Personal Space as a Function of Sex and Locale

1975

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PERSONAL SPACE AS A
FUNCTION OF SEX AND LOCALE

BY

KATHERINE VALETTA SOUKUP
B.A., University of Florida, 1966

THESIS
Submitted in partial fulfillment of the requirements
for the degree of Master of Communication
in the Graduate Studies Program of
Florida Technological University

Orlando, Florida
1975
ACKNOWLEDGEMENTS

To Earle Richard Soukup,

Husband and Confederate Extraordinaire
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INTRODUCTION

The industrialists view the world of 2050 as a time of great technological expertise and leisure time. The ecologists see 2050 as a year of smoggy skies, ruined rivers, and devastation. An M.I.T. computer team, led by Dennis Meadows, "predicts a declining population, miserably short of everything," unless zero population growth is attained and all materials are recycled.1

The United States has reached the desired level of zero population growth, but has not turned from its consumist economy. The world population continues to grow at an unprecedented seventy million people per year.2 The emerging nations seek to improve their standards of living, increasing the pressure on remaining stores of natural resources. The stage is set for the human race, like Calhoun's rats, to deteriorate into snarling packs of paranoid animals.3

To avert the calamity of a steady diet of soybeans and seaweed, agronomists are working feverishly against 1980 deadlines of mass starvation for underprivileged nations. The ecologists are lobbying for sane use and preservation of natural resources, and the social scientists are seeking to understand the causes and effects of an individual's reaction to over-crowding.
It is this latter category with which this paper will be concerned. The classical study of rat behavior by Calhoun under conditions of over-crowding brought immediate parallels of rats to humans by some scientists as representative of behavior exhibited by fringe elements of society in our large cities. Many social scientists believe that the research is still in its embryonic stages, and that little foundation exists for these kinds of assessments. The whole body of research related to causes and effects of reactions to crowding is fragmented, and worried over by a broad spectrum of the social sciences. Approaches are varied and methods unrefined, while the intensity of the problem increases with each year's additional burden of population increase.

The purpose of this paper is to explore more fully the concept of personal space as it relates to future problems, and to initiate thinking toward more generalizable concepts through field experimentation.

Defined, personal space is the area "immediately surrounding the individual, where a majority of his interactions take place," or as Edward Hall describes it, "a series of fluctuating concentric globes of space, each defining a region for certain types of interaction." The factors influencing one's personal space, according to Becker, are familiarity, status, sex, age and situation.

Behavior and personal space is guided by an interaction involving a "dynamic distance maintaining system," which is a part of the individual's general interaction pattern. This makes the predictions of man's reaction to over-crowding even more difficult to assess. Attempts have been made, however.
Katz noted the term as early as 1937. Stern used "personal nearness" and Lewin coined the term "life space" in 1935. Interest in the field waned until studies by Calhoun and Hediger initiated a second generation of personal space research. Many have studied the topic, but only a few names persist in the literature, Little, Hall, Sommer and Becker to name a few.

Edward Hall's book, The Hidden Dimension, made some pertinent observations about human behavior that have generally been accepted. He divided the human personal space dimensions into intimate, personal, social and public zones. Working with linguist-scientist George C. Trager, he observed the changes in voices with the changes in distance and marked them off with chalk on the floor. Hall and Trager discovered that there were eight zones but that these could be collapsed into four general areas with a close and far-out phase for each. They proceeded to test their findings with personal interviews and observations. We are asked to accept their findings with the statement by the author, Hall, that his subjects were men and women from business and the professions:

Many could be classified as intellectuals. The interviews were effectively neutral; that is, the subjects were not noticeably excited, depressed, or angry. There were no unusual environmental factors, such as extremes of temperature and noise.

In light of today's trend toward more scientific approaches to the study of human behavior, Hall's research should be replicated for verification.

With this easy dismissal of methodology, the study of proxemics begins a new chapter. The research that follows Hall did not attempt
to verify his findings, but using this information as a base, branched out into several unique directions. The first area to be considered is a delineation of terms, useful in any science or quasi-science.

Franklin Becker, a University of California protege of Dr. Robert Sommer, and Dr. Clara Mayo of Boston University completed a joint study which distinguished the terms "territoriality," used in the animal studies and "personal space" used in proxemics. This apparently needed to be done, since many felt that Hediger and Calhoun's work had direct impact on human behavior. Whether the mechanism is the same for both phenomena has not been determined and research is still required in this area. The differences, however, are notable.

Dr. Sommer himself was responsible for this logical extension of Calhoun's work. He was careful to note, however, that this concept could be extended to humans as emphasizing physical possession, actual or potential.

Territoriality, is a means of marking one's territory, and both in humans and animals stems from the necessity to render the territory recognizable in order to occupy and defend it by marking its borders with vision, sound, smell or a combination of these sense modalities.8

In other words this becomes a demarking of "one's own turf."

The application of this concept to humans raises questions as to its correspondence value. Sommer and Becker did not imply that the underlying mechanisms of animal and human behavior in territoriality were identical. Personal space, on the other hand, has no specific typographical reference and cannot be recognized by the presence of some marker.9 The two concepts of territoriality and personal space
are similar in that their reference to "the structure of dynamic relations within a space time locus are the same."  

Sommer and Baker tested the difference between personal distance and territoriality in a study using 26 males and 22 females. Their method was to invade personal space in a university cafeteria setting during lunch. The experimenter would choose a table at which a standard marker had been left by a student, such as books or coat, prior to going to the line for lunch. The experimenter would sit in one of the three conditions: exactly in the same spot, adjacent to, or across from the chosen position. Defense was defined operationally by whether the subjects sat in the seat they had marked, or moved to some other seat. If the subject sat in the seat, this was defined as territoriality. If the subject moved to another seat, his reaction was classified as "no defense." In the invade condition 15 subjects moved rather than defend their space, as did 16 in the adjacent condition.  

The result of the study clearly showed the desire to stake out a personal space, but personal space was not valued to the extent that the subject was willing to defend it. The conclusion, then was that subjects were seeking to maintain distance between themselves and others rather than staking out territory.  

Kenneth B. Little's "Personal Space" study appeared in the Journal of Experimental and Social Psychology in 1965. The experiment introduced a silhouette technique for studying personal space, a technique which is used in later studies as a primary method of determining personal space. Little cited Hall's work as "personal space being
divided into three zones: intimate, casual-personal and social-consultative."\[13\] Little's work was either in error or Hall changed his original schema to four zones in his book *The Hidden Dimension* published a year later in 1966.

The purpose of Little's study was to present "a design to examine a restricted segment of problems while developing procedures for investigations of more generic issues."\[14\]

Little predicted, first, that interactions between two persons, classified variously as friends, acquaintances and strangers, would take place at an increasing rank order of distances. The second hypothesis was that the average interaction distances would increase with increased impersonality of the setting as the transitions shifted from a living room, to an office, to a street corner.\[15\]

The first experiment used a drawing background of the three areas: home, office and street corner, using paper doll silhouettes to be placed at varying distances in the scene by the subject. The experimenter would say, "here are two good friends, casual acquaintances, or strangers" as the condition required. "They have just met in the home of a mutual acquaintance and have been talking for about two minutes. Set them up on the board and tell me what they are talking about."\[16\] The purpose of the requested conversation was to focus attention on the verbal interaction rather than on the distances. The latter was recorded by the experimenter to the nearest 1/8th inch by marking grid marks on the board. Each subject arranged the figures with the nine possible degrees of acquaintanceship and background scenes. For female subjects all three testable factors, settings, interactions
and degrees of acquaintance were significant. For the male subjects, the effect failed to reach a significant level, but the trend was in the desired direction. The results appeared to substantially confirm the first prediction, but not the second.

