier summaries (Edney, 1975; Sundstrom and Altman, 1974) of human and animal territoriality identified the following differences:- First, in animal territoriality, uses of space are stereotyped, suggesting a biologically based mechanism. In human territoriality this varies suggesting a learned mechanism. Second, there is a link between aggressive defence and animal territoriality. This link does not hold in human territoriality. Third, while animal territoriality is intact, human territoriality is dispersed. Fourth, while the ownership of animal territory is exclusive, ownership of human territory is both exclusive and time-shared. Fifth, it is not common amongst animals to be totally invaded by another group as compared to humans. Sixth, animals must invade the territory in an intrusion, while humans can use weapons to invade territories without trespass. Seven, animals exclude all other cospecifics from their territories, while humans entertain cospecifics visitors

Based on the differences provided as above it seemed that a biological basis for territoriality could only be applied to animals.

2. Current findings

However, since the time of that conclusion mentioned above, with the growth in the field of sociobiology and an increase in experimental studies of animal territories (in e.g., the *Journal of Animal Ecology*), has led to a more complex view of territoriality. Brown (1987) noted that even biologists have questioned whether the original biological framework is appropriate for animal populations and early human societies. While there might still be claim for a biological origin for animal territoriality, a more popular notion now is that territorial instinct is responsive to learning. In other words, territoriality being seen as an adaptive mechanism that is responsive to different ecological demands. This notion derived from findings that demonstrate that animals are less stereotyped in their use of territories and exhibit a greater variety of territorial signals than previously thought.

For example, some species (e.g., fish) show their adaptation to fluctuation ecological conditions by alternating between territorial systems and dominance systems (Wilson, 1975 p. 441), Some species have shown to claim geographically dispersed territories, for example birds using different trees for nut storage. There are also animals which involved in time sharing of territories, for example squirrels that have different peak activity time will share a territory (Wilson, 1975 p. 271), while the nocturnal and diurnal lizards share the same space (Ferguson, Hughes, and Brown, 1983).

Even the link between territoriality and aggressive defence is not clear. Several studies have emphasised that possession decreases aggression, at least when territorial claims are clear. Others revealed the ability of animals to claim territories through non-aggressive means such as chemical secretions (Wilson, 1975 p. 565), or the ability to intrude without entering a territory such as by their birdcalls or colourful throat display that serve as vocal and visual 'weapons' (Brown, 1987).

In sum, the current understanding is that animal territorial behaviours are more flexible than previously thought, and can often vary across the life span of the animal and across different types of resources. Thus the differences between animal and human territoriality concluded in earlier findings have been narrowed down to almost at par with current findings.

3. General difference

Even though current findings have narrowed the gap on the differences between animal and human territorialities, there yet exist general difference between the two, which is in terms of

the function of territories. According to Gold (1982, p.48), the most general difference between animal and human territories is that they serve different needs.

Animal territoriality concerns the survival of the species. It helps to structure and organise their societies, be it a defined area of land or water or air. It serves as a mechanism for supplying the three great needs, that of security from predators, security of food and drink supply, and in enabling the continuity of the species through mating (Ardrey,1966, p.5).

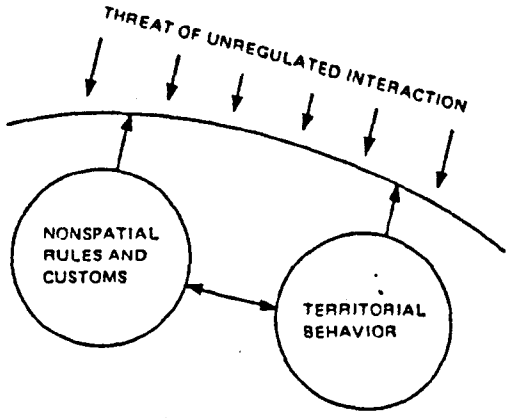
Meanwhile, human territoriality may also embrace 'higher' needs such as status, recognition, and self-image or identity. It also facilitate the achievement of certain human psychological processes including needs for privacy, intimacy and solitude (Altman, 1975; Taylor and Ferguson, 1980; Westin, 1970). In addition, human territoriality helps to regulate social interaction (Altman, 1975). That is, spatial separation create different settings which reduce opportunities for conflict. For example sporting activities are totally different and should be separated from say, religious functions.

We now have distinguished the functions of human territoriality from that of animal territoriality. A more elaborate review on human territoriality will follow which hinges on a proposed model in the next section.

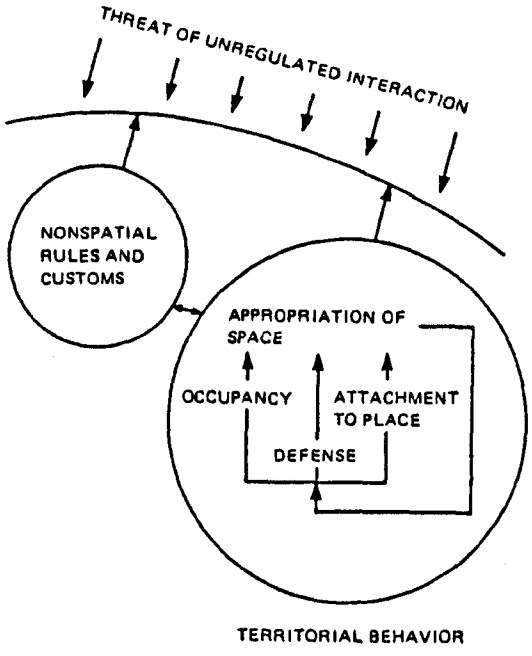
2.2.3 A model for human territoriality

Brower's(1980) initial proposal for a model of human territoriality as shown in Figure 2.2 1(a) envisaged there are two interacting forces, one spatial, that of territorial behaviour and the other nonspatial, that of rules and custom of a community's culture, both guarding against the threat of unregulated interaction. If the protection is inadequate, there is an imbalance in the system that could result in increased aggression with disruption of social order. As culture is seen as complimenting territorial behaviour towards the defence against unregulated interaction thus the relevance of the review on human territoriality to the present research.

Brower also argued that the concept of territoriality deals not only with the defence of the territories but equally important also is for their maintenance. To illustrate the importance of this function, he cited a study made by Brower and Williamson (1974) which involved small parks designed to serve the recreational needs of local residents in an inner-city neighbourhood in Baltimore. Operating with a tight budget, the City Council had expected the residents to play a major management role in maintaining the parks. However, being divided amongst themselves



a) Model of territorial behaviour



b) Expanded model of territorial behaviour

Figure 2.2.1: Brower's proposed model of territorial behaviour

[source: Brower, S.N. (1980). Territory in urban settings. In A. Altman, A. Rapoport, J.R. Wohlwill (Eds.) *Human Behaviour and Environment, Vo.4: Environment and culture*, Plenum, New York, pp. 179-207.]

and also afraid of the high crime rate and violence prevalent in their community the residents showed lack of interest to maintain them. Soon the parks became a no-man's land which eventually was used as a hangout by antisocial groups, and also as dumping ground. In response to this finding, Brower modified his initial proposal into an extended model as shown in Figure 2.2.1(b). Here he proposed that territorial behaviour act as exercising control over a particular physical setting, referred to as the appropriation of space. Three elements, that of occupancy, defence, and attachment contribute towards this appropriation. These elements will be dealt with as follows.

1. Occupancy of space

Appropriation of space will be affected by the ability of an individual or group to establish a suitable type of occupancy. One of the most quoted categorisation of spatial occupancy is that used by Altman (1975) who identified it into: primary, secondary, and public (Cassidy, 1997, p. 135; Veitch and Arkkelin, 1995, p. 260). Primary territory is the space felt to be owned by an individual or group on a relatively permanent basis, and is central to their daily lives (eg. one's home or nation). Secondary territory is owned on a temporary basis (eg. one's locker in a changing room). Public territory is generally accessible to anyone (eg. a beach or a table in a restaurant). If these are favourite or frequented with regularity, they become secondary territories. Differences between these three categories can be further distinguished according to their dimensions in terms of duration, centrality, marking intentions, marking range, and response to intrusions as summarised in Table 2.1. In Altman's terms, waiting area in health centres would be placed under 'Public territory' occupancy.

Dimensions	Primary territory	Secondary territory	Public territory
Duration	Long	Short, but regular usage common	Short
Centrality (to users life)	Very central	Somewhat central	Not central
Marking intentions	Usually personalizing or decorating	Often claiming territories	Intentionally claiming territory
Marking range	Heavy reliance on a wide range of markers and barriers; bodily and verbal marking usually not necessary.	Some reliance on physical markers; bodily and verbal marking common.	Few physical markers or barriers; much bodily and verbal marking.
Responses to invasion	Can relocate or use immediate bodily and verbal markers.	Can often relocate, use immediate bodily and verbal markers, as well as some reemphasis of physical markers.	Cannot relocate easily; can use legal recourse, reestablishment of physical markers and barriers, as well as bodily and verbal markers.

Table 2.1: Dimensional variations between primary, secondary and public territories
[Source: "Territoriality and residential crime: A conceptual framework" by B.Brown and I.Altman, 1981, p. 60 in *Environmental Criminology* by P.J. Brantingham and P.L. Brantingham (Eds.), Beverly Hills: Sage Publications].

The major dimensions of Altman's typology are centrality (the importance of the territory to the everyday life of a person or group), and the duration of use. Meaning, in order to classify a space, an assessment must be made of the significance or quality of the interaction that takes place there. Brower (1980) argued that such an assessment cannot be made by planners or urban designers and as such do not suit their practical needs in terms of information resources.

By contrast, Brower proposed a four-fold typology, which uses controls that operate in a space as the major dimension. These are generally expressed in visual motifs and physical arrangements, such as boundary definitions and entrances, or in visible expressions of use, such as maintenance, embellishment, intensity of use, and activity of users. Elaboration of each type of occupancy is as follows:-

a) Personal occupancy

The territories are controlled by individuals or groups that have clear and lasting relationship (e.g., marriage or blood relationship). The most common prototypes include single-family house and private bedroom. Being personal, there is no restriction of any kind in the usage of such territory. Territorial signs are more private such as family photographs, diplomas, etc. They seldom cater to the convenience of strangers, but are usually very solicitous of guests.

Chermayeff and Alexander (1963) made a thorough study of the organisation of family in terms of home spatial territorial boundaries within the family. He stressed the necessity of audio and visual privacy in the design of the various spaces, by introducing 'locks' (buffer zones) as an intermediate zone in connecting the other spaces.

b) Community occupancy

Groups whose members may change over time control the territories. Examples include club members, church congregations, school faculty and student bodies, office co-workers, etc. The territories are allowed less freedom as compared to the personal occupancy. Territorial signs include badges and logos that serve to impress upon outsiders the exclusionary nature of the occupancy. In Brower's term, waiting area in health centres would be placed under this category.

c) Occupancy by society

The territories are controlled by the general public, and are open as a right to all. They include public owned territory such as a street, and non-publicly owned territory such as theatre, waiting room at the bus terminal, etc. They are accorded less freedom to restrict admission and control use than either personal or community occupancies. Territorial signs that serve as guides are explicit, clear, legible, and standardised.

d) Free occupancy

The territories do not have permanent occupants, and are not subjected to any rules and restrictions. Characterised by the absence of territorial signs, and for this reason they invite exploration and excite the imagination include places such as beaches and the wilderness.

2. Defence of space

The relationship between territorial behaviour and threat is supported by the findings of a study by Altman, Taylor and Wheeler (1971). Observations were made on the behaviours of pairs of men confined in isolated squatters for an extended period of time. It was found that, as anxiety, stress and nervousness increased, there was an increased tendency for individuals to become territorial with respect to their own beds, chairs, and spaces at the table. On the other hand, as levels of stress and anxiety decreased, territorial behaviour became less evident.

According to Brower (1980) increased threats can be handled by defending all claims either more aggressively such as by increased surveillance, erection of barriers, etc., or non-aggressively. The non-aggressive manner could be either by shrinking the boundaries of one's claims by falling back to the territories that are most defensible, or to renounce, or at least not to press, one's claims to ineffective types of occupancy. However, there is a strong likelihood that the non-aggressive strategy may well result in the abandonment of territorial claims in some space, leaving them undefended and effectively unappropriated. The issue of defensible spaces will be reviewed in Section 2.2.4. As for now, Brower proposed that for a territory to be appropriated, designers must go beyond the concept of defensible space.

3. Attachment to place

By 'attachment' means a feeling of possessiveness that occupants have towards a particular territory because of its associations with self-image or social-identity. Attachment to place is associated largely with the symbolic qualities of a site, with relationships between the space and objects in it, and the experiences, aspirations, and conditions of the occupants. Brower (1980) proposed that a strong bond of association or attachment to a place culminates to personalisation of the place, be it personal or communal, and it is likely to be most tenaciously defended when challenged.

2.2.4 Territorial demarcation and defence of space.

Most studies of territoriality emphasis the demarcation and defence of public territories against territorial trespass. Vegas (1986, p.100) identified three types of territorial trespass, that is 'contamination', 'violation' and 'invasion'. "Contamination" relates to situations whereby making it unacceptable for our own occupation and use. These do not involve the physical presence of others but more on what have been deposited. For example, old newspapers being left on seats in a waiting area. "Violation" involves unauthorised use by others of what we regard as ours. For example, someone else's jacket being hung on the back of the seat we are sitting. "Invasion" involves the physical presence of others which reflects intention of intruding one's territory. For example, someone else sitting on our seat which was temporarily vacated.

1. Physical territorial markers.

Sommer (1969, 53) has reported on the effectiveness of various markers in a library under different levels of density. Results revealed that in low density, any type of marker served to prevent people from sitting at the table. However in high density, personal effects (eg. sweater or a notebook with a name on it) were more effective.

In another similar study, Gal, et.al. (1986) involved twenty-nine females and eleven male university students in a study on the influence of different spatial markers and types of tables in a library setting. Slides of a four-person table, four study tables with low partitions at front and sides, and four carrels with high partitions at front and sides, together with an open book, a jacket, and a person as spatial markers, were presented to the students. Students were asked to rate their level of avoidance sitting at the table. Results revealed that the different types of table and markers affected their reactions. While all the seats (except the diagonal seat) at marked

tables with low or no partitions were highly avoided, and only the marked seat at the carrels was avoided, the most highly avoided marker was the person marker.

In waiting area of health centres, it is quite common for one to leave one's seat temporarily for various reasons, such as going to the toilet, enquiring with receptionists, or attending consultation with the doctor, etc. As studies have shown the common tendency of leaving markers for the defence of the temporarily vacated seats, such behaviour if any would be investigated in the present research.

Some writers have argued that studies such as those mentioned above cannot be regarded as territorial studies. To illustrate this point, Becker (1973) conducted two experiments to discover about the meaning and function of spatial markers and their relation to personal distance, territorial, and jurisdictional concepts. In the first experiment conducted in a library, he found that it was more of the presence of persons rather than markers that deterred subjects to lengthen their stay or occupy a seat. It seemed that the markers function to protect the space around them by eliciting reactions to decreased personal distance, not by signifying that the area is occupied. The second experiment was based on stimulus photographs and questionnaire response. Results revealed that no subject would sit at a marked location, and that subjects expressed the desire to avoid confrontation with an intruder or owner of a marker. Thus, the actual function of markers is to reduce or eliminate conflict over space by creating an effective warning device system. As such Becker proposed that the jurisdictional concept (mentioned in Section 2.2.1) as more appropriate than the territorial concept to describe spatial ownership in public areas. However, Becker's proposal seemed to be not well received by other writers.

2. Nonverbal territorial markers

In public territories, there also exist nonverbal territorial markers in which the shape and extent of the territory are not marked or bounded by physical markers. An example cited by Goffman (1963) involved museum visitors who claim the space encompassed by their apparent path of gaze toward an art object.

3. Social defenders of territory.

Studies have shown how people themselves defend territories. These can be seen in either the micro level, involving direct interpersonal interactions between people; or macro level involving urban planning; or through the influence of their culture.

a) Micro level

As mentioned earlier Gal, et.al. (1986) found that in choosing seats in a library, the most highly avoided marker was the person marker. Since there was no mention of density of occupancy during that study, presumably that situation would have occurred during low-density occupancy. During high-density occupancy, even marked seats (in the form of books) either positioned immediately adjacent to or within one seat away from the presence of a person have been showed to be intruded upon, as noted by Sommer and Becker (1969, p. 91). Amongst other findings they observed that people seating one seat away from a marked seat would more likely to defend that seat for a relatively short time (e.g. fifteen minutes versus sixty minutes).

Since data to be gathered for the present research would involve peoples' choices for seats, studies relating to the defence of seats are highly relevant for this research. Social defenders of seats within the context of the present research would be elaborated further in Section 2.2.4 (3c).

b) Macro level

In one of her many examples, Jacobs (1961) narrated about the school children in St Louis who after attending school were very reluctant to go back home situated in a new housing project for fear of being bullied or extorted. This was in contrast with children who happily left for home situated in the older housing areas. Upon investigation, the new housing project with its boring landscaping and playground were practically deserted. Since there was no surveillance of any kind, this has resulted in the area being controlled by thugs and the like, thus making the route unsafe for the children. This is in stark contrast with the much more interesting, full of variety and livelier old housing area. Children staying there have the choice between the various safest alternative routes, under the watchful eyes of shopkeepers or other adults walking by (Jacobs, 1961p. 85-86). Thus, in her criticism of city planning and rebuilding Jacobs has proposed that defensive behaviour associated with appropriation of space will not only increase the occupant's feeling of security, but will also discourage criminal activities.

Based on Jacob's proposition, Newman (1972) acknowledged the existence of certain design features in urban housing developments that could encourage various types of criminal acts if left undefended. In his now seminal book 'Defensible Space' he developed a set of criteria for the design of defensible spaces, which involved demarcating clearly the separation between what is totally public to that of totally private spaces. This would lead to resident's feelings of territorial control and thus the capability of surveillance of spaces in their residential environment.

However, other writers have criticised this concept, pointing out that designing a space to be defensible would not necessarily make people more defensive of it (Taylor, et.al., 1978). There are also examples of defensive behaviour occurring in spaces that violated Newman's defensible space criteria (Banham, 1974). In addition towards criticisms on Newman's defensible space, Brower (1980) further argued that designers must go beyond the concept of defensible space if they want users to appropriate the space. There should exist suitable occupancy conditions, and a sense of attachment by the occupants (these are incorporated in his model). For example, space which is well suited for community occupancy may not be easily defended by personal occupancy, and it will not be appropriated at all in the absence of a community. Also, occupants will not be strongly driven to defend a space, no matter how defensible the design, if the space is inconvenient, or unpleasant, or without personal or social significance. To solve these problems Brower proposed some solutions which include involving the users in the design and management of the facility, making the setting malleable and adaptable to local conditions, encouraging the display of territorial signs, promoting community events in the space, and developing ways of maintaining a visible record of these events to serve as affirmation of group continuity, achievement and values.

c) Cultural effects

It was mentioned in Section 2.2.3 that Brower (1980) acknowledged the effects of culture on defensive territorial behaviour. According to him, clear definition and defence of territories are needed in high-threatening situation such as in a community with high mobility and high cultural and social diversity. However, unassertive signs may be all that are necessary for the regulation of interaction in a low-threatening situation. A culture that relies heavily on rules and customs would more likely to depend less on their territorial behaviour in their social interactions. For example, in the old Rhodesia, families of black servants lived in huts within white residential areas, and yet, because of the highly structured society, the two groups achieve almost complete social separation. Another example involved the distinct Malaysian culture, notably those living in the rural areas. Even though they have been colonised since the fall of the Malacca Sultanate in 1511 and colonised by western forces such as the Portuguese, Dutch and finally the British, till their independence in 1957 their culture still remained intact and distinctly eastern and Asian. Walter (1978, p. 237-238) and Lawson (2000) noted that in such socially homogenous and spatially distinct traditional Malay village or *kampung*, there is no obvious delineation between public and private space; residents maintain a common claim to the whole area - hence achieving a high degree of surveillance, or 'defended spaces'.

Thus, different defensive territorial behaviour suits different culture. It is quite surprising for early writers to have overlooked the effects of culture on territorial behaviour after having involved with different species of animals as noted by Lawson,

"It is odd that writers such as Ardrey have drawn widely from the different species of animals and yet implicitly been rather restricted in their understanding of humans to North American and Western European cultures!"

The data gathered in Malaysia for the present research involved predominantly Malay subjects (90%). Although the setting of the health centres in Malaysia for the present research were not in the rural areas, the semi-urban Malay subjects for this research are still deeply rooted with the culture and tradition as that of the rural Malays. As such they would display similar manner of social interactions and behaviour as that of the rural Malays towards mutual togetherness, such as in acknowledging the presence of other people, and sit and talk to another stranger (another Malay). Due to this, it is anticipated that they would defend seats temporarily vacated by another stranger.

4. Characeteristics of territorial occupants

The characteristics of territorial occupants are more revealing when reviewing cross-cultural studies on territorial behaviours. For example, Smith (1983) made a study on beach territories between the Germans in Germany and the French in France. His study involved both interviews and observations. Included in the interviews with the beach users were regarding their nationality, and group size. Observations noted their territorial size and types of spatial markers used. Results revealed that that the Germans displayed a greater clarity of territorial boundaries in the form of sandcastles and property signs. By contrast, the French with no well-formed concept of territory, and the absence of markers as used by the Germans, just relied on randomly spaced groups of people to 'demarcate' their 'territories' increased their encroachment into other people's 'territory' over time.

In another example, Worchel and Lollis, (1982) studied the behavioural reactions between the Greeks in Greece and the Americans in the U.S. They predicted that individuals would remove garbage sack in what is considered as under their area of control such in private and semi-public areas, while not doing so in public areas. A litterbag was placed in three different locations of residences: front yards, sidewalk in front of residence, or street curb in front of home. Results indicated similarities between the two cultures in the time taken in removing the bag placed in the yards of their residences. However differences was significant in the removal of the bags

from the sidewalk and street in the United States than in the Greeks. One might conclude that the Greeks were less concerned with litter than the Americans, but the swiftness by both samples against territorial "invasion" by the litter bags does not prove as such. The actual reason was that in the U.S. the sidewalk in front of residence, or street curb in front of home are regarded as semi-public while in Greece as public. As such, Worchel and Lollis suggested that behavioural change might be achieved by altering the perception of territorial control.

In relation to gender difference, in the study by Smith (1983) mentioned earlier, he found that French and German males used fewer markers on beach territories than females. While all-male French groups averaged 2.6 markers per person compared to 4.0 for females, all-male German groups averaged 2.5 markers per person compared to 2.8 markers for females. Edney and Jordan-Edney (1974) interviewed 110 groups of beach users in the U.S. and found that single American males claimed larger beach space (2825mm in radii) as compared to single American female (1800mm in radii). Mercer and Benjamin (1980) in their studies on spatial behaviour of 116 males and 190 female pairs undergraduates in the U.S. also revealed that American males' mean own territories were significantly larger than females' mean own territories.

Since it has been shown that different cultures display different manner in their control and claim of territory, while males claim larger territories than females, these phenomena would be investigated in the present research.

5. Styles of territorial occupancy and intrusion.

Even though public spaces tend to be easily invaded, normally people would rather find other alternatives if situations permit. Studies have shown that people exhibit different styles when they have to occupy or intrude a territory. For example, in the study by Becker (1973, p.441) mentioned earlier, he found that if subjects have to sit at occupied tables, they (80%) would choose the most distant seat (diagonal seating) available. In addition, they would not lengthen their stay as compared to the control subjects who occupied seats at unmarked tables. Since choices for seats are affected by the presence of other people, this aspect would be analysed in the present research.

Different styles are also exhibited by people in their approach towards intrusion. For example, Sommer and Becker (1969, p. 91) revealed that normally the direct query approach would result in the defence of a particular territory by those who have occupied it much earlier. However, both nonverbal request and aggressiveness approaches such as barging into the territory or hesitantly approaching the seat decreased the defence of such space. Lavin (1978) reported that

a more apolegetic or deferential styles are more frequent, particularly if the territory is not blocked by protecting physical barrriers. Thus it seemed that relative openness of the current occupant may encourage a more deferential approach.

6. Architectural features and territorial claims.

Certain architectural features tend to encourage territorial claims. For example, Sommer and Becker (1969, p. 87) found that amongst the favourite seats in a library chosen by students include those that are close to a wall, facing away from the distractions of the main entrance, and toward the rear of the room. Similarly as was reported in the study by Lipman (1968) in Section 2.1.3 (7) about the territorial separation between 'senior' and 'junior' elderly which appeared to be related to physical factors such as positions of doors, windows, the furniture and fireplace projections. In another study, Baum, Reiss, and O'Hara (1974) revealed that a drinking fountain is most likely to be used by passer-by if it is shielded from the spatial proximity of others by a barrier. In the context of the present research attributes of seats would be analysed in the people's choice for seats.

Summary

As the function of human territoriality is in regulating social behaviour, hence the relevance of its review for the present research, especially in areas pertaining to the aspect of culture in complimenting territorial behaviour for the defence against unregulated interaction and also as defenders of territory.

Much of the knowledge concerning human territoriality derived from 'ethology', the study of animals in their natural habitat. Earlier definitions of territoriality from the biological approach emphasised on defensive demarcation, while later definitions from the sociologigal approach emphasise more on the process of social interaction.

Studies have shown that humans are territorial and have developed the territorial behaviour at an early age. However the nature/nurture debate on the origin of human territoriality still persist to date. Earlier findings revealed that a biological basis for territoriality could only be applied to animals. However with the current advancement in the field of sociobiology and more experimental studies have led to a more popular notion now in that territorial instinct is responsive to learning. The most general difference between animal and human territories is that they serve different needs. While animal territoriality concerns the survival of the species, human territoriality may also embrace 'higher' needs such as status, recognition, and self-image or identity.

Brower (1980) has proposed a model for human territoriality based on both spatial forces (territorial behaviour) and nonspatial forces (culture), both guarding against the threat of unregulated interaction. The spatial forces act as exercising control over a particular physical setting, referred to as the appropriation of space. Three elements, that of occupancy, defence, and attachment/identity contribute towards this appropriation.

Most studies of territoriality have emphasised on the demarcation and defence of public territories such as in the use of physical or human markers. Studies have revealed that different cultures claim and control territory differently, while male claim larger territory than females. Architectural features have also been shown to be popular spots for territorial claim.

Based on this review, several aspects relating to human territoriality such as the defence against unregulated interaction, the defence of territories, and territorial claims would be analysed in the present research. The analyses would be conducted crosss-culturally in terms of choices for seats in relation to:-the presence of other persons, the adjacently occupied seats, and attributes of the seats.

2.3.0 Privacy

According to Altman (1975, p.6) privacy is central to understanding environment and behaviour relationship; it provides a key link among the concepts of proxemics, territory and crowding. As such a review on the topic of privacy is relevant for the present research. This section is divided into three main parts. The first part discusses about the issue concerning the definition of privacy. The second part discusses about the theories involved in the concept of privacy. Based on studies done, the final part discusses about factors influencing privacy.

2.3.1 Definition

The definition of 'privacy' has been imprecise and ambiguous (Westin, 1967, p.7; Kelvin, 1973, p.248). According to Newell (1994a, p. 65) precise conception cannot be discovered because it reflects the ideas of a particular society at a given time. This section shall discuss about the issue concerning the meaning of privacy, and conclude with a more recent proposal towards its definition.

Earlier understanding about 'privacy' seemed to equate it with 'isolation'. However Willis (1963a, p.1141) cautious us that 'privacy' does not mean to divorce oneself from others but merely to give freedom to carry out activities without interfering with - or being interfered by others. This was echoed by Kelvin (1973, p.253) where he emphasised the crucial distinction between 'privacy' and 'isolation'. According to Kelvin, 'isolation' concerns a lack of social relations, as an imposed condition while 'privacy' is the consequence of choice. However, the issue of clarifying the meaning of the term seemed to persist even in more recent literatures (eg. Newell, 1994b; and Pedersen, 1997, p.147; Newell, 1998, p.357)) even after Westin has done a thorough analysis on the term in 1967, and another cautionary remark made by Margulis (1977, p.7) about the ambiguity and vagueness of its definition. In a questionnaire study done by Worsley and Finighan, (1977, p.74) involving 189 respondents of predominantly working class / lower middle class in Melbourne, they found that there exist a wide variety of concepts of privacy, such as territorial possession, noise and visual intrusion, solitude, and intimacy. To show the much varied and imprecise definition of the term, listed are some examples of definitions that can be found in the literature:-

"Privacy is the claim of individuals, groups or institutions to determine for themselves when, how, and to what extent information about themselves is communicated to others"
Westin, 1967, p.7

"Psychological privacy serves to maximize freedom of choice, to permit the individual to feel free to behave in a particular manner or to increase his range of options by removing certain classes of social constraints"
Proshansky, Ittelson, & Rivlin, 1970, p. 173.

Privacy refers to the "negation of potential power-relationships between [a person or group] and others"
Kelvin, 1973, p.254.

Privacy is "the selective control over access to the self or to one's group"
Altman, 1975, p.18.

The definition proposed by Altman had been cited by many authors in the past (such as, Russell and Ward, 1982, p. 677; Gifford, 1987, p.199) and even till more recent times (such as Bonnes and Secchiaroli, 1995, p.95; Cassidy, 1997, p.159; and Pedersen, 1997, p. 147) because it captures the essence of privacy (Gifford, 1987, p. 199). Elaborating further about Altman's definition:-
"access to self" may refer either to information about oneself or to social interaction with oneself.
"to one's group" may refer to another person or groups of person.
"selective control" implies that access may be granted as well as denied, privacy is not merely shutting out others.

In developing the meaning of privacy further, Altman subsequently redefined it. It is no longer only a 'mechanism' which guarantees the attainment of an ideal state of openness/closedness towards others, but rather a process; its dynamics and outcomes are strictly correlated with the specificity of the 'contexts and social circumstances' (Altman and Chemers, 1987, p. 77).

It has been mentioned earlier that a precise conception cannot be discovered because it reflects the ideas of a particular society at a given time. As such Newell has come out with a proposal in defining 'privacy'. Based on an extensive literature review for her PhD in 1992 entitled "*The meaning and use of privacy: a study of young adults*", Newell concluded that the ambiguity and vagueness of the term can be resolved and wide support obtained if privacy is viewed as an interactive condition of the person and his/her environment. According to Newell the definition must be sufficiently fluid to adapt to differing times, cultures and mores but to be useful it must retain an unchanging core principle. She proposed that privacy be defined as a condition of separation from the public domain, which is voluntary and temporary and into which the state, as representative of the public domain, does not justifiable intrude. This includes physical, psychological and informational separation and goes both ways.

2.3.2 Theories relating to privacy

This section provides a brief overview about various theories concerning privacy, and will highlight the most popular view that has been cited even in more recent literatures. At the same time further development to that view have been proposed by some writers.

According to Margulis (1977, p.6), there are three distinct but overlapping stages in the concept development of privacy. The first stage completed had involved the studies, observations, and cases that demonstrated the importance and viability of a behavioural concept of privacy. It included the works of Goffinan (1963), Schwartz (1968), and, as its foremost contribution, Westin (1970). The second stage accepted the importance of the concept and turns to systematic explorations of what privacy is. It involved attempts to demonstrate similarities and differences between privacy and other concepts (such as territoriality). It included the works of Pastalan (1970), Kelvin (1973), Altman (1975), Edney and Buda (1976), Laufer, et.al., (1976), Laufer and Wolfe (1977), and Westin's (1970) taxonomy of states and functions of privacy. Margulis foresees the third stage to be involving systematic explications of the whys and hows of privacy, which are built on stage 2 analyses. It would involve theories: systematically related sets of statements some of whose logical implications are empirically testable.

Regarding the relationship of privacy to other aspects of human spatial behaviour, while Altman (1975, p.3) viewed privacy as the central concept amongst those aspects, there were others who viewed privacy differently. For example, Pastalan (1970) viewed privacy as a process meant to serve our territorial interests. Edney and Buda. (1976) viewed privacy and territoriality as clearly distinct concepts. Taylor and Ferguson (1980, p.237) concluded that neither privacy nor territoriality is more fundamental, but rather, they are linked on an equal basis. Nevertheless, according to Gifford, Altman's (1975) privacy framework is "the most comprehensive in environmental psychology" (1987, p.216). In fact, the recognition of the importance of Altman's contribution is almost unanimous in the more recent literatures (Veitch and Arkkelin, 1995, p. 267; Bonnes and Secchiaroli, 1995, p.95; Cassidy, 1997, p. 159).

As mentioned earlier, Altman (1975, p.6) proposed that privacy is central to understanding environment and behaviour relationship; it provides a key link among the concepts of proxemics, territory and crowding. Proxemics and territory are seen as mechanisms [and processes (Altman and Chemers, 1980, p.79)] towards attaining the desired level of privacy, while crowding is seen as a social condition whereby the privacy mechanisms have not functioned effectively resulting in undesired social contact.

In Altman's model as illustrated in Figure 2.3.1, privacy is an interpersonal boundary regulation process by which a person or group regulates interaction with others. Privacy regulation permits people to achieve their desired level of privacy according to when they require it. Privacy is, therefore, a changing process whereby people attempt to regulate their openness/closedness to others.

An important feature of Altman's framework is that proxemics and territory, along with verbal and non-verbal responses and cultural practices, operate as behavioural processes to facilitate privacy regulation. As the framework suggests, people mentally establish a desired level of privacy - a level of interaction people would prefer within a particular setting. This might involve either inviting interaction with others, or not having any interaction at all. This then sets a series of behavioural processes to implement their momentary desired level of interaction. They might vary their physical distance with others (such behaviour exemplifies the use of proxemics); or they might make themselves inaccessible into a territory that they occupy or control (territorial behaviour); or they might indicate their accessibility or otherwise by their manner of speech (verbal behaviour); or body language (non-verbal behaviour). Thus, people use a series of processes at different times and in different patterns to implement a desired degree of contact with others.

As Figure 2.3.1 illustrates, sometimes things work out successfully; that is when the achieved privacy equates the desired privacy. There are also times when this optimal situation does not happen.. People experience crowding when achieved privacy is less than the desired level, that is when the behavioural processes of proxemics, territory, and verbal and non-verbal behaviours were not used in a successful way. There are also times when people experience social isolation, which resulted from receiving less contact than that desired.

Although Altman's framework has been cited by many writers, it is still in its infancy and need to be developed further. According to Cassidy (1997, p. 160) Altman's proposal is a useful framework which links the different aspects of proxemics which have traditionally been studied separately, however, the factors identified still needed to be operationalised and measured. Also, it does not incorporate the physical environment that plays an important part in the process. The mechanisms of interpersonal control must be seen in terms of an interaction between the person and their environment.

In addition, Kline and Bell (1983, p.1214) cautioned that Altman's proposal may not hold in all circumstances. Altman has proposed that low need for privacy would lead to closer interpersonal distancing with a stranger than would high need for privacy. However, Kline and

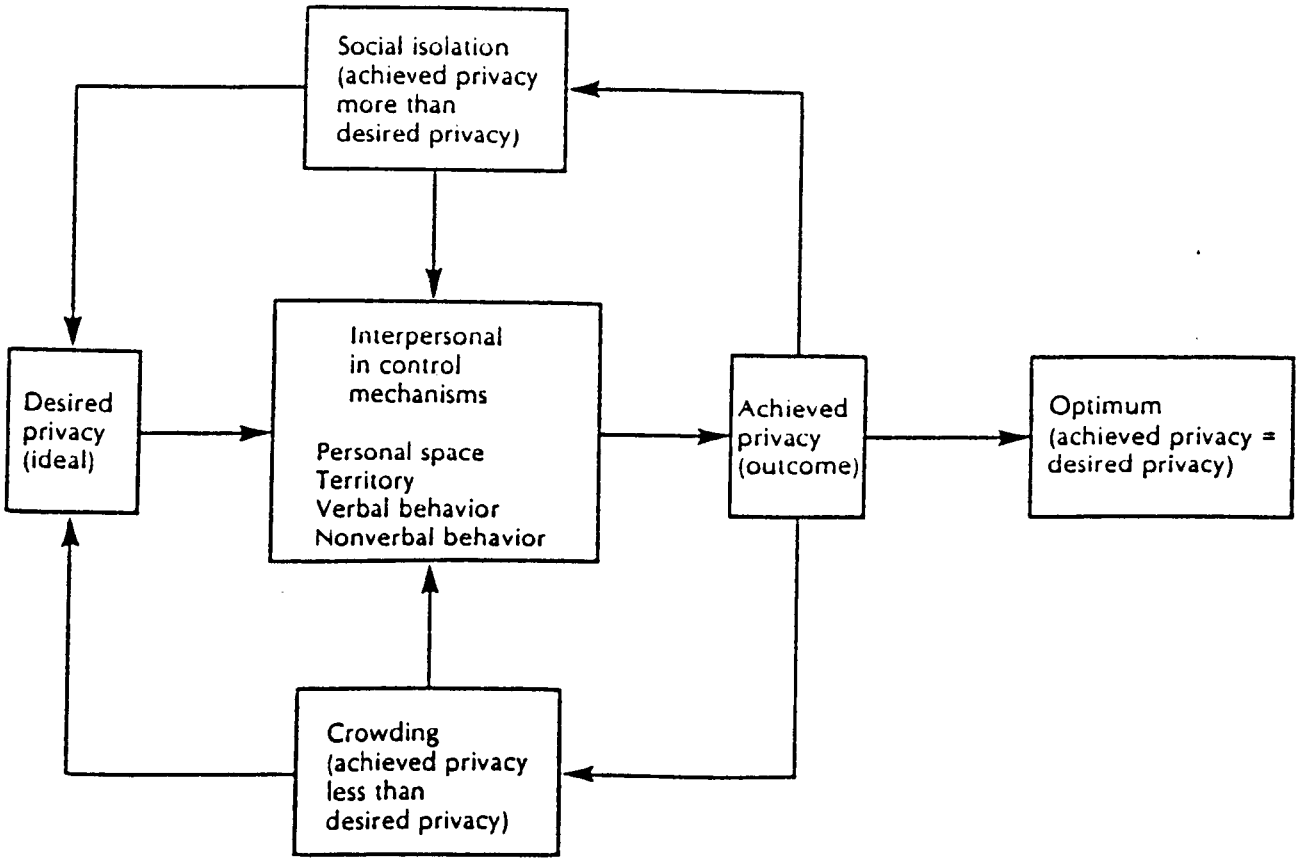


Figure 2.3.1: Overview of relationship among privacy, personal space, territory, and crowding.
[source: Altman, I. (1975, p.7). The Environment and Social Behaviour. Brooks/Cole Publishing Co., California.]

Bell found that the expected relationship may be more evident in face-to-face encounters and standing encounters than in seated, side-by-side interaction patterns (1983, p.1214).

In view of comments made on Altman's framework, more recently Newell (1994, p.66) suggested that the function of privacy is to provide protection for
(a) system maintenance and
(b) system development of human individuals.

According to her, 'system maintenance' involves the general biological and psychological health and well being of each individual, which includes uninterrupted cyclic rhythms, homeostasis, coping responses sufficient for system demands, emotional release, cognitive relief, and protection from threats to ego disintegration. A condition of privacy protects the system from such threats.

System development involves the opportunity to develop freely, individually, and optimally, without coercion. It frequently involves period of self-evaluation. Successful development leads to autonomy and a healthy self-esteem. Privacy is not a system within the individual but it is a condition that promotes system development, since a condition removed from the public domain offers opportunities for trial and error without loss of face, and the limiting effects of self-consciousness and social constraint are absent.

Overview

Despite the emergence of several newer theories on privacy, Altman's (1975) privacy framework still remained the most popular model quoted.

2.3.3 Factors influencing privacy

Empirical studies on the topic of privacy are sparse (Pedersen, 1997, p.148; Newell, 1998, p. 368) and more comprehensive measure of privacy has yet to be developed (Gifford, 1987, p. 201). According to Gifford (1987, p.201), most of the studies on privacy have actually studied perceived privacy using surveys, questionnaires, or interviews, and that measurement through naturalistic observation is rare. The questionnaire measures of privacy are often based on the pioneering typology of Westin (1967, pp.31-32), where privacy is seen as having four faces: solitude, intimacy, anonymity, and reserve. 'Solitude' is the popular but limited notion of

privacy: being alone. 'Intimacy' refers to group privacy, as when a pair of lovers wishes to be alone together. 'Anonymity' suggests the times when individuals wish to be among others and to interact as one person among many but do not want to be personally identified. 'Reserve' is the creation of a psychological barrier against intrusion.

Based on studies that have been done, various factors have been identified in influencing privacy needs. These factors are reviewed as follows.

1) Demography.

Marshall (1972) revealed that differences in a person's background are related to privacy needs. He found that individuals who grew up in homes they felt were crowded prefer more anonymity and reserve as adults. Those who had spent more time in cities preferred more anonymity and intimacy. Meanwhile, wanderers (those who are farther from the place they grew up) prefer less intimacy.

2) Gender difference

While several studies have shown that privacy needs between the males and females are not the same, others have found contradictory results. For example, Karlin, et.al., (1978, p.168) reported that studies on acute crowding, that is involving extremely close interaction distances, have shown that females responded more positively than men. However in their studies on crowded dormitory rooms, Karlin, et.al., (1978, p. 168) found that females were more distressed by the overcrowding as compared to the males. In another related study, Waldern, et.al., (1981) compared males and females in two- and three-person rooms. He found that males in two-person rooms became more conscious of issues of privacy because they spent time in the room, but when in threes males tended only to use the room as a place to sleep. Females however tended to use the rooms in both cases, and coped better than the males. Newell's (1994a) study also confirmed the existence of gender differences towards privacy needs. Based on an open and non-directive questionnaire on the context and process of acquiring privacy involving 243 university students of both genders, she found that there was no significant difference with regard to socio-economic or racial variables. However, significant differences were found between the genders. Males and females differed in the reasons they required privacy, how they went about getting it and how successful they were in getting it. Ruback and Riad (1994) suggested that perhaps females are better at providing social support for each other which might buffer the effects of reduced privacy.

3) Age difference

Privacy needs differ amongst people of different age group. For example Wolfe (1975) explored the meaning of privacy in different age groups of children. She found that privacy needs arises as children get older.

4) Personality

People with different personalities differ in their needs for privacy. For example McKechnie (1974) found that there is a higher need for privacy for those with lower self-esteem.

5) Situational aspects of privacy.

Our preferences for and satisfactions with privacy vary with the situation, that is the physical setting or the social atmosphere. For example, Marshall's (1972) study of single-family dwelling residents revealed that sharing a residence with more people was correlated with a preference for less privacy. She also found that residents of houses with open plans preferred less privacy. At work, then, open spaces are associated with dissatisfaction with privacy, but at home open spaces are associated with preferences for less privacy.

Sundstrom, et.al, (1980) and Sundstrom, et.al., (1982) found that staff preferred individual office to open plan offices, and identified privacy as a major concern while performing their work. Their studies revealed that satisfaction with privacy correlated positively with job satisfaction, satisfaction with the work place and job performance. Kupritz's (1995) study complimented this finding. Based on 114 respondents working in an office environment, he found that the lack of privacy caused by visual and acoustical distractions impeded worker performance. Halpern (1995, pp.87-88) pointed out that desired privacy is related to psychological health and its effects can be explained in terms of optimum arousal levels and stress. It therefore follows that environments that either restrict privacy or alternatively provide too much seclusion will be perceived as stressful and psychological damaging.

6) Cultural differences

Eventhough earlier studies have shown the existence of cultural differences towards the attainment of privacy, others have found commonalties as well.

For example, evidence of cultural differences towards the attainment of privacy has been suggested in earlier studies such as Hall (1966, pp.146-148). He cited, even the quest for privacy between the Americans and the Englishmen are not the same (1966, p.130-134). But, Newell (1998) found commonalties between cultures. Newell's study concerned the identification of cross-cultural parameters to privacy and commonalities of usage between cultures. A total of 266 university students from three different countries (70 in the U.S., 112 in Ireland, and 84 in Senegal) participated as respondents to the specially developed privacy questionnaires. Results revealed striking commonalities between cultures:- social and motivational reasons for seeking privacy, the emotional negative affect (eg. sad/grieving) related to the desire in seeking privacy, definition of privacy as the condition (voluntary and temporary) of the person, and the therapeutic effect of privacy. The most important element of privacy in all three cultures was in "not being disturbed". Cultural differences were found to be non-significant.

Meanwhile, Harris, et.al. (1995) argued that although privacy needs may be universal (such as the findings made by Newell, 1998), the exact mechanisms used to regulate privacy can vary considerably from culture to culture (1995, p. 317-318). This is in support of Altman and Chemers (1980, p.83) who have commented that "*The process of privacy regulation is, we believe, so central to human functioning that it is hypothesised to be present in all culture*". They hypothesised that all cultures have mechanisms that regulate privacy. The difference is in the way the mechanisms regulate it.

For example, superficially the highly mobile Gypsy society seemed to lack physical means for their privacy. However Yoors, (1967, p. 37) found that they have developed the following rule, among others to allow members privacy. On rising from sleeping around the campsite, if one wishes to be in private and do not wish for social interactions with the other Gypsies one would not wash one's face. All those in the community respect this rule.

Another related study involved the Iban society of Sarawak in Malaysia who lived in longhouses that seemed to have very little privacy. Patterson and Chiswick (1981, p. 136) found that they achieved privacy through different mechanisms. These mechanisms are largely social conventions instead of the physical means we rely on. For example the Ibans have special manoeuvres for changing clothes in public that preserve their modesty; the longhouse is closed to outsiders on many occasions; and beginning at puberty the sexes use separate sleeping areas.

Summary

As privacy is central to understanding environment and behaviour, hence a review on this topic is relevant for the present research.

To date the definition of 'privacy' has been imprecise and ambiguous, and it has been suggested that this cannot be obtained as it reflects the ideas of a particular society at a given time. The definition being most referred to even in more recent literature is as was defined by Altman (1975).

Also, Altman's privacy framework which viewed privacy as the central concept amongst other aspects of human spatial behaviour such as proxemics, territoriality and crowding has been regarded as the most comprehensive in environmental psychology. However criticms against Altman's privacy frameworks argued that it does not incorporate the physical environment that plays an important part in the process. It has also been found to suit only face-to-face encounters and standing encounters than in seated, adjacent seating interaction patterns.

More recent theoretical framework has suggested that privacy provide protection for system maintenance and system development of human individuals. System maintenance concerns the general biological and psychological health and well being of each individual, while system development involves the opportunity to develop freely, individually, and optimally, without coercion. Nevertheless, this framework has not been popular amongst writers compared to that proposed by Altman (1975).

Based on the studies conducted, it is revealed that the need for privacy and mechanisms for achieving it are influenced by several factors. These include demography, gender difference, age difference, personality, situational aspects, and cultural differences. These factors would be analysed in the present research.

2.4.0 Crowding

While it is proper and necessary to study crowding at the large-scale level of cities or nations, for the purpose of this research, the focus shall be limited towards understanding aspects of human crowding that involve ongoing social interactions among people, as emphasised by Altman (1975). This section is divided into five parts. Definition of the term is given in the first part. The second part briefly traces the historical stages of research on crowding. Various theoretical approaches on crowding are provided in the third part. The effect and reactions of crowding are provided in the fourth part. The relationship of crowding and culture is provided in the final part.

2. 4.1 Definition

Early studies on crowding have tended to use the term 'crowding' and 'density' as though both the terms have the same meaning. These two terms have either been used interchangeably (Gifford, 1987) or synonymously (Altman, 1975). According to Veitch and Arkkelin (1995), most theorists now agree that the physical state of high density is not the same as the psychological experience of crowding and that these two must be differentially defined. It was Stokols (1972) who first made the distinction between the two terms. According to Stokols, 'density' is a physical condition involving space limitations, whereas 'crowding' is an experiential state determined by perceptions of restrictiveness when exposed to spatial limitations. Baum and Paulus (1987) elaborated this distinction further by defining 'density' as the physical conditions associated with the numbers of people in given amounts of space, while 'crowding' as an experience - the outcome of appraisal of physical conditions, situational variables, personal characteristics, and coping assets.

Altman (1975) regarded 'crowding' as an interpersonal process at the level of people interacting with one another in pairs or in small groups. It occurs when privacy mechanisms fail to function successfully, causing a person or group to have more interaction with others than is desired; that is, achieved privacy is less than desired privacy. Crowding does not necessarily imply an undesirable or stressful situation. In fact, sometimes the presence of many people is expected or even sought (Baum and Valins (1977). In Altman's terms, crowding exists when various privacy-regulation mechanisms fail to produce a match between desired and achieved levels of privacy, with less privacy resulting than was desired.

2.4.2 Historical stages of research

Studies on crowding began in the 1920s as population increases in the Western world. The studies can be categorised into two main streams, that is sociology and psychology, with both having an early-phase and later-phase, distinguished by the sophistication of their methodological strategies (Altman, 1975).

1) Early correlational-sociological studies

These studies emphasised on social outcomes of population density and indicators of social pathology, such as mental health and disease, crime, and various forms of social disorganisation. Examples of such studies include those by White (1931) and Bordua (1958).

The methodology used in such studies were correlational, that is they examined statistical covariations between population density and social-pathology indicators, based on records and archives. While most of the studies found some associations between density and social pathology, it cannot be concluded that density was the cause because alternative explanations could have accounted for the correlations. For example, pure density is not the only variable that distinguishes the centre of a city from its suburbs. Other factors such as the inhabitant's physical well-being, economic status, health facilities, education, etc. which often differed in central-city and suburban areas could also be related to social pathology.

Also, the studies treated density in a relatively undifferntiated fashion. Relatively large geographical units such as, people per acre, people per nation, etc were typically used as measurements.

In addition, the studies emphasised on social-system outcomes rather than on social processes. Social pathology such as crime rates, mental-health disorders, etc are end products of a long history of social experience. The studies did not examine the effects or how people cope the high- and low-density situations on a day-to-day basis. Furthermore, their approach to crowding was to treat it as a broad social-system problem rather than as an individual or microinterpersonal phenomenon.

2) Later correlational-sociological studies

From the 1960s onwards, sociological studies shifted their methodological strategy in several ways. For example, the classic study by Galle, et al (1972), viewed population density in a more differentiated way. Amongst the measurement used include the number of persons per room in a dwelling unit (the smallest and most directly interpersonal level of density). It also took into consideration the obscuring effects of ethnic background, socio-economic status, and other variables on the relationship between density and social pathology.

Other later studies also moved in these directions, giving more attention to different levels of analysis of population concentration. For example, Mitchell (1971) analysed the relationship between number of families per dwelling unit and marital satisfaction in Hong Kong; Booth and Welch (1973) examined the relationship between density, health, and aggression in 65 countries.

3) Early experimental-psychological studies

The psychological studies approach differed from the sociological approach in several ways. First, the studies were experimental and laboratory-oriented. Second, the studies involved relatively shorter periods of time. Third, subjects in many experimental studies work on tasks developed for the specific setting, rather than those that are part of the ongoing and natural aspects of their everyday lives. Fourth, the studies emphasise manipulation and control of variables.

Examples of such studies include those by Griffit and Veitch (1971) and Freedman, et al (1971). Griffit and Veitch (1971) found that people liked a hypothetical stranger more in an uncrowded and cooler environment based on responses to a rating scale. Freedman, et al (1971). examined the impact of room size and group size on individual performance on a variety of intellectual tasks, such as word formation, object use, memory, and concentration, and on a group-discussion task. There were no differences in performance as a function of density.

Comparable to the early phase of correlational research, these studies treated density in a relatively undifferentiated fashion, and emphasised on products or outcomes, such as performance success rather than social processes. There also was an absence of social interaction among people. Both the Freedman et al. (1971) and the Griffit and Veitch (1971) studies emphasised the effects of density on people who worked alone, not as members of an interacting group.

4) Later experimental-psychological studies

These studies are characterised by the involvement of social interaction among people and a richer conception of density. For example, Freedman, et al., (1972) examined the impact of density on performance of tasks involving co-operation or competition between people. Stokols, et al., (1973) studied social behaviours of laughing, hostility, and so on in various density arrangements. A number of studies have varied both room and group size to get at spatial- and social-density effects (Freedman, et al., 1971; McGrew, 1970). Spatial density is achieved by changing space while holding group size constant, while social density is achieved by varying group size with the amount of space held constant (Baum and Paulus, 1987). Desor (1972) studied the richness, differentiation, and articulation of environment by examining the effects of wall partitions, room shapes, door placements, and other factors on willingness of subjects to place simulated figures in a room mock-up. Studies by Valins and Baum (1973) and Baum and Valins (1973) are important because they studied the longer-term implications of living in crowded environments on later social behaviour. They found that dense living was associated with the mutual avoidance of social interaction.

5) Comparison between the correlational studies and experimental studies

Both the correlational and experimental studies have their strengths and their weaknesses. The correlational studies deal with factors relating to social pathology that involves the everyday lives of the people, and reflected years of exposure to density. However, it is difficult to pinpoint the exact cause due to some unknown variables. Also, direct examination of social process is difficult.

Meanwhile, the experimental studies involved the manipulation and control of variables that allow clearer inferences about cause-effect relationships involving density and behaviour. They also allow direct examination of social process. Because groups can be observed on the scene, measurement of aggression and other social behaviours is possible.

2.4.3 Theoretical models of crowding

According to Baum and Paulus (1987) and Gifford (1987), theoretical approaches to crowding can be categorised in a number of ways, such as according to either the stimulus aspect or response factors of density and crowding; either spatial factors or social elements of crowded

settings: and either psychological reactions only or a variety of psychological and behavioural outcomes. These differential emphases have resulted in theories that vary widely in their scope. Amongst the theories that have appeared in the literature include the Overload model, the Arousal model, the Density-Intensity model, the Behavioural Constraint model, and the Control Perspective model. Each of these models shall be described as follows.

1) Overload Model

This model has deep roots and was used extensively during earlier research in interpreting effects of crowding. It focuses on one consequence of density. Since each individual in a setting represents a potential social contact, high levels of density are a potential source of excessive stimulation resulting in a possible state of stimulus or social overload.

Individuals differ in their tolerance in coping with various levels of interactions and as such, uncertainty and uncontrollability are important factors in the experience of overload (Rapoport, 1975; Saegert 1978). According to Altman (1975), there exists some optimal level of social stimulation where individuals seek to avoid both being overloaded and not having sufficient stimulation (isolation). This depends on personal characteristics and situational factors. If the individuals do not attain the desired level of stimulation, attempts will be made to adjust the level of stimulation by various behavioural, psychological, or cultural coping mechanisms. Overstimulation (overcrowding) would lead to attempts to reduce stimulation by means of withdrawal, aloofness, and so on. At the same time, understimulation (isolation) would lead to seeking additional social stimulation by seeking opportunities for interaction, being friendly, and so on.

It is also interesting to note that while too many contacts (overload) may be distressing, this is not always the case because sometimes a large number of social interactions may be bearable or fun (Baum and Valins, 1977). However, when these interactions are unwanted, problems are more likely. Thus, difficulties in regulating when, where, and with whom one may interact can lead to too many unwanted interactions, and eventually to stress.

2) Arousal Theory Model

Unlike the overload theory, where the emphasis was on identifying a source of crowding within the density construct and then specifying responses and relevant conditions, arousal theory seeks primarily to identify mediators of the effects of crowding and density (Baum, and Paulus,

1987). Density still must be appraised, but here the appraisal either may directly yield arousal or may suggest several consequences, of which arousal is one. The arousal that is generated then causes the effects that make up the crowding syndrome.

Evans (1978) and Paulus and Matthews (1980) suggest that arousal due to high density has effects on one's performance. Also, arousal may be attributed by the person in an arousing situation to various factors, depending on situational and cognitive cues. For example, Worchel and Teddlie (1976) argued that proxemics violations associated with high-density settings cause arousal, which results in a negative experiential state attributed to others being too close. If arousal is misattributed (eg. is attributed to something other than others being too close), the likelihood of a negative emotional state being linked to high density is lessened (Aiello, et al., 1983).

Patterson (1976, 1979) has elaborated the arousal model and has described a perspective that takes more account of behavioural, physiological, and psychological factors. According to this intimacy arousal theory, high-density situations increase the intensity and probability of non-verbal intimacy behaviour (e.g. inappropriate closeness, eye contact, touching, etc.). This increased intimacy can be a source of arousal, and this arousal can be labelled either positively or negatively, depending on context.

3) Density-Intensity Hypothesis Model

Another model that focuses on density as a source of stimulation, is Freedman's (1975) density-intensity hypothesis. According to this notion, crowding is not inherently good or bad. Instead, crowding serves to intensify a person's typical reactions to situations. If the situation is a normally pleasant one, density should increase the pleasure experience. If, on the other hand, the situation is basically unpleasant, density will make it more unpleasant. This intensification occurs because high density increases the importance of people or characteristics of the setting and hence intensifies the typical reactions to them.

A number of studies have shown that increased spatial density may elicit positive reactions for all-female groups but negative ones for all-male groups (cf. Sundstrom, 1978). These findings may reflect intensification of females' positive feelings and negative ones for males. Yet the data in crowded conditions do not indicate such initial baseline differences (cf Paulus and Matthews, 1980). Other studies have failed to support Freedman's predictions (Sundstrom, 1978).

4) Behavioural Constraint Model

According to Baum and Paulus (1987) this model is probably the most popular theoretical perspective. It focuses on limitations of freedom to choose among a number of behavioural options in dense environments. Limitations and restrictions of behaviour are the source of crowding stress and related behavioural and psychological reactions. Proshansky, et al. (1970) emphasised the importance of freedom of choice in residential settings and used this idea to organise the concepts of territoriality, proxemics, and crowding. Feelings of crowding are induced by violation of normative expectations about the use of space and frustration of goals by the physical presence of others. These factors are seen as threats to one's freedom of choice (cf. Brehm, 1966).

Altman (1975) has developed a similar but more elaborate model. He proposed that individuals are motivated to regulate their level of privacy or degree of social stimulation so as to attain preferred levels. If a preferred level is not achieved, various verbal, non-verbal, and physical coping responses are engaged to adjust the level of privacy. High density levels may inhibit the ability of individuals to use these coping mechanisms successfully to attain desired levels of privacy.

5) Control Perspective Model

According to Bell, et. al., (1996), more recent conceptual efforts have focussed on more careful explanations for why high density has the effects that it does. One of these, the control perspective has been used in this regard because it unifies diverse theoretical currents.

Perceived control is a potent mediator of stress. When we believe that we can control a stressor or other aspects of a situation, the evasiveness of stress appears to be reduced. On the other hand, even if no other problems are apparent, losing or not having control can be stressful. Several researchers have proposed that high density can cause a loss of control (or prevent someone from ever having control), and that this loss of control is the primary mechanism by which density causes stress (Baum, et. al., 1979; Evans and Lepore, 1992; Lepore, et. al., 1992).

Overview

Theoretical approaches to crowding can be categorised in several ways, such as either the stimulus aspect or response factors of density and crowding; either spatial factors or social elements of crowded settings; and either psychological reactions only or a variety of

psychological and behavioural outcomes. Based on the theoretical models, the negative effects of crowding would be expected only in situations of high-density crowding.

2.4.4 Effect and reactions of short-term crowding

For the purpose of this research the focus will be given to the effects of short-term rather than long-term crowding. According to Cassidy (1997) the effect of crowding is largely felt through the invasion of one's proxemics and territoriality. This was confirmed by Kaya and Erkip (1999) when they found that during short-term crowding, proxemics was invaded more under high density than under low density conditions. This finding has important bearing on the present research because both levels of density do occur in the form of percentage of occupancy at a particular time in the waiting area.

1) Effect

Much of the studies on short-term crowding reviewed have focussed on the outcome of stress. For example Aiello et al. (1975) found that males and females were more stressed in small rooms than in a room characterised as noncrowded. Sundstrom (1975) found non-verbal behaviour associated with stress reactions among crowded subjects. Even in dyadic interaction, close physical proximity has been found to be stressful (cf. Baxter et al. 1970).

2) Adaptability

Studies have also shown that some people could tolerate crowding situation more than others. According to Gillis, et al. (1986) when density is held constant, some people will feel crowded and others will not, because some people can tolerate or adapt to higher levels of density than can others. Adaptability varies across individuals. This could be due to:- personality and attitudes, expectations and norms, experience, gender, mood (c.f. Gifford, 1987); preferences (Aiello et al. ,1977); social status (Baldassare, 1981); control (Glass and Singer, 1972, and Sherrod, 1974); and culture (Gove, et al., 1983;).

3) Coping

How do people cope when being overcrowded? Baums and Paulus (1987) identified two basic forms of social responses - withdrawal, and aggression.

The withdrawal responses include lower levels of eye contact, head movements away from others (Baum and Greenberg, 1975; Baum and Davis, 1976), and maintenance of greater interpersonal distances (Baum and Greenberg, 1975). Responses are affected by the sexual composition of the group. For example, Ross, et.al.(1973) found that females in all-female group spent relatively more time in mutual gazing under crowded conditions, while the opposite effect was obtained for males. Thus males showed withdrawal tendencies under crowded conditions while females showed affiliative tendencies. These findings can be interpreted as reflecting either differential coping styles or differential sensitivity to proxemics invasions (cf. Paulus and Matthews 1980).

The aggressive response has been observed in situations characterised by fewer people but very small spaces where reported crowding has more to do with spatial restriction or inappropriate proximity of others. Aggressive or dominant behaviour may cause others to move away, ceding some of "their space" to the aggressive individual. Several studies have reported evidence of increased aggression among people exposed to crowding in small spaces (eg. Ginsburg, et al., 1977; Hutt et al., 1966). However, other studies have not reported this effect (eg. Loo, 1972).

The nature of aggressive response to crowding has been clarified by consideration of several intervening conditions. First it appears that resources must be sufficiently scarce to make less aggressive coping ineffective. Rohe and Patterson (1974) suggested that competition for scarce resources, including space, might be a major determinant of aggressiveness during exposure to high density. Subsequent research also identified resource scarcity as important (Smith and Connolly, 1977).

In terms of gender, men exhibit more aggressive responses to crowding characterised by spatial restriction than do women (eg Freedman et al., 1972; Stokols, et al., 1973; Schettino and Borden,1976). However, Baum and Davis (1976) found evidence of gender differences only when groups were small.

Overall, the evidence of aggressive responses is not strong. This is primarily because of difficulties in studying it (Baum and Paulus, 1987). Most investigations of aggressive response have been conducted in the laboratory, and the kinds of measures of aggressions available in such a situation are limited.

2.4.5 Crowding and Culture

It was mentioned earlier that one of the possible reason people responds differently to crowding is due to their different cultural background. Hall (1959, 1966), was amongst the first to note that members of different cultures react differently to crowding (Insell and Lindgren, 1978). .Hall observed that the British, Americans and Canadians, placed a high value on privacy and apartness, but that Mediterranean people, including both Latin Americans and members of Middle East cultures, are not disturbed by the physical closeness of others and actually enjoyed situations that North Americans and Northern Europeans considered to be crowded and congested. Hall (1966) further added that the English are, like the Germans, an intensely private people. They try to cope with crowding by "cocooning"; avoiding eye contact, maintaining a reserved demeanour, and withdrawing psychologically when physical escape from crowds is impossible (see Altman and Haythorn, 1967).

In agreement with Hall's observations, Sundstrom, (1978) and Altman (1975) suggested that cultural differences may be expected in reactions to high density. Although empirical studies on crowding and human behaviour in relation to cultural or subcultural group have been minimal (Aiello and Thompson 1980a) several studies confirmed the assertion made by Sundstrom and Altman. For example, studies have found that high density is related to social pathology in some places but not in others (eg. Fuller, et al., 1993). Similarly, Nasar and Min (1984), predicted and found that Mediterraneans would respond more negatively than Asians when placed in a small, single dormitory room. Gillis, et al., (1986) did report cross-cultural differences, with Asians being more tolerant of high density and British respondents being less adaptable, with Southern Europeans somewhere in between these two. Some evidence exists of more sensitivity to crowding among Blacks compared to Hispanics in Chicago (Gove and Hughes, 1983) and among foreign students compared to Indian students in India (Odera and Hasan. 1993).

Although Asians as compared to the Westerners are found to be more tolerant and better able to cope with crowding (Gillis, et al., 1986) that does not mean that they prefer to be in that situation (Bechtel, et al., 1997). Studies by Loo and Ong (1984) and Loo (1986) in San Francisco's Chinatown area revealed that their Chinese respondents generally evaluated crowding as undesirable. Similarly, Homma (1990) reported that the Japanese also view crowding as a negative experience.

It should be noted that even within the same culture, the tolerance for crowding varies according to early exposure. For example, Booth (1976) found that men who grew up in Toronto in crowded households were less likely to experience stress-related diseases under conditions of

high social density than those raised in less dense households. Similar results were found by Sundstrom (1978) and Webb and Worchel (1993).

This section obviously has important bearing for this research, especially pertaining to differences in tolerance to crowding between western and eastern culture. It has been shown that western culture values privacy and apartness and hence feels congested in a situation that the eastern culture regards as normal. More specifically, the British have been shown to be less adaptable than the Asians in situation of high density.

Summary

For the purpose of this research, the review in this section has focussed only on aspects of human crowding involving ongoing social interactions and the effects of short-term crowding.

The terms 'crowding' and 'density' that tended to be used synonymously in earlier studies have been distinguished in later studies. Current accepted understanding about the two terms is that 'density' refers to the physical conditions associated with the numbers of people in given amount of space while 'crowding' refers to the experience in that situation which occur when privacy mechanisms fail to function successfully.

Studies on human crowding began in the 1920s as population increases in the Western world. Categorised under two main streams of studies, that of sociology, and psychology, both had an early-phase and a later-phase, distinguished by the sophistication of their methodological strategies. While the sociological studies emphasised on correlational studies and longer term effects, the psychological studies were more experimental and involved relatively shorter term effects.

Theoretical approaches to crowding can be categorised in several ways, such as either the stimulus aspect or response factors of density and crowding; either spatial factors or social elements of crowded settings; and either psychological reactions only or a variety of psychological and behavioural outcomes. These differential emphases have resulted in theories that vary widely in their scope such as, the Overload model, the Arousal model, the Density-Intensity model, the Behavioural Constraint model, and the Control Perspective model.

Studies have shown that during short-term human crowding, proxemics was invaded more under high density than under low density. This finding has important bearing on this present research because both levels of density occur in the waiting area of health centres in the form of percentage of occupancy.

Several studies have found that both males and females displayed signs of stress in crowded environments. Others revealed that the levels of tolerance in such situations vary amongst individuals and dependent on factors such as gender, experience, personality and attitudes, expectations and norms, mood, preferences, social status, control, and culture. In coping with overcrowding, several studies have identified two basic forms of social responses, that is withdrawal, and aggression, with the male exhibiting more aggressive responses than the females.

Evidence from studies has shown that Western culture differed in their tolerance to crowding as compared to Eastern culture. The Western culture valued privacy and apartness and feel congested in a situation regarded as normal by Eastern culture. More specifically, the British have been found to be less adaptive in high density crowding as compared to the Asians. This finding is highly relevant for the present research because it involves the influence of culture on human behaviour in response to crowding, more generally between Western and Eastern culture, and more specifically between the British and the Asians.

3.0.0 Research methods

3.0.0 Research Methods

This chapter is divided into two main parts. The first part describes about the most common types of methods used in the study of environment-behaviour (E-B) relationship. It also discusses the merits and limitations of each method and provides an evaluation of the methods used. The second part involves the generation of hypothesis for the present research. It provides the status of findings on cultural differences in human spatial behaviour, analyses on the list of empirical studies conducted and the formulation of the hypotheses.

3.1.0 Methods

3.1.1 Types of methods

Several methods have emerged for used in studies involving the behavioural sciences. Sommer and Sommer (1980, p. 9) have provided a guide in the relevant technique and approach to be used in relation to such studies, as tabulated in Table 3.1. In spite of the availability of those methods, Sommer and Sommer noted that only four methods - observation, experiment, questionnaire and interview - account for nine-tenths of the articles in social sciences journals (1980, p. 8). As such the focus of the review shall only be on these methods.

1) Observation Method

This ranges from informal observation of an environment, to a recorded narrative of what is seen, or to structured observation in which areas of the setting are preselected and particular behaviours are systematically observed and recorded on special coding forms.

This method generates data about people's activities and the relationship needed to sustain them. It is ideal for studying commonplace non-verbal behaviours, such as gestures, postures, or seating arrangements, in which people may not be consciously aware of how they are behaving.