A second study was conducted to determine the relationship between interaction distances as measured by the projective method and by live person interactions. Little again employed the silhouette techniques, using four male and female silhouettes made out of black plexiglass. The scale was one inch to the foot. The subjects were 37 female students from elementary psychology classes. The method was the same as in the first study, with one major exception. Upon the conclusion of testing, subjects were taken to the next room where a second experimenter waited with two actresses recruited from the drama department of the university. The subjects were then asked to take the role of a theatrical director and arrange the actresses in 12 scenes similar to those used in the original experiment. The experimenter handed the subject 12 cards on which the figure setting instructions had been typed. The order was randomized and even the experimenter did not know in which order the scenes would appear. The subjects completed a check list that included facial expressions, body attitude and placement on the stage. A picture was taken and then the next scene was arranged. The subjects indicated no awareness of distance as being the variable tested.

The results showed that perceived interaction distances in a dyad are markedly influenced by the degree of acquaintance by the two
The authors concluded that "the effect holds whether the people involved are line drawings, silhouettes or the real thing." While Little's work tended to confirm Hall's, it must also be said that his primary contribution was to establish an alternative method for studying personal space. His final directive should be noted. This study "pertains to North Americans—sub-species—college student," and that North Americans are "non-contact people with middle range personal spaces," "non-contact" being a term coined by Hall and Hediger in their studies. Latin Americans would cite this as further proof of North American coldness, while Englishmen would probably view us as being rather pushy.

Bass and Weinstein examined the early development of interpersonal distance in children. In the initial study, the authors cite Sommer's and Little's work, and on the basis of this research, hypothesize that sex differences would be more pronounced for nine year olds than younger children. "Specifically, at age nine, males were expected to remain further away from friends but closer to strangers than females would. Also, it was expected that differences would be found at grade levels." The degree of acquaintance was hypothesized to have some effect at all grade levels. Using a quasi-projective technique, this study attempted to determine whether interpersonal distance behaviors are shown by young children, ages five to nine, and how certain factors influenced such behavior. The factors examined were sex, grade, setting and degree of acquaintance. The task stimuli were four front view drawings of rooms presented in booklet form. Two scenes were used: the
principal's office and the living room. A silhouette of a child of the same sex and age was printed on the paper. The experimenter sat away from the scene and said to the child "Look at this room. It is the principal's office. Make believe the boy or girl in the room is your friend." Condition two was a living room and a friend; condition three was the principal's office and a stranger. The experimenter recorded where the child placed the figure. The dependent variable, the distance between the two figures, was measured. Finally, the experimenter recorded the verbal responses of the child as to why the child placed the figure where he did.

The results for the sex variable failed to reach significance. With the exception of grade one, males had a greater mean spatial distance for both friends and strangers in all situations. As hypothesized, grade had a significant effect on figure placement. Children in higher grades placed their figures farther away than children in lower grades. Setting effect was also significant. The mean spatial distance was greater in the living room than in the principal's office, the explanation being that children depended on peers in strange situations. The mean spatial distance for strangers was significantly greater in all settings and grades than for friends.

The results can be criticized for their over-generalizations. One such statement claims that since nine year old females behave essentially the same as nine year old males in their use of personal space, the distance effect is probably not relevant in the early ages.
Yet the authors contend that even though the sex variable failed to reach significance it was in the desired direction. This seems to be a contradiction.

There were some other problems in the study as well. The fact that the kindergarten children did not appropriately place their silhouettes bothered the experimenters, but they explained this by looking to Piaget, who said that the eighth year is the time for consolidating spatial perceptions. The fact that some of the children placed the silhouettes upside down or were unable to verbalize why they felt threatened or why they felt this space needed to be maintained, showed the lack of a pilot study and was responsible for the loss of about one fourth of the data collected. This points to a serious design problem, one that was not taken into account in the initial planning stages of the experiment. A better technique for using children of this age must be found. "Naturalistic observations in the environment, the use of doll-playing" 26 are techniques suggested by the authors.

While the Bass and Weinstein study attempted to find out at what age personal distance awareness became operative, the Dosey and Meisel study begins to work with the effect of personality traits. As in attitude theory research, this personality variable problem presents a tremendous barrier to progress. The way in which it is handled in the following studies might prove useful for communication scientists. Dosey and Meisel analyzed personal space and self-protection. They theorized that personal space acted as a buffer zone and would serve as a protective barrier for one's emotional safety. 27
The authors hypothesized that greater distances would be used "under stress conditions, by highly anxious people who perceive their body-image boundaries as weak or unstructured." The experimenters used the Rorschach test to assess body image boundaries and anxiety. Three methods for invasion of personal space were used: the silhouette method developed by Little, and approach/encroachment method, and a free-seating choice method. The stress condition was manipulated by calling the physical attractiveness of the subject into question. They accomplished this curious manipulation by telling the subjects that other participants would rate them on their sex appeal. A non-stress condition was also employed. The prediction that stress would increase spatial usage was supported for two of the three experimental conditions. The seating choice condition failed to reach significance. However, from the discussion of the methodology, it is impossible to determine whether they tested the subjects to see if their stress manipulation worked. From all appearances, they merely assumed that the subjects did react to the implied stress because their need for personal space was greater under the stress conditions.

The authors' further report an analysis of the correlations made for the personality variables of anxiety and body-image boundary. For each of these two variables there were 16 correlations: eight with the approach condition, using 4 same sex and 4 using opposite sex approach; 4 using the silhouette technique; and 4 using the seating choice method. Of these 48 possible combinations only two correlations showed significance, one for each of the anxiety and barrier scales. The authors do not report the precise combination, however. The
predictions for a relationship between personal space and personality variables are again unsupported, and consistency into the investigation of personality variables and their effect on personal space is maintained thus far.

This particular study can be faulted in one respect, however. It is suspected that a modeling effect may have been operative in the groups. The researchers checked for this consideration, suspecting that the subjects may have been imitating others in the groups, and though there was an indication that this was true, they still maintained that their hypothesis of increased spatial distance under stress was generally supported.

Two more personality variables were studied in John Williams' "Personal Space and Its Relation to Extraversion-Introversion." He used both the behavioral and questionnaire approach to test the hypothesis that extroverts should prefer being physically closer to people during an interaction than introverts.

Three approaches were used to test the theory, subjects participated in all three experiments, one performed right after the other. Out of 309 students, 20 extroverts and 20 introverts were chosen, based on the Maudsley Personality Inventory. Phase I included a discussion between a "decoy" (confederate) and the subject based on a general topic concerning Canadian military strength. The distance between the chairs at the end of the interaction was the measure for personal space requirements.

Phase two was the completion of a questionnaire which requested information concerning spatial preferences. Results of these phases
showed that in the case of minimum distance for comfortable conversation there was a significant difference in the two groups. Extroverts allowed experimenters to get significantly closer to them than did introverts.  

A study completed at the University of California at Riverside by K.V. McDowell, states as its goal: "To examine behavioral responses to the violation of personal space." The basic tenet behind this exploration is that an adequate investigation of personal space requires manipulation of that space.

Ninety University of California students were chosen randomly from the student directory. Four confederates, two males and two females, interacted with 20 subjects. Confederates were trained. Subjects were to be maneuvered to a counter where two conditions were enacted, the violated condition and the normal condition. The experimenter said very simply, "I would like for you to interact for about five minutes; just talk or chat about anything and I'll return with some forms for you to fill out."

From the observation room 35 mm. high speed, black and white photographs were taken and later used as raw interaction data. Subjects completed questionnaires based on Anderson's List of 200 Personality traits. These were on a one-to-seven, negative-to-positive range. The questionnaire asked them to describe the other individual's personality. Subjects were questioned about their suspicions regarding the experiment, paid and debriefed.