There are several advantages in using this method. First, it is empathetic, that is a researcher soon gets a feeling for the character of a situation. This provides essential initial research insights that a study can revise and elaborate. Second it is direct, that is we get first hand

knowledge of the way people behave in natural settings. Third, it is dynamic, that is, researchers can test their hunches on the spot. Fourth, it is variably intrusive, that is researchers can decide how far they will intrude and from what social and physical vantage point they want to participate in observed events, or remain completely unobtrusive.

Problems	**Approach**	**Research techniques**
To obtain reliable information under controlled condition	Test people in a laboratory	Laboratory experiment, Simulation
To find out how people behave in public	Watch them	Natural observation
To find out how people behave in private	Ask them to keep diaries	Personal documents
To learn what people think	Ask them	Questionnaire Interview Attitude scale
To find out where people go	Chart their movements	Trace measures Behavioural mapping
To identify personality traits or assess mental abilities	Administer a standardised test	Psychological testing
To identify trends in verbal material	Systematic tabulation	Content analysis
To understand an unusual event	Detailed and lengthy investigation	Case study

Table 3.1: Choosing among research techniques
[Source: Sommer, R. and Sommer, B.B. (1980, p. 9). *A practical guide to behavioural research, tools and techniques*. Oxford University Press, New York].

It also has some limitations. First, it can be time consuming and inconvenient as the observer needs to be present when the activity is taking place, although the use of hidden video cameras in place of the observer could solve this problem. However this could pose the problem of invasion of privacy. Second, it is difficult to deduce beliefs, attitudes or opinions. Third, there can be human error in coding observed behaviour, which is in misidentifying one behaviour from another, or being unable to code all the activity because it is happening all at once. Fourth, the misinterpretation of subjects' behaviour could affect its reliability.

Some examples of studies using this method include those by Lipman (1968), in his study on spatial behaviours of the elderly in old people's home; Cook (1970), in his studies on seating patterns in public houses and restaurants; Baxter (1970), in his study on proxemics behaviour of the Anglo-, Black- and Mexican-American in a zoo; Reid (1980), in his study on the spatial involvement and teacher-pupil interaction patterns in school biology laboratories; and Kaya and Erkip (1999) in their study on the effect on proxemics during short-term crowding

2) Experimentation method

The experimentation method involves the creation of an artificial situation in which variables can be controlled. It is the only method that identifies with certainty the variables that is causing the effects being observed in an experiment. In other words, this method is used for tracing cause-effect relationships. It involves the measurement of the effects of an independent variable (eg. heat) which is systematically varied on a dependent variable (eg performance). However, this method necessitates two forms of control. First, only the independent variable is allowed to differ between experimental conditions. Second, subjects are randomly assigned to experimental treatments. This makes it improbable that differences between different conditions are caused by factors other than the independent manipulation.

This method can be useful for studying environmental issues. For example, to specify some of the psychological aspects of exposure to noise, Glass and Singer (1972) used this method in a laboratory and were able to discover relationships that would have been difficult if not impossible to find in field studies or non-experimental investigations.

This method can also be done in the field by transferring many aspects of experimental science to a field setting. By doing this, realism and generalizibility can be increased, and still have enough control over the variables to be able to derive causal relationships. Edney (1975) used an example of this technique in a study on territoriality where the field experiment was done using the subjects' dormitory as the laboratory.

Another experimentation method is known as the Projective or Simulation method. This involved the introduction of a real environment into an artificial setting. It requires subjects to imagine some interaction situation and to project themselves into how they would behave in that situation by several means. The means could be through the manipulation of dolls or miniature figures (e.g., Little, 1965), or the placement of marks on a prepared form to indicate preferred distances from others (eg., Sommer, 1969), or the choice of sitting or standing positions represented in a photograph or the use of slides to measure responses from the subjects such as

been conducted by Mandal and Maitra (1985), and Srivastava and Mandal (1990). Some of the advantages in using this technique are as follows. First, it is easy to present to a small group. Second, it is inexpensive. Third, it allows a wide variety of scenes to be shown at one time. However, the degrees to which these measures correlate with those of the other methods are questionable.

3) Standard questionnaires

These are series of written questions on a topic which the respondents' written opinions are sought. This technique is used to discover regularities among groups of people by comparing answers to the same set of questions asked of a large group of people. The questionnaires can be delivered by mail, or administered over the phone or in person by interviewers.

The advantages of mail-administered questionnaires include the following. First, not much cost is involved in data collection and in processing the data. Second, interviewer bias is minimised or avoided. Third, it has the ability to reach respondents who live at widely dispersed addresses or overseas. The disadvantages include the following. First, the response rate is low. Second, it is unsuitable for respondents of poor literacy, visually handicapped, of old age, the very young, and those not interested in the topic. Third, there is no opportunity to correct misunderstandings or to probe or to offer explanations. Fourth, there is no opportunity to collect ratings or assessment based on observations.

Administered questionnaires conducted by an interviewer (also known as the structured interview technique) would be discussed in the next section.

In self-administered questionnaires, they are presented to respondents by an interviewer. After explaining the purpose of the questionnaire, the respondents are then left alone to complete the questionnaire that will be picked up later. The advantages in using this technique include high response rate, accurate sampling, and minimum biases from interviewer.

In group administered questionnaires, self-explanatory questionnaires are given to large groups of respondents assembled together. Slides or films might also be shown during the session. Here, all the respondents answer the same question in the same order within the same time. The only problem is that of contamination (through copying, talking or asking question).

4) Interviews

Interviews are normally conducted where the opportunities for observations are limited. It is used to assess beliefs and opinions, and personality characteristics. Respondents may reveal manifest (verbal) and latent (nonverbal) content. Interviews can be unstructured or structured.

In an unstructured interview, questions are not formulated beforehand. The purpose is to explore all the alternatives in order to pick up information and define areas of importance which might not been thought of ahead of time, and to allow the respondent to take the lead to a greater extent.

In a structured interview (also known as administered questionnaire technique), questions are formulated beforehand and asked in a set order and in a specified manner. The purpose is to obtain consistency from one situation to the next. Structured formats are essential in getting information that can be combined.

Another type of structured interview is known as the in-depth or focussed interview. This involves interviewing people based on situation analysis as a guide and probes (questions seeking clarification) as a tool to keep the interview flowing without directing it. The purpose is to get in-depth reactions from respondents to particular environments. It can be use for individual or group respondents. It can encourage diversity in opinions rather than forced consensus. However, it is not suitable for gathering large amounts of easily comparable and quantified data. An example of such technique was done by Zeisel (1976) in his study on the prevention of school property from being damaged.

Generally speaking, compared to postal questionnaires, responses from interviews provide greater richness and spontaneity from open-ended questions; improve response rates as response rates from postal questionnaires is below 40% (Oppenheim, 1992, pp. 81-81); and the purpose of the study can be more convincingly presented than a cover letter. However, conducting an interview can be time-consuming and expensive; and it is more open to bias than most other research method (Sommer and Sommer,1980, p.98). The problem of biases can be overcome by developing measures that are standardized such as the Sympton Checklist 90 (SCL-90; Derogatis, 1977).

3.1.2 Evaluation on the methods

According to Sommer and Sommer (1980,p.7), there is no ideal research technique since all methods have good and bad features as was elaborated in Section 2.3.1 The most important determinant in the approach to be taken is in the aim of the research.

In evaluating the various methods used, the *Projective or simulation* method has been heavily criticised by many researchers (e.g., Love and Aiello, 1980, p. 102; Slane, et.al.1981, p. 151; Pedersen and Sabin,1982, p 1062; and Hayduk, 1983, p.296) due to its questionable validity as it lacked realism In fact Aiello (1987, p.409).asserts that "more than half" of the findings in all of personal space research are questionable because of the use of projective techniques. Therefore, it would seem prudent to reach conclusions based only on research that use *laboratory or field* methods that involved actual interaction between subjects. At this point, Bell, et. al.,(1996, p. 21-22) argued that in obtrusive laboratory methods, subjects are aware that they are being studied, and as such their responses may be different if the measures had been disguised. As such he further suggested that in conducting the research, there should be minimal disturbance on the setting, and that allows the study of real people in real environments such as provided by the *field or naturalistic unobtrusive observation* method. That is in conducting the research at the actual setting rather than in laboratories, and making the observations in an inconspicuous manner.

For most problems a multi-method approach or combining several of these methods would be better than one, as was done by Fleming, et.al. (1987) in their study on stress in human crowding, where they combined interviews, observation and task performance methods.

3.2.0 Generation of hypotheses

Based on the literature reviewed in Chapter 2.0, the most recent compilation of studies involving cultural differences in human spatial behaviour was listed by Aiello (1987,pp. 435-444). The generation of hypotheses for this research was done by analysing the studies conducted in the list provided by Aiello.

3.2.1 Findings on cultural differences studies

Despite earlier non-empirical observations made in support of cross-cultural differences in proxemics behaviour (eg. Hall, 1959,1966) it has been mentioned by Aiello (1987, p. 434) that

the empirical studies conducted had showed diverse results, that is while some studies had been supportive of cultural differences (eg. Noejirwan, 1977, 1978; and Shuter, 1976) other studies have not been supportive (eg. Furston & Larson, 1968; Graubert & Adler, 1977; Gilmour & Walkey, 1981). However Aiello's statement did not take into consideration about the validity of the methods used, and whether the studies were 'truly' cross-cultural. These will be analysed in the next section.

3.2.2 Analysis of empirical studies on cultural differences

Analysis of the empirical studies on cultural differences in human spatial behaviour is as illustrated in Tab. 3.2. The first five columns comprising the number, author of the study, subjects involved, methodology used, and result of the study was adopted from Aiello (1987,pp. 435-444). The last three columns represent this researcher's analysis upon the various studies conducted.

This researcher adopted the following categorisation on the studies listed.

1. The type of cultural studies were abbreviated as follows:-

i) 'SC' denotes sub-cultural study (that is, other cultures within one domain culture).

ii) 'CC' denotes cross-cultural study

iii) 'TC'denotes truly cross-cultural study (whereby subjects involved were residing at their native countries when the study was conducted)

2. The method used in the studies were abbreviated as follows:-

i) 'V' denotes valid

ii) 'Q' denotes questionable.

This categorisation was based on the arguments mentioned in Section 2.2.2 where the use of *projective or simulation* methods were heavily criticised for their lack in realism, while subjects responses in the *laboratory methods* might not reveal their actual responses expected. Based on this argument, only the *field/naturalistic unobtrusive observation* method qualifies to be categorised as the valid method.

3. The results of the studies were abbreviated as follows:-

i) 'S' denotes supportive of cultural differences

ii) 'N' denotes non-supportive of cultural differences

Table 3.2: Studies on cultural differences in spatial behaviour

[Source: Aiello, J.R. (1987,pp. 435-444)). Human spatial behaviour. In Stokols, D. and Altman, I (eds.), *Handbook of Environmental Psychology, Vol 1.*, p. 389-504. Kriegar Pubilication Co., Florida.]

Note: The last three columns indicate the analysis made by the present researcher.

No.	Study	Subjects	Methodology	Results	Study Category			Method Validity		Cultural Difference	
					SC	CC	TC	V	Q	S	N
1	Aiello & Jones (1971).	210 dyads, 6 to 8 yrs old Equal numbers of males and females: black, white, Puerto Rican	Unobtrusive observation in field (schoolyard) using adaptation of Hall's (1963) proxemics scales.	Middle-class white children stood farther apart than lower-class black and Puerto Rican children when interacting. Black children stood less directly than white children.	1			1		1	
2	Aiello & Jones (1979).	106 adolescents same sex pairs Equal numbers of males and females: White: 35 lower-class; 26 middle class Black: 18 lower-class; 27 middle-class	Unobtrusive observation in field (modified classroom) using adaptation of Hall's (1963) proxemics scales.	Blacks stood farther apart and maintained a more indirect head orientation than whites. Lower class subjects interacted at larger distances than middle-class.	1			1		1	
3	Banks (1973).	Blacks and Whites	Preferred Distance Questionnaire	Blacks preferred more distance than whites.	1				1	1	
4	Bauer (1973).	60 college students Equal nos. of black, white, males,female	Approach toward black or white experimenter.	Black females approached closest, followed by black males, white females, and white males.	1				1	1	
5	Baxter (1970).	859 dyads; Male and female; Children, adolescents, adults Anglo, Black, Chicano;	Unobtrusive observation of pairs in field (zoo)	Mexican-Americans stood closest, followed by whites, then blacks. Blacks stood closer in indoor setting. Chicanos stood closer outdoors.	1			1		1	
6	Boxaem Flowers, Bodner, & Satterfield (1977).	60 male black and white delinquent youths.	Approach by confederate male (European-American) confederate (eight axes).	Those who committed crimes against property allowed greater approach than those who committed crimes against persons. European-American allowed closer approach than African- and Mexican-Americans.	1			1		1	
7	Brown (1981).	White: 263 females; 213 males Black: 20 females; 12 males	Observation of likelihood of subjects to invade upon conversation in a shopping mall.	Subjects more likely to pass through all black dysd than white or mixed dyad.	1			1		1	
8	Cade (1972).	1. 48 Hawaiian Oriental 24 Hawaian Caucasian	Kuethe's Felt Figure Placement Task	No difference between subcultures in distances they placed family members from each other.	1				1		1
9		2. 21 American 18 Filipino 28 Japanese	Kuethe's Felt Figure Placement Task	No difference between subcultures in distances they placed family members from each other.	1				1		1
10	Collet (1971)	60 male college students: 10 Arab	Rating of liking for other subject.	Arab subjects gave more favourable ratings to Englishmen instructed in Arab-like (greater immediacy) behaviors than those who were not.		1			1	1	
11	Connolly (1974).	48 children: 24 black 24 midwestern 38 males and 10 females	Four sets of photographs showing teacher-student dyads in spacings ranging from 12 to 84 in. were presented to subjects. Subjects made three judgements choosing those that represented 1. the most appropriate spacing 2. enough forward movement to change the interaction 3. enough backward movement to change the interaction. Measurements of proxemic behaviour were also correlated with their choices.	Black subjects placed less space between interactants than white subjects for all three choice conditions. They also appeared to use more spatial manipulation to mark different changes in content and context during a conversation. All subjects agreed that a negativemeaning was conveyed when the interactants were moved far enough apart. There was no agreement on the meaning of close distance.	1				1	1	
12	Dennis & Powell (1972).	200 dyads 7-14 years old black, white, other groups	Unobtrusive observation using the Dennis Infra-communication Analysis. Device in field.	Space between black-white dyads increased with age. Black males interacted closer than black females with white partner.	1			1		1	
13	Duke & Nowicki (1972).	483 elementary through college students 120 black 363 white	Comfortable Interpersonal Distance Scale.	Subjects projected smaller distances for stimulus persons of the same race than for those of a different race.	1				1	1	
14	Duncan (1978).	96 dyads in grades K, 2, 4 Equal numbers of same-sex (male or female) same-race (black or white).	Unobtrusive observation in field (schoolyard) using adaptation of Hall's proxemic scales.	Blacks interacted at closer distances than whites in earlier grades but difference disappeared by fourth grade. Black females stood closest. Black faced one another less directly than whites; this effect strengthened as children grew older. Males of both races stood less directly than females.	1			1		1	
15	Edwards (1973).	120 S. African males singles student Equal number of: white, Xhosa, rural Xhosa, urban Xhosa	Doll placement in lab.	All groups placed friends closest, followed by acquaintances, then strangers, except urban Xhosa, who placed strangers closer than acquaintances. Rural and urban Xhosa placed acquaintances at greatest angle. Xhosa placed men more directly in M-F pairs. No difference for white students.	1				1		1
16	Engelbretson (1972).	155 college students Sanse Japanese: 26 male; 24 female American Caucasians: 24 male; 25 female. Mainland Japanese: 32 male; 24 female	Kuethe's Felt Figure Task in lab.	Cultural differences do not correspond to placement distance.	1				1		1

Key: SC - Subculture; CC - Cross-culture; TC - Truly Cross-culture; V - Valid; Q - Questionable; S - Supportive; N - Non-supportive.

Table 3.2: Studies on cultural differences in spatial behaviour (continue)

	Study	Subjects	Methodology	Results	Study Category			Method Validity		Cultural Difference	
					SC	CC	TC	V	Q	S	N
17	Engebretson & Fullmer (1970).	155 students Native Japanese: 32 male; 24 female Hawaii Japanese: 26 male; 24 female American Caucasian: 24 male; 25 femal	Adaptation of Kuethe's Felt Figure Technique. Six different interaction scenes that varied as a function of interactants and conversational contents.	No difference between Hawaii Japanese and American Caucasian placement distances but native Japanese had significantly larger placements. Across all groups students with friend placements were closer than student with father or professor.	1				1	1	
18	Ford, & Graves (1977).	60 grades 2 & 8 children Equal numbers of: white males and females Chicano males	Stop approach toward a confederate of same age, gender, ethnic background (in lab).	Chicano children stand closer than whites in grade 2. No difference in grade 8. Younger children approached more closely than older children. Females approached closer than males.	1			1		1	
19	Furston & Larson (1968).	32 pairs Latin American North American	Unobtrusive Observation in lab of seated interaction	No physical contact between members of either group. No differences between groups in either axis or seating distances.	1			1			1
20	Frankel & Barrett (1971).	40 males: Caucasian native-born Americans	Approach technique in which subjects were approached by white or black confedrates in a counterbalanced order.	High-authoritian and low self-esteem white subjects allowed closer approach distances for white than for black approacher.	1			1		1	
21	Gilmour & Walkey (1981).	73 male New Zealand prison inmates. 22% Polynesian	Distances estimated from videotapes.	Violent prisoners used more distance than non violent. No difference between Europeans and Polynesians.	1			1			1
22	Graubert & Adler (1977).	380 students; 18 to 20 years old Males and females 77 Australian 96 South American 94 Great Britain 113 American	Figure Placement Task	Male students from all four groups appear similar on both neutral and mental-patient related stimuli, as well as in importance of attractiveness of opposite sex other. Females were similar only on neutral items. All groups kept "mental hospital" and "mental patient" at greatest distance.		1			1		1
23	Hendricks & Bootzin (1976)	80 white females	Three measures were used: 1. Initial seating choice from black and white confederates. 2. Reported level of discomfort at various approach distances 3. Closest position to which subject was willing to advance.	White subjects maintained greater seating distance from black confe confederates. Female subjects approaching male confederates reported greater discomfort than those approaching female confederates. No significant effects were found on the measure of overt approach.	1			1		1	
24	Jones (1971)	1. 76 Dyads: 22 black; 35 Puerto Rican; 19 Italian	Observation of photographs in field (city streets) adaptation of Hall's notation system.	The subcultural groups did not differ in distance or axis.		1		1			1
25		*2. 212 MM,MF, FF dyads* 100 black 75 Puerto Rican 51 Italian 86 Chinese	*Unobtrusive Observation* in field (city streets) adaptation of Hall's notation system.	*For all groups, male-male axis less direct than female-female axis.* No differences among the sub-cultural groups in distance.		1		1			1
26	Jones & Aiello (1973).	96 grades 1,3,5 pairs Equal number of MM, FF pairs 48 black pairs 48 white pairs	Unobtrusive Observation in field (modified classroom) using adaptation of Hall's (1963) scales.	Blacks stood closer than whites in grade 1, same in grade 3, and farther in grade 5. Blacks faced each other less directly than whites. Males of both groups faced less directly than females.	1			1		1	
27	Katz, Katz, & Cohen (1976)	80 white children 5 & 6 years old 9 & 10 years old	Measures seating distance from experimenter.	Children sat closer to white than black experimenter. This effect increased with age for boys, decreased with age for girls. Children sat closer to nonhandicapped white experimenter than handicapped white experimenter For younger children, this was reversed if experimenter was black.	1			1		1	
28	Leibman (1970).	116 females 98 white 18 black	Observations of subject's seated distance from white female confederate, white male confederate, or black male confederate on a 6-ft bench in a waiting area.. In a second set of four conditions, subjects were given the choice between intrusive seats with white vs. black females, white vs. black males, male vs. female whites, and male vs. female blacks. In the third set of conditions, subjects were given a choice between an empty bench and a bench occupied by a white female confederate.	For both subcultural groups, interpersonal distance was not affected by the race of the confederate. Larger distances tended to be used when interacting with a male confederate than with a female confederate. When given a choice, subjects chose an empty bench over one that was occupied Race of the confederates was not found to influence the subject's choice of intrusive seats.	1			1			1
29	Little (1968).	432 College students American: 53 M; 53 F Swedish: 42M; 43 F Scottish: 50 M; 50 F Greek: 35 M; 35 F Italian: 36 M; 35 F	Doll placement in lab.	No significant differences between males and females in IPD. Pattern found for IPD was Greek < Italian-American < Swedish < Scottish.		1			1	1	
30	Lomranz (1976).	45 males 15 Argentinian; 15 Iraqi; 15 Russian	Doll placement in lab.	Overall mean interaction distances were greatest for Argentinians, followed by Russians, then Iraqis. Iraqis used least IPD for good friends.		1			1	1	

Key: SC - Subculture; CC - Cross-culture; TC - Truly Cross-culture; V - Valid; Q - Questionable; S - Supportive; N - Non-supportive.

Table 3.2: Studies on cultural differences in spatial behaviour (continue)

	Study	Subjects	Methodology	Results	Study Category			Method Validity		Cultural Difference	
					SC.	CC	TC	V	Q	S	N
31	Lothstein	32 adolescent prisoners: 16 male high-assault white & black 16 male low-assault white & black 32 male high school students: 16 black 16 white	Approach by experimenter	High-assaultive use more personal space. Blacks use more space than whites.	1			1		1	
32	Mazur (1977).	89 male unacquainted pairs: 38 American 25 Moroccan 26 Spanish	Observation from photographs in field (on park benches).	No cross-cultural differences in seating distances.		1		1			1
33	Noesjirwan (1977).	286 patients in waiting room 139 Australians (68% female). 147 Indonesians (74% female)	Unobtrusive Observation of seating distance.	Indonesians were more likely to enter with a companion, sit closer to a stranger, and talk to a stranger.			1	1		1	
34	Noesjirwan (1978).	54 dyads: 32 Australians 22 Indonesian	Unobtrusive Observation using adaptation of Hall's notation system	Indonesian interact at closer distances than Australians, but with less direct gaze and body orientation.			1	1		1	
35	Rosegrant & McCrosky (1975).	240 college students: Equal numbers of black, white, males, females	Measure of seating distance.	Whites space themselves farther from blacks than whites, farther than blacks from whites, and blacks from blacks. Female blacks used least distance.	1			1		1	
36	Scherer (1974).	1. 35 dyads grades 1 to 4, M & F; lower-class SES: 15 black 20 white	Children in schoolyard were unobtrusively photographed, distances estimated from photos.	No effect for race on interaction distance (although white children tended to stand farther apart than black children).	1			1			1
37	Schofield & Sagar (1977).	247 grade 7 and 8, male & female: 109 black 138 white	Observations of side-by-side and face-to-face seating patterns using gender and racial aggregation indices in an integrated school's cafeteria containing 32 reciangular (16-seat) tables.	Race was found to be extremely important grouping criterion (even for students choosing to attend adesgregated school). Sex was found to be an even more important grouping criterion. Racial aggregation decreased over time in one grade (7) but increased in the other.	1			1		1	
38	Severy, Forsyth, & Wagner (1979).	144 7-, 11-, 15-year olds: Equal numbers of black, white, males, females	Approach from and toward same-race target seat placement, CID. Felt figure placement.	Blacks used less space than whites at age 7 but this effect appears to reverse as children age. Method and race, sex, & age appear to interact, however.	1			1		1	
39	Sluter (1976).	393 male and female dyads: 137 Costa Rican 124 Panamian 132 Colombian	Unobtrusive Observation in field using modification of Hall's notation system.	Costa Rican use least space, engage in more touching followed by Panamians, then Colombians. Same pattern found for directness of axis.			1	1		1	
40	Sommer (1968).	524 college students: 90 American 112 Swedish 131 English 98 Scottish 93 Pakistani	Ratings of intimacy of seating positions in lab.	Americans, Swedes and English rate seating similarly, with across seating seen as more intimate. Dutch subjects rate corner seats less intimate. Pakistanis rate side-by-side seating asmost intimate.		1			1	1	
41	Sussman & Rosenfield (1982).	Bilingual Japanese: 18 male; 16 female Bilingual Venezuelan: 19 male; 15 femal American: 19 male; 20 female	Unobtrusive Observation of chair placementdistance in relation to same-sex, same-nationality confederate.	When speaking in native language: Japanese > American-Venezuelan. When speaking English all groups approximated American pattern of distance.		1		1		1	
42	Tennis & Dabbs (1976).	56 adult female: 28 black 28 white	Stop approach (own and experimenter) of same-race other in lab.	Whites allowed closer approach than blacks. Both races preferred more space in corner than in centre of room.	1			1		1	
43	Thompson & Aiello (1981).	262 pals students: 5 to 19 years old same-sex, same race, nonretarded and educatable mentally retarded	Unobtrusive Observation in field (modified classroom) using adaptation of Hall's (1963) proxemic scales and 10 other nonverbal behaviours.	Blacks stood farther apart and less directly.	1			1		1	
44	Thompson & Baxter (1973).	10 pairs of each; males and females: white-black white-Mexican Americans black-Mexican Americans	Observed compensatory reactions (movement foreward and away during interaction) in real life (eg. high school, hospital).	Whites move away from Mexican-Americans; Blacks retreat from both whites and Mexican-Americans; Whites move forward with blacks (to decrease distance).	1			1		1	
45	Vaksman & Efiyson (1979).	30 male college students: 15 American 15 foreigner from Argentina, Guatemala, Honduras, Iran, Libya, Saudi Arabia, Venezuela.	Unobtrusive Observation of chair placement.	Foreign students used less distance and gaze than Americans.		1		1		1	
46	Watson & Graves (1966).	32 male pairs: 16 Americans 16 Arabs	Unobtrusive Observation in lab (seated interaction).	Arabs sat closer, more directly, touched more, engaged in more eye conta louder than Americans.		1		1		1	

Key: SC - Subculture; CC - Cross-culture; TC - Truly Cross-culture; V - Valid; Q - Questionable; S - Supportive; N - Non-supportive.

Table 3.2: Studies on cultural differences in spatial behaviour (continue)

	Study	Subjects	Metrhodology	Results	Study Category			Method Validity		Cultural Difference	
					SC	CC	TC	V	Q	S	N
47	Watson (1970).	106 male university students:- Contact cultures: 20 Arabs 20 Latin American 10 South European. Noncontact cultures: 12 Asian 12 Indian-Pakistanis 32 North European.	Unobtrusive Observation in lab (seated interaction). A demographic questionnaire and proxemics research interview were also included.	Subjects from contact cultures faced each other more directly, touched more, and looked into each other's eyes more than subjects from non-contact cultures. Arabs sat the closest together, significantly differing from all groups except the Southern Europeans and Indian-Pakistanis. Northern Europeans sat farther apart than all other groups except Asians. South Europeans sat closer than North Europeans but did not differ from other groups. Asians sat farther apart than Indian-Pakistanis but did not differ from other groups. No significant differences were found among cultures within the two contact/noncontact categories.		1		1		1	
48	Willis (1968).	1. 60 pairs:- 30 black; 30 white	Initial speaking distance when approached by experimenter.	Whites tended to stand closer than blacks.	1			1		1	
49		2. 18 pairs: 9 black-white; 9 white-white	Initial speaking distance when approached by experimenter.	Black-white pairs stood farther apart than white-white pairs.	1			1		1	
50	Willis, Carlson & Reeves (1979).	1047 grades K to 7, in groups:- white 408 males; 383 females black: 143 males; 113 females	Unobtrusive Observation in field (cafetaria lines)	In all-white and integrated schools, IPD increased with age, except for male-male pairs. In all black schools, no increase with age. In all schools, grade school children stand farther from opposite sex, and in all-white schools, this increases with age.	1			1		1	
51	Winogrond (1981).	54 females: 18 white; 19 to 24 yrs old 18 white; 63 to 85 yrs old 18 black; 53 to 86 yrs old	Measured distance subject approached toward a friend	Young whites approached closer than elderly blacks and whites. White and black elderly women interacted at same distance.	1			1		1	
52	Word, Zanna, & Cooper (1974).	15 white college students	Judges behind one-way mirrors observed distance, forward lean, eye contact, shoulder orientation during interviews. Confederate applicants were 2 black male, 3 white male high school students.	White interviewers engaged black applicants with less immediacy than white applicants.	1			1		1	
53	Zimmerman & Brody (1975)	78 male unacquainted dyads, grades 5 & 6 : 38 black 40 white	Unobtrusive Observation while playing (in lab). Biracial dyads then watched a televised warm or cold biracial interaction and were observed again.	Pairs of black youngsters interacted at greater distances, faced each other less directly than all-white dyads. Black-white pairs were intermediate in distance, axis, and talk. Watching models on TV in a warm (compared to a cold) interaction decreased IPD for both groups. White dyads played closer than blacks.	1			1		1	
	Total				38	12	3	39	14	41	12
	Percentage				71.7	22.6	5	73.6	26	77.4	23

Key: SC - Subculture; CC - Cross-culture; TC - Truly Cross-culture; V - Valid; Q - Questionable; S - Supportive; N - Non supportive.

3.2.3 Hypothesis 1

Out of the overall total of fifty-three studies listed by Aiello, only three studies can be categorised as 'truly' cross-cultural studies. That is those conducted by Noejirwan, (1977, 1978), and Shuter, (1976). All these studies also used the *field/naturalistic unobtrusive observation* method and all supported cultural differences.

Noejirwan (1977, 1978) found that the Indonesians (eastern culture) were more likely to be accompanied, sat closer to a stranger, and talked to a stranger as compared to the Australians (western culture). Meanwhile, Shuter (1976) found that during their interactions, the Costa Ricans used the least space and engaged in more touching, followed by Panamians, and then the Colombians.

Based on these findings it is hypothesised that a 'truly' cross-cultural study and using the field/naturalistic unobtrusive observation method would reveal cross-cultural differences in proxemics behaviour between any two cultures.

3.2.4 Hypothesis 2

It was mentioned in Chapter 1 that Watson (1970, p. 115) had categorised the Asians in general (eastern culture) and Northern Europeans, including Australians and those in the UK (western culture) as members of the non-contact culture, where physical contact are minimal in their daily transactions. However in her studies, Noejirwan (1977, 1978) confirmed that there exist differences in proxemics behaviour between the Indonesians (eastern culture) and the Australians (western culture), eventhough both were categorised under the non-contact culture. Unlike the studies made by Noejirwan, Watson's studies cannot be regarded as 'truly' cross-cultural because he involved subjects who were not in their countries of residence. As such the validity of Watson's studies remained questionable. Noejirwan's studies were 'truly' cross-cultural and thus considered to be more valid.

In parrallell to Noejirwan's findings, it is hypothesised that the observed behaviour of the British subjects would demonstrate a tendency to maintain inter-personal space in their choice of seats, whereas the Malaysian subjects would demonstrate an interest in using the opportunity for social intercourse.

The hypothesis could be linked to a general view that the British would be shown to be more concerned with individual autonomy and privacy, while the Malaysians would be shown to be more concerned with mutual togetherness and a greater sensitivity to the presence of others.

Summary

Although several methods can be applied in the study involving the behavioural sciences, researchers have tended to use only amongst four methods - observation, experiment, questionnaire and interview.

The observation method could be informal, unobtrusive or structured. The advantages of this method include:- it is empathetic, first hand knowledge can be obtained, dynamic, and variably intrusive. The limitations include:- it is time consuming, difficult to deduce opinions of subjects, human error in coding the behaviour, and misinterpretation of behaviour observed.

The experimentation method, which can be conducted in laboratories or in the fields, involves the creation of an artificial situation in which variables can be controlled. It is the only method that identifies with certainty the variables that is causing the effects being observed in an experiment. This method is most useful for studying environmental issues (e.g. effects of noise on humans), which is almost impossible to be conducted through non-experimental methods. However generally, this method lacks reality.

Another experimentation method, known as the Projective or Simulation method involves the introduction of a real environment into an artificial setting. Subjects are required to project themselves into how they would behave in that situation by several means, including the manipulation of dolls or miniature figures, photographs or slides projections. Advantages of this method include:- it is easy to present to a small group; it is inexpensive; a wide variety of scenes can shown at one time. However, the degrees to which these measures correlate with those of the other methods have been questionable.

Standard questionnaires are series of written questions on a topic to discover regularities amongst a large group of respondents' written opinions. The questionnaires can be sent through the post (mail-administered), self-administered or interviewer-administered (also known as structured interview). Advantages of the mail-administered questionnaires include:- inexpensive means of collecting and processing data; minimised interviewer biases; can reach respondents at widely dispersed addresses or overseas. Limitations include:- low response rate; unsuitable for respondents of poor literacy, visually handicapped, of old age, the very young, and those not interested in the topic; no opportunity to clarify misinterpretations; and no opportunity to assess based on observations. Self-administered questionnaires can involve single or group respondents. Advantages include:- high response rate, accurate sampling, and minimum biases from interviewer.

Interviews, normally conducted where the opportunities for observations are limited are used to assess opinions. Unstructured interviews are exploratory in nature. Structured interviews, formulated beforehand, serve to obtain consistency from respondents. Another form of structured interview, known as focus interview uses probes to get in-depth reactions from respondents to particular environments. Compared to postal questionnaires, responses from interviews provide greater richness and spontaneity from open-ended questions, and much more response rates. However, conducting an interview can be time-consuming and expensive; and it is more open to bias than most other research method.

Although there is no ideal research technique since all have their advantages and limitations, the projective or simulation method have been heavily criticised due to its questionable validity as it lacked realism. In the obtrusive observation method subjects are aware that they are being studied, hence affecting their responses. That is why the study of real people in real environments such as provided by the field or naturalistic unobtrusive observation method has been highly recommended.

Hypotheses generation for this research was based on the analysis made on the cultural studies on human spatial behaviour as listed by Aiello (1987).

Findings on cultural differences studies in human spatial behaviour have been mixed. While some were found to be supportive, others were not. However, upon analysing the various studies in terms of the type of cultural study, the and the validity of the method used it was found that studies categorised as 'truly' cross-cultural, and using the highly recommended *field/naturalistic unobtrusive observation* method have been supportive of cross-cultural difference. This thus generated the first hypothesis for this research.

Noejirwan (1977, 1978) found that there exist differences in proxemics behaviour between the Indonesians (eastern culture) and the Australians (western culture), even though both were categorised under the non-contact culture by Watson (1970). Noejirwan's 'truly' cross-cultural studies are considered to be more valid as compared to the studies conducted by Watson (1970) who involved sojonours as subjects. As such, this reseracher's second hypothesis would be in parallel to that of Noejirwan's findings in that that the observed behaviour of the British subjects would demonstrate a tendency to maintain inter-personal space in their choice of seats, whereas the Malaysian subjects would demonstrate an interest in using the opportunity for social intercourse.

4.0.0 Methodology

4.0.0 Methodology

This chapter is divided into two main parts. The first part explains the reasons for choosing waiting area of health centres as the setting for this research and also provides a brief description about the organisation and functions of a health centre. The second part describes about the manner this research was conducted from the outset. Also included is a detailed account on how the researcher conducted this research using the *field/naturalistic unobtrusive observation* method in the waiting area of health centres in the UK and Malaysia.

4.1.0 The setting

4.1.1 Choice of waiting area in health centre as the setting

The choice of waiting areas in health centres as the setting for the present setting was based on three factors identified during the literature reviwed stage. Firstly, as mentioned in section 1.2.0 several authors such as Beales (1978) and Cammock (1973, 1975, 1983) have identified design faults related with the designers' lack of understanding concerning human spatial behaviour in the design of such buildings. Secondly, apart from the only study which involved a similar setting, that of a doctor's waiting room conducted by Noesjirwan (1977), it seemed that no other studies have involved waiting area in health centres as their setting. Thirdly, most of the empirical studies on human spatial behaviour have involved university students (normally between ages eighteen to twenty-five years old) as the subjects, and in popular settings such as laboratories, libraries, dormitories, and married student's housing apartments. Users of health centres are common ordinary people, rather than say, just university students, and as such could be true representatives of the typical population. Based on these factors, it was envisaged that waiting areas in health centres as the setting would serve the purpose for the present study.

4.1.2 Organisation and functions of a health centre

According to Cox and Groves (1983,p.3) all systems of health care delivery in most countries comprise a range of institutions, which are graded according to their degree of sophistication and specialisation and the level of care that they can provide. Three main levels can be identified and are usually termed primary, secondary and tertiary as shown in Figure 4.1.

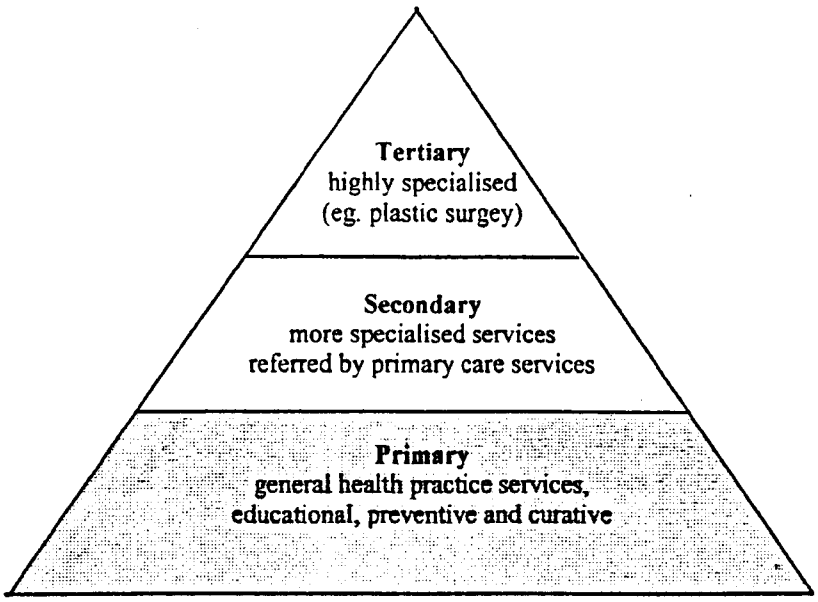
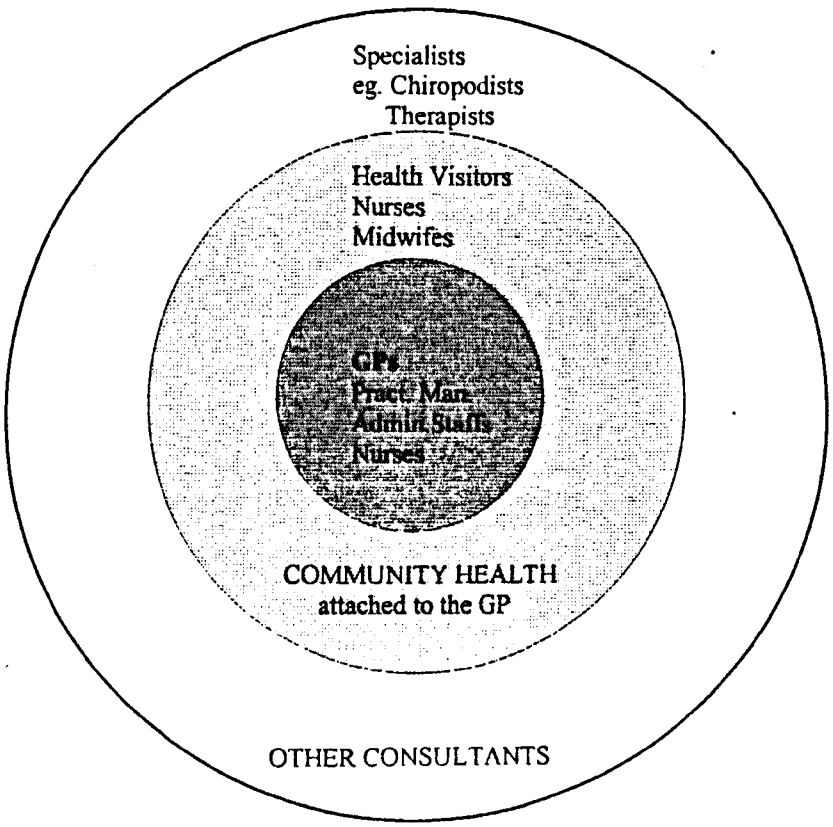


Figure 4.1: The health pyramid
[Source: Cox, A. and Groves, P. (1983). *Hospitals and health care facilities*, p.3]



Note:
Not more than 2,000 patients / 1 GP

Figure 4.2: Staff in a typical health centre.

Primary care services embrace all the general health practice services, educational, preventive and curative, that is offered to the population at the point of entry into the system. Secondary care services comprise the care that is provided by more specialised services to which people are referred by the primary care services. Tertiary care services include highly specialised services not normally found at secondary level, including super-specialities such as plastic surgery, neurosurgery and heart surgery. These are very broad divisions, within which there will be finer gradations depending on the appropriate methods of organisation in a particular country, but as basic categorisations they are recognised and understood throughout the world. Amongst the settings accommodating the primary care services are the health centres.

The idea for a health centre sprang from the basic realisation that the various agencies and professions concerned with primary health care could work better if contained in one building (Valins, 1993, p.3). The function of a health centre is to provide a range of health services at the primary care level. The three types of activities typically held in a health centre are as follows:-

1. Personal care
   This is the most common activity in any health centre. In this activity a patient visits a GP, nurse or another individual worker, normally on his own initiative, to obtain help or treatment for a personal problem or ailment.
2. Clinic sessions
   These sessions are normally attended by numbers of people and organised for a particular purpose such as antenatal supervision or immunisation.
3. Group activities
   These activities are normally conducted in classes, such as antenatal relaxation, keep-fit exercises, talks and demonstrations

All the activities are arranged in sessions, which may be daily, weekly or less frequent. Only one of these types of activity is likely to be taking place at any one time.

In the UK health centres are owned by the District Health Authorities but practitioners may purchase or rent their own surgery premises (Cox and Groaves, 1983, p.13). The health centres are operated by several General Practitioner (GP) practices as the core group with their own practice manager, practice nurses, and administrative staffs, as shown in Figure 4.2. Other staffs such as health visitor, nurses and midwives are provided by the Community Health. Other specialists who may be providing their services include chiropodists, therapists, dentists, physiotherapists, etc. In Malaysia, the health centres are owned and run entirely by the government. This means the government provides all the staffs including medical specialists.

There are three types of territories or zones in any health centre (Valins. 1993p. 23) as categorised below:-

1. Staff zone

   The staff zone accommodates patients' records area, common room, administrative office, and staff wcs.
2. Public zone

   The public zone accommodates patient entrance / reception / waiting area
3. Patient care zone

   The patient care zone accommodates consultation rooms, interview rooms, examination rooms, group space, and any other room used for patient care sessions.

The conceptual criteria for the relationship between the three territories of staff, public and patient care is as shown in Figure 4.3. The arrangement of spaces should allow staff and patients to circulate without unscheduled or inappropriate contact. It is necessary for patients to reach the reception easily upon arrival, and also passing the reception upon exit in case if there is a need for them to make future appointment. In cases of emergency (example, a distressed patient) it should also be possible for the patient to leave the building via an alternative exit. However, the flow of patients into and out of the building should not require them to unnecessarily pass through a waiting area as this could disrupt the peacefulness of the waiting area. The waiting area should have discreet access to a patient w.c. This can double as a specimen w.c for the treatment area.

Staff territory also needs to be protected. There will be no need for patients to pass through the staff areas during normal procedures. The staff must be able to circulate between staff and patient care territories without having to intrude upon the public spaces. Thus a doctor should be able to enter a building, check in to the records area and then gain access to his consulting room without having to be delayed on route by, for example a patient in the waiting area.

4.1.3 Health centres in the UK

In the UK the researcher managed to obtain the participation of a total of eleven health centres for this research. A pilot study was first conducted in two health centres in Sheffield (HGHC, BS), and one in Prestatyn, (TCS). The pilot study was necessary for the following reasons:-

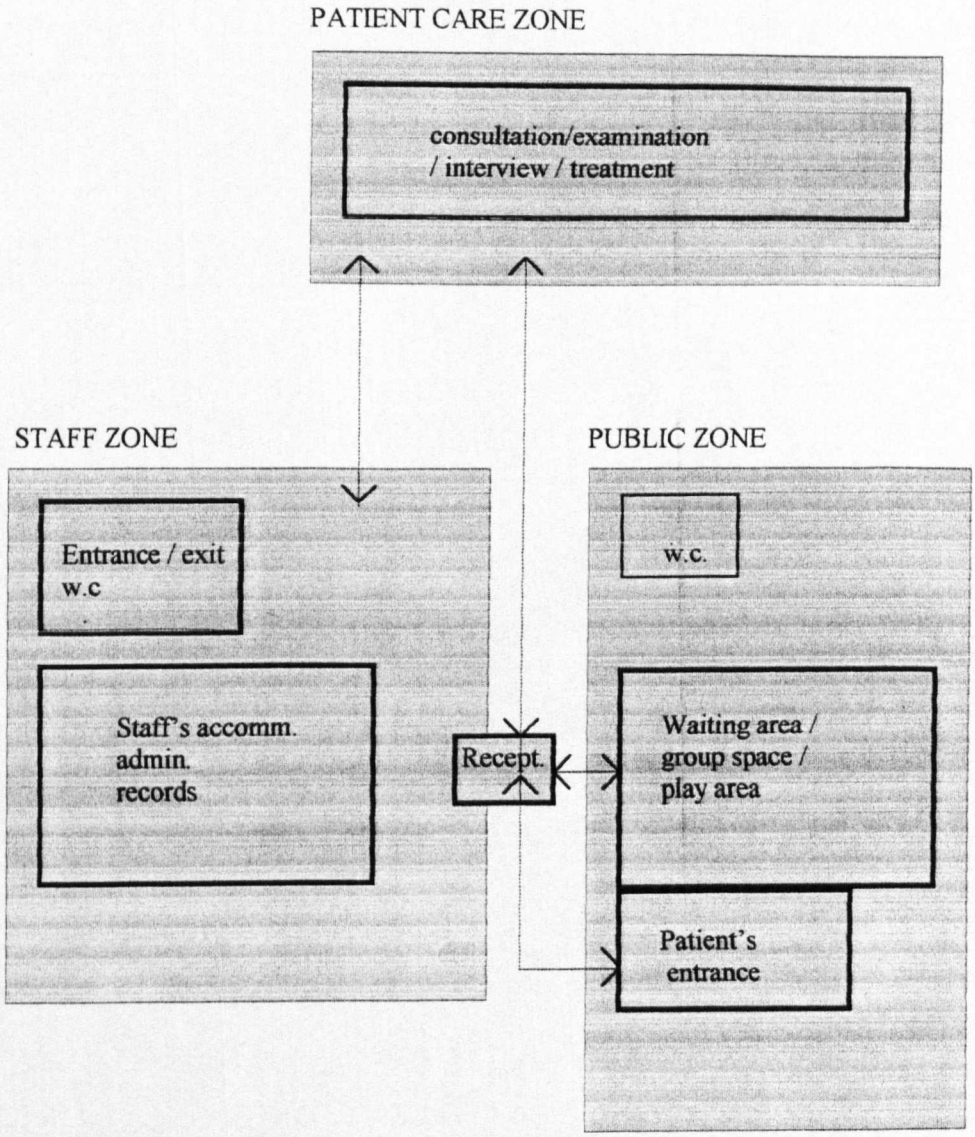


Figure 4.3: Zones in health centres

a) to expose the researcher to the real environment of the waiting areas.
b) the method of study could be further reviewed and improved. and necessary adjustments or amendments be made before an extensive study was made.
c) hunches obtained in the findings could develop concepts and formulate hypotheses for the research.

Following the pilot study, more samples were obtained in three health centres in Edinburgh (CHC, PMC, SHC), and in five more health centres in Sheffield (DHC, KPHC, NMC, PHMC, TMS).

4.1.4 Health centres in Malaysia

In Malaysia all privately owned health centres have developed into large medical centres or hospitals and are thus not suitable for this comparative study. Only health centres run by the Malaysian government were comparable in size as to those available in the U.K. As such samples in Malaysia were obtained from the government-owned health centres. This involved ten health centres (KKA, KKC, KKK, KKM, KKKA, KKKJ, KKKR, KKPK, KKSA and KKSK), all randomly located within a thirty-mile radius from the capital city of Kuala Lumpur.

4.2.0 Procedure

The procedure conducted for this research was the same in each case. After the practice manager's permission was obtained, the researcher seated himself in an unobtrusive but strategic position. This was done by choosing a seat that the researcher thought would be the least popular seat to be occupied by the subjects, while at the same time being able to observe the subjects easily. This was done approximately about 15 minutes before the first subject was expected. While waiting for the first subject, a plan of the waiting area was drawn, indicating the positions of:- seats (which were numbered on the plans), other furniture, television, name caller display, doors, and windows. These particulars were later drafted onto the floor plans obtained from the practice manager as shown in Appendix 2.0. Particulars concerning the environment of the waiting area were also recorded in a form as shown in Appendix 1.2.

4.2.1 The subjects

Initially the observations were intended to focus only on the patients, however, since on many occasions the subjects were accompanied by their partners/close relatives or friends, it was difficult to distinguish between patients and non-patients. As such, it was then decided to observe all the people sitting in the waiting areas. After all this research concerns users of the waiting area rather than just the patients.

A target of at least one hundred subjects per health centre was set to be observed. In order to reach the minimum target, the duration for observation varied from a minimum of one day to a maximum of three days per health centre. The minimal target for the numbers of subjects observed for each of the health centres was achieved in all the health centres, except for the two health centres in Edinburgh (CHC, SHC). This was due to lack of subjects during the researcher's time constraint, as the researcher had allocated two days each per health centre for the three health centres to be observed during his one week stay in Edinburgh.

For each subject who sat in the waiting area, the following particulars was recorded in the subject's data sheet as shown in Appendix 1.3:- subject's assigned number, estimated age, gender, number of companions, seat number occupied, and in activities engaged in during the waiting period. Apart from the earlier observations made in TCS, HGHC and BS in the UK, the waiting period of each subject was also recorded in the other health centres.

4.2.2 Interviews

For each health centre in the UK, the observation was followed up by separate interviews with the practice manager and the receptionist. In Malaysia, interviews were carried out with the medical officer (equivalent to practice manager) and ten subjects per health centre, while interviews with the receptionists were not possible. The interview was structured with open-ended questions aimed at the person's perceptions of the waiting situations, including complaints about the waiting area from users. The format used for the interview is as shown in Appendix 1.4 - 1.6. At the same time, particulars about the health centres obtained from the practice manager during the interview was recorded in the form as shown in Appendix 1.1.

This research is intended to uncover the basis on which subjects made choices about where they would sit in a waiting room. The factors break down into three main classes. Those about the subjects themselves, those which relate to the properties of the seat itself, and those which relate to the presence of other people. The data gathered was then analysed as in the following chapter.

Summary

Waiting areas in health centres were chosen as the setting for this research for several factors. Firstly, the designers' lack of understanding on human spatial behaviour relating with the design of such buildings. Secondly, no other studies have involved such building type as the setting. Thirdly, users of such building type being ordinary common people could represent the true population.

Health centres, categorised under the primary care level in most countries embrace all the general health practice services, educational, preventive and curative, that is offered to the population at the point of entry into the system. The idea for a health centre sprang from the basic realisation that the various agencies and professions concerned with primary health care could work better if contained in one building. Activities normally catered in a typical health centre include personal care, clinic sessions, and group activities pertaining to health matters. In the U.K., the District Health Authorities own the health centres but practitioners who employ their own staff may purchase or rent their own surgery premises. In Malaysia, the government owns all health centres, with all the staff being government employed. The private health centres have developed into larger Medical Centres.

A typical health zone consists of three zones, that is, the staff zone, the public zone and the patient care zone. The arrangement of spaces should allow staff and patients to circulate without unscheduled or inappropriate contact.

This research involved eleven health centres in the UK and ten health centres in Malaysia. Since waiting times of patients were not recorded in three of the health centres in the UK, the final analysis was based on the remainder eight health centres.

A pilot study was first conducted in three health centres in the UK. The reasons for the pilot study was:- for this researcher's exposure to the actual situation; to make necessary amendments on the method of study before embarking into the extensive study; and to obtain hunches for hypotheses formulation.

The procedure conducted for this research was the same in each case. Data on subjects' spatial behaviour was obtained by unobtrusive observations. Data concerning the physical environment of the waiting area was also noted.

The subjects involved were all users of the waiting area. This includes patients and non-patients. A target of at least one hundred subjects was set to be observed in each health centre. The target was achieved in all the health centres except for two in the UK.

In the UK, the observation was followed up by a structured interview with the practice managers and the receptionists. In Malaysia, the interview also involved ten patients per health centre.

This research involves subjects' choices for seats in a waiting room, in relation to the physical environment, and the presence of other people.

5.0.0 The Findings

5.0.0 The Findings

This chapter analyses results of the findings made from the observations of subjects in waiting area in health centres in the UK and Malaysia. Following the hypotheses that was proposed in Chapter 3, the aim of the analysis in this chapter is to determine whether some seats are more popular than others because of cultural differences between subjects from both the countries. This chapter is divided into three parts. The first part concerns the general particulars about the subjects and events observed. The second part concerns the person-built environment relationship. The final part concerns the person-person relationship. The chi-square statistical test was used to confirm results of the findings.

5.1.0 The Subjects

This section analyses and compares data concerning general particulars about the subjects observed in the UK and Malaysia. This analysis was done to determine whether the cross-section of the samples obtained from both the countries were similar and thus comparable in terms of gender, age group, and subjects' grouping in relation to the number of those accompanying them before proceeding with the analysis in the following sections.

In the UK the observations made on the eight health centres involved an overall total of 783 subjects which resulted in 671 events. In Malaysia, the observations made on the ten health centres involved an overall total of 760 subjects that resulted in 693 events.

In identifying the various types of subjects involved in this research, subjects were categorised according to their gender, age group, and subjects' grouping in relation to the number of those accompanying them

5.1.1 Distribution of subjects according to gender.

The gender of the subjects was categorised as either 'Male' or 'Female'. In comparing the proportions of subject's gender between the two countries involved, the analysis revealed that the proportion of gender distribution of the overall subjects between the two countries was not the same. In UK, the proportion of Female subjects almost doubled that of the Male subjects,

while in Malaysia the proportion between the genders was almost equally distributed as shown in Figure. 5.1.1

Thus in the U.K., the proportion of Male subjects observed was 34.9% as compared to 65.1% of the Female subjects. In Malaysia, the proportion of Male subjects observed was 52% as compared to 48% of the Female subjects.

5.1.2 Distribution of subjects according to age group.

Subject's age group was categorised as: 'Infant', for ages between 1 - 3 years old; 'Kid', for ages between 4 - 12 years old; 'Youth', for ages between 13 - 17 years old; 'Adult', for ages between 18 - 60 years old; and 'Elderly', for ages more than 60 years old. The analysis revealed that the distribution of the overall subjects according to their age group was generally proportionately similar in both countries, with a majority of more than 70% being Adult as shown in Figure. 5.1.2.

Thus the proportion of Adult subjects observed was 73.8% in the U.K. and 73.6% in Malaysia. While the proportion of Kid subjects and Elderly subjects observed was 10.2% and 12.6% respectively in UK, in Malaysia it was 16.8% and 6.6% respectively. The proportion of Infant subjects was 1.7% in the U.K. compared to 1.4% in Malaysia. The proportion of Youth subjects in both countries was almost similar being 1.7% in the U.K. and 1.6% in Malaysia.

5.1.3 Distribution of subjects according to grouping.

Subject's grouping was categorised by the number of persons they were accompanied, that is: 'Single' if they were alone; 'Dyads', if they were accompanied by another person; 'Triads', if they were accompanied by two persons; and 'Others' if they were accompanied by more than two persons. It was found that the subjects' grouping distribution in both countries was proportionately similar, with the majority of more than 55% being Single subjects as shown in Figure. 5.1.3.

Thus, the proportion of Single subjects was 62.6% in the U.K. and 55% in Malaysia. The proportion of Dyads in the U.K. and Malaysia was 30.9% and 31.8% respectively. The proportion of Triads in the U.K. was 6.5% and 9.8% in Malaysia. While there was no subjects categorised as Others in the U.K., in Malaysia the proportion of Others observed was 3.4%.

Distribution of overall subjects

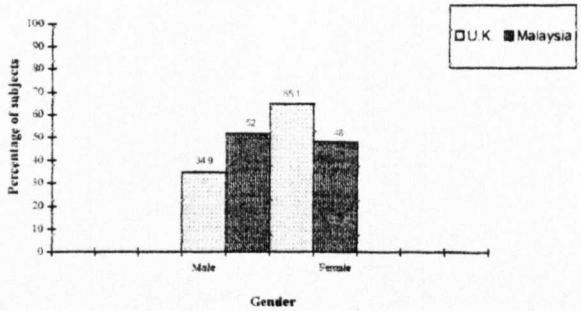


Figure. 5.1.1: Distribution of overall subjects according to gender in the U.K. and Malaysia.

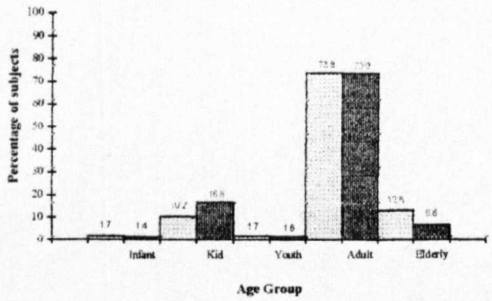


Figure. 5.1.2: Distribution of subjects according to age group in the U.K. and Malaysia.

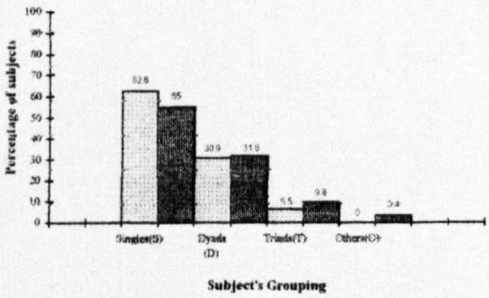


Figure. 5.1.3: Distribution of subjects according to subject's grouping in the U.K. and Malaysia.

The subject's grouping can be categorised further into Single and Non-Single groupings. Based on the data obtained above, the proportion of Non-Single subjects in Malaysia was much higher than those in the U.K. as shown in Figure. 5.1.3.1. Thus, while the proportion of Non-Single subjects was only 37.4% in the U.K., in Malaysia it was 45%. The slightly higher proportion of Single subjects in the U.K. as compared to those in Malaysia could be due to many reasons. Amongst others it could be due to their different lifestyle, or in being single parent, or both husband and wife are employed. Another possibility is that the British subjects might preferred to be on their own rather than being accompanied by their partners/relatives or friends and hence maintaining their own privacy.

In terms of the overall events observed in both countries, majority of the events of around 80% involved Single subjects as shown in Figure. 5.1.3.2.

Thus the proportion of the overall events that involved Single subjects was 79.4% in the U.K. and 80.8% in Malaysia. Only 18% events in the U.K. and 15.4% events in Malaysia involved Dyads, and 2.6% events in the U.K. and 3.2% events in Malaysia involved Triads. While no events involving groups of more than three people was observed in the U.K., only 0.6% events was observed in Malaysia.

5.1.4 Distribution of Single (S) subjects

Since majority of the events observed in both the U.K. and Malaysia involved Single subjects, the analysis of this research shall focus only on such group of subjects.

In terms of the Single subject's gender, the analysis revealed that the distribution was not proportionately similar between both countries. While in the U.K. the proportion of Female subjects was more than twice that of Male subjects, in Malaysia the proportion of Male subjects slightly exceeded the Female subjects as shown in Figure. 5.1.4.1.

Thus in the U.K., only 32.9% was Single Male subjects as compared to 67.1% Single Female subjects. In Malaysia, 55.6% was Single Male subjects as compared to 44.4% Single Female subjects. Similar reasons as mentioned in section 5.1.3 might have caused the disproportionate distribution of the genders between both countries. Since the gender distribution of Single subjects between both countries was not the same, further analysis on the hypothesis which focussed only on the subject's cultural differences in the following sections should also take into consideration the gender factor for any implications if any.

Distribution of subjects' grouping.

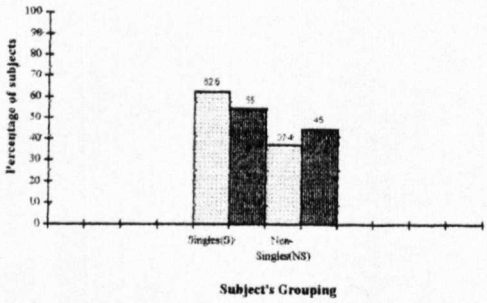


Figure. 5.1.3.1: Distribution of subjects according to subject's grouping of Single(S) and Non-Single(NS) in the U.K. and Malaysia.

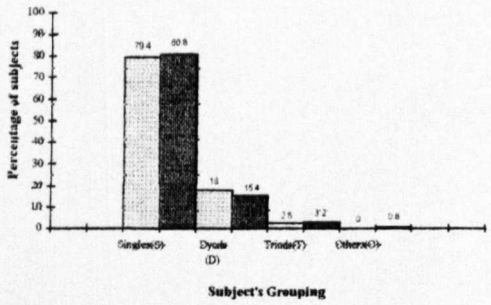


Figure. 5.1.3.2: Distribution of subject's grouping based on events observed in the U.K. and Malaysia.

Distribution of Single(S) subjects

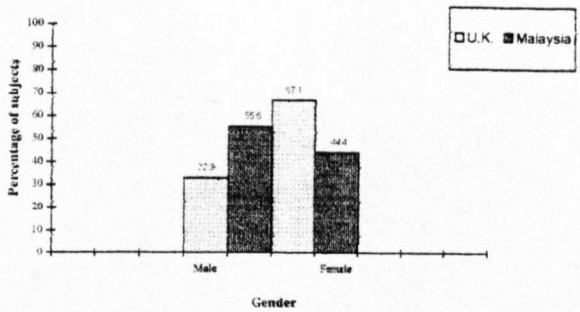


Figure. 5.1.4.1: Distribution of Single(S) subjects according to gender in the U.K. and Malaysia.

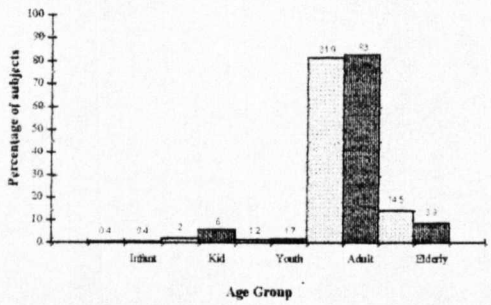


Figure. 5.1.4.2: Distribution of Single (S) subjects according to age group in the U.K. and Malaysia.

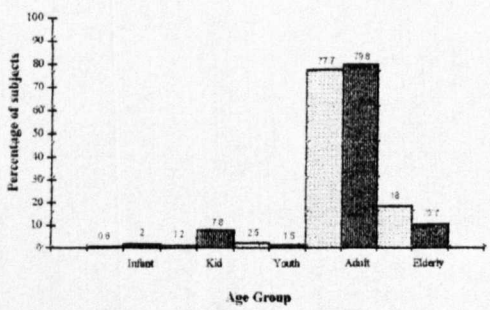


Figure. 5.1.4.2.1: Distribution of Single (S) Male subjects according to age group in the U.K. and Malaysia.

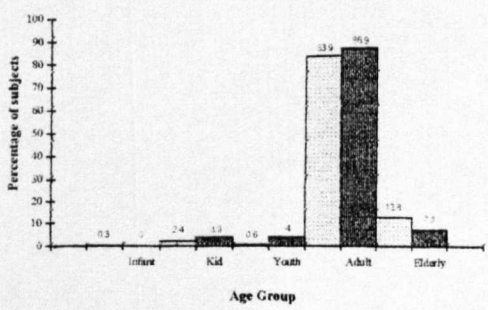


Figure. 5.1.4.2.2: Distribution of Single (S) Female subjects according to age group in the U.K. and Malaysia.

In terms of the Single subject's age group, the analysis revealed that the distribution was proportionately similar between both countries with majority of the subjects of more than 80% being Adult as shown in Figure. 5.1.4.2

Thus the proportion of Single subjects categorised as Adult was 81.9% in the U.K. and 83% in Malaysia. The proportion of Elderly and Kid was 14.5% and 2% respectively in the U.K. and 8.9% and 6% respectively in Malaysia. The proportion of Youth was 1.2% in the U.K. and 1.7% in Malaysia. The proportion of Infant was 0.4% in both countries. As the age group distribution of the Single subjects between both countries was proportionately similar, age would not be a factor in the analysis to be made in the following sections.

A further analysis on the age group distribution of the Single subjects based on gender revealed that in both countries, majority of the subjects was Adult, being almost 80% for the Male subjects, and more than 80% for the Female subjects as shown in Figures 5.1.4.2.1 and 5.1.4.2.2.

Summary

This section has analysed and compared the data concerning general particulars about the subjects and events observed in the U.K. and Malaysia. This analysis was done to determine whether the cross-section of the samples obtained from both the countries were similar and thus comparable in terms of gender, age group, and subject's grouping in before proceeding with the analysis in the following sections

Results of the analysis are as summarised in Table 5.1.1 and 5.1.2. Overall the number of subjects observed was 783 people involving 671 events in the U.K., and 760 people involving 693 events in Malaysia. The subjects were categorised according to their gender, age group, and subject's grouping.

In relation to the subject's gender, in the U.K. the proportion of Female subjects (65.1%) almost doubled that of the Male subjects (34.9%). In Malaysia the proportion of Male subjects (52%) slightly exceeded that of the Female subjects (48%). Thus, in the U.K., the Female subjects frequent the health centres much more than the Male subjects, while in Malaysia both the genders were almost of equal proportion.

In relation to the subject's age group category, majority of the subjects of more than 70% in both the U.K. (73.8%) and Malaysia (73.6%) was Adult (18-60 years old).

Regarding the subject's grouping category, although majority of the subjects was Single in both the U.K. (62.6%) and Malaysia (55%), the proportion of Non-Single subjects in Malaysia exceeded those in the U.K. by almost 8%. The slightly higher proportion of Single subjects in the U.K. as compared to those in Malaysia could be due to several reasons, including towards maintaining their own privacy.

In relation to the Single subject's gender, in the U.K. the proportion of Female subjects (67.1%) almost double that of the Single Male subjects (32.9%), while in Malaysia the proportion of Single Male subjects (54.9%) exceeded the Single Female subjects (45.1%) by almost 10%. In relation to the Single subject's age group, majority of the subjects in both the U.K. (81.9%) and Malaysia (83%) were Adult.

Table 5.1.1: The Subjects

- Comparison of general particulars between subjects in the UK and Malays

	General particulars	UK		Malaysia	
		No. of subjects	Perc. of subjects	No. of subjects	Perc. of subjects
1	**Overall total**	783		760	
2	**Gender**				
	Male	273	34.9	395	52
	Female	510	65.1	365	48
3	**Age group**				
	Infant (1-3 years old)	13	1.7	11	1.4
	Kid (4-12 years old)	80	10.2	128	16.8
	Youth (13-17 years old)	13	1.7	12	1.6
	Adult (18-60 years old)	578	73.8	559	73.6
	Elderly (> 60 years old)	99	12.6	50	6.6
	Total	783	100	760	100
4	**Subjects grouping**				
	Single	490	62.6	464	55
	Non-Single:	293	37.4	296	45
	Total	783	100	760	100
	Note for Non-Single:				
	Dyads	242	30.9	214	31.8
	Triads	51	6.5	66	9.8
	Others		0	16	3.4
	Total	293	37.4	296	45
5	**Single subjects**				
	a) Gender				
	Male	161	32.9	258	55.6
	Female	329	67.1	206	44.4
	Total	490	100	464	100
	b) Age group				
	Infant (1-3 years old)	2	0.4	2	0.4
	Kid (4-12 years old)	10	2	28	6
	Youth (13-17 years old)	6	1.2	8	1.7
	Adult (18-60 years old)	401	81.9	385	83
	Elderly (> 60 years old)	71	14.5	41	8.9
	Total	490	100	464	100
	c) Male Age Group				
	Infant (1-3 years old)	1	0.6	2	0.8
	Kid (4-12 years old)	2	1.2	20	7.8
	Youth (13-17 years old)	4	2.5	4	1.5
	Adult (18-60 years old)	125	77.7	206	79.8
	Elderly (> 60 years old)	29	18	26	10.1
		161	100	258	100
	d) Female Age Group				
	Infant (1-3 years old)	1	0.3	0	0
	Kid (4-12 years old)	8	2.4	8	3.9
	Youth (13-17 years old)	2	0.6	4	1.9
	Adult (18-60 years old)	276	83.9	179	86.9
	Elderly (> 60 years old)	42	12.8	15	7.3
		329	100	206	100

Table 5.1.2: The Events

- Comparison of events involving subjects in the UK and Malaysia.