The results showed that the manipulation was done effectively. Confederates maintained a distance of 48 and 97 centimeters in the
violated and normal conditions, respectively. The interaction distance in the violated condition on the average was 56 centimeters, and in the normal condition 85 centimeters. Using the photographs, movement, body orientation, eye contact and looking were verified. No support was found for the hypothesis that a distance violation produces face-to-face confrontation with the violator. The analysis of the personality questionnaire showed that confederates were rated slightly more positively at the violated distance. Subjects saw the confederates at violated distances as being more talkative, friendly, and idealistic, and in addition as being less irresponsible, silent, studious, unfriendly and impractical. These failed to reach statistical significance, however. It is clear that a violation during an interaction produces a rather sudden and "dramatic response on the part of the victim to increase the distance between himself and the confederate." The interesting finding in the study is that even though the victim exhibits the flight response to the violator, there is little devaluation of the person in the questionnaire.

Upon reflection, however, the results can be questioned in that subjects' awareness of the participation in an experiment may have led to the inclusion of one or more subconscious mechanisms. The first of these mechanisms may have been a sympathetic response to the confederate. "He is just trying to do a good job; therefore, I will not penalize him in my evaluation of his performance." The second, mechanism might have been an alteration in the subject's response due to his awareness that he was participating in an experiment. He may have been more nervous, anxious, or possibly more passive and blase than usual. The third, and
quite possibly the most important, was the existence of a conscious attitude that the subject was supposed to take a positive disposition toward the confederate due to the nature of the experiment. Even though the experimenters say they attempted to control for awareness of the distance manipulation and checked the subjects at the conclusion of the experiment, it is possible that any of these mechanisms existed and went unnoticed and unmeasured.

Along with developing a method of studying the personal distance measures and checking for personality variables as an effectant, the research moves toward practical application. The following group of studies show how information on personal space measures may be applied.

The first of these is a study by Rawles, Rawles, Trego and McGaffey, 1972. The study was concerned with personal space as a predictor of performance under close working conditions. Using Little's definition of personal space, the author's stated their purpose.

The two experiments reported here were undertaken to determine whether or not personal space measures could be used to predict performance on certain tasks in relation to the degree of closeness under which the task is performed.40

The research team determined the individual's personal space in the study by a field experiment. The experimenter told the subject to walk toward a confederate until he felt comfortable in engaging him in conversation. High and low personal space scores were compared to scores on psychomotor arithmetic tests, using varying degrees of closeness in the first experiment which they performed on 56 students at TCU. The experiment included tests on three psychomotor tasks taken from Rands Repetitive Psychological Measures. They involved eye-to-hand coordination, flexibility of closure, and visualization. Subject were
then tested under three conditions of closeness. Two, four, and eight subjects were tested while seated around a table 30 by 60 inches. Each of the subjects performed three tasks under each of the three conditions. Having been randomly assigned to the condition, they were put in a small room deliberately made to look cramped and crowded. Subjects were ranked according to their personal space measures. Low personal space scorers were not significantly affected by crowding. The results continued in this vein over the other tasks. A second experiment was performed using the same field test. A modified number facility task of rapid addition was used. Pretesting was done to insure validity. The procedure for this experiment involved two conditions of closeness. Two and eight subjects were tested around the same size table as in the previous experiment. Subjects were scheduled so that half took the test under the two subject condition first, while the other half took the eight subject condition. Subjects were again ranked according to their personal space scores. A low personal space score ranged from six to eighteen inches. High personal space scores were from twenty-one inches to seven and three-fourths feet. The results of the data analysis showed that

subjects in the upper half of the personal space distribution worked more arithmetic problems and got more problems right than did the subjects in the lower half of the personal space distribution, regardless of conditions of closeness.41

The finding was unexpected for two reasons. First, subjects were of similar backgrounds in both groups, and second, because in Experiment 1 no such differences in performance were apparent. While inspection of the means indicates:
high personal space scorers worked more problems correctly under both conditions. It also shows that low personal space scorers worked more problems correctly under the eight subject conditions, than they do under the two subject condition.42

The study showed that low scorers in the personal space measures seemed to be enhanced by being in a larger group. The larger group seemed to facilitate the number of problems they worked. Conversely, high personal space scorers in the larger group had a reduction in correct answers. It is possible that the stress resulted from the close conditions for the high personal space scorers.43 Again, however, stress was not directly measured, so there is no assured validity.

Sommer and Becker, 1971, tested room density and user satisfaction. Their rationale for the study was that a college classroom "derives from a single student population which is relatively homogenous in age, education, and socio-economic status." A college classroom varies in density from hour to hour depending on class size. Observations were taken over a period of four years in one particular room whose average class sizes varied from five to twenty-two with a mean of thirteen. Various courses met in this classroom over that time: Russian, engineering, English and business. Instructors were also asked to participate in the experiment and as many as possible were contacted to fill out the paper and pencil rating. On a four point scale, excellent, satisfactory, minor or major improvements needed; the results showed that in classes consisting of from five to ten students, twenty-seven percent of the responses were complaints, rising to 30% in classes of 11 to 15, and 34% in classes of 16 or more. Sommer states that it is possible that their results were confounded by the study of only a single classroom, but it does seem to appear...
that there is a connection between density and user satisfaction. The correlations were not large because,

it is undoubtedly due to the random error inherent in any field study. Results make it clear that psychologists must deal with organisms in environment separately.44

Since complaints of ventilation in the room ranged from zero in small classes to 95% in classes of 20, it is obvious, at least to Sommer, that an ecological perspective will require concepts of people in situations rather than of people on the one hand and situations on the other.

Thayer and Alban display a unique manipulation of personal space in "A Field Experiment on the Effect of Political and Cultural Factors on the Use of Personal Space." Their rationale for the choice of a field experiment was to

remove the demand characteristics of most experimental lab studies of interaction distance by the use of a naturalistic situation, and further, it sought to extend the generalizability of proxemic phenomena by the use of noncollege sample.45

Subjects were 44 male pedestrians 25 to 55 years old who were walking alone and in the direction of the experimenter. The experimenter, 25 and well-groomed, approached the subject wearing a 4" x 2" button on his breast pocket showing either the American flag or the peace symbol, and asking for directions to Chinatown. As soon as subjects began to reply, the experimenter moved to within six inches of the subject.

The distance the subject assumed immediately after the experimenter's movement was recorded by an observer who noted the number of inches from the subject's shoe to the experimenter's closest shoe, using the natural grid of the premeasured concrete sidewalk as a guide.46
The subjects were drawn from Greenwich Village and Little Italy, two strikingly different political-ethnic neighborhoods. No significant differences in the personal space of individuals was noted in the liberal neighborhood regardless of type of button worn by the experimenter. The findings were discussed in terms of the likelihood of "exposure to, and tolerance of, extreme political diversity within the two neighborhoods samples, as well as necessary releasers for ethnically predisposed proxemic behavior." 47

The studies reviewed above still present an incomplete picture. This is particularly devastating since what happens to people under conditions of over-crowding, is no longer a matter of laboratory speculation. Robert Sommer, a leader in the field of personal space design and awareness reports that in Hong Kong three million people are crowded into 12 square miles and seem to be adapting reasonably well. 48

Unfortunately, there is no quantitative answer as to what Sommer means by "reasonably well." Sociologists might conclude that there is no significant increase in violent crimes, births or deaths, but the focus of the social-psychologist must be on the inner-space and emotions of individuals subjected to over-crowdings as it affects the communication process.

The research though sparse, falls into two general categories. The first is the doomsday variety--man cannot adapt and can only witness eventual disintegration of his society. The second school implies that man can and will adjust.