		UK		Malaysia	
	Subject's Grouping	No. of events	Perc. of events	No. of events	Perc. of events
1	Overall total	671		693	
2	Grouping				
	Single	490		464	
	Single (changing seats)	43		96	
	Single (total)	533	79.4	560	80.8
	Duos	121	18	107	15.4
	Trios	17	2.6	22	3.2
	Others			4	0.6
	Total	671	100	693	100
3	Single subjects				
	a) Gender				
	Male	170	31.9	311	55.5
	Female	363	68.1	249	44.5
	Total	533	100	560	80.8
	b) Gender changed seats				
	Male	9	20.9	53	55.2
	Female	34	79.1	43	44.8
	Total	43	100	96	100
	Overall of total events		6.4		13.9
	c) Gender shared same seat with babies				
	Male	1	2.4	3	23.1
	Female	41	97.6	10	76.9
	Total	42	100	13	100
	Overall of total events		6.3		1.9

This analysis has revealed that apart from the gender distribution, the subjects between both countries were proportionately distributed and thus comparable in terms of age group distribution and subject's grouping, whereby in majority of the overall events observed involved Single Adult subjects. At the same time, the slightly higher proportion of Single subjects in the U.K. as compared to those in Malaysia does indicate the preference of privacy by the British subjects.

In terms of gender distribution it was revealed that in the U.K. the proportion of Female subjects almost doubled that of the Male, while in Malaysia the proportion of Male subjects slightly exceeded those of the Female subjects. Since the gender distribution was not proportionately distributed between the two countries, the gender factor would be taken into consideration in the analysis to be made in the following sections as the hypothesis proposed has focussed only on the cultural differences between the subjects.

5.2.0 Person-Environment Relationship

This section analyses the relationship of the subjects in relation to the waiting area. It deals with the choices people make about where to sit based on the attributes of the seats themselves irrespective of the presence of other people.

It might at first be thought that the length of time a seat was occupied would be a good measure of its popularity. However in reality this is as much dependent upon the time a subject has to wait as it is on their preference. This assumes that people do not move to change seats during a long wait. However, this was not the case as indicated by 6.4% in the U.K. and 13.9% in Malaysia on the overall observations on Single subjects which involved people changing seats.

Instead, the number of times a seat was chosen by a newly arriving subject was preferred as the main measure of seat popularity. Of course this measure is also imperfect in that a seat cannot be chosen if it is already occupied. This factor will be considered later in Part C where the person-person relationship will be analysed. For now we analyse the simple comparative popularity of seats and relate this to the seats' attributes. Three groups of seat attributes have been identified. Those to do with the position of a seat in a row of seats, those to do with the view from the seat of other features of the environment, and finally the distance of the seat from other features in the room.

Upon analysing the data it was realised that the popularity of each type of seat cannot be determined by the number of times each type of seat was chosen alone because the types of seats were not actually equally distributed. However, the popularity of seat type could be determined by comparing the proportion of the type of seat chosen with the same type of seat vacant actually distributed per event.

The following analyses were based on observations made in the eight health centres in the U.K. and ten health centres in Malaysia. Overall, 671 events were observed in the U.K. and 693 events in Malaysia. The number of events observed which involved Single subjects were 533 events in the U.K. and 560 events in Malaysia. Discounting the seat occupied by the observer, the total number of seats actually distributed in the observations involved 215 seats in the U.K. and 252 seats in Malaysia.

Apart from analysing the popularity of seats chosen by the subjects, two other aspects shall also be analysed to determine their implications if any. The first aspect involved choices for seats based on subject's gender as it was shown in Section 5.1.1 that subject's gender were not proportionately distributed between the two countries. The second aspect involved seats that

were not chosen by the subjects in each event as this would reinforce further the findings on choices made on the seats chosen.

5.2.1 Seat row positions

This section deals with the chosen position in a row of seats. In the health centres seats were not normally arranged in simple series of rows but were usually in groups. Seats were noted by the researcher as shown in each of the plans (Appendices 2 and 3), and seat row positions coded according to their placement, that is End (E) seat, Next-to-End (E1) seat, and all other seats as Middle of row (M) seat, as shown below:-

E	E1	M.	.....	.....	...M	E1	E

The chi-square statistical test is suitable to test whether a significant difference exists between an observed occurrence of a certain type of category to that of the expected value based on the null hypothesis. It was used to examine the popularity of each seat position against the actual relative occurrence of the type of seat position. Thus, the expected values for the chi-square are the frequency of occurrence and the observed values are the actual choices made. The significant levels are categorised as highly significant for a probability of less than 1:1000, significant for a probability of between 1: 100 and 1:1000, probably significant for a probability of between 1:50 and 1:100, and not signifiant if the probability is more than 1:50.

5.2.1.1 Choices made by overall Single subjects.

This analysis on Single subjects was based on the 533 events observed in the U.K. that involved the distribution of 12,314 vacant seats, and 560 events in Malaysia that involved the distribution of 19,962 vacant seats. The number of choices made by the subjects as compared to the actual row position resulted in figures disproportionately in favour of E- seats as shown in Figure 5.2.1.1 (a).

Thus in the U.K., 35.8% of choices were for E-seats even though only 29.1% seats of this type were actually so positioned. Choices for the E1- seats were almost identical with seats of these types actually so positioned. Only 39.6% choices were for the M-seats despite 45.1% seats of this type were actually so positioned. The chi-square test found this finding to be significant ($0.01>p>0.001$; $X > 12.11$, $df = 2$; where p = probability; X = chi-square distribution; and df = degrees of freedom). In Malaysia, 52.5% of choices were for E-seats even though only 27.8% of the seats of this type were actually so positioned. Choices for the E1-seats were almost identical to this type of seats actually so positioned, and only 21.6% of choices were for M-seats

Seat Row Position

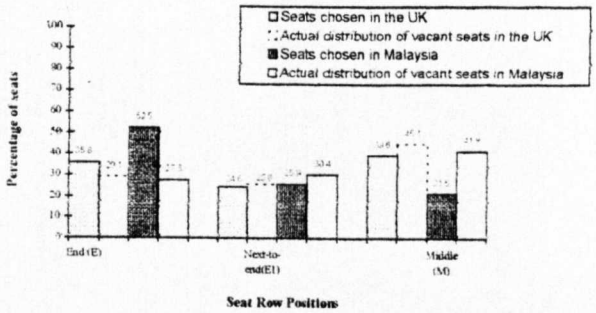


Figure 5.2.1.1(a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia in relation to seat row positions as compared to actual distribution of vacant seats.

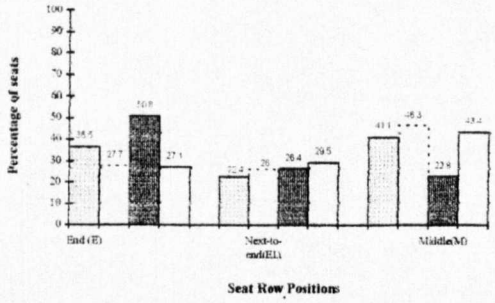


Figure 5.2.1.1.(b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia in relation to seat row positions as compared to actual distribution of vacant seats.

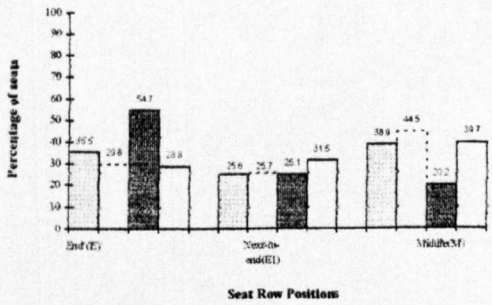


Figure 5.2.1.1 (c): Proportion of seats chosen by Single Female subjects in the U.K. and Malaysia in relation to seat row positions as compared to actual distribution of vacant seats.

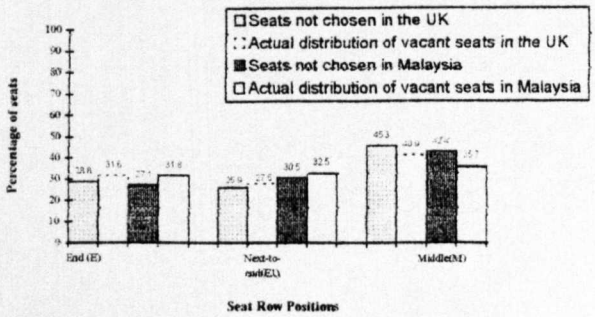


Figure 5.2.1.1 (d) : Proportion of seats not chosen by overall Single subjects in the U.K. and Malaysia in relation to seat row positions as compared to actual distribution of seats.

despite the 41.8% seats of this type were actually so positioned. The chi-square test found this finding to be highly significant, ($p < 0.001$; $X > 180.50$; $df = 2$).

Based on the above findings it can be found therefore that all the seat row positions in both the U.K. and Malaysia were not equally popular. It was shown that the E- seats were the most popular seats in both countries.

5.2.1.2 Choices made by genders

Results of the chi-square test on the expected choices made by both the genders in both countries in the analysis was found to be not significant. Thus, the disproportionate distribution of the genders in both countries did not affect on the overall choices made.

5.2.1.2.1 Choices made by Single Male subjects.

The choices that concerned the Single Male subjects in the U.K. involved 170 events with the distribution of 3,913 vacant seats. In Malaysia, this involved 311 events with the distribution of 11,283 vacant seats. In both countries the number of choices made by the subjects as compared to the actual row position resulted in figures disproportionately in favour of the E- seats as shown in Figure 5.2.1.1 (b).

Thus in the U.K., 36.5% of choices made by Male subjects were for E-seats even though only 27.7% seats of this type were actually so positioned. Choices for the E1-seats were almost identical to this type of seats actually so positioned. Only 41.1% choices were for the M-seats despite 46.3% seats of this type were actually so positioned. The chi-square test found this finding to be probably significant ($0.05 > p > 0.02$; $X > 6.59$, $df = 2$). In Malaysia, 50.8% of choices made by Male subjects were for E- seats even though only 29.5% of the seats of this type were actually so positioned. Only 26.4% and 22.8%choices were for the E1-seats and M-seats respectively despite 29.5% and 43.4 seats of these types respectively were actually so positioned. The chi-square test found this finding to be highly significant, ($p < 0.001$; $X > 96.10$; $df = 2$).

5.2.1.2.2 Choices made by Single Female subjects.

The choices that concerned the Single Female subjects in the U.K. involved 363 events with the distribution of 8,401 vacant seats. In Malaysia, this involved 249 events with the distribution of 8,679 vacant seats. In both countries the number of choices made by the subjects as compared to the actual row position again resulted in figures disproportionately in favour of the E- seats as shown in Figure 5.2.1.1 (c).

Thus, in the U.K, 35.5% of choices made by Female subjects were for E- seats even though only 29.8% seats of this type were actually so positioned. Choices for the E1-seats were almost identical to this type of seats actually so positioned. Only 38.9% of choices were for M- seats despite there being 44.5% seats of this type were actually so positioned. The chi-square test found the findings to be probably significant ($0.05 > p > 0.02$; $X > 6.60$, $df = 2$). In Malaysia, 54.6% of choices made by Female subjects were for E- seats even though only 28.9% of the seats of this type were actually so positioned. Only 25.3% of choices were for E1- seats even though 31.5% seats of this type were actually so positioned, and only 20.1% of choices were for M- seats despite the 39.6% seats of this type were actually so positioned. The chi-square test found the findings to be highly significant, ($p < 0.001$; $X > 84.36$; $df = 2$).

Since these findings revealed that both genders in both countries favoured the E-seats, therefore the disproportionate distribution of gender between the two countries was not a factor in the choice for the E- seats.

5.2.1.3 Overall seats not chosen by subjects

A further analysis on the overall seats not chosen per event as compared to the actual distribution of seats in both countries showed that they were almost identical as shown in Figure 5.2.1.1 (d).

Discussion

This analysis found that all the seats in relation to the seat row positions were not equally popular in the U.K. and Malaysia. Results of the chi-square test are as summarised in Table 5.2.1. In both countries there was a significant preference for end (E) seats and this was not affected by gender.

Even though there was no cultural differences in the choices for seats in relation to the seat row positions between subjects in both countries, it could be that their choices were due to different reasons. The British might favour it because such seats provide maximum privacy compared to the other types of seats. Although it can be argued that the Malaysians might have the same reason as the British, however it might also be due to the much narrower aisle width (300mm) between the rows of seat as compared to those found in the U.K. (600mm). Thus, in Malaysia the narrower aisle width made it more difficult or hinders one to choose other seats in the row.

In addition, upon arrival into the health centres, it is more comfortable to sit on E-seats as compared to the other inner seats when one is perspiring due to the hot and humid weather in Malaysia as the environment of the other inner seats especially those adjacent to occupied seats tended to be warmer due to the body heat of the other occupier. Furthermore all the health centres in Malaysia were not air-conditioned.

A further analysis on the overall seats not chosen per event as compared to the actual distribution of seats in both countries showed that they were almost identical. The chi-square found these findings to be highly significant in both the U.K. and Malaysia.

Summary

This section has dealt with the choices people make about where to sit based on the first seat attribute, that of seat row positions. Results revealed that in both countries there was a significant preference for end (E) seats and this was not affected by gender.

Based on the literature reviewed, it is suggested that the British choices for the end (E) seats were due to maintain their privacy. While the Malaysians might have similar reasons in their choices for such seats, however other factors seemed to suggest their inclination. For example, the narrower aisle width between rows of seats could prevent them from choosing other types of seats. Besides, it is much more comfortable to sit on such seats, than the 'stuffier' inner seats in a hot and humid environment of Malaysia. Seats not chosen as compared to those available were found to be not significant.

Table 5.2.1: Person-Environment Relationship

- Summary of Chi-square test on choices by Single subjects in the UK and Malaysia for seats in relation to the seat row positions.

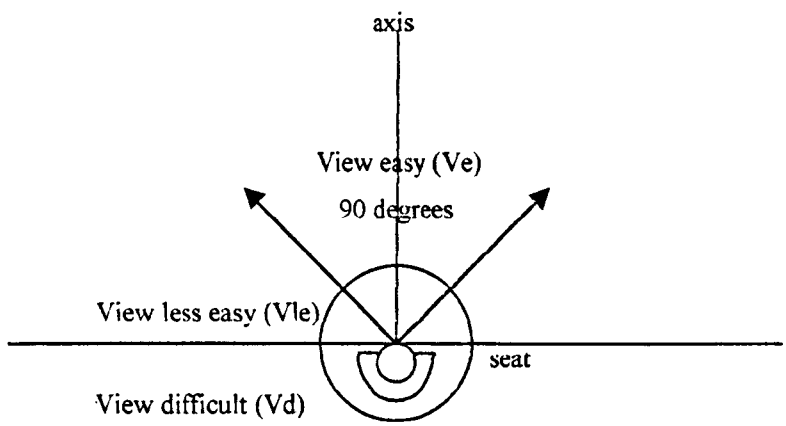
Purpose of test : To investigate whether some seats were more popular than others.

		UK		Malaysia	
Attributes of seats	**Subjects invc**	**Chi-square Tests**	**Significance**	**Chi-square Tests**	**Significance**
Seat row positions (Chosen seats)	Overall	$0.01 > p > 0.001$ (X >12.11; df=2)	S	$p < 0.001$ (X >180.50; df=2)	HS
		E-seats most popular.		E-seats most popular.	
	Male	$0.05 > p > 0.02$ (X >6.59; df=2)	PS	$p < 0.001$ (X >96.10; df=2)	HS
		E-seats most popular.		E-seats most popular.	
	Female	$0.05 > p > 0.02$ (X >6.60; df=2)	PS	$p < 0.001$ (X >84.36; df=2)	HS
		E-seats most popular.		E-seats most popular.	

Key: p = probability; X = sampling distribution; df = degrees of freedom; HS = highly significant; S = significant; PS = probably significant.

5.2.2 Views from seats

This section shows how the view from a seat influences people's choice of seat. We looked specifically at five features we thought might be important. They were; the caller display announcing the doctor is ready to see the next patient, the route to consulting rooms, the outside, any television, and any children's play area and any other persons in seats. In all of these cases, apart from view of other persons in seats (as will be explained later) , the data recorded is as illustrated in the following diagram: -



i) View easy (Ve).

This range is 45 degrees either side of the axis looking forward from the seat.

ii) View less easy (Vle).

Either side of the easy view range but only to 90 degrees.

iii) View difficult (Vd).

All items behind a line drawn through the seat at right angles to the axis,

iii) No view

This is where the facility in question was not available.

The chi-square statistical test was used to examine the popularity of each seat with view against the actual relative occurrence of the type of view. Thus, the expected values for the chi-square are the frequency of occurrence and the observed values are the actual choices made.

The influence of the genders on the overall choices made was first tested. Results of the chi-square test on the expected choices made by both the genders in both countries in these analyses were found to be not significant. Thus, the disproportionate distribution of the genders in both countries did not have an effect on the overall choices made.

1) View of caller

This analysis was made to compare the choices made by the subjects from both countries of their preference for seats with view of caller. It analyses the attentiveness of the subjects to the caller in terms of sight rather than sound. Since in the U.K., a public address (P.A) system was used in three of the health centres, seats in those centres were not considered in this analysis. This left a total of five health centres combining a total of 134 seats. During our samples, an overall total of 303 subject choice events occurred in connection with these seats. In total this would have involved 40,602 (134 x 303) possible seat choices but at the time of making the choice many seats were already occupied. In practice only a total of 7,085 seat choices were actually available. In Malaysia the number of seats actually distributed for all the ten health centres were 410 seats. Similarly, an overall total of 560 subject choice events observed which would have involved 229,600 seat choices (410 x 560) involved only 19,962 seat choices.

In the U.K. the number of choices made by the overall subjects as compared to the vacant seats actually distributed were in favour of the Vle-seats. In Malaysia, the number of choices made as compared to the vacant seats actually distributed were almost identical for all the seat types as can be seen in Figure 5.2.2.1 (a). Thus, in the U.K., 45.9% of the choices made by the overall subjects were for the Vle-seats even though only 36.7% seats of this type were actually vacant. Only 19.1% of the choices were for the Vd-seats despite the 35.3% seats of this type were actually vacant, while choices for the Ve-seats were almost identical with this type of seats actually vacant. The chi-square test confirmed this finding to be highly significant ($p < 0.001$; $X > 15.87$; $df = 2$).

Choices by the genders as compared to the seats actually vacant are as shown in Figure 5.2.2.1 (b) and 5.2.2.1 (c). Analysis on seats not chosen by the overall subjects as compared to the vacant seats actually distributed were almost identical for both countries as shown in Figure 5.2.2.1 (d).

Discussion

In Malaysia, although all the seats were with a view to the caller, however seats facing directly the caller were equally popular to those of more oblique view. However in the U.K. the distribution is significant. The choices were for seats with more oblique view of caller. This would mean that this view is not that particularly important as other factors may be causing the subjects to select the less easy view seats.

View of caller

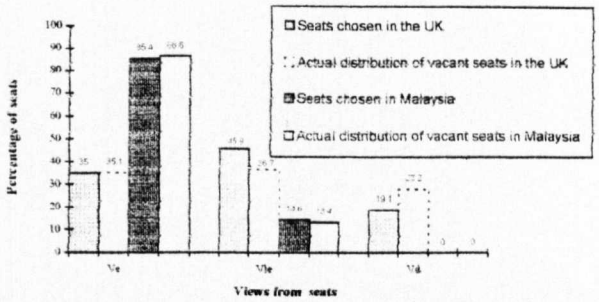


Figure 5.2.2.1(a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of caller

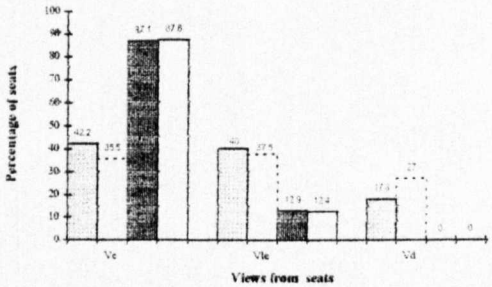


Figure 5.2.2.1(b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of caller.

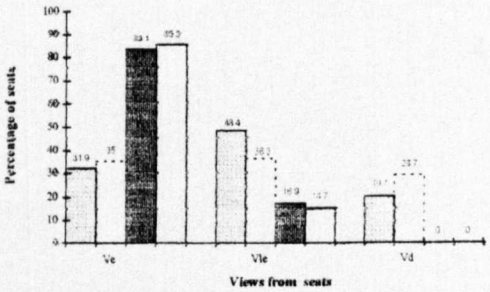


Figure 5.2.2.1 (c): Proportion of seats chosen by Single Female subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of caller.

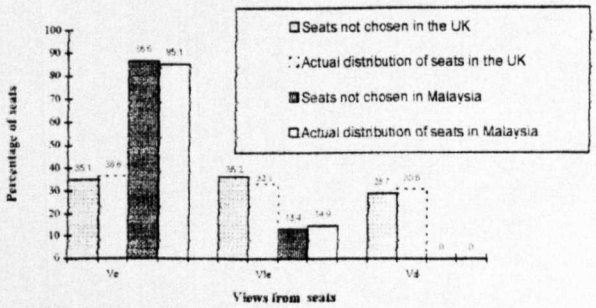


Figure 5.2.2.1(d): Proportion of seats not chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of caller.

2) View of route to consulting room

This analysis was made to compare the choices made by the subjects from both countries of their preference for seats with view of route towards consulting rooms. In the U.K., the overall number of seats actually distributed in the eight health centres were 215 seats. During our samples, an overall total of 533 subject choice events occurred in connection with these seats. In total this would have involved 114,595 (215 x 533) possible seat choices but at the time of making the choice many seats were already occupied. In practice only a total of 4,407 seat choices were actually available. In Malaysia the number of seat choices was the same as that given in section 5.2.2.1, that is 19,962 seat choices.

In the U.K., 39.8% of the choices made by the overall Single subjects were for the Vle-seats even though only 34% seats of this type were actually vacant. Only 32.8% of the choices were for the Ve-seats despite the 37.2% seats of this type were actually vacant. while choices for the Vd-seats were almost identical with this type of seat vacant as shown in Figure 5.2.2.2. The chi-square test confirmed this finding to be significant ($0.02 > p > 0.01$; $X > 8.48$; $df = 2$). In Malaysia, all the seats have a view of the consulting rooms. However, choices for seats were almost identical with the types of seats vacant. The chi-square test confirmed this finding to be significant ($0.02 > p > 0.01$; $X > 5.66$; $df = 1$).

Choices by the genders as compared to the vacant seats actually vacant are as shown in Figure 5.2.2.2 (b) and 5.2.2.2 (c). Analysis on seats not chosen by the overall subjects as compared to the vacant seats actually distributed were almost identical for both countries as shown in Figure 5.2.2.2(d).

Discussion

The distribution is significant in both countries. Subjects do not choose a higher proportion of seats facing away from the consulting rooms, but on the other hand the seats directly facing are slightly less popular than the seats with more oblique view. This would mean that this view is not that particularly important as other factors may be causing the subjects to select the less easy view seats.

View of route to consulting rooms.

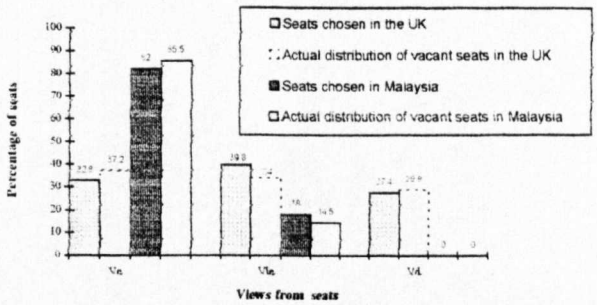


Figure 5.2.2.2 (a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of route to consulting rooms.

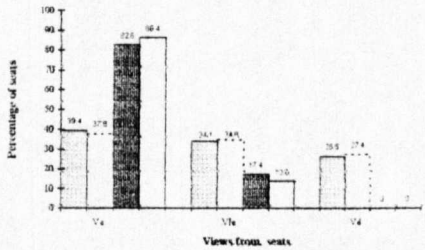


Figure 5.2.2.2 (b):Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of route to consulting rooms.

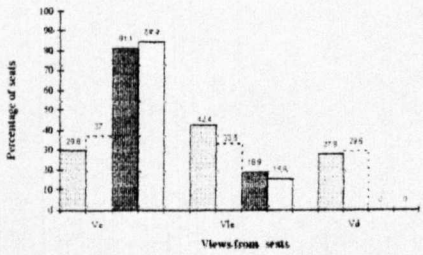


Figure 5.2.2.2 (c): Proportion of seats chosen by Single Female subjects in the U.K and Malaysia as compared to actual distribution of vacant seats in relation to view of route to consulting rooms.

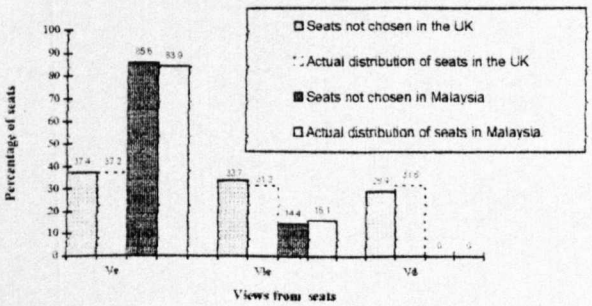


Figure 5.2.2.2 (d): Proportion of seats not chosen by overall Single subjects in the U.K and Malaysia as compared to actual distribution of vacant seats in relation to view of route to consulting rooms.

3) Outside view

This analysis was made to compare the choices made by the subjects from both countries of their preference for seats with an outside view. In the U.K, four of the health centres had no external view from the waiting area and thus not considered in this analysis. This left a total of four health centres combining a total of 106 seats. During our samples, an overall total of 262 subject choice events occurred in connection with these seats. In total this would have involved 27,772 (106 x 262) possible seat choices but at the time of making the choice many seats were already occupied. In practice only a total of 5,826 seat choices were actually available. In Malaysia, all the ten health centres had outside view. The number of seat choices was the same as given in section 5.2.2.2, that is 19,962 seat choices.

The number of choices made by the overall subjects as compared to the vacant seats actually distributed in both countries were in favour of the Ve-seats as can be seen in Figure 5.2.2.3 (a). Thus, in the U.K., 70.2% of the choices made by the overall subjects were for the Ve-seats even though only 62.2% seats of this type were actually vacant. Only 16.4% of the choices were for the Vle-seats despite the 23.4% seats of this type were actually vacant, while choices for the Vd-seats were almost identical with this type of seats actually vacant. The chi-square test confirmed this finding to be significant ($0.02 > p > 0.01$; $X > 8.48$; $df = 2$). In Malaysia, 12.9% and 19.1% of the choices made by the overall subjects were for the Ve and Vle-seats respectively even though only 7.3% and 14.5% seats of these types respectively were actually vacant. Only 68% of the choices were for the Vd-seats despite the 78.2% seats of this type were actually vacant. The chi-square test confirmed this finding to be highly significant ($p < 0.01$; $X > 39.17$; $df = 2$).

Choices by the genders as compared to the vacant seats actually vacant are as shown in Figure 5.2.2.3 (b) and 5.2.2.3 (c). Analysis on seats not chosen by the overall Single subjects involved 5,564 seat choices in the U.K. and 19,402 seat choices in Malaysia. In comparing the proportion of seats not chosen to that actually distributed, it was found that their proportion was almost identical for both countries as shown in Figure 5.2.2.3 (d)

Discussion

There seemed to be a similarity between subjects in both countries in their choices for seats with good external view. However it is more marked in Malaysia considering only a small proportion of such seats actually distributed, as compared to those in the U.K.

Outside view

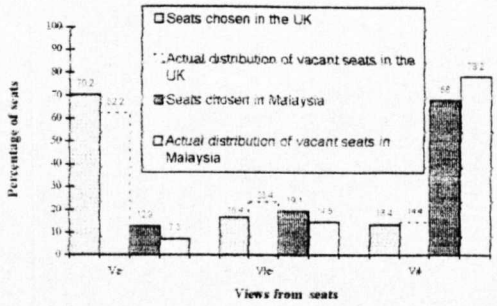


Figure 5.2.2.3 (a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to outside view.

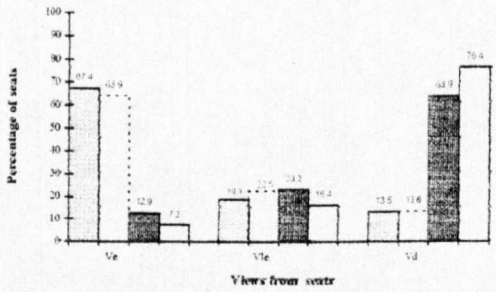


Figure 5.2.2.3 (b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to outside view.

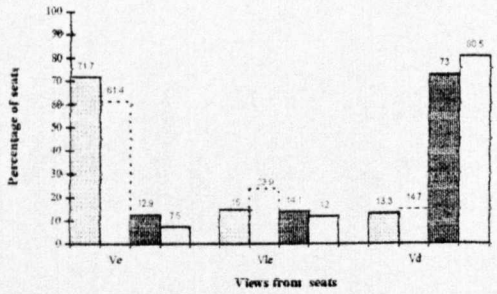


Figure 5.2.2.3 (c): Proportion of seats chosen by Single Female subjects in the U.K. and Malaysia as to actual distribution of vacant seats in relation to outside view.

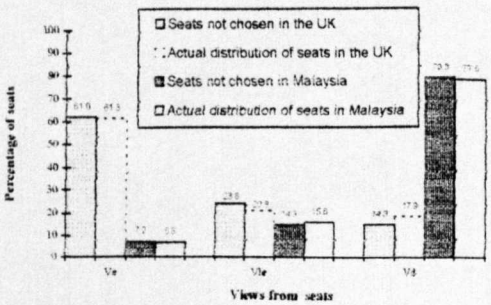


Figure 5.2.2.3 (d): Proportion of seats not chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to outside view.

4) View of television

This analysis was made to compare the choices made by the subjects from both countries of their preference for seats with view of television.

Five of the health centres in the U.K. were not provided with such facility and thus not considered in this analysis. This left a total of three health centres combining a total of 75 seats. During our samples, an overall total of 236 subject choice events occurred in connection with these seats. In practice this would have actually involved 17,700 (75 x 236) possible seat choices but at the time of making the choice many seats were already occupied. In total then only 4,810 seat choices were available.

In Malaysia two of the health centres were not provided with such facility and thus not considered in this analysis. This left a total of eight health centres combining a total of 273 seats. During our samples, an overall total of 431 subject choice events occurred in connection with these seats. In practice this would have actually involved 117,663 (273 x 431) possible seat choices but at the time of making the choice many seats were already occupied. In total then only 12,553 seat choices were available.

The number of choices made by the overall subjects as compared to the vacant seats actually distributed were in favour of the Ve-seats in both countries as shown in Figure 5.2.2.4 (a). Choices for the other seat types were almost identical with those types of seats vacant, except for the Vd-seats in Malaysia where 42% of the choices made were for such seats despite 48.8% seats of this type were actually vacant. The chi-square test found this finding to be significant in Malaysia ($0.02 > p > 0.01$; $X > 8.43$; $df = 2$), but not in the U.K. ($0.01 > p > 0.05$; $X > 4.60$; $df = 2$).

Choices by the genders as compared to the vacant seats actually vacant are as shown in Figure 5.2.2.4 (b) and 5.2.2.4 (c).

View of television.

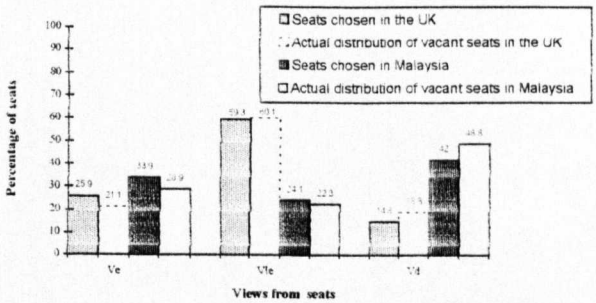


Figure 5.2.2.4(a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of television.

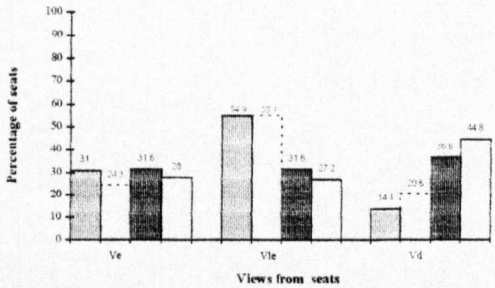


Figure 5.2.2.4 (b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of television.

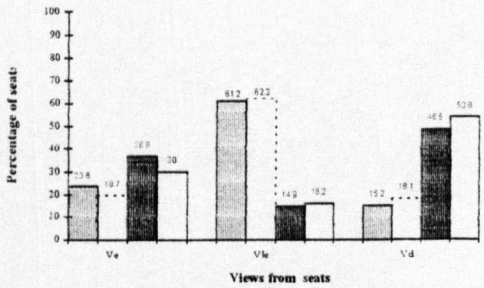


Figure 5.2.2.4 (c): Proportion of seats chosen by Single Female subjects in the U.K and Malaysia as compared to actual distribution of vacant seats in relation to view of television.

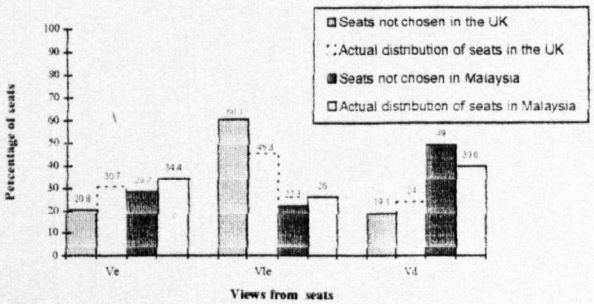


Figure 5.2.2.4 (d): Proportion of seats not chosen by overall Single subjects in the U.K and Malaysia as compared to actual distribution of vacant seats in relation to view of television.