The doomsday group cites J.B. Calhoun's work with rats as ample evidence of the disastrous effects of over-crowding. Calhoun's
study noted that Norway rats stabilized their population at about 150 on a quarter acre of land where there was sufficient food and no predators. He then induced stress through over-population while three generations of rats were being reared.

Six distortions of behavior were noted:

1) Some rats withdrew from social and sexual intercourse completely; others began to mount anything in sight; courtship patterns were frequently pursued by several males;

2) Nest building patterns—ordinarily neat—became sloppy or non-existent.

3) Litters of young rats became mixed; new-born and young rats were stepped on or eaten by invading hyperactive males;

4) Unable to establish spatial territories, the dominant males would fight over positions near the eating bins; "classes" of rats shared territories and exhibited similar behaviors; the hyperactive males violated all territorial rights by running around in packs—disregarding any boundaries except those backed by force;

5) Pregnant rats frequently had miscarriages; only one-fourth of the 558 newborns in the behavioral sink survived to be weaned; disorders of the sex organs were numerous;

6) Aggressive behavior increased significantly.

Hutt and Vaizey attempted to correlate human behavior with Calhoun's findings. Hospitalized children, who were either normal, autistic or brain-damaged, were observed in a playroom with varying densities of from 6-12 children.

All groups showed deterioration of behavior, but normal children were least affected. As a function of group density, significant changes were found in three categories of behavior; aggressive, social and boundary (withdrawal to the boundaries of the room). Autistic children usually reacted by withdrawing, while brain damaged and normal children reacted with increased aggression/destructive behavior.

This indicates strong evidence in favor of Calhoun's school of thought. We must be cautious, however, to accept the trend as fact. Previous research mentioned illustrates the multiplicity of variables already studied. However, two increasingly important factors have been
generally ignored in the research. The first factor is that of sex. What differences exist in the personal space requirements of individuals by sex? The second factor is locale. Individuals make certain economic choices when deciding where to live. Their goals for success, money or culture may dictate that they endure these opportunities for stress, while those who live in small towns may do so because of an inherent need for more personal space. There are fundamental questions lying here unanswered. First, is there actually a difference in the personal space requirements of individuals living in urban areas and small towns, and second, will these individuals once having made certain economic choices suffer adverse affects once the cities swallow the small towns in ever-increasing megalopolies?

Density research seeks to resolve the question of are people really affected by over-crowding? Personal space studies on the other hand, try to understand how and why an individual's space bubble develops and why for some they are larger than others. The importance of that question rests on a relationship with the first question. If an individual truly is adversely affected by over-crowding, it is possible to alter his awareness through environment, conditioning or heredity or a combination of these factors? It seems as if once again one research question was not resolved before another took precedent.

However, it is interesting to note some findings from the density research. Observing groups of people from a wide range of ethnic backgrounds over several four hour periods of time in crowded and uncrowded rooms, Freedman found that "density (the number of people in a given space) has apparently no effect on the performance of simple
tasks." It does, however, seem to have profound effects on interpersonal behavior in groups of the same sex.51 The findings were that men had negative reactions to the crowded situation, liked other members less, considered them less friendly and gave more severe sentences to the defendants of taped jury trials and thought members in the crowded jury room would make poor jury members. Women represented the antithesis of the men. They were more lenient, found the experience pleasant, and considered other members more likeable, friendly, and better jury members. Surprisingly, when men and women were mixed, there seemed to be no negative effects on behavior due to crowding. Freedman hypothesized that it was not density that caused negative reactions, but the number of people one was forced to interact with which was the crucial factor.

Conflicting research abounds, however. Findings by Stephen Heshka and Yona Nelson in England squarely addressed the problem of interpersonal speaking distances as a function of age, sex and relationship. Their findings on the sex variable were in conflict with Freedman's. The authors studied personal space by photographing interactions in natural outdoor settings. Heshka and Nelson found that men stood closer to one another, regardless of sex. However, women stood much closer than men when the relationship was firmly established, regardless of the sex of the other interactant.52

The Heshka/Nelson study is contrasted not only with the Freedman study, but also that of Edward Hall. Hall observed that the upper-middle class English male has a greater need for privacy, and that he possessed a den and a dressing room to protect him from children who
had not internalized the English patterns of privacy. Hall's work, however, was of an informal observational nature. 53

A study by Miriam Liebman amasses more incomplete evidence. Liebman studied race and sex and found that females were chosen significantly more often than males in free-seating and intrusion choice conditions. 54 No attempt was made to explain these findings, however. Likewise, Willis studied speaking distances of 775 people at the beginning of an interaction. His observations showed that speakers stood closer to women than men, peers stood closer to one another than they did to older persons and Caucasians speaking to blacks kept a much greater distance than they did while speaking to Caucasians. 55

Sex as a variable in the study of personal space still represents an interesting set of unknowns. The field research in Chapter II seeks to illuminate some of the aspects of personal space requirements of the sexes.

Purpose and Research Questions

The purpose of this study then is to explore the personal space requirements of individuals as a function of their sex and locale. The scope of the study does not include any measurements of adverse effects on the human race, but instead seeks to measure the personal space requirements of strangers of both sexes, and those living in two specific geographic areas, the urban area with populations of over 50,000 and the small town with populations under 10,000. A second aspect to the study is to assess the attitudes of these subjects on questions of over-crowding.
With the array of conflicting evidence presented in the background material in relation to the variable of sex, a hypothesis seems untenable. Instead, a general research question is posed. Is there a difference in the personal space requirements of the sexes, and if a difference exists in what direction is it? The locale factor lacks background material as well. To date, no studies have been done to examine the personal space requirements of those living in urban areas as opposed to those living in smaller towns. Therefore, another research question is posed. Does a difference exist in the personal space requirements of those living in small towns and urban areas? The method for studying these questions are discussed in Chapter II.
Chapter I

FOOTNOTES

1 The Register, [Santa Ana, CA], July 21, 1974, Leisure-time Section, p. 1, cols. 1-2.

2 Ibid.


6 Ibid.

7 Ibid., pp. 124-127.

8 Franklin Becker and Clara Mayo, "Delineating Personal Distance and Territoriality," Environment and Behavior, III (December, 1971), 376.

9 Ibid.

10 Ibid., p. 378.


12 Ibid., p. 417.


14 Ibid., p. 239.

15 Ibid., p. 240.

16 Ibid.

17 Ibid., p. 241.

18 Ibid., p. 243.

19 Ibid., p. 244.

20 Ibid., p. 246.
21 Ibid.


23 Ibid., p. 370.

24 Ibid., p. 371.

25 Ibid., p. 372.

26 Ibid., p. 375.


28 Ibid., p. 94.

29 Ibid., p. 96.

30 Ibid., pp. 96-97.


32 Ibid.

33 Ibid., p. 157.

34 Ibid., p. 158.


36 Ibid., p. 212.

37 Ibid., p. 213.

38 Ibid., p. 217.

39 Ibid.


41 Ibid., p. 267.
42 Ibid.

43 Ibid.

44 Sommer and Becker, "Room Density," p. 417.


46 Ibid.

47 Ibid.


52 Stephen Heshka and Yona Nelson, "Interpersonal Speaking Distance as a Function of Age, Sex and Relationship," Sociometry, XXXV (Fall, 1972), 491-498.

53 Hall, Hidden Dimension, p. 123.


55 F.N. Willis, "Initial Speaking Distance as a Function of the Speakers' Relationship," Psychonomic Science, V (1966), 221-222.
In an extensive study of violations of personal space, Kenneth McDowell found no support for the hypothesis that violations of an individual's personal space will cause that individual to meet the violation with less eye contact or a changed body orientation as a reaction to that violation. He states that:

The apparent method used to re-establish distance seems to be direct backing away from the violator, and there is little or no evidence that other hypothesized methods, such as decreased eye contact and or turning away from the violator, provide alternative ways of dealing with the violator's near proximity.¹

This finding was a key factor in selection of the research method.

A method developed by Thayer and Alban was used to conduct this two-phase study. Phase I, a field space violation experiment, was tested in two specific settings or locales, the large city of Orlando, and three small towns of under 10,000 population in Florida. Phase II consisted of a survey which yielded data on space preferences of individuals in these two locales.

The Pilot Study

The original research plan, tested in a pilot study, was as follows: The confederate would approach a lone individual on the street and ask him or her to participate in a university survey on overpopulation and its associated problems. Once the subject agreed, the
confederate would begin asking demographic questions while moving to within six inches of the individual, (as in the Thayer and Alban study on political and cultural factors in the use of personal space). The unobtrusive observer, who was out-of-sight of the subject, would record the subjects' retreat distance. A grid method, similar to Thayer and Alban's was established prior to interaction.

The research team chose the shopping centers from which to draw their subjects to avoid contamination of the space violation manipulation. Hall addressed the problem of setting effects and hypothesized that interaction distances increase with the impersonality of the setting. Since the purpose of the study was to find the interaction distances of strangers in small and large towns, it was necessary to test the research question and hypothesis away from home or office.

The pilot study was initiated for two purposes: to test the validity of the procedure and the semantics of the questionnaire. The pilot study was done in the J.M. Fields shopping center in Gainesville, Florida. Gainesville has a population of 100,000. The choice of this particular area had two advantages: the first was that the subjects could be both urban and rural, since many came from outlying areas to shop on Saturday, and second that Gainesville was far enough away from the areas selected for the field study to avoid premature exposure of subjects to the experimental treatment, but close enough to be economical for the research team.

A major methodological problem was uncovered in the pilot study. An unobtrusive observer could not be placed out-of-sight in the shopping center setting without obscuring the accuracy of the desired
measurement. It was decided that by placing the observer at a card
table in a chair with piles of surveys and pencils around that the
alleged purpose of the study would be authenticated. Several factors
were considered in making the change. First, there was the fear that
the experiment would inhibit many potential subjects, particularly
females, if the confederate approached them on the sidewalk alone.
Secondly, it was felt that without the support of the female observer
the results of the distance manipulation would be probably greater than
might be under the other circumstances, creating a fear bias in the
experiment larger than already anticipated. Thirdly, a more accurate
distance measure could be taken. Another consideration was also made.
It was necessary to perfect a smooth distance manipulation in the pilot
study which could be replicated with each subject in the actual
experiment.

The second aspect of the pilot study was to validate the
questions on the survey. It was found that questions 3 and 4 were too
time consuming and required thought which was beyond the respondent's
facts at hand. (See Appendix A.) Question three in the original survey
concerned meat prices and was intended to catch the interest of the
respondent, but called for conjectures by the respondent that many did
not feel capable of making. Question four, concerning a law governing
rural building and zoning was found to be too complicated for the
interview setting. Question 12 was also discarded from the survey
because again it required an assumption about ecological damage that
respondents did not feel competent in making.
The Field Experiment

Subjects. Three small towns were selected for the study on the basis of a population under 10,000 and a distance of over 25 miles from the nearest urban sprawl. These were Chiefland, Orange City and Mount Dora. Orlando was chosen as the large city for its proximity, and all subjects were interviewed at the Winter Park Mall.

A survey was constructed which asked six demographics. Three of the demographics were of primary importance: sex, age, and locale. The other three questions were for the purpose of properly classifying the respondents in the urban and rural categories. An individual who worked in an urban area but commuted to a rural area could conceivably be misclassified. Therefore, the demographic questions were designed to sort this respondent into his proper category. Subjects then could be properly dispersed and distortion of results was thus avoided. As a second assuring aspect, it was decided that those living in an area for less than three years would be classified in the previous residence categories. Mortimer Spiegelman in An Introduction to Demographics has defined urban and rural areas in the same way that the U.S. Census Bureau has. Essentially, a city of 50,000 or more inhabitants and closely settled incorporated areas, or 2 adjacent cities of 25,000 or more is classified as urban. The rural farm definition included those living in rural areas on places of ten or more acres yielding farm products sold for fifty dollars or more or less than ten acres yielding 250 dollars or more in 1959. The rural nonfarm population included all others than the farm populations who were living in rural areas.
One-hundred and twenty subjects selected for the study were those that came to the shopping centers in the various cities. In Chiefland, subjects who came alone to the TG & Y Dime Store between 1:00 P.M. and 6:00 P.M. were asked to participate. A Minute Mart in Orange City was the only active shopping area. Subjects were tested from 12:00 P.M. to 2:00 P.M. on Thursday and from 3:00 P.M. to 4:00 P.M. on Saturday. Mount Dora provided a cooperative Winn Dixie Manager who allowed the researchers to set up a table in the Golden Triangle Shopping Center. In Orlando permission to take the survey was granted by the Winter Park Mall Merchants Association, but was denied by the new J.M. Fields Shopping Center near Colonial Plaza. (See Table 7.)

Subjects were selected by the quota sampling method in order to fill the cells of the research design. Urban males, urban females, rural males and rural females constituted the sample. Thirty subjects for each cell were sought.

Materials. Materials used in the experiment were kept to a minimum. The clipboard, which was the primary tool for the experiment, was 8 x 14 inches and was chosen for the large amount of space it allowed the confederate in writing down the subject's responses to the survey. This permitted easy change of answers if the subject desired. A card table and two chairs were also transported to the site and set up approximately ten feet from the doors of the small town stores.

A grid was measured off using masking tape in one inch strips placed every twelve inches across the contact area in a straight line. A second strip ran parallel to the first, but was offset six inches, so that from the observer's position there was a mark every six inches
from which to make a measurement. The length of the two parallel lines was six feet. The two lines were separated by 18 inches. In this way by looking across the grid it was possible to line up the subjects' toes and estimate the distance to the nearest mark.

The grid was disguised by discoloring the tape to look like just another spot on the sidewalk. The table and chair were placed ten feet from the grid and the observer sat perpendicular to it for easy visibility. (See Illustration 1.)

Winter Park Mall provides an area near the entrance to the Mall's west side. This area was pre-grided. Rubber tiles were exactly 12 inch squares with parallel lines of tiles offset by the length of one-half tile, making a prearranged grid pattern. To have laid down tape strips on this shiney surface would have drawn attention to the real purpose of the experiment. Therefore, it was decided to use the area as it appeared. This did allow the confederate to enlarge the contact area fifty percent. Any one traversing the mall entrance could be enlisted, whereas in the small towns only those entering the contact area could be utilized as subjects.

Other ancillary materials used in the experiment were 8 x 11 inch survey sheets, a pencil sharpener, a briefcase, tape measure, ruler, stapler, masking tape and legal pads to record distance measures, pre-coded record sheets to record mean distance measures by cells, and demographic record sheets to record responses to the survey.

Design. The experimental design was a 2 x 2 factorial. Sex with the two levels of male and female provided the first independent variable. The second factor was locale, the two levels being urban
and small town. Phase I was designed to discover if differences did exist in the personal space of individuals living in small and large towns and if women required smaller or larger personal spaces than men.

The survey design which was incorporated into Phase II was constructed with the idea of serving as a cover to the personal space manipulation and gathering information on how these two segments of society viewed population problems.

A dichotomous question format of yes or no answers was chosen for two reasons. First, this form lent itself to easy tabulation, and second, it reduced the possibility of experimenter bias by limiting the role of the interviewer who might be inclined to offer his own opinion through either visual or verbal cues.