Analysis on seats not chosen by the overall Single subjects involved 4,574 seat choices in the U.K. and 12,122 seat choices in Malaysia. In comparing the proportion of seats not chosen to that actually distributed, it was found that the proportion of the Vle-seats in the U.K. and the Vd-seats in Malaysia were much higher than those types of seats actually distributed as shown in Figure 5.2.2.4 (d). Thus, in the U.K. 60.1% of the seats not chosen were the Vle-seats even though only 45.3% seats of this type were actually distributed. 20.8% of the Ve-seats were not chosen despite 34.4% seats of this type were actually distributed. The Vd-seats not chosen were almost identical with those type distributed. However the chi-square test confirmed this finding to be not significant ($0.9 > p > 0.8$; $X > 0.24$; $df = 2$). In Malaysia 49% of the seats not chosen were the Vd-seats even though only 39.6% seats of this type were actually distributed. The proportion of Vl and Vle-seats not chosen were almost identical with those types of seats actually distributed. However the chi-square test confirmed this finding to be not significant ($0.9 > p > 0.8$; $X > 0.30$; $df = 2$).

Discussion

This analysis shows that unlike the British, the Malaysians significantly placed importance in their choices for seats with view of the television. Similar to enjoying the external view, watching the television in public can also be regarded as a non-concentration activity. As such those involving in such activity would not mind to be interrupted by say, a conversation, etc. In other words they do not mind their privacy to be invaded by others. Since subjects in Malaysia showed much preference for seats with easy view of the television as compared to subjects in the U.K., it can be said then that the Malaysian subjects were less private as compared to the British subjects.

5) View of children's play area

This section analyses preference for seats with view of children's play area made by the subjects in the U.K. only because such facility was not provided in Malaysia.

Three of the health centres in the U.K. were not provided with such facility and thus not considered in this analysis. This left a total of five health centres combining a total of 138 seats. During our samples, an overall total of 392 subject choice events occurred in connection with these seats. In practice this would have actually involved 54,096 (138 x 392) possible seat

choices but at the time of making the choice many seats were already occupied. In total then only 8,777 seat choices were available.

The number of choices made by the overall subjects as compared to the vacant seats actually distributed were in favour of the Ve-seats as shown in Figure 5.2.2.5 (a). Thus, 42.1% of the choices made by the overall subjects were for the Ve-seats even though only 32.3% seats of this type were actually vacant. Only 32.6% choices were for the Vd-seats despite 42.5% seats of this type were actually vacant. Choices for the Vle-seats were almost identical with this type of seats vacant. The chi-square test confirmed this finding to be highly significant. ($p < 0.001$; $X >$ 20.64; $df = 2$).

Choices by the genders as compared to the vacant seats actually vacant are as shown in Figure 5.2.2.5 (b) and 5.2.2.5 (c).

Analysis on seats not chosen by the overall Single subjects involved 8,385 seat choices. In comparing the proportion of seats not chosen to that actually distributed, it was found that the proportion of the Vd-seats were much higher than those types of seats actually distributed as shown in Figure 5.2.2.5 (d). Thus, 43% of the seats not chosen were the Vd-seats even though only 24.6% seats of this type were actually distributed. Only 31.8% Ve-seats were not chosen despite 50.8% seats of this type were actually distributed. The Vle-seats not chosen were almost identical with this type of seats actually distributed. However, the chi-square test confirmed this finding to be not significant ($0.7 > p > 0.5$; $X > 0.97$; $df = 2$).

Discussion

The choices made by the overall subjects were significantly for easy view of the children's play area. It is most likely that the subjects (67% being females) were either monitoring their own children or being amused by other children playing at that area.

View of children's play area.

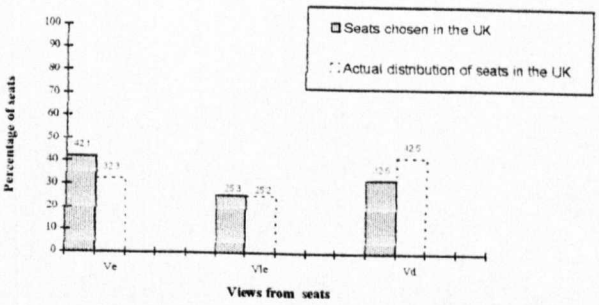


Figure 5.2.2.5 (a): Proportion of seats chosen by overall Single subjects in the U.K as compared distribution of vacant seats in relation to view of children's play area.

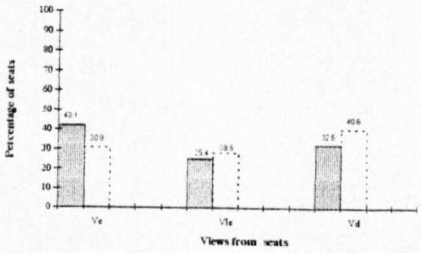


Figure 5.2.2.5 (b): Proportion of seats chosen by Single Male subjects in the U.K. as compared to actual distribution of vacant seats in relation to view of children's play area.

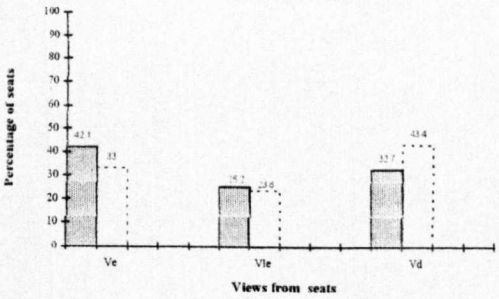


Figure 5.2.2.5 (c): Proportion of seats chosen by Single Female subjects in the U.K. as compared to actual distribution of vacant seats in relation to view of children's play area.

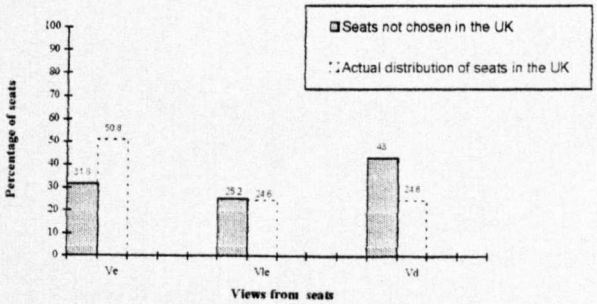
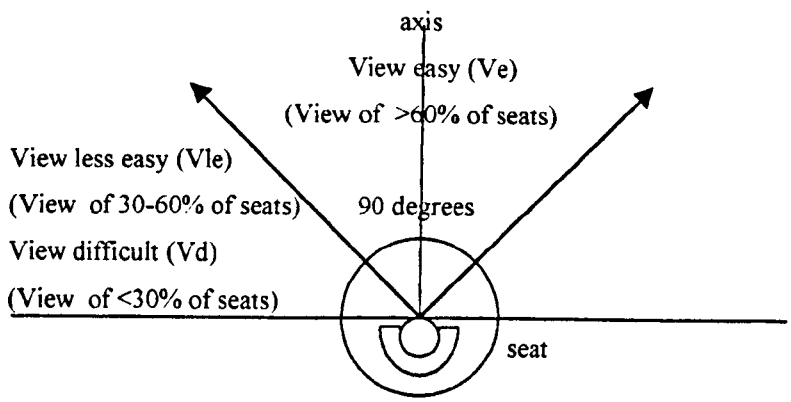


Figure5.2.2.5 (d): Proportion of seats not chosen by overall Single subjects in the U.K. as compared to actual distribution of vacant seats in relation to children's play area.

6) View of other persons in seats

This analysis was made to compare the choices made by the subjects from both countries of their preference for seats with view of other persons in seats. The data recorded is as illustrated in the following diagram: -



i) View easy (Ve).

This range is 45 degrees either side of the axis looking forward from the seat and captures the view of more than 60% of seats.

ii) View less easy (Vle).

Either side of the easy view range but only to 90 degrees and captures the view of between 30-60% of seats.

iii) View difficult (Vd).

Either side of the easy view range but only to 90 degrees and captures the view of less than 30% of seats.

In the U.K., the overall number of seats actually distributed in the eight health centres was 215 seats. During our samples, an overall total of 533 subject choice events occurred in connection with these seats. In total this would have involved 114,595 (215 x 533) possible seat choices but at the time of making the choice many seats were already occupied. In practice only a total of 12,314 seat choices were actually available. In Malaysia the number of seat choices was the same as that given in section 5.2.2.1, that is 19,962 seat choices.

In Malaysia, the number of choices made by the overall subjects as compared to the vacant seats actually distributed were in favour of the Vd-seats, while the Vle-seats being least favoured as shown in Figure 5.2.2.6 (a). Thus 33.2% of the choices were for the Vd-seats despite there being only 23.3 seats of this type vacant were actually distributed. Only 60% of the choices were for

View of other persons.

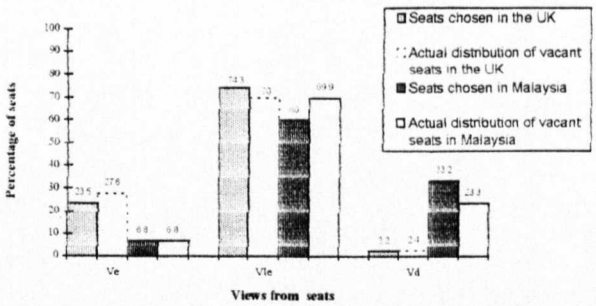


Figure 5.2.2.6(a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of other persons.

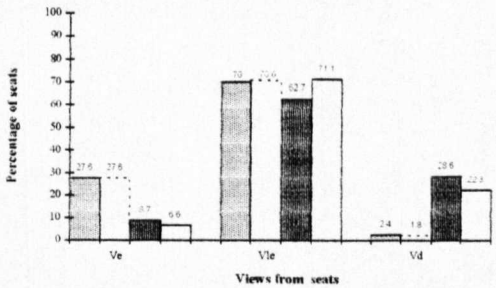


Figure 5.2.2.6 (b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to view of other persons.

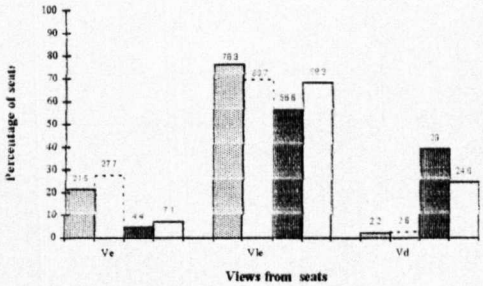


Figure 5.2.2.6 (c): Proportion of seats chosen by Single Female subjects in the U.K and Malaysia as compared to actual distribution of vacant seats in relation to view of other persons.

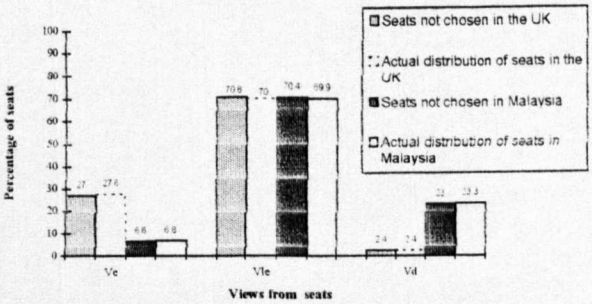


Figure 5.2.2.6 (d): Proportion of seats not chosen by overall Single subjects in the U.K and Malaysia as compared to actual distribution of vacant seats in relation to view of other persons.

the Vle-seats even though 69.9% seats of this type vacant were actually distributed. In the U.K. choices for seats were almost identical with those types of seats vacant. The chi-square test found this finding to be highly significant in Malaysia ($p < 0.001$; $X > 31.3$; $df = 2$), but not in the U.K. ($0.01 > p > 0.05$; $X > 4.8$; $df = 2$).

Choices by the genders as compared to the vacant seats actually distributed are identical with the choices made by the overall population in each country as shown in Figure 5.2.2.6 (b) and 5.2.2.6 (c). Analysis on seats not chosen by the overall subjects as compared to the vacant seats actually distributed were almost identical for both countries as shown in Figure 5.2.2.6 (d).

Discussion

While there was a tendency amongst the British for seats with some view of other persons in seats, this was found to be not significant. By contrast, in Malaysia it is highly significant that choices were for seats without view of the other persons in seats. Based from the previous analysis done it seemed that the British were more concerned with features relating to the health centre itself such as view of caller and entry towards consulting rooms, while the Malaysians were more interested in features not related to the health centre such as view of television and of the outside.

Summary

This section investigated the way people choose seats depending on the view they offer of various features of the waiting room. Results of the chi-square test are as summarised in Table 5.2.2.

We have shown that gender has no effect here but that there are some differences between our two samples for the U.K. and Malaysia. For example, in relation to views of caller and consulting room doors choices there was a significant difference between the two samples. In both the analyses, choices by people in the U.K. were for seats with a view.

In comparing the choices made by the overall subjects between the two countries, while a similarity exist in their choices for seats with good external view, there seemed to be several cultural differences. Unlike the Malaysians, the British seemed to prefer seats with view of the caller and the route to the consulting rooms.. The Malaysians showed their preferences more on seats with good view of the television and least on view of other persons in seats.

Apart from their choices for good external view, the other criteria placed by the British in their choices for seats much relate to their sole purpose of being at the health centre. This shows that they were more concern in not missing an appointment, a possible indication of being autonomous.

By contrast, the criteria placed by the Malaysians in their choices for seats seemed not to be related to their presence of being in the health centre. Enjoying the external view and watching the television in public does not need concentration and as such those people who are indulging themselves in such activities would not mind if they were interrupted, say, by a conversation, etc. Such activities can also be interpreted as a signal to the others that they are available for socialising and seemed to portray themselves to be less private than the British.

Table 5.2.2: Person - Environment Relationship

- Summary of Chi-square test on choices for seats in relation to the attributes of views from seats in the U.K. and Malaysia.

Purpose of test : To investigate whether some seats were more popular than others.

		UK		Malaysia	
Attributes of seats	**Subjects involved**	**Chi-square Tests**	**Significance**	**Chi-square Tests**	**Significance**
1 View of caller	Overall Single subjects	$X > 15.87$; df = 2; $p < 0.001$; Vle-seats more popular	HS	$X > 0.741$; df = 1; $0.50 > p > 0.30$ All seats equally popular	NS
	Single Male	$X > 4.10$; df = 2; $0.1 > p > 0.05$ Ve- and Vle-seats more popular	NS	$X > 0.59$; df = 1; $0.90 > p > 0.80$ All seats equally popular	NS
	Single Female	$X > 15.18$; df = 2; $p < 0.001$; Vle-seats more popular	HS	$X > 0.75$; df = 1; $0.50 > p > 0.30$ All seats equally popular	NS
2 View of entry towards consulting rooms	Overall Single subjects	$X > 8.48$; df = 2; $0.02 > p > 0.01$; Vle-seats more popular	S	$X > 5.66$; df = 2; $0.02 > p > 0.01$; All seats equally popular	S
	Single Male	$X > 0.20$; df = 2; $0.95 > p > 0.90$ All seats equally popular	NS	$X > 3.66$; df = 2; $0.1 > p > 0.05$ All seats equally popular	NS
	Single Female	$X > 14.03$; df = 2; $p < 0.001$; Vle-seats more popular	HS	$X > 2.01$; df = 2; $0.20 > p > 0.10$ All seats equally popular	NS
3 Outside view	Overall Single subjects	$X > 8.37$; df = 2; $0.02 > p > 0.01$; Ve-seats more popular	S	$X > 39.17$; df = 2; $p < 0.001$; Ve- and Vle-seats more popular; Vd-seats least popular	HS
	Single Male	$X > 0.65$; df = 2; $0.80 > p > 0.70$ All seats equally popular	NS	$X > 28.76$; df = 2; $p < 0.001$; Ve- and Vle-seats more popular; Vd-seats least popular	HS
	Single Female	$X > 8.90$; df = 2; $0.02 > p > 0.01$; Ve-seats more popular	S	$X > 12.24$; df = 2; $0.01 > p > 0.001$; Ve- and Vle-seats more popular; Vd-seats least popular	S

Key: p = probability; X = sampling distribution; df = degrees of freedom; HS = Highly Significant; S = Significant; PS = Probably Significant; NS = not significant.

Table 5.2.2: Person - Environment Relationship (continue)

- Summary of Chi-square test on choices for seats in relation to the attributes of views from seats in the U.K. and Malaysia.

Attributes of seats	Subjects involved	UK Chi-square Tests	Significance	Malaysia Chi-square Tests	Significance
4 View of television	Overall Single subjects	$X > 4.60$; df = 2; $0.01 > p > 0.05$ Ve-seats more popular	NS	$X > 8.43$; df = 2; $0.02 > p > 0.01$; Ve- seats more popular; Vd-seats least popular	S
	Single Male	$X > 2.79$; df = 2; $0.30 > p > 0.20$ Ve- seats more popular; Vd-seats least popular	NS	$X > 6.34$; df = 2; $0.05 > p > 0.02$; Vd-seats least popular	PS
	Single Female	$X > 2.10$; df = 2; $0.50 > p > 0.30$ Vle-seats more popular	NS	$X > 4.03$; df = 2; $0.20 > p > 0.10$ Ve- seatsmore popular	NS
5 View of play area	Overall Single subjects	$X > 20.64$; df = 2; $p < 0.001$; Ve- seats more popular; Vd-seats least popular	HS	Not available	
	Single Male	$X > 7.50$; df = 2; $0.05 > p > 0.02$; Ve- seats more popular; Vd-seats least popular	PS		
	Single Female	$X > 14.09$; df = 2; $p < 0.001$; Ve- seats more popular; Vd-seats least popular	HS		
6. View of other persons in seats	Overall Single subjects	$X > 4.79$; df = 2; $0.01 > p > 0.05$ Vle-seats most popular; Ve-seats least popular	NS	$X > 31.33$; df = 2; $p < 0.001$; Vd-seats most popular; Vle-seats least popular	HS
	Single Male	$X > 4.79$; df = 2; $0.01 > p > 0.05$ All seats equally popular	NS	$X > 10.57$; df = 2; $0.01 > p > 0.001$; Vd-seats most popular; Vle-seats least popular	S
	Single Female	$X > 7.50$; df = 2; $0.05 > p > 0.02$; Vle-seats most popular; Ve-seats least popular	PS	$X > 28.42$; df = 2; $0.20 > p > 0.10$ Vd-seats most popular; Vle-seats least popular	NS

Key: p = probability; X = sampling distribution; df = degrees of freedom; HS = Highly Significant; S = Significant; PS = Probably Significant; NS = not significant

5.2.3 Distances from seats

This section deals with the choices people make about where to sit based on the third and last attribute of the seat, that of seat distances to other features of the environment. Dotted lines at 1.0 metre intervals plotted on the plans (as shown in Appendices 2 and 3) indicated the distances of the seats from the following sources:-

1) Reception area
2) Route towards consulting rooms
3) Reading materials

The distances of the seats from the sources mentioned above were categorised as follows:-

i) < 3m, for seat distances less than 3metres.
ii) 3-5m, for seat distances between 3-5metres.
iii) > 5m, for seat distances more than 5metres.

The chi-square test was used to examine the popularity of each seat with distances to the other features of the environment against the actual relative occurrence of the various distances. Thus, the expected values for the chi-square are the frequency of occurrence and the observed values are the actual choices made.

In the U.K., overall there were 215 seats actually distributed. During our sample, 533 subjects' choice events occurred in connection with these seats. In total this would have involved 114,595 (533 x 215) possible seat choices but at the time of making the choice many seats were already occupied. In practice then, only 12,314 seat choices were actually available. Similarly in Malaysia, based on an overall total of 410 seats actually distributed, our sample of 560 subjects' choice events which would have involved 229,600 (560 x 410) possible seat choices, involved only 19,962 seats.

Results of the chi-square test on the expected choices made by both the genders in both countries in all the analysis was found to be not significant. Thus, the disproportionate distribution of the genders in both countries did not affected on the overall choices made.

1) Distances from seats to reception area

This analysis was made to compare the choices made by the subjects from both countries on their preference for seats in relation to seat distances to the reception area. In the both the U.K. and Malaysia, number of choices made by the overall Single subjects as compared to the seats actually distributed the resulted in figures disproportionately in favour of seats with distances less than 5m to reception as shown in Figure 5.2.3.1 (a).

Thus in the U.K. 12.8% and 34.9% of choices were for seats with distances less than 3m and between 3-5m respectively to the reception area even though only 7.4% and 21.8% seats of these types respectively vacant were actually distributed. Only 52.3% of choices were for seats with distances more than 5.0m despite the 70.8% seats of this type vacant were actually distributed. The chi-square test showed this finding to be highly significant ($p < 0.001$; $X > 88.27$; $df = 2$). In Malaysia, 15.4% and 18.6% of choices were for seats with distances less than 3m and between 3-5m respectively from the reception area even though only 8.9% and 10.5% seats of these types respectively vacant were actually distributed. Only 66% of choices were for seats with distances more than 5m despite the 80.6% seats of this type vacant were actually distributed. The chi-square test showed this finding to be highly significant ($p < 0.001$; $X > 75.8$; $df = 2$).

Choices by the genders as compared to the seats actually vacant are as shown in Figure 5.2.3.1 (b) and 5.2.3.1 (c).

Analysis on seats not chosen by the overall Single subjects involved 11,781 seats in the U.K. and 19,402 seats in Malaysia. In the both the U.K. and Malaysia, the proportion of seats not chosen by the subjects as compared to the seats actually distributed were almost identical as shown in Figure 5.2.3.1 (d).

Discussion

Choices in both the countries were for seats with distances less than 5 meters to the reception area. It would have been thought that the British subjects would have preferred only seats with distances between 3-5 meters to the reception area which are considered to be more private than seats less than 3 meters, and at the same time not too far away from the reception area. Such seats would have provided a better degree of privacy from the noise at the reception area as compared to seats less than 3 meters.

Distances to reception.

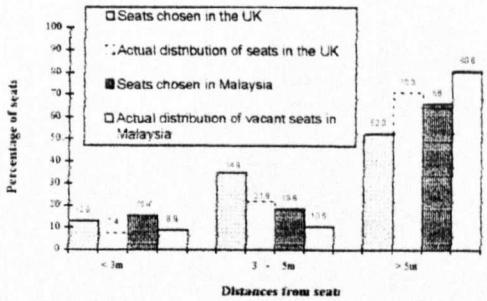


Figure 5.2.3.1(a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to reception.

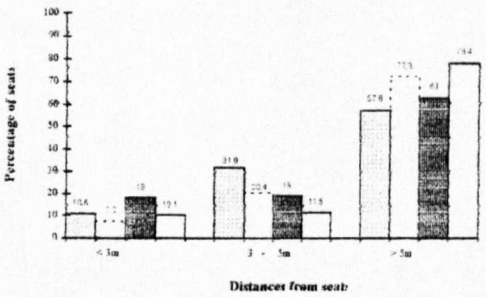


Figure 5.2.3.1(b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to reception.

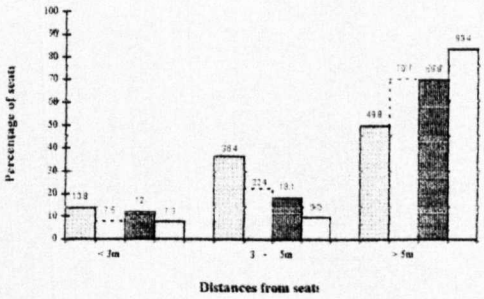


Figure 5.2.3.1(c): Proportion of seats chosen by Single Female subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to reception.

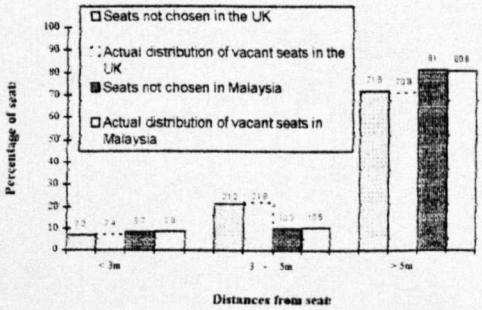


Figure 5.2.3.1(d): Proportion of seats not chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to reception.

2) Distances from seats to route towards consulting rooms

This analysis was made to compare the choices made by the subjects from both countries on their preference for seats in relation to seat distances to route towards the consulting rooms. While in the U.K. the number of choices made by the overall Single subjects as compared to the seats actually distributed resulted in figures disproportionately in favour of seats with distances between 3-5 meters to route towards the consulting rooms, in Malaysia choices were for seats less than 3 meters as shown in Figure 5.2.3.2 (a).

Thus in the U.K. the choices for seats with distances less than 3 meters to route towards consulting rooms were almost identical with the seats vacant actually distributed. However, 25.5% choices were for seats with distances between 3-5 meters even though only 19% seats of these types vacant were actually distributed. Only 57.4% of choices were for seats with distances more than 5.0m despite the 63.5% seats of this type vacant were actually distributed. The chi-square test showed this finding to be highly significant ($p < 0.001$; $X > 15.05$; $df = 2$). In Malaysia, 43.8% were for seats with distances less than 3 meters to route towards consulting rooms even though only 27.8% seats of this type vacant were actually distributed. Only 40.5% and 15.7% of choices were for seats with distances between 3-5 meters and more than 5 meters respectively despite the 44% and 28.2% seats of this type respectively vacant were actually distributed. The chi-square test showed this finding to be highly significant ($p < 0.001$; $X > 75.8$; $df = 2$).

Choices by the genders as compared to the seats actually vacant are as shown in Figure 5.2.2.1 (b) and 5.2.2.1 (c). Analysis on seats not chosen by the overall Single subjects revealed that in both the U.K. and Malaysia, the proportion of seats not chosen by the subjects as compared to the seats actually distributed were almost identical as shown in Figure 5.2.3.2(d).

Discussion

In the U.K., choices by the overall subjects were highly significant for seats nearer (between 3-5 meters) to route towards the consulting rooms. By contrast in Malaysia, choices by the overall subjects were highly significant for seats nearest (less than 3 meters) to route towards the consulting rooms. For obvious reasons (ease of accessibility) the Malaysian subjects favoured seats nearest to route towards the consulting rooms. However, the British subjects favoured seats neither too near nor too far away from route towards the consulting rooms. A possible reason for this is that seats which are too near the entrance to route towards the consulting rooms are considered to be less private with the noisy coming and going of patients and staffs, and thus less desirable in terms of maintaining their own privacy.

Distances to consulting rooms

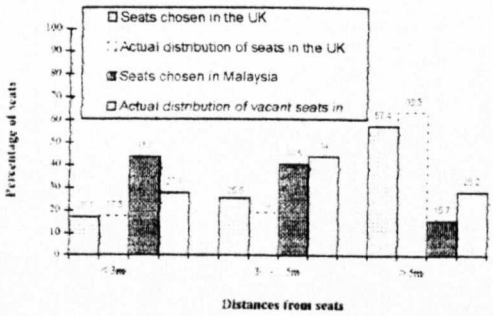


Figure 5.2.3.2 (a): Proportion of seats chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to consulting rooms.

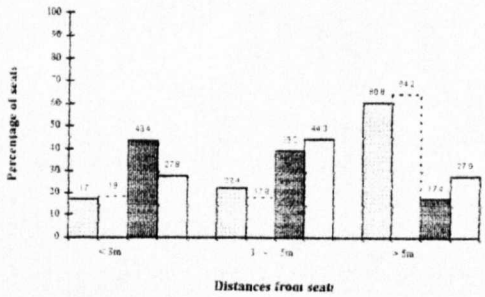


Figure 5.2.3.2 (b): Proportion of seats chosen by Single Male subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to consulting rooms.

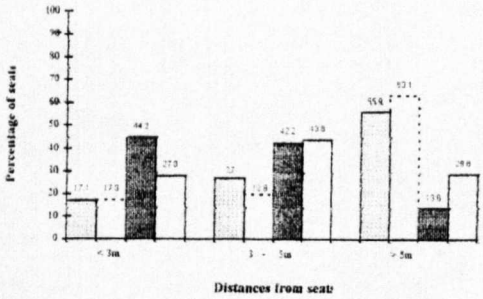


Figure 5.2.3.2 (c): Proportion of seats chosen by Single Female subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to consulting rooms

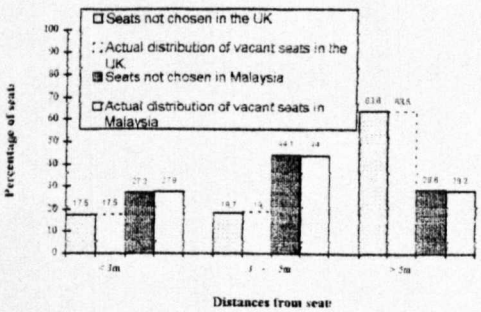


Figure 5.2.3.2 (d): Proportion of seats not chosen by overall Single subjects in the U.K. and Malaysia as compared to actual distribution of vacant seats in relation to distances to consulting Rooms

3) Distances from seats to reading materials

This analysis shall focus only on the British subjects' choices for seats in relation to seat distances to reading materials since there was no provision of such items in the health centres in Malaysia.

In the U.K., reading materials were not provided in one of the health centre and thus not included in this analysis. This left a total of seven health centres combining a total of 191 seats. During our sample, 455 subjects' choice events occurred in connection with these seats. In total this would have involved 86,905 (455 x 191) possible seat choices but at the time of making the choice many seats were already occupied. In practice only a total of 10,812 seat choices were actually available.

The number of choices made by the overall Single subjects as compared to the seats actually distributed resulted in figures disproportionately in favour of seats with distances less than 3 meters to reading materials as shown in Figure 5.2.3.3 (a).

Thus 69% of the choices made by the overall Single subjects were for seats with distances less than 3 meters to reading materials even though only 60% of these types of seats vacant were actually distributed. Choices for seats with distances between 3-5 meters were almost identical with the seats vacant actually distributed. Only 2.2% choices were for seats with distances more than 5 meters even though 11.7% seats of these types vacant were actually distributed. The chi-square test showed this finding to be highly significant ($p < 0.001$; $X > 41.22$; $df = 2$).

Choices by the genders as compared to the seats actually vacant are as shown in Figure 5.2.2.3 (b) and 5.2.2.3 (c). Analysis on seats not chosen by the overall Single subjects revealed that the proportion of seats not chosen by the subjects as compared to the seats actually distributed were almost identical as shown in Figure 5.2.2.3 (d).

Discussion

Based on this analysis it was revealed that choices by the overall subjects were significantly for seats with distances less than 3 meters to the reading materials. This does indicate the preference by the British to involve themselves in reading, an activity which involved more concentration and thus seemed to signal to others of their intention to be left in private.

Distances to reading materials.

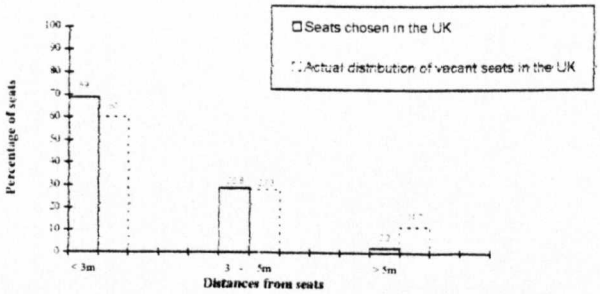


Figure 5.2.3.3 (a): Proportion of seats chosen by overall Single subjects in the U.K. as compared to actual distribution of vacant seats in relation to distances to reading materials.

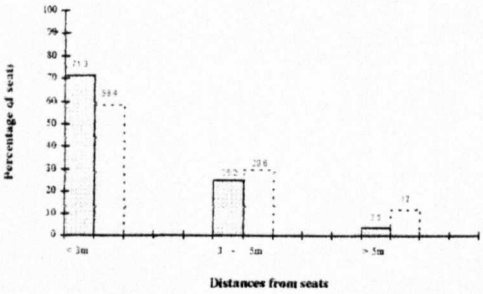


Figure 5.2.3.3 (b): Proportion of seats chosen by Single Male subjects in the U.K. as compared to actual distribution of vacant seats in relation to distances to reading materials.

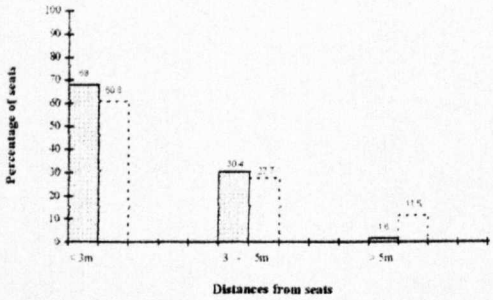


Figure 5.2.3.3 (c): Proportion of seats chosen by Single Female subjects in the U.K. as compared to actual distribution of vacant seats in relation to distances to reading materials.

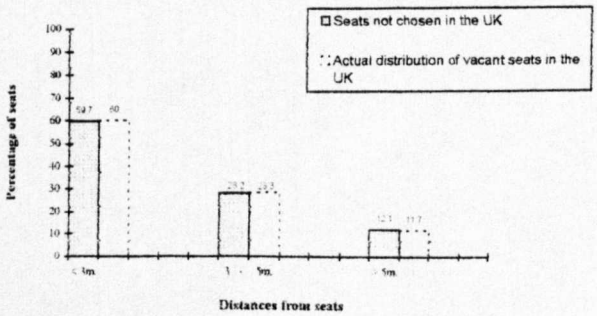


Figure 5.2.3.3 (d): Proportion of seats not chosen by overall Single subjects in the U.K. as compared to actual distribution of vacant seats in relation to distances to reading materials.

Summary

This section has dealt with the choices people make about where to sit based on the seats attributes of seat distances to the other features of the environment, that is distances to the:- reception area, route towards consulting rooms, and reading materials as summarised in Table 5.2.3. In all the analysis, gender was not found to be a factor in the choices made by the overall subjects.

For obvious reasons, similarities between the British and the Malaysian in their choices for seats were in their preferences for seats less than 5 meters from the reception area. It can be argued that if the British wanted to maintain their privacy they would have chosen seats in the range of between 3 - 5 metres from the occasionally busy reception area. Although this was not the case amongst the British females, it was significant amongst the British males.

The difference between the British and the Malaysians in their choices for seats was in relation to seat distances to entrance to the route to the consulting rooms. While the Malaysians preferred the nearest distance of less than 3 metres from the entrance, the British in their preference for privacy preferred distances not too near from the busy and noisy entrance to route to consulting rooms. In this context the Malaysian subjects can be considered to be less private. In addition, the British choices to sit nearest to the reading materials do indicate their preferences for reading, thus maintaining their privacy.

Table 5.2.3: Person - Environment Relationship

- Summary of Chi-square tests on choices for seats in relation to the attributes of distances from seats in the UK and Malaysia.

Purpose of test : To investigate whether some seats were more popular than others.

		UK		Malaysia	
Attributes of seats	**Subjects involved**	**Chi-square Tests**	**Significance**	**Chi-square Tests**	**Significance**
1. Distance to reception area	Overall Single subjects	$X > 88.27$; df = 2; $p < 0.001$; Choices for <5m seats.	HS	$X > 75.8$; df = 2; $p < 0.001$; Choices for <5m seats.	HS
	Single Male	$X > 18.49$; df = 2; $p < 0.001$; Choices for 3-5m seats.	HS	$X > 43.93$; df = 2; $p < 0.001$; Choices for <5m seats.	HS
	Single Female	$X > 71.96$; df = 2; $p < 0.001$; Choices for <5m seats.	HS	$X > 33.88$; df = 2; $p < 0.001$; Choices for <5m seats.	HS
2. Distance to entry towards consulting rooms	Overall Single subjects	$X > 15.05$; df = 2; $p < 0.001$; Choices for 3-5m seats.	HS	$X > 83.83$; df = 2; $p < 0.001$; Choices for <3m seats.	HS
	Single Male	$X > 2.38$; df = 2; $0.5 > p > 0.3$ Choices for 3-5m seats.	NS	$X > 41.26$; df = 2; $p < 0.001$; Choices for <3m seats.	HS
	Single Female	$X > 13.27$; df = 2; $0.01 > p > 0.001$; Choices for 3-5m seats.	S	$X > 43.83$; df = 2; $p < 0.001$; Choices for <3m seats.	HS
3. Distance to reading materials	Overall Single subjects	$X > 41.22$; df = 2; $p < 0.001$; Choices for <3m seats.	HS	No provision of reading materials.	
	Single Male	$X > 13.77$; df = 2; $0.01 > p > 0.001$; Choices for <3m seats.	S		
	Single Female	$X > 30.19$; df = 2; $p < 0.001$; Choices for <3m seats.	HS		

Key: p = probability; X = sampling distribution; df = degrees of freedom; HS = Highly Significant; S = Significant; PS = Probably Significant; NS = not significant.

5.3.0 Person-to-person Relationship

This section analyses factors that might affect people's choice of seats that are not to do with the seats themselves but due to the relationship with other people already in seats in the waiting area. For example, most obviously, do people prefer to sit next to or away from other people? This can be done by studying the effects of occupancy on the choices for seats adjacent to the occupied seats in the first section. In the second section, a study is made on whether the gender of the adjacent person(s) already in seats has any effect on the subjects' choices for seats.

5.3.1 Seating choices in relation to seats adjacenct to occupied seats and percentage of occupancy.

Seats were categorised according to how near they were in a row to the nearest occupied seats. A seat immediately adjacent to an occupied seat was coded as 'A', one where there was a gap of one seat was coded 'A1', and all others were coded as 'AM' as shown below:-

AM	AM	A1	A	Already Occupied	A	A1	AM	AM

The popularity of seats could be determined by analysing the subject's events of seat occupancies recorded during the observations as shown in Appendix 3.

In all the events observed, the choices made by all the subjects in choosing their seats were entirely on their own free will. That is, in none of the events observed were the subjects being forced to sit on any particular seat because the maximum occupancy of the seats per event in all the health centres did exceed 50%. There were therefore huge choices available although of course we have no way of knowing whether a subject would have preferred one of the already occupied seats.

In this section, an analysis is made of the Singles (S) subjects choices in relation to seats adjacent to occupied seats and percentage of occupancy. Before this can be done, there is a need to consider the availability of the adjacent seats to the occupied seats in relation to the degree of occupancy. This is because when the occupancy increases, the availability of the A-seats increases more than the A1-seats with the eventual decrease in the AM-seats.

The proportions of occupancy of seats occupied were categorised according to the minimum and maximum percentage of occupancy with a 10% increase interval between those two occupancies. Occupancies were categorised as less than 10% for minimum occupancy, between 11-20%, between 21-30%, between 31-40%, and between 41-50% for maximum occupancy since none of the events observed exceeded 50% occupancy. The number of events which occurred according to the degree of occupancy were found as follows:-

	U.K.		Malaysia	
Occupancy	No. of events	Percentage	No. of events	Percentage
1 - 10 %	139	26.1	140	25
11 - 20 %	161	30.2	210	37.6
21 - 30 %	171	32.1	132	23.6
31 - 40 %	53	9.9	42	7.5
41 - 50 %	9	1.7	35	6.3

For each event, the availability of the different types of seats adjacent to those occupied was categorised according to the degree of occupancy per health centre. Figures of the availability of such seats in both countries were then summed up according to the occupancy categorised.

Having established the relationship between the degree of occupancy and availability of the adjacent seats to the occupied seats, an analysis was made on its effect on the Singles (S) subjects' choices for such seats. Detailed analysis of the choices made for the various category of adjacent seats to occupied seats in relation to the percentages of occupancy are made below.

1) Overall choices for seat adjacent to occupied seats

In the U.K. the overall total of 533 events observed involved the availability of 12,314 seat choices, while in Malaysia the overall total of 560 events observed involved the availability of 19,962 seat choices. In both the countries, the number of choices made by the subjects as compared to the seat choices available were almost identical as shown in Figure 5.3.1.1 (a).

In the U.K. the 170 events observed which concerned male subjects involved the actual distribution of 3,913 seat choices, while the 363 events that concerned the female subjects involved the actual distribution of 8,401 seat choices. In Malaysia the 311 events observed which concerned male subjects involved the actual distribution of 10,972 seat choices, while the 249 events that concerned the female subjects involved the actual distribution of 8,430 seat

Adjacently occupied seats

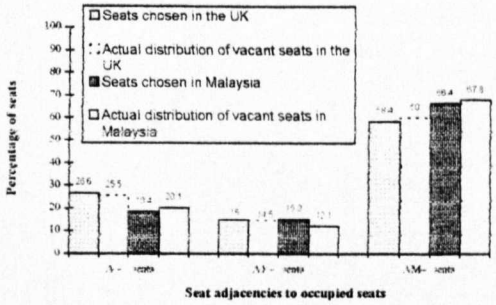


Figure 5.3.1.1 (a): Seating choices by overall Single subjects in relation to adjacencies to occupied seats in the U.K. and Malaysia.

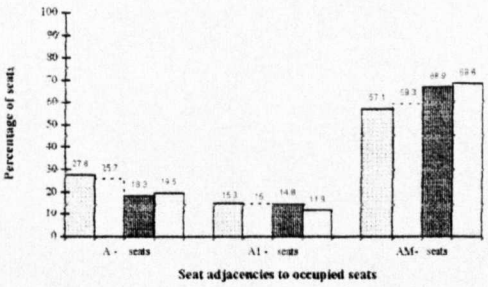


Figure 5.3.1.1(b): Seating choices by Male subjects in relation to adjacencies to occupied seats in the U.K. and Malaysia.

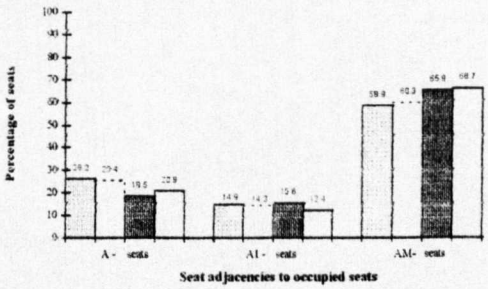


Figure 5.3.1.1 (c): Seating choices by Female subjects in relation to adjacencies to occupied seats in the U.K. and Malaysia.

choices. Result of the chi-square test on the expected choices made by both the genders in both countries was found to be not significant (U.K.: $0.7 > p > 0.5$; $X > 0.99$; $df = 2$; Malaysia: $0.7 > p > 0.5$; $X > 0.99$, $df=2$). In both the U.K. and Malaysia, again the number of choices made by the subjects as compared to the seat choices available were almost identical as shown in Figure 5.3.1.1.(b) and 5.3.1.1 (c).

2) Relationship between percentage of occupancy and percentage of adjacent seats to occupied seats chosen by Singles (S) subjects

In this section we will investigate the effects of the degree of occupancy in relation to the seats adjacent to occupied seats chosen by the subjects. As noted earlier, with an increase in occupancy, the availability for the AM-seats would be reduced with the increase in availability of both the A1- and A-seats. Thus, we would expect a decrease in choices for the AM-seats and an increase in choices for the A1- and A-seats. This general pattern was observed in both countries as shown in Figure 5.3.1.2. However, above 40% occupancy there seemed to be a sharp increase in choices made for the A1-seats in the U.K. but a gradual decline for such seats in Malaysia. At the same time, there was a sharp increase in choices for the A-seats in Malaysia, but with a sharp decline for such seats in the U.K. This pattern suggest that the Malaysians were more willing to occupy seats immediately adjacent to an occupied seat, and thus portray themselves to be less private as compared to the British. The choices made by the British seemed to indicate that they wish to maintain their privacy by leaving a seat vacant immediately adjacent to the seat occupied.

3) Seating choices for seats adjacent to occupied seats in various occupancy.

A detailed analysis on the choices for seats adjacent to occupied seat in relation to a ten- percent increment in occupancy is dealt with as follows.

(a) Minimum occpancy (less than 10%)

In the U.K. the minimum occupancy of less than 10% concerned 139 events observed which involved the availability of 3,574 seat choices, while in Malaysia it concerned 140 events observed which involved the availability of 6,566 seat choices. In both the U.K. and Malaysia, the number of choices made by the subjects as compared to the seat choices available were almost identical as shown in Figure 5.3.1.3 (a).

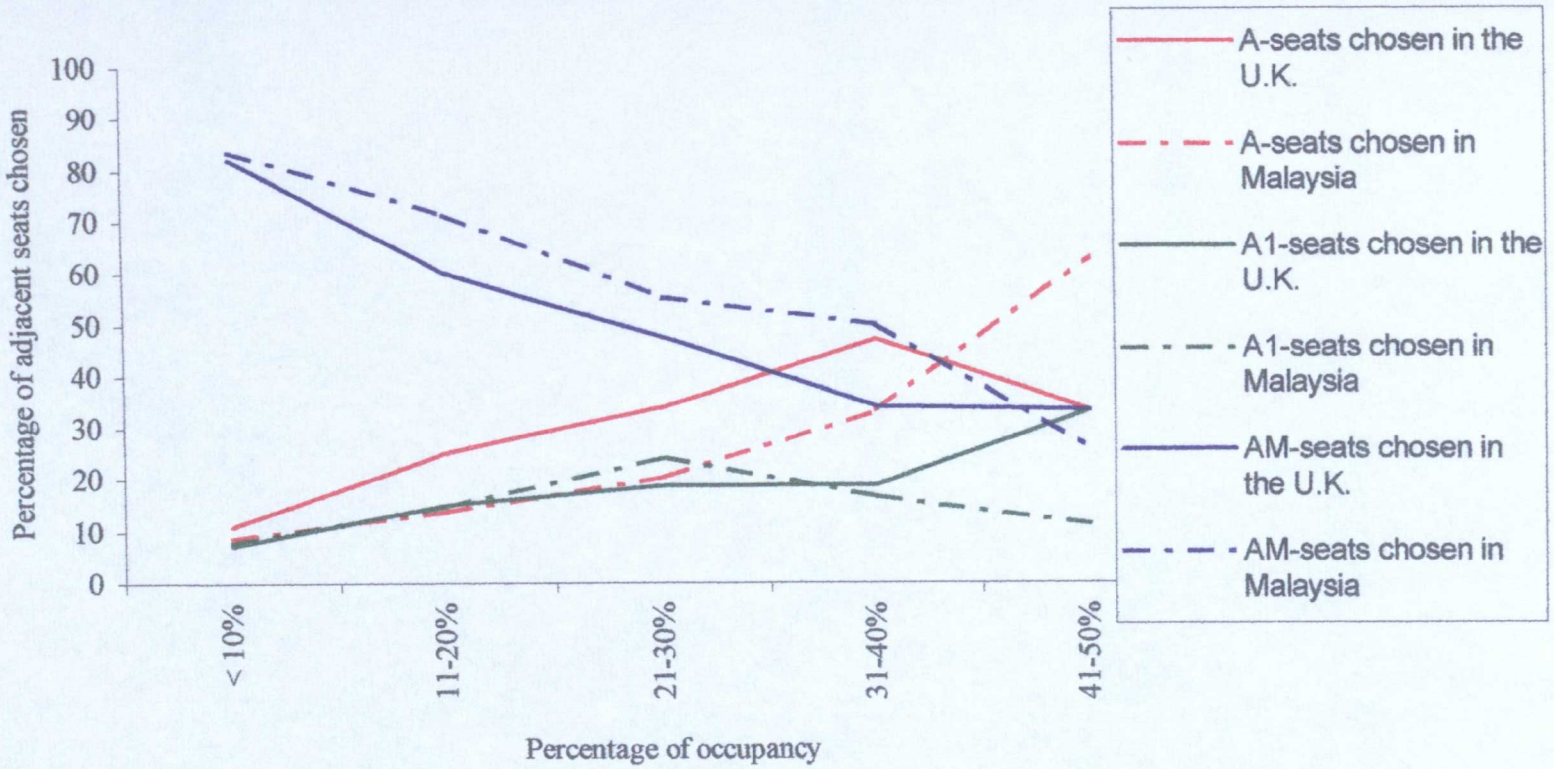
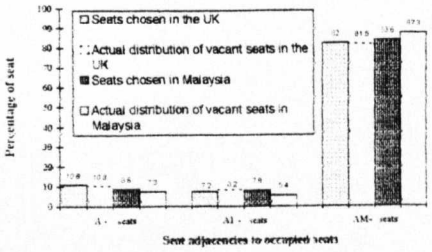
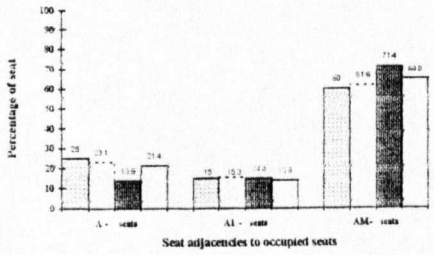


Figure 5.3.1.2: Relationship between percentage of occupancy and percentage of adjacent seats to occupied seats chosen by Singles (S) subjects in the U.K. and Malaysia.

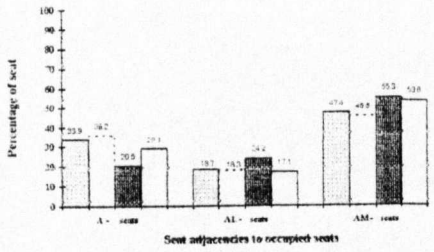
Percentage of occupancy.



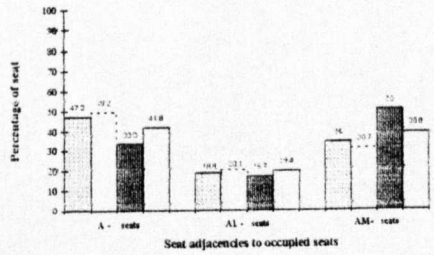
a) When occupancy was minimum (less than 10%).



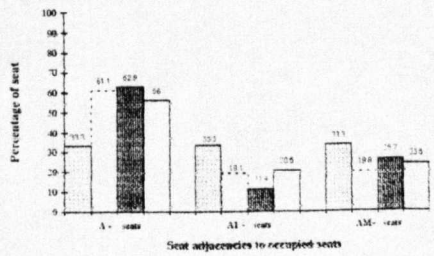
b) When occupancy was between 11-20%



c) When occupancy was between 21-30%



d) When occupancy was between 31-40%.



e) When occupancy between 41-50%.

Figure 5.3.1.3: Seating choices by Single subjects in relation to adjacencies to occupied seats in the U.K. and Malaysia in relation to various occupancy.

(b) Occupancy between 11-20%

In the U.K. this concerned 160 events observed involving the availability of 3,901 seat choices. while in Malaysia it concerned 210 events observed which involved the availability of 7,716 seat choices. In the U.K. the number of choices made by the subjects as compared to the seat choices available were almost identical, unlike in Malaysia where choices were for the AM-seats as shown in Figure 5.3.1.3 (b) where 71.4% were for the AM-seats despite only 64.8% seats of this type available. Choices for the A1-seats were almost identical with such type of seats available. Only 13.8% of the choices were for the A-seats even though 21.4% seats of this type were available. The chi-square confirmed this findings to be probably significant in Malaysia ($X > 7.19$, $0.05>p>0.02$, $df=2$).

(c) Occupancy between 21-30%

In the U.K. the occupancy of between 21-30% concerned 171 events observed which involved the availability of 3,654 seat choices, while in Malaysia it concerned 132 events observed which involved the availability of 4,404 seat choices. In the U.K. the number of choices made by the subjects as compared to the seat choices available were almost identical, unlike in Malaysia where the least popular seats being the A-seats while the most popular being the A1-seats as shown in Figure 5.3.1.3 (c). Thus, in Malaysia, 24.2% were for the A1-seats despite only 17.1% seats of this type available. Only 20.5% were for the A-seats despite the 29.1% of such seats were available. Choices for the AM-seats were almost identical with such type of seats available. The chi-square confirmed this finding to be probably significant ($X > 7.35$; $0.05>p>0.02$, $df=2$).

(d) Occupancy between 31-40%

In the U.K. this concerned 53 events observed which involved the availability of 934 seat choices, while in Malaysia it concerned 42 events observed which involved the availability of 800 seat choices. In the U.K. choices for all the types of seat adjacencies were almost identical with those types of seats available unlike in Malaysia where choices were for the AM-seats as shown in Figure 5.3.1.3 (d). Thus, in Malaysia, 50% choices were for the AM-seats despite only 38.8% seats of this type were available. Choices for the A1-seats were almost identical with such type of seats available. Only 33.3 % of the choices were for the A-seats even though 41.8% seats of this type were available. However the chi-square confirmed this finding to be not significant ($X > 2.23$, $0.5>p>0.3$, $df=2$).

(e) Occupancy between 41-50%

In the U.K. this concerned 9 events observed which involved the availability of 126 seat choices, while in Malaysia it concerned 35 events observed which involved the availability of 443 seat choices. In the U.K. choices were for the A1-seats and AM-seats unlike in Malaysia where choices were for the A-seats as shown in Figure 5.3.1.3 (e). Thus, in the U.K., both 33.3% choices were for the A1-seats and AM-seats despite 19.1% and 19.8% seats of these types respectively were available. Only 33.3% choices were for the A-seats even though 61.1% seats of this type were available. By contrast in Malaysia 62% choices were for the A-seats despite only 56% seats of this type were available. Choices for the AM-seats were almost identical with such type of seats available. Only 11.4 % of the choices were for the A1-seats even though 20.5% seats of this type were available. However the chi-square confirmed these findings to be not significant (U.K.: X > 2.9, 0.3 > 0.2, df=2; Malaysia: X > 1.8, 0.5 > 0.3, df=2).

Discussion

This analysis revealed that overall, none of the types of seat adjacent to that occupied were favoured by subjects from both countries. Also, the disproportionate distribution of genders between the two countries did not influence the choices made by the overall subjects.

A further investigation was conducted relating to the degree of occupancy on the choices made on seats adjacent to occupied seats. Results revealed there was a similar pattern in subjects' choices for seats in both countries as occupancy increases. However differences emerged when occupancy was above 40%. While in the U.K. choices were for the AM-seats and the decline for the A-seats, in Malaysia choices were for the A-seats and a decline for the AM-seats. This suggests that the Malaysians were more willing to seat immediately adjacent to occupied seats in short-term crowding, and thus portraying themselves to be less private as compared to the British. It seemed that the British preferred to maintain their privacy by leaving a seat vacant immediately adjacent to the seat occupied.

Other results revealed that while the British were not affected in their choices for seats in relation to the degree of occupancy, it was a different case in Malaysia where choices were significant for the AM-seats and A1-seats when occupancy was between 11-20%, and 21-30% respectively. This suggests that compared to the British, the Malaysians were more sensitive in their choices for seats in the presence other persons.

5.3.2 Seating choices for adjacent seats in relation to subjects gender.

In this section we shall analyse whether gender has any influence on the choices for seats adjacent to the occupied seats. This would involve choices made based on subject's gender in relation to the gender of adjacent person(s) already in seats.

The situation when the subject's gender is the same as the that of the adjacent person(s) already in seats shall be categorised as either 'MM' for male-to-male, or 'FF' for female-to-female. When the subject's gender is opposite to that of the adjacent person(s) already in seat, it shall be categorised as either 'MF' for male-to-female, or 'FM' for female-to-male. The situation when the gender of the adjacent persons already in seats were both of the opposite genders shall not be included in this study. For obvious reasons, this analysis will involve subjects' choices for the A-seats and A1-seats only.

The popularity of each situation could be determined by comparing the proportion of subject's gender seating choices with the actual distribution of subject's gender. The chi-square statistical test was used to examine the popularity of each situation against the actual relative occurrence of the type of situation. Thus, the expected values for the chi-square are the actual distribution of the gender and the observed values are the actual choices made.

1) Choices for the A-seats

In the U.K., out of the overall total of 533 Single subject's events observed, 134 events involved choices for the A-seats. In Malaysia, out of the overall total of 560 Single subject's events observed, 101 events involved choices for the A-seats. Overall, majority of the choices for the A-seats involved the FF situation (45%) in the U.K while in Malaysia it involved the MM situation (34.7%) as shown in Figure 5.3.2.1 (a).

The choices by Male subjects for the A-seats in the U.K. involved a total of 45 events, whereby 13 events or 28.9% concerned the MM situation and 32 events or 71.1% concerned the MF situation. In Malaysia, this involved a total of 56 events, whereby 35 events or 62.5% concerned the MM situation and 21 events or 37.5% concerned the MF situation. While the proportion of choices made by the Male subjects as compared to the actual proportion of genders distributed were in favour of the MF situation in the U.K., choices were for the MM situation in Malaysia as shown in Figure 5.3.2.1(b). Thus, in the U.K. only 28.9% of the Male subjects' choices involved the MM situation despite 34.9% of the subjects actually distributed were males. However, 71.1% of the choices involved the MF situation even though only 65.1% of the

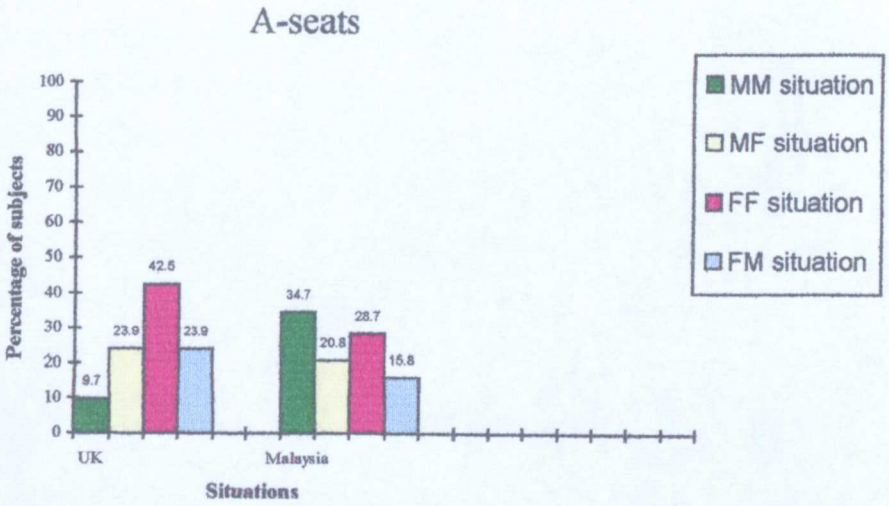


Figure 5.3.2.1 (a): Choices by Male and Female subjects in the U.K. and Malaysia for A-seats in relation to gender of adjacent person(s) in occupied seats.

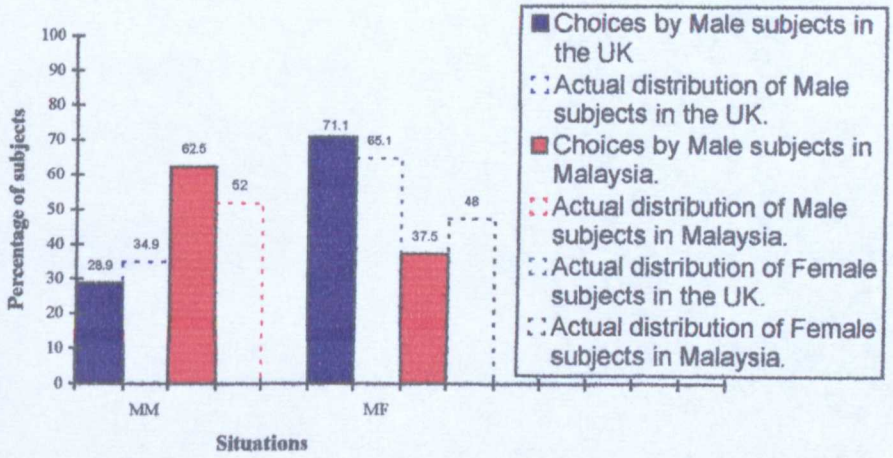


Figure 5.3.2.1 (b): Choices by Male subjects in the U.K. and Malaysia for A-seats in relation to gender of adjacent person(s) in occupied seats.

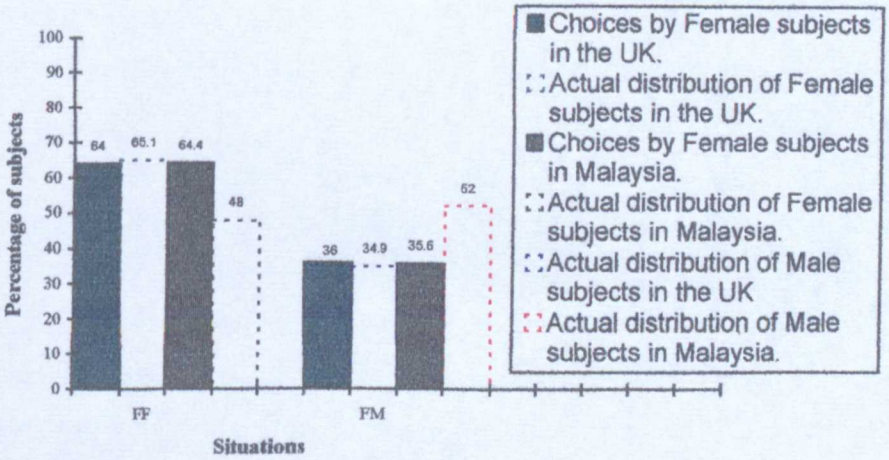


Figure 5.3.2.1 (c): Choices by Female subjects in the U.K. and Malaysia for A-seats in relation to gender of adjacent person(s) in occupied seats.

subjects actually distributed were females. By contrast, in Malaysia, 62.5% of the Male subjects' choices involved the MM situation even though only 52% of the subjects actually distributed were males. However, only 37.5% of the choices involved the MF situation despite 48% of the subjects actually distributed were females. Although the chi-square showed this finding to be not significant in the U.K., it is probably significant in Malaysia ($X > 4.42$, $0.05 > p > 0.02$, $df = 1$).

The choices by Female subjects for the A-seats in the U.K. involved a total of 89 events, whereby 57 events or 64% concerned the FF situation and 32 events or 36% concerned the FM situation. In Malaysia, this involved a total of 45 events, whereby 29 events or 64.4% concerned the FF situation and 16 events or 35.6% concerned the FM situation. While the proportion of choices made by the Female subjects as compared to the actual proportion of genders distributed were almost identical in the U.K., choices were in favour of the FF situation in Malaysia as shown in Figure 5.3.2.1 (c). In Malaysia, 64.4% of the choices involved the FF situation even though only 48% of the subjects actually distributed were females. However, only 35.6% of the choices involved the FM situation even though 52% of the subjects actually distributed were males. The chi-square revealed this to be significant ($X > 10.77$, $0.01 > p > 0.01$, $df = 1$).

2) Choices for the A1-seats

In the U.K., out of the overall total of 533 Single subject's events observed, 78 events involved choices for the A1-seats. In Malaysia, out of the overall total of 560 Single subject's events observed, 84 events involved choices for such seats. Overall, majority of the choices for the A1-seats involved the FF situation (50%) in the U.K while in Malaysia it involved the MF situation (31%) as shown in Figure 5.3.2.2 (a).

The choices by Male subjects for the A1-seats in the U.K. involved a total of 25 events, whereby 13 events or 52% concerned the MM situation and 12 events or 48% concerned the MF situation. In Malaysia, this involved a total of 46 events, whereby 20 events or 43.5% concerned the MM situation and 26 events or 56.5% concerned the MF situation. While the proportion of choices made by the Male subjects as compared to the actual proportion of genders distributed were in favour of the MM situation in the U.K., choices were for the MF situation in Malaysia as shown in Figure 5.3.2.2 (b). Thus, in the U.K. 52% of the Male subjects' choices involved the MM situation even though 34.9% of the subjects actually distributed were males. However, only 48% of the choices involved the MF situation despite the 65.1% of the subjects actually distributed were females. By contrast, in Malaysia, only 43.5% of

A1-seats

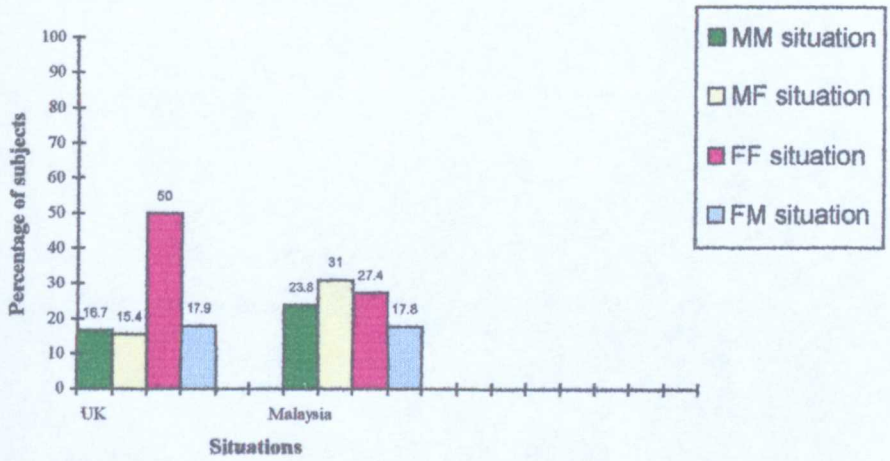


Figure 5.3.2.2 (a): Choices by Male and Female subjects in the U.K. and Malaysia for A1-seats in relation to gender of adjacent person(s) in occupied seats.

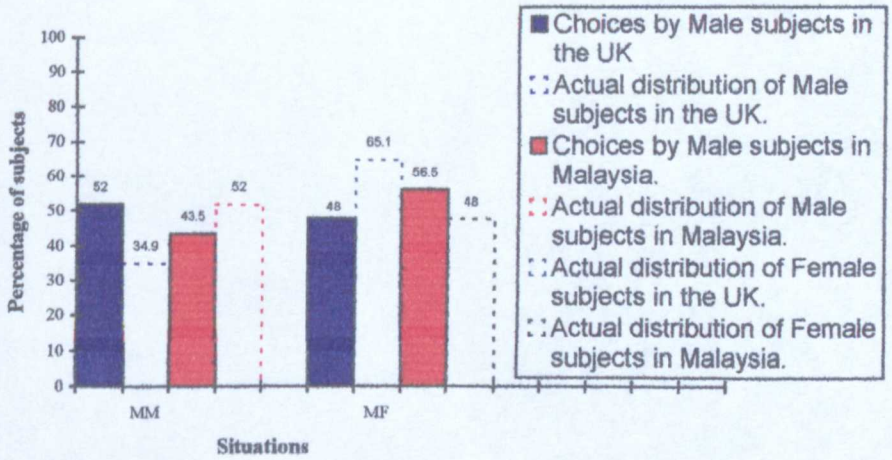


Figure 5.3.2.2 (b): Choices by Male subjects in the U.K. and Malaysia for A1-seats in relation to gender of adjacent person(s) in occupied seats.

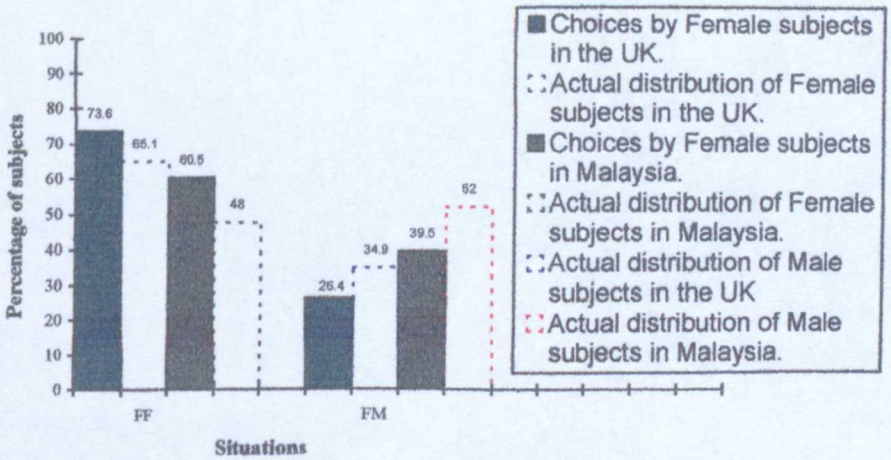


Figure 5.3.2.2 (c): Choices by Female subjects in the U.K. and Malaysia for A1-seats in relation to gender of adjacent person(s) in occupied seats.

the Male subjects' choices involved the MM situation despite 52% of the subjects actually distributed were males. However, 56.5% of the choices involved the MF situation even though only 48% of the subjects actually distributed were females. The chi-square showed this finding to be highly significant in the U.K. ($X > 12.87$, $p < 0.001$, $df = 1$), but not significant in Malaysia.