In constructing the survey, Burton and Cherry's suggestions were utilized as much as possible. These authors stress the necessity of considering how the respondent will interpret the questions. They emphasize that vocabulary should be simple, within easy grasp of the least intelligent of the group studied. For this reason question ten gave a definition of a condominium before asking whether the subject would like to live in one of these units.

Another point to consider was that sentences should not be long and involved. Question three of the survey asked a simple straight-forward question, but giving the auxiliary information called for too much concentration on the part of the subject. It was tested in the pilot study to see if it possibly could be used but was found to be too time consuming. To eliminate further experimenter bias it was
necessary to keep confederate explanation to a minimum. Hence, another reason for the dichotomous format.

Other suggestions were followed. Professional jargon and technical words, as well as leading statements were avoided. Limits of enumeration were precisely set as in question five, where 10,000 and 100,000 residents were used. Subjective and vague words, such as good and bad, were avoided where possible.

The arrangement of questions in the survey was based on the following precepts:

1) questions easiest to answer were listed first,
2) interest questions were placed at the forefront,
3) questions of similar topics were lumped together.

The order of questions went from general-impersonal to specific-personal in descending order. It was felt that the subject would be more receptive to answering more personal choice questions after the initial primary tension was resolved. Population growth, housing preferences, and personal space preferences were surveyed.

Procedure. Training for the experimental procedure was carried on through discussion of techniques with the confederate two weeks prior to the pilot experiment. The following points were emphasized. The distance manipulation must be done face-to-face. The confederate must repeat the procedure precisely with each subject. He must be cautious not to establish what Burton and Cherry call establishing over-rapport with the subject which would lead to bias. While being initially friendly and non-threatening, the confederate should begin asking questions slowly and clearly, while not putting unnecessary emphasis on
phrases which may cause the subject to try to give an answer which may please what the subject perceives as the experimenter's expectations.

Instructions to the Confederate were adopted from Doby's *Introduction to Social Research*. They were as follows. Ask all the stimulus questions exactly as worded. Do not attempt to explain stimulus questions. Repeat the exact wording of the question slowly and distinctly, emphasizing the key words. Do not elaborate the wordings. If you ad lib you distort the question. Try to overcome preliminary "don't knows" and vague replies by reoffering the category or the question. Never suggest an answer to a question. The respondent's replies are supposed to reflect his own reactions, uninfluenced during the course of the interview by the interviewer or any other outside source. Do not give your own opinions, even if you are asked for them. Try to keep the respondent on the track. Try to avoid irrelevant chatter without being abrupt. These concepts were reviewed again prior to the pilot study. After the pilot study was completed, a discussion was held to review the performance of the confederate and to suggest procedural changes.

The choice of the Confederate was made on the basis of certain personality traits required for the assignment, as suggested by Burton and Cherry. The Confederate should possess an ability to talk easily with all types of people, an ability to judge people and situations quickly and correctly and, allied to this, persistence and thoroughness; also, quick wit and resourcefulness. The Confederate should also be sympathetic as well as enthusiastic, conscientious,
honest and reliable. An inquiring mind, an appearance and manner which inspires confidence, and plenty of physical stamina were also prerequisites.

Other characteristics which relate to the interviewer's competence include keen powers of observation and a regard for detail, a good memory, a legible handwriting, an ability to summarize and record objectively; in particular, a freedom from bias in observation in eliciting and recording facts and opinions, freedom to travel, a high school education, and the use of a car.

The step by step procedure incorporated changes dictated by the pilot study methodological problems. A table was set up in front of a store or shopping center after permission was gained from the manager to administer the survey. A measuring grid was laid down as described in the materials section. The observer would take her position opposite the contact area and behind the table. The Confederate would then approach a subject on the sidewalk near the entrance to the store. He then asked the subject to participate in a survey for a study on population problems for Florida Technological University. He would say: "I am taking a survey on population problems for Florida Technological University and I would like your opinion. It will only take a few minutes." This proved to be a better technique for addressing the respondents, since the first approach used in the pilot had been somewhat negative. The Confederate asked..."I am taking a survey on population problems for FTU...would you care to participate." This unfortunately left the subjects with an easy method of refusal, and several subjects were lost.
The Confederate would then proceed to gather the demographics. After asking these basic questions, if he was not already within close proximity to the subject, the Confederate would then move to within about 12 inches of the subject. This was done while looking at the clipboard and asking the first question. The distance manipulation was then begun by the experimenter at the conclusion of question one. He moved the left foot forward to within one inch of the subject's toe, while resting the majority of his weight on his right heel. He would then move his right foot even with his left foot; placing his weight on the left foot. This left approximately twelve inches between the experimenter and the subject depending on the body weight of the subject. At the conclusion of the second question, the confederate was in position looking down at the clipboard waiting to record the subject's response to the question. The clipboard was held slightly to the side and protruded approximately three inches into the subject's personal space. Operationally, the clipboard was considered part of the experimenter's space since his hand rested on the top of the clipboard. The experimenter held the clipboard occasionally in a vertical position while waiting for a response to one of the questions.

Responses to the questionnaire were filled in by the confederate while the observer measured any distance changes the subject may have made. It was found during the pilot study that most subjects moved three to six times. So all movement was recorded both forward and backward to establish a more accurate mean figure.

The experimenter would then thank the subject for his or her participation in the study and then return to the table handing over the
questionnaire to the observer who would then record the demographics on a master sheet. The procedure would then be replicated with each new lone shopper.

Data Analysis

The data was prepared for computer analysis by tabulating the results of the survey by hand. Responses were recorded by their classification into one of four categories. These were male urban, female urban, male rural and female rural. Mean figures were prepared for all space violation manipulations and classified by the subject's demographic. Four cells were filled with thirty subjects each. Urban male, urban female, rural male and rural female comprised the cell compositions. The distance manipulations were subjected to multiple factor analysis of variance.

The responses to the survey were tabulated by their classification into eight categories, urban male over 25 and under 25, urban female over 25 and under 25, rural male over 25 and under 25, rural female over 25 and under 25. After breaking the answers down into these eight categories, it was discovered that there were too few responses collected in the under 25 categories to establish chi square values. The cells were then collapsed to the original four categories and chi square analyses made of the responses.

Chapter three discusses these results, breaks down the responses into categories of locale and sex, and discusses responses in terms of percentages and trends.
Summary of Findings

In summary, the research question concerning personal space requirements of the sexes showed that women had larger personal space requirements than men in a shopping center setting. Also, it was found that people living in small towns have larger personal space requirements than those living in urban areas.

Phase II, a survey, generally showed that women require more privacy and personal space than men. This is in keeping with the study's findings on sexual trends in personal space. Women's opinions about crowding were consistent with their own need for personal space. This indicates a favorable consistency of findings in the field experiment.

However, certain aspects of these findings should be discussed in terms of their conflict with previous research and the inherent difficulty of comparing field research with laboratory research.
FOOTNOTES


4. Ibid., p. 48.


7. Ibid., p. 49.
Chapter III

RESULTS

The results of the experiment and survey are discussed in terms of findings for both Phase I, the distance manipulation, and Phase II, the survey. First, a brief discussion of the number of refusals seems in order. A total of forty potential subjects refused to participate. In all cases the refusal was the same, "Sorry, I'm in a hurry!" The demographics of each subject were observed, and locale was classified not by the subject's response, but by the locale where the subject was encountered. For example, a male may have refused to participate, but the accuracy of the locale and age classification was suspect. It would have been possible for an urban male or female to have been encountered in a small town setting. Likewise, observation of the age classification was subject to error since it was left to the judgement of the observer and confederate to estimate the age of the subject.

The number of refusals was broken down into cells of urban male, urban female, rural male and rural female. Statistical analysis could not be made due to the small number of urban females. However, some observations can be made. Males in general refused to participate more often than females. They comprised 65% of all refusals. Nine urban males over 25 and 5 urban males under 25 for a total of 14 would not respond to the survey. Urban males were a source of 35% of the
refusals received in the study. Rural males comprised the other 30% of refusals.

Refusal rates among females were different from those of males. Urban females refused fewer times than any other group. The percentage of refusals for urban women was 7.5%. Eleven rural females refused to participate in the survey, comprising another 27.5% of the loss. Most of the rejections in this category came from rural females over 25.

In summary, males refused to participate twice as often as females. There was little difference in the refusal rates of urban and rural males. However, rural females refused to participate almost four times as much as urban females. Though the number of refusals was not large enough to conduct tests of significance, the above trends were evident.

Tests of Hypothesis and Research Question

The 2 x 2 factorial design was based on research questions which sought illumination on two points: The first was, is there a difference in the personal space requirements of men and women; and second, is there a difference in the personal space requirements of individuals living in urban areas and small towns.

The results of a distance manipulation showed that females in general stood farther away from the male experimenter than did males. The mean distance figure for the urban male was 11.66 inches, while the mean distance figure for the rural males was 20.46 inches. The mean distance figure for the urban females was 14.60 inches and 22.96 inches for the rural females. There was significant differences in the
distance of subjects by sex and locale. (See Table I.) Also, the mean distances of males to females was significantly different. \((F = 5.00, p < 0.05)\). See Table I.

The locale factor also showed a significant main effect. Personal distances of those living in small towns were significantly greater than those living in urban areas regardless of sex \((F = 49.91, p < 0.01)\). See Table I.

### Table I

Analysis of Variance for Main Effects of Sex and Locale

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>221.41</td>
<td>1</td>
<td>221.41</td>
<td>5.00*</td>
</tr>
<tr>
<td>Locale</td>
<td>2210.21</td>
<td>1</td>
<td>2210.21</td>
<td>49.92**</td>
</tr>
<tr>
<td>Sex x Locale</td>
<td>1.41</td>
<td>1</td>
<td>1.41</td>
<td>0.03</td>
</tr>
<tr>
<td>Error</td>
<td>5136.30</td>
<td>116</td>
<td>44.28</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7569.33</td>
<td>119</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\*\(p < 0.05\)

\**\(p < 0.01\)

\(F_{0.99} (1,120) = 6.85\)

\(F_{0.95} (1,120) = 3.92\)
Phase II of the study involved gathering survey material from the subjects on population problems as a cover for the distance manipulation. The data yielded from the survey was subjected to chi square analysis to see if urban males and females and rural males and females differed significantly in their beliefs about population.

Question one asked if the subject was concerned about uncontrolled population growth in Florida. There were no significant differences among groups. Some observations can be made from this data, however. One-fourth of all subjects interviewed were not concerned about uncontrolled growth. Eighteen of the 30, or 60% who were not concerned, were those living in rural areas.

Question two asked if the subject thought there was enough land to accommodate 100 new families a week moving into Florida for the next five years. No significance was achieved, but several interesting aspects emerged. Rural females were most strongly opposed in a 2-to-1 ratio, saying that there definitely was not enough land. The other cells remained about equal in their distribution between the yes and no categories. Over-all, 52 replied yes there was enough land and 59 said no.

For question three, males, in a 4-to-1 ratio felt there was enough room to accommodate 10,000 new residents. Females, however, were split evenly between the yes and no categories. The significant differences among groups were due to this variation by sex ($\chi^2 = 14.05$, $p < 0.001$). Overall, seventy-two, regardless of group, said yes to 10,000 new residents, while 39 said no. See Table 2.
Table 2

Question 3a

The population of your country is expected to grow rapidly within the next ten years. Do you think there is enough space to accommodate 10,000 new residents?

<table>
<thead>
<tr>
<th>3a.</th>
<th>Urban male</th>
<th>Urban female</th>
<th>Rural male</th>
<th>Rural female</th>
<th>$x^2$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>24</td>
<td>13</td>
<td>22</td>
<td>13</td>
<td>14.05</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>14</td>
<td>4</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>27</td>
<td>26</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

Subjects were asked if they felt 100,000 new residents could be accommodated in their county as a second part to question three. The reply was generally no in a two-to-one ratio. Of those replying yes 14 were males, while only 4 were females ($x^2 = 6.7, p < 0.10$). See Table 3.

Table 3

Question 3b

The population of your county is expected to grow rapidly within the next ten years. Do you think there is enough space to accommodate 100,000 new residents?

<table>
<thead>
<tr>
<th>3b.</th>
<th>Urban male</th>
<th>Urban female</th>
<th>Rural male</th>
<th>Rural female</th>
<th>$x^2$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>9</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>6.76</td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>23</td>
<td>21</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>
The fourth question was of a subjective nature asking whether the respondent wanted his town or city to grow, stay the same, or decrease in size. Since three questions were asked, if a subject recorded yes to one of the categories, the other two areas were marked no. Statistical analysis could then be made by treating question four as having three separate parts.

The first two parts of the question did not show significant differences among groups. In the urban sector 12 males wanted Orlando to grow larger and 18 did not. Eight urban females wanted Orlando to grow while 22 did not. The small town sample showed 14 men wanting the town to grow large while 15 did not. Twelve rural females wanted the town to grow while 17 did not.

Part B to question four asked if the town or city should stay the same. There was no statistical difference among groups. Sixty-one replied yes while 58 replied no.

The answer to question four, part c, was statistically quite different. Nineteen urban dwellers replied they would like to see the town decrease in size, while no small town dwellers replied in the affirmative. One hundred-one replied that they would not like to see the town decrease in size. In this instance the urban sample comprised of both males and females caused the difference. \( \chi^2 = 12.87, \ p < 0.001 \). In prior questions the variance was by sex rather than locale, and suggests that those living in cities may feel the pressure of population growth more strongly. The table which follows shows the population samples broken down into the cells of urban males and
females and rural males and females with a corresponding record of negative and positive responses. See Table 4.

Table 4

<table>
<thead>
<tr>
<th>Question 4c</th>
<th>Urban male</th>
<th>Urban female</th>
<th>Rural male</th>
<th>Rural female</th>
<th>$x^2$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>11</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>12.87</td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>22</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

The advent of new industry to the county was the subject of question five. Answers were distributed fairly evenly across the cells and no statistical differences were attained. Sixty voted yes and 56 voted no.

Questions were grouped together in terms of the topics, ranging from general impersonal to personal specific in reference to population preferences. The sixth question began the second grouping on housing preferences.

Should your neighbor's house be more than 15 feet away was the problem posed by the sixth question. One hundred-six replied yes, while only 8 said no. No significant differences among groups were evidenced. Surprisingly enough, seven males said no, while only one female felt that the houses did not need to be farther than 15 feet away.
Question seven was closely related, asking if the subject would be concerned if the neighbor's house was less than 15 feet from his. Eighty subjects replied yes and thirty-six said no. No significant differences were noted in the replies among groups. The ratio in all groups was about two-to-one showing concern for closeness of homes.

Significant differences were observed in replies to question eight due to groupings by sex rather than locale. Urban women rejected condominiums two-to-one, while rural females rejected them three-to-one. Men rejected them overwhelmingly: rural males seven-to-one and urban males six-to-one ($x^2 = 7.99, p < 0.05$). See Table 5.

### Table 5

The Construction industry is building large condominium or townhouse units on small parcels of land enabling large numbers of people to own their own home and share recreational facilities. Would you want to live in one of these units?