The choices by Female subjects for the A1-seats in the U.K. involved a total of 53 events, whereby 39 events or 73.6% concerned the FF situation and 14 events or 26.4% concerned the FM situation. In Malaysia, this involved a total of 38 events, whereby 23 events or 60.5% concerned the FF situation and 15 events or 39.5% concerned the FM situation. The proportion of choices made by the Female subjects as compared to the actual proportion of genders distributed were in favour of the FF situation in both the U.K. and Malaysia as shown in Figure 5.3.2.2 (c). Thus, in the U.K. 73.6% of the Female subjects' choices involved the FF situation even though 65.1% of the subjects actually distributed being females. Only 26.4% of the choices involved the FM situation despite 34.9% of the subjects actually distributed being males. Similarly, in Malaysia, 60.5% of the choices involved the FF situation even though only 48% of the subjects actually distributed were females. However, only 39.5% of the choices involved the FM situation even though 52% of the subjects actually distributed being males. Although the chi-square showed this finding to be not significant in the U.K., it is significant in Malaysia ($X > 6.26$, $0.01 > p > 0.01$, $df = 1$).

Discussion

Based from this analysis, it was revealed that there were differences in the choices made by the subjects in relation to the gender of the adjacent person(s) already in seats between both the countries.

In the U.K. men tended to sit next to women rather more than would be expected, whereas in Malaysia the opposite was the case. However, the results were not strikingly significant. By contrast, in both countries woman were more inclined to sit next to another women.

There thus exist a cultural difference in the choices for seats in relation to the gender of adjacent person(s) already in seats between the two countries. In the U.K., choices by both the genders for the A-seats were not significantly influenced by the gender of the adjacent person(s) already in seats. However in Malaysia, it is significant that choices by both the genders were for the adjacent person(s) to be of the same gender. Preference for the same gender situation in Malaysia could probably due to the Malaysians practising their Muslim faith in the call for segregation between the genders. In Malaysia the A-seats are regarded as being in close proximity and hence their avoidance wherever possible when it involved the adjacent person(s) being of the opposite gender. This is further demonstrated by the preference for the MF situation when it comes to the choices for the A1-seats, considered to be of lesser close proximity by the Male subjects, although the chi-square showed this to be not significant. Preferences by the Female subjects in Malaysia for the FF situations in both A-seats and A1-seats and showed to be significant by the chi-square tests clearly demonstrated their preferences to be away from the opposite gender.

Summary

This section had dealt with the factors that might affect people's choice of seats in relation with other people already in seats in the waiting area. Two factors were identified for the purpose of this analysis. The first factor involved the effects of occupancy on the choices for the type of seat adjacent to the occupied seats. The second factor involved the influence of gender of the adjacent person(s) already in seats. Results are as summarised in Table 5.3.1 and 5.3.2.

Results of the analysis on the effects of occupancy on the choices for seats adjacent to the occupied seats revealed that in the U.K., the degree of occupancy did not affect the subjects' choices for seats, unlike in Malaysia. The Malaysians showed greater sensitivity with the increase in the presence of other people in their choices for seats.

Results also showed that in the U.K., men tended to sit next to another woman rather more than expected unlike in Malaysia. Females in both countries significantly tended to sit next to their own gender. The results indicate that subjects in Malaysia were governed by their Islamic faith in avoiding close proximity between the different genders.

Table 5.3.1: Person-Person Relationship

- Summary of Chi-square test on Single subjects' seating choices of adjacencies to occupied seats & percentage of occupancy in the U.K. and Malay

Purpose of test : To investigate whether some seats were more popular than others.

			UK		Malaysia	
	Degree of seat occupancy	**Popularity of seat adjacencies**	**Chi-square Test**	**Significance**	**Chi-square Test**	**Significance**
1	Overall occupancy	All seats equally popular	0.8 p > 0.7 (X >0.6; df=2)	NS	0.1 > p > 0.05 (X > 5.13; df=2)	NS
2	Minimum occupancy (<10%)	All seats equally popular	0.9 > p > 0.8 (X >0.24; df=2)	NS	0.5 > p > 0.3 (X > 2.1; df=2)	NS
3	Occupancy between 11-20%	Some seats more popular than others	0.9 > p > 0.8 (X >0.34; df=2)	NS	0.05 > p > 0.02 (X > 7.19; df=2)	PS
					AM-seats most popular.	
4	Occupancy between 21-30%	Some seats more popular than others	0.9 > p > 0.8 (X >0.4; df=2)	NS	0.05 > p > 0.02 (X >7.35; df=2)	PS
					A1-seats most popular.	
5	Occupancy between 31-40%	Some seats more popular than others	0.9 > p > 0.8 (X >0.27; df=2)	NS	0.5 > p > 0.3 (X > 2.23; df=2)	NS
					AM-seats most popular.	
6	Occupancy between 41-50%	Some seats more popular than others	0.3 p > 0.2 (X >2.93; df=2)	NS	0.5 > p > 0.3 (X > 1.77; df=2)	NS
			A1 and AM-seats more popular.		A-seats most popular	

Key: p = probability; X = sampling distribution; df = degrees of freedom; HS = highly significant; PS = probably significant; NS = not significant.

A-seat = immediately adjacent seat; A1-seat = next-to-immediately adjacent seat; AM = other seats.

Table 5.3.2: Person-Person Relationship

- Summary of Chi-square test on Single subjects' seating choices in relation to gender of adjacent person(s) in the U.K. and Malaysia.

Purpose of test : To investigate popularity of seats

			UK		Malaysia	
	Category of adjacent seat	**Popularity of seats**	**Chi-square Test**	**Significance**	**Chi-square Test**	**Significance**
1	**Choices for A-seats:**					
	a) Male subjects	In relation to either gender	$0.3 > p > 0.2$ ($X > 0.27$; $df=1$)	NS		
		In relation to same gender			$0.05 > p > 0.02$ ($X > 4.42$; $df=1$)	PS
	b) Female subjects	In relation to either gender	$0.9 > p > 0.8$ ($X > 0.05$; $df=1$)	NS		
		In relation to same gender			$0.01 > p > 0.001$ ($X > 10.77$; $df=1$)	S
2	**Choices for A1-seats:**					
	a) Male subjects	In relation to either gender			$0.1 > p > 0.05$ ($X > 0.05$; $df=1$)	NS
		In relation to same gender	$p < 0.001$ ($X > 12.87$; $df=1$)	HS		
	b) Female subjects	In relation to either gender	$0.1 > p > 0.05$ ($X > 3.18$; $df=1$)	NS		
		In relation to same gender			$0.02 > p > 0.01$ ($X > 6.26$; $df=1$)	S

Key: p = probability; X = sampling distribution; df = degrees of freedom; HS = highly significant; S = Significant; PS = probably significant; NS = not significant.

5.4.0 Results of interviews

This section analyses on the results of interviews conducted in health centres in the U.K. and Malaysia.

In the U.K. interviews were conducted with ten practice managers and five receptionists. No interviews were made with subjects. In Malaysia interviews were conducted with ten practice managers and one hundred subjects involving equal numbers of male and females. Attempts to interview the receptionists failed because they were either personally reluctant or too involved with their work as most of the health centres in Malaysia were under staffed.

As was mentioned in Chapter 4, the interviews were structured with open-ended questions aimed at the person's perceptions of the waiting situations, including complaints about the waiting area from the users. Results of the interviews are as follows.

5.4.1 Practice managers

All the practice managers were interviewed except for one in the U.K. who was not available when the interview was conducted. In total ten practice managers were interviewed each in the U.K. and Malaysia. Results of the interviews are as summarised in Table 5.4.1.

In response to the question on the general working environment, 90% of those in the U.K. found the place acceptable. In Malaysia 40 % complained of being under-staff.

In the U.K., 20% noted that staffs were involved during the design stage of the health centres. In terms of merits, 40% in the U.K. felt that the building functions well, as compared to 90% in Malaysia. In terms of demerits, in the U.K. 40% complained that the records storage area were too small, 10% suggested that the records storage area should be adjacent to the reception area, and another 10% complained about the travelling distance between accommodations. In Malaysia, 10% complained of the lack of storage space for the extra seats, while another 10% suggested that the waiting area should be larger.

In relation to the physical environment of the waiting area, in the U.K. 40% felt that it was acceptable as compared to 80% in Malaysia. In terms of demerits, in the U.K. 20% complained about the poor ventilation, 20% complained about the unreliable air-conditioners, 10% complained about poor lighting, 10% complained about the lack in sound-proofing for the

Table 5.4.1: Result of interviews with practice manager in the UK and Malaysia

Practice managers' comments	UK (%)	Malaysia (%)
1 Working here		
Acceptable	90	100
Problems:		
1. Lack of staffs		40
2 Plan Layout		
a) Staffs involved during design stage	20	
b) Merits		
i. Functions well	40	90
c) Demerits		
i. Records area too small	40	
ii. Reception and records should be adjacent	10	
iii. Long distances between accommodations	10	
iv. No store for extra seats.		10
v. Waiting area should be larger		10
3 Environment of Waiting Area		
a) Merits		
i. Acceptable	40	
b) Demerits		
i. Poor ventilation.	20	10
ii. Poor lighting	10	10
iii. No sound-proofing for consulting room	10	
iv. Air-cond not reliable	10	
v. Noisy play area	10	
vi. Heating problem	10	
4 Users complaints		
a) Plan Layout		
i. Elderly felt area too large (like mini hospital)	10	
b) Environment		
i. Noisy play area	10	
ii. Lack privacy at reception	40	
c) Provisions		
No tv or reading materials.		10
Need more seats		10
d) Others		
i. Long waiting time		20
5 Suggestions for improvement		
a) Plan Layout		
i. Consulting rooms to have adjoining door.		10
ii. Need for additional consultation room.		10
iii. Waiting area needs to be larger.		
iv. Provide extra treatment room	10	
v. Provide storage space for cleaners	10	
vi. Provide space for health education	10	
b) Environment		
i. Consulting rooms should be air-conditioned.		10
ii. Waiting area should be air-conditioned.	10	10
iii. Provide background music	10	
c) Provisions of:-		
i. Reading materials		20
ii. Play area		10
iii. PR officer		10
iv. Television		10
v. Public phone		10
vi. Drinking water		10
vii. Playground	10	
viii. Cctv at outside for security	10	

consultant rooms, and 10% complained about the children's' play area being too noisy. In Malaysia, 10% complained about poor ventilation and another 10% on the poor lighting.

Regarding complaints from users, in the U.K. 40% mentioned about the lack of privacy at the reception area, 10% felt the area was too large (like a mini-hospital), and 10% about the noisy children's' play area. In Malaysia, 20% mentioned about the long waiting time, 10% about the non-provisions of either television or reading materials, and 10% on lack of available seats during peak hours.

Several suggestions were proposed by the practice managers to improve the conditions of the health centres. In the U.K. 10% suggested the provision of extra treatment room, 10% on storage space for cleaners, and 10% on space for health education. In Malaysia, 10% suggested for the provision of a common door between adjacent consulting rooms, and another 10% on the provision of extra consulting room.

In relation to improving the physical environment of the health centres, in the U.K. 10% suggested for the waiting area to be air-conditioned, and another 10% on provision of background music. In Malaysia 10% each proposed that the consulting rooms and waiting area to be air-condition.

Regarding other suggestions, in the U.K. 10% proposed the provision of outdoor children's play area, and another 10% on the provision of c.c.t.v. for security reasons. In Malaysia 20% suggested for the provision of reading materials, 10% each for the provision of children's play area, public relation officer, television, public telephone, and drinking water.

5.4.2 Receptionists

In the U.K., receptionists from only five out of the eleven health centres participated in the interview. The rest did not participate because they were too involved with their work. In Malaysia, attempts to interview the receptionists failed because they were either personally reluctant or too involved with their work as most of the health centres were under-staffed. Results of the interview with the British receptionists are as summarised in Table 5.4.2.

All of the receptionists found the working environment and the physical environment to be acceptable.

Table 5.4.2: Rresult of interviews with receptionists in the U.K.

	Receptionists' comments	Percentage responded
1	**Working here**	
	No problems	100
2	**Plan Layout**	
	a) Merits	
	i. Functions well	60
	b) Demerits	
	i. Records area to be larger	40
	ii. Waiting area should be larger	20
3	**Environment of Waiting Area**	
	Acceptable	100
4	**Users complaints**	
	i. Lack privacy at reception	60
	ii. Seating arrangement too regimented	20
5	**Suggestions for improvement**	
	i. Provide extra treatment room	20

In relation to the overall layout of the health centres, 60% felt that the building functions well. In terms of demerits, 40% and 20% complained that the record storage area and the waiting area, respectively, were too small. 20% suggested for the provision of an extra treatment room.

Regarding user complaints, 60% mentioned about the lack of privacy at the reception area, while 20% on the regimented seating arrangement at the waiting area.

5.4.3 The subjects

Interviews were conducted only with subjects in Malaysia. Ten subjects per health centre involving equal numbers of males and females were randomly selected for the interview. In total this involved one hundred subjects. Results of the interview is as summarised in Table 5.4.3.

In relation to the plan layout of the waiting area, 99% found the place acceptable, while 1% felt that it should be larger.

Regarding the environment of the waiting area, while 98% were satisfied, 2% complained that the place was warm.

A total of 94% found the seating arrangement acceptable, while 2% each complained that it was too cramped, and the arrangement being disorderly. 1% each complained that it was too regimented, and the length of the rows of seats being too long.

Regarding the reasons in their choices for seats, a total of 94% related them to the distance of seats from other features in the waiting area; that is, 53% chose to be near the route to the consulting rooms, while 41% chose to be near the reception area. A total of 12% related their reasons with nearness to objects; that is, 5% to ceiling fans, 2% to external door (for natural ventilation). A total of 67% related them to views from seats; that is, 35% chose seats with a good view of the route to the consulting rooms, 26% with view of the caller, 5% with view of television, and 1% with outside view. A total of 15% gave their reasons in relation to other persons; that is, 7% chose to be away from the crowd for a peaceful mind, 5% chose to be near to another person, and 3% chose to be away from the sick for fear of infections.

In relation to reasons for not starting a conversation with adjacent person (stranger); 42% responded because of shyness, 42% said they would start a conversation, 9% felt it was not appropriate, 3% felt too sick, 2% were afraid they might make noise and disturb other patients, and 2% said they were not interested.

Table 5.4.3: Result of interviews with subjects in Malaysia.

	Subjects' comments	Percentage Responded
1	**Plan of waiting area**	
	Acceptable	99
	Area should be larger	1
2	**Environment**	
	Acceptable	98
	Too warm (uncomfortable)	2
3	**Seating layout**	
	Acceptable	94
	Too cramped	2
	Seats not arranged properly (disorderly)	2
	Too regimented	1
	Seat rows too long	1
4	**Reasons for choosing the particular seat**	
	Nearest distance to:-	
	Entry to consulting rooms	53
	Reception	41
	Easy view of:-	
	Entry to consulting rooms	35
	Caller	26
	Outside	1
	In relation to objects:-	
	Fan	5
	Television	5
	Main entrance door (for natural ventilation)	2
	In relation to other persons:-	
	To be near another person	5
	To be away from other person	
	- away from the crowd for peace	7
	- afraid might be infected by the sick	3
	No special reason	7
5	**Reasons for not starting a conversation with adjacent person**	
	Feel shy (afraid might disturb the other person)	42
	Would start conversation	42
	Not appropriate	9
	Too sick	3
	Not interested	2
	Afraid might create noise and disturb other persons	2
6	**Reaction if adjacent person (stranger) started conversation**	
	Would responsd fully if the other person is friendly	57
	Depends on the topic	39
	Would reply briefly (not encouraging)	4
7	**Content of conversation**	
	Personal (eg. relating to sickness, family, etc.)	88
	Impersonal (eg. weather, current issues)	7
	Both impersonal and personal	5

Discussion

Based on the interviews conducted, the practice mangers in both countries and the receptionists in the U.K. were generally satisfied with the working environment of their health centres, except for the problem of being under-staff in Malaysia.

The buildings seemed to function well in Malaysia, but in the U.K. the records storage area seemed to be smaller than required.

Generally, the physical environment of the health centres was acceptable, apart from minor complaints concerning ventilation, heating and lighting.

In Malaysia, majority of the subjects was satisfied with the plan layout, seating layout (although nearly all were regimentedly arranged) and the environment of the health centre (although the researcher perspired most of the time, due to the hot and humid weather while conducting this research).

In their reasons for seat choices, majority related them to the nearness to the consulting rooms and reception area, and a good view of the consulting rooms and the caller. A smaller proportion related them due to the presence or absence of other people.

In terms of not starting a conversation with the adjacent person, some said they would start a conversation while a similar proportion responded because of their shyness.

Although interviews were not conducted with the subjects in the U.K., the most common complaint they lodged to the practice managers and the receptionists was in the lack of privacy at the reception area. In Malaysia, amongst other minor complaints by the users include the length of waiting time.

Summary

The interviews conducted involved five receptionists and ten practice managers in the U.K. and ten practice managers and one hundred subjects of equal proportion from both genders in Malaysia.

Apart from the minor complaints about the poor ventilation, heating and lighting, generally, staff and users in both countries were satisfied with the environment of their health centres.

Although the lack of privacy (audio and visual) was clearly visible at the reception area in health centres in both countries, surprisingly (or rather unsurprisingly) only the British subjects did complained about it.

6.0.0 Discussion

6.0.0 Discussion and Conclusion

This section is divided into four main parts. The first part summarises the main findings from different stages of the research - the review of the literature, the methodology, and the survey results. The second part discusses the findings in relation to the initial hypothesis. The third part lists the resulting contribution to knowledge. The last part lists suggestions for future studies in this field.

6.1.0 What has this thesis shown?

6.1.1 Literature review

a) Most of the literature reviewed in this field of research was Western-based but misleadingly presented as a global perspective.

b) Culture is integral to the study of proxemics. Therefore a 'truly' cross-cultural approach is necessary for global comparison.

c) The study on proxemics is complex: it involves variables such as subjects' gender, age, personality, status, relationships, acquaintanceship, culture, similarity/dissimilarity; and the situation of the interactions. In addition, the literature shows that proxemics is interrelated with other aspects of human spatial behaviour such as territoriality, privacy and crowding. 'Privacy' seemed to bind together all these aspects.

d) Much of the findings on existing studies concerning proxemics have been inconclusive Several authors (for example, Love and Aiello, 1980, p. 102; Slane, et.al.1981, p. 151; Pedersen and Sabin,1982, p 1062; Hayduk, 1983, p.296; Aiello, 1987, p.409; Bell, et. al., 1996, p. 21-22) have stated that questionable methodology is the reason for this. They proposed that the study of proxemics should be carried out in the field rather than in laboratories; unobtrusive; and 'truly' cross-cultural.

6.1.2 New technique

The *field or naturalistic unobtrusive observation* method produced a large amount of reliable data. A new technique for measurement was adopted. This involved the use of *Autocad* to produce fast repetitive plans showing the seating layouts per event – that is the moment when a subject chooses an unoccupied seat. Details about subjects' gender and the seats chosen per event were depicted in the plans, making detailed analysis of the data fast and easy.

6.1.3 Results of the field study

Within the limitations of the present research to be discussed in section 6.2.0, results of the field study as summarised in Table 6.1.0 were as follows:-

A) Cultural observations

a) Seating layout

Seating layouts in the U.K. seemed to be mostly (in seven out of eight health centres) sociopetal, where the layouts tended to orient people towards the centre. However, in Malaysia all the layouts (in ten health centres) were arranged in a series of rows and thus sociofugal, which tended to disperse people from the centre. People in the U.K. tended to face each other more than those in Malaysia.

b) Reading culture

While reading materials were available in almost all (in seven out of eight health centres) the health centres in the U.K., these were totally absent in all the ten health centres in Malaysia. There seemed to be a different reading culture between people in the two countries.

B) The Analysis

a) The subjects

i) Subjects' grouping

Majority of the subjects in both countries were Singles (S), with 62.6% in the U.K. and 55% in Malaysia. Thus the proportion of Single (S) subjects were slightly more in the U.K. than those in Malaysia.

ii) Gender distribution

The proportion of Male subjects to Female subjects was 1:2 in the U.K. while being 1:0.8 in Malaysia. The disproportionate distribution of the different genders in both countries did not influence the choices for seats made by the overall population.

iii) Age distribution

The age distribution of subjects between the two countries was almost proportionately similar, and thus comparable.

b) Person-Environment Relationship

i) Seat row position.

Choices for the end-seats in a row of seats were highly significant in both countries.

6.1.0 Summary of findings

	U.K.		Malaysia	
A. The subjects				
A1. Overall				
	Numbers	**%**	**Numbers**	**%**
1. Gender				
Male	273	34.9	395	52
Female	510	65.1	365	48
2. Grouping				
Single	490	62.6	464	55
Non-single	293	37.4	296	45
A2. Single subjects				
1. Gender				
Male	161	32.9	258	55.6
Female	329	67.1	206	44.4
2. Events				
Male	170	31.9	311	55.5
Female	363	68.1	249	44.5
B. Person-Environment Relationship : Results of Chi-squared test				
	Popularity of seats	**Sig.**	**Popularity of seats**	**Sig.**
1. Seat row positions	E-seats most popular	S	E-seats most popular	HS
2. Views from seats of:-				
2.2 Caller	Seats with some view most popular	HS	All seats equally popular	NS
			(note: All seats were with view)	
2.2 Route to consulting rooms	Seats with some view most popular	S	Seats with some view most popular	S
			(note: All seats were with view)	
2.3 Outside	Seats with good view most popular	S	Seats with good view most popular	HS
2.4 Television	Seats with good view most popular	NS	Seats with good view most popular	S
2.5 Childrens play area	Seats with good view most popular	HS	not available	
2.6 Other persons in seats	All seats equally popular	NS	Seats with difficult view most popular	HS
3. Distances from seats to:-				
3.1 Reception area	Distance <5m most popular	HS	Distance <5m most popular	HS
3.2 Route to consulting rooms	Distance between 3-5m most popular	HS	Distance <3m most popular	HS
3.3 Reading materials	Distance <3m most popular	HS	not available	
C. Person-Person Relationship : Results of Chi-squared test				
1. Choices for adjacently occupied seats in relation to occupancy				
	Popularity of seats	**Sig.**	**Popularity of seats**	**Sig.**
1.1 Less than 10%	All seats equally popular	NS	A1 seats most popular	NS
1.2 Between 11-20%	All seats equally popular	NS	AM seats most popular	PS
1.3 Between 21-30%	All seats equally popular	NS	A1 seats most popular	PS
1.4 Between 31-50%	All seats equally popular	NS	All seats equally popular	NS
1.5 Overall	All seats equally popular	NS	A1 seats most popular	NS
2. Choices for adjacently occupied seats in relation to gender				
Types of adjacent seat:-				
2.1 A-seats				
By Male subjects	In relation to either gender	NS	In relation to same gender	PS
By Female subjects	In relation to either gender	NS	In relation to either gender	S
2.2 A1-seats				
By Male subjects	In relation to same gender	HS	In relation to either gender	NS
By Female subjects	In relation to either gender	NS	In relation to same gender	S

Key: Sig. = Significant level; HS = Highly significant; S = Significant; PS = Probably significant; NS = Not significant

A-seats = Immediately adjacent to occupied seats; A1-seats = Next-to-A seats.

ii) Views from seats

In terms of views from the seats, the only similarity in the choices made between subjects from both countries was in the choices for seats with an easy view of the outside. While it was significant in the U.K., it was highly significant in Malaysia. In Malaysia, all the seats were with view of caller. Even then, the choices made for such seats were not significant. However in the UK although almost 30% of the seats distributed were with difficult view, such seats were the least popular. Instead, it was highly significant that choices were for seats with partial view of the caller.

In relation to view of the television, and other persons in seats, while such seats in the U.K. were all equally popular, in Malaysia it was significant that choices were for seats with an easy view of the television and highly significant for seats with difficult view of other persons.

In relation to view of children's play area, in the U.K. it was highly significant that choices were for the seats with easy view. This facility was not available in Malaysia.

iii) Distances from seats

In terms of distances from seats, the only similarity in the choices made between subjects from both countries was in their highly significant choices for seats with distances less than 5 m. from the reception area.

In relation to distances from seats to entry of route towards the consulting rooms, in the U.K. it was highly significant that choices were for seats between 3-5 m. In Malaysia, it was highly significant that choices were for seats less than 3 m.

In relation to distances from seats to the reading materials, in the U.K. it was highly significant that choices were for seats less than 3 m. This facility was not available in Malaysia.

c) Person-Person Relationship

i) Adjacent seats to those occupied.

All the types of seats adjacent to those occupied were equally popular in both countries.

ii) Adjacent seats to those occupied in relation to density of occupancy.

Unlike in the U.K., in Malaysia choices for seats adjacent to those occupied were associated with the density of occupancy. It was statistically significant that choices were for the other types of seats (AM-seats) and next-to-immediately-adjacent seats (A1-seats) when the density of occupancy was between 11-20% and 21-30% respectively.

iii) **Adjacent seats to those occupied in relation to gender.**

Unlike in the U.K., in Malaysia choices for seats were affected by the gender of those in immediately adjacent (A-seats). It is significant that choices for the A-seats were dependent on those of the same gender already in seats.

6.2.0 Discussion

6.2.1 Limitations

It is realised that an ideal comparative study should examine strictly comparable facilities based on similar provision of facilities with those to be compared. A detailed directory of provisions in health centres in the U.K. and Malaysia was not available, and coupled with time and financial constraint on the part of the researcher, choosing health centres for this research with similar provisions of facilities in both countries was not possible. Thus, health centres in both the U.K. and Malaysia were randomly selected. Even then some of the health centres chosen declined to take part in this research. In any case more directly comparable centres may not be available.

This comparative research could have been more successful if all the waiting area in the health centres in both countries were provided with televisions, an outside view, children play area, and reading materials. These features were involved in the Person-Environment relationship analysis. Sadly, some of the health centres studied were without some of these provisions.

Ideally also, the number of seats distributed in the waiting area should be similar. This was not the case for this research. In the U.K. the number of seats actually distributed per health centre ranges from 21 to 36 seats, providing an average of 27 seats per health centre. In Malaysia, it ranges from 19 to 80 seats, providing an average of 42 seats per health centre. This meant the number of seats actually provided in Malaysia per health centre almost double that provided in the U.K.. Because of this difference, there might be other psychological factors that could have influenced the behaviour of the people in both countries.

It is also not known whether other factors pertaining to the subjects such as personality, status, and acquaintanceship could have influenced the present findings.

In addition there have been studies done regarding the influence of the shape and size of an environment and its ceiling height in relation to human behaviour. The selection of waiting areas which were strictly comparable with such features again was not possible for this research.

6.2.2 Hypothesis

It was hypothesised that a 'truly' cross-cultural study and using the *field or naturalistic unobtrusive observation* method would be supportive of cross-cultural differences; the observed behaviour of the British subjects would demonstrate a tendency to maintain inter-personal space in their choice of seats, whereas the Malaysian subjects would demonstrate an interest in using the opportunity for social intercourse.

The hypothesis could be linked to a general view that the British would be shown to be more concerned with individual autonomy and privacy, while the Malaysians would be shown to be more concerned with mutual togetherness and a greater sensitivity to the presence of others.

6.2.3 The findings

Within the limitations of the present research as was discussed in section 6.2.1, and the Eastern cultural background of the present researcher, the following seemed to support the hypothesis:-

i) Subjects' grouping

There were more Single subjects in the U.K. than in Malaysia. While there could be several reasons for this, such as different life styles, single parent, or both the husband and wife are working, the quest for privacy by the British should not be discounted.

ii) End-seats

While Hall's (1966) proxemics framework involved standing interactions, much of Sommer's (1969) study though involved seating patterns, mostly are in relation to seating at tables. Apart from the studies by Collet and Marsh (1980) and Noesjirwan (1977), no other studies have involved seating patterns in a row of seats. Nevertheless, result of this research finding seemed to support the findings made by Collet and Marsh (1980), whereby single subjects in particular have preference for end seats positioned in a row. Sommer (1969) related the reason for choosing such seats with privacy. While this reason could probably be true in the British context, however, in Malaysia this could be also due to the narrower aisle width between the rows of seats, thus making it difficult to reach the other seat types. Also, it is much comfortable to occupy the end seats rather than the stuffier 'inner' seats in a hot and humid environment.

iv) View of caller and entrance to route to consulting rooms

In relation to view of caller, and entry of route towards the consulting rooms, while all the seats were equally popular in Malaysia, the choices made by the British were significant for seats with partial view. While there could be other reasons for not choosing seats with a good view of such facilities, nevertheless there exist differences in the choices made by subjects between the two countries.

v) View of television

Choices for seats with good view of television were not significant in the UK. However, in Malaysia the choice for such seats was significant. Those watching the television in public can

be considered as indulging themselves in a much lesser self-concentrating activity and thus make them more sociable and less private.

vi) View of other persons

While in the U.K., this was not an important criteria, suggesting their lack of sensitivity to others, by contrast in Malaysia it was highly significant that choices were for seats with difficult view, suggesting their sensitiveness toward the privacy of others. They would rather focus their attention to view the television or the outside view.

vii) Distance to entrance to route to consulting rooms

In Malaysia, for obvious reason highly significant emphasis was for seats nearest to entrance to route towards consulting rooms. In the U.K. highly significant choices were for seats neither too near nor too far from the entrance to route towards consulting rooms, that is within a range of between three to five meters. The route towards the consulting rooms can be considered to be busy with the coming and going of both staff and patients and thus considered to be less private. The choices by people in the UK to be not too near such area might indicate their preference for privacy.

viii) Distances to reading materials

Choices by the British for seats nearest to the reading materials suggest their intention in indulging into reading, a concentration activity, which might be regarded as less sociable.

ix) Degree of density in occupancy

Hall (1959, 1966) was amongst the first to note that members of different cultures react differently to crowding. Most empirical studies have emphasised the effect of high density crowding, and they all have supported Hall's contentions. For example, Nasar and Min (1984) found that the Mediterranean responded more negatively than the Asians when placed in a small, single dormitory room. In another study Gillis, et al (1986) found the Asians to be more tolerant of high density and British respondents being less adaptable, with Southern Europeans somewhere in between these two. Even though the Asians can adapt well in high density crowding they generally evaluated crowding as undesirable (Loo and Ong, 1984; Loo, 1986).

The present study however did not involve high density crowding, but rather of a medium density where overall, the maximum occupancy observed did not exceed 50% in both countries. As such symptoms of:- invasions of proxemics (e.g., Kaya and Erkip, 1999), aggressions (e.g., Baums and Paulus, 1987) or being stressfull (e.g., Aiello, et.al., 1975) were not visible amongst the subjects in the present research. Nevertheless differences were found between the samples in their choices for the adjacent seats to those occupied between the samples. Unlike in the U.K., in Malaysia choices were influenced when occupancy was between 11-30%. As such, unlike the British, the Malaysian samples seemed to show greater sensitivity towards the presence of others.

Regarding choices for the immediately adjacent (A-seat) seats to those occupied in relation to gender, in Malaysia there was significant preference for seating next to someone of the same

gender. This finding was not surprising as they were practising their Islamic faith in the avoidance of close proximity between people of the opposite gender. In the U.K. however people sat next to others of either gender.

However, it can also be argued, that if the British were more concerned with individual autonomy and privacy than the Malaysians, they would not have preferred the following choices similar to those made by the Malaysians:-

i) Seats with good outside view

Choices for such seats supported of the observations made by Sommer (1969, p. 85) who noted that amongst the favourite choices for seats involving the British were seats with outside view. Enjoying the outside view and of children's play area involved non-concentrating activities and thus could lead to socialising.

ii) Seats of distances less than 5m. to the reception area.

The area near to the busy and noisy reception area are considered less private They should have preferred the more private intermediary distance of between 3-5m.

iii) Any type of adjacently occupied seats.

Preferences should have been for the more private AM-seats, that is seats other than the immediately adjacent (A) seats or next-to-A seats as revealed by Sommer (1969, pp. 61-73) and Cook (1970, p. 64) who noted the preference by the British for the most distant seats when the activity involved co-acting, a typical activity in any waiting area.

iv) Any type of adjacently occupied seats in relation to density

Preferences should have been for the more private AM-seats.

Therefore, while there are indications that the British tended to be more concerned with individual autonomy and privacy than the Malaysians regardless of the presence of others there are also indications suggesting similarities in choices with the Malaysians. Hence the findings seemed to be inconclusive.

In the formulation of the hypothesis for the present research, various authors (as mentioned in section 6.1.1 d) have argued that results of previous studies on proxemics were inconclusive because of their questionable methodology used. As such they have suggested adopting the 'truly' cross-cultural approach using the *field or naturalistic unobtrusive observation* method. Since the present research has adopted the suggested approach and yet resulted in inconclusive findings, perhaps the limitations of the present research mentioned in Section 6.2.1 have important bearings on the present findings.

6.3.0 Contribution

The research has made a contribution to knowledge in the following areas:-

a) As an addition to the scarcity in literature on 'truly' cross-cultural study on proxemics.

b) As an addition to the scarcity in literature on sitting habits at seats without tables.

c) As a new technique for measurement.

d) As an indication of possible cultural differences in proxemics behaviour between Eastern and Western cultures. This could be used as hypothesis for future studies.

6.4.0 Future Research

a) Difficulties were faced by the present researcher in trying to record all the data concerning the proxemics behaviour, the change of events and the activities involved, as these occasionally happened all at once. It is suggested that future studies should involve more than one person (assistants) to record the data during the data collection stage. Also, as unobtrusive observation is very important, co-operation from the doctors could be sought so that another person could interview subjects in the consulting rooms upon completion of their consultations. The co-ordination by the element of time between these assistants would be important in ensuring the data of a particular subject is accurately recorded.

b) Although not done in the present research, data such as the subjects' age and activities could be shown using different colour coding in the seating layout plans showing the different events. This technique of depicting all the data in each plan serves as a fast and easy reference for detailed analysis of the data.

c) An important subject for future research would include the effect of differences:- of the size, shape and height of the environment; of facilities such as name caller display, television, outside view, children's play area, reading materials; and the number of seats and seating layout. These data need to be inspected in establishing the validity of some of the results in the present study.

d) This research is believed to be the first research on human behaviour involving the Malaysians. As such there lies ahead further studies that could be carried out in relation to inter-cultural and cross-cultural proxemics behaviour involving the Malaysians in particular, and other eastern cultures in general. Within the inter-cultural level, comparative studies could involve the various ethnic communities of West Malaysia such as the Malays, Chinese, Indians, and those of East Malaysia involving the Kadazans, Bajaus, Ibans, etc.

Within the cross-cultural level, comparative studies could involve Malaysians with other eastern culture such as the Thais, Indonesians, Filipinos, Vietnamese, Koreans, etc. In short, studies on human spatial behaviour involving the eastern culture are still 'untapped'.

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