<table>
<thead>
<tr>
<th></th>
<th>Urban male</th>
<th>Urban female</th>
<th>Rural male</th>
<th>Rural female</th>
<th>$x^2$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td>11</td>
<td>3</td>
<td>7</td>
<td>7.99</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>19</td>
<td>22</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>25</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Could the condominium or townhouse concept provide enough privacy? Nine urban females said yes; twenty-one said no. Urban females were evenly distributed between the yes and no categories with 15 votes each. Ten rural males said yes, while seventeen said no. Rural females responded 9 yes and 21 no. No significant differences among groups were observed.
Questions ten and eleven dealt with personal space preferences. Do you like shopping in large crowds brought strong negative response in all groups. A trend was noticed in that those living in small towns were more strongly against shopping in crowds than the urban sample \( (x^2 = 7.06, p < 0.10) \) of rural females, only two stated that they liked to shop in large crowds, while 4 rural males also agreed. Fifty-four of the rural sample, however, did not like to shop in large crowds as compared to 42 of the urban sample who did not. See Table 6.

Table 6

<table>
<thead>
<tr>
<th></th>
<th>Urban male</th>
<th>Urban female</th>
<th>Rural male</th>
<th>Rural female</th>
<th>( x^2 ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td>7.06</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>20</td>
<td>26</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

No significant differences were observed among groups in response to question 11. Do you like being in an excited crowd such as you might find in a sporting event brought 82 positive responses and 36 negative responses over-all. In general, the ratio of yes to no answers was two-to-one. Rural females slightly exceeded this ratio with 12 out of 28 responses in the negative category, or approximately 42%.

In summary, it was shown that women have larger personal space requirements than men in the field study situation. The second
research question showed that people living in small towns have larger personal space requirements than those living in urban areas.

Phase II, a survey, generally showed that women require more privacy and personal space than men. This is in keeping with the study's findings on sexual trends in personal space. Chapter IV discusses these results in terms of possible experimenter bias and setting effects.
Chapter IV

DISCUSSION

Retrospect provides the greatest impetus to new research in the social/psychological sciences. The present field research study is no exception. Discussed in detail in this chapter are the possible sources of bias in the study, the justification or negation of any perceived effects of bias, the implications and ramifications of the study, the directions for new research and finally a summary of the study and its findings.

The standard litany of complaints against field research includes the lack of a controlled environment, the lack of measurement accuracy and the problem of experimenter bias. This particular study was designed to eliminate many field study errors, but in doing so encountered unanticipated sources of bias. This should encourage research, but limits the generalizability of this personal space study to recognition that the results will be the same as long as the confederate is male, there is an obtrusive observer, and that the demographic reconstructions are similar.

One of the research questions asked if there was a difference in the personal space requirements of individuals and if so, in what directions was that difference. It was shown in the present study that men stood closer to the confederate regardless of the locale factor.
This is in keeping with Heshka and Nelson, rather than Freedman. Much of the reason for this finding may be attributable to the types of settings which were explored in these two particular studies. It is possible that in the Freedman study, the female subjects reacted to the close-conditions of a laboratory setting over time and established rapport with other subjects. The setting effect for the Heshka/Nelson study was out-of-doors, but for Freedman's study, it was an indoor laboratory situation. This would contaminate Freedman's findings by erasing the stranger qualification and placing the participants in the acquaintance category.

A second problem with setting effects arose in the current study. In the small town samples, outdoor shopping centers were the only source of subjects open to the research team. The survey table and grid was set up near the entrance to the stores. However, the metropolitan setting was the Winter Park Mall entrance, which was part of a self-contained environment with a pre-grided area. This would alter the kind of treatment given to each sample if it could be assumed that the subjects were aware of the grid. However, the research team was given no indication by the subjects, either visually or verbally, that the tape marks were perceived. The confederate was seated in the chair closest to the store entrance. When a lone subject approached the entrance he would walk to the grided area. Since the distance to the door was only three feet, it seemed natural for the subject to step out of the flow of traffic. The subject was drawn to the grid without actually having to be maneuvered. If we can assume
that the subjects were unaware of the treatment, we could also assume that the settings effects were minimal in response to a grided versus non-grided treatment. A second aspect which is suspect in the study is the enclosed mall versus the outdoor mall. If permission could have been obtained from the other shopping centers, a comparison of the means of the two urban samples could have been made. Without this data the generalizability of the study is limited and further research is indicated.

One solution, however, is to make a comparison of the mean figures in the Heshka and Nelson study. We might infer that setting effects were minimal if the findings are similar. The male-to-male interaction score for strangers in the Heshka study was 14.2 inches. The male-to-female stranger interaction mean was 19.9 for women.² In the Soukup study the male-to-male stranger's score was 11.66 and for male-to-female 14.60 inches. A comparison of these figures shows that Heshka and Nelson found larger interaction distances for strangers than the present study. Given the differences of an urban English population whose personal space requirements, according to Hall, are larger than Americans, it is possible to suspect that a slight setting effect was operative, but not large enough to negate the results of the study.

The second main effect, locale, was significant at the 0.01 level. That is, individuals in small town shopping center settings showed larger personal space requirements than those living in urban areas.

A major area of concern was experimenter bias. As far as possible the two types of bias Ferber and Wales refer to were avoided.
These were selection and answer bias. Selection bias is simply the selection of households or individuals to respond to the survey. There is a distinct possibility that random sampling was not present. However, selection of times for interviews in the various communities was made to cover the largest spectrum of people. For instance, Winter Park was sampled from 4:00 P.M. to 9:00 P.M. on a Friday and from 10:00 A.M. to 1:00 P.M. Saturday. This should have provided a fair cross-section of subjects allowing working men and women to be sampled as well as housewives and retired persons. Likewise, subjects in Chiefland were sampled from 1:00 P.M. to 6:00 P.M. Mount Dora subjects were interviewed from 4:00 P.M. to 7:00 P.M. on a Thursday and again from 9:00 P.M. until 2:00 P.M. on Friday.

Selection bias as a conscious motive on the confederate's part was avoided by selecting any lone individual who came to the shopping center and secondly classifying them in the quota sampling only after the interview had been completed. Answer bias invalidates results by allowing the respondent to answer in accordance with what he suspects may be the interviewer's bias. Another aspect to interviewer bias is the possibility that the interviewer "may lean over backwards to eliminate bias thereby causing a different kind." This type of bias can be eliminated by using the yes-no category format, thereby limiting the role of the interviewer.

Rosenthal and Fode performed three experiments to detect experimenter bias. They found that visual and verbal cues could serve as transmitters of experimenter bias. Part of the instructions to the confederate included a discussion of sources of bias and the
necessity to repeat each interview in the same manner. Thus internal validity was guarded.

Another possible treatment bias in the study is the fact that the confederate was male. This may have caused females to react more strongly in establishing a larger personal distance. However, even though the thesis study did not control for the confederate's sex, some observations can be made from the Heshka and Nelson study. Indications are that in a natural setting women stand farther from strangers whether they are male or female. For the English sample females stood 19.9 inches from men and 17.9 inches from other women strangers. At the closest distance to strangers, females were still 4 inches farther than males who were speaking to strangers. Furthermore, the choice of a single confederate was made to hold constant several variables whose influence on the data was unknown. These variables were sex, age, technique of manipulation and size of confederate. No prior baseline data had been established with which to compare results. No one variable was considered more significant than the others. Therefore, a conservative approach seemed warranted, leaving these areas for future research. This decision was subjectively justified later by confederate observations. Those as tall or taller retreated only slightly. Likewise, status or occupation was possibly an influencing factor in the use of personal space. Two doctors and a company vice-president withdrew the least of any of the subjects. The addition of an unwieldly number of variables would in all probability enhance the chance for experimenter error in a field with so little background material.
A second source of treatment bias may be the unobtrusive versus obtrusive observer. Several studies have used photographs to document interactions. This is an excellent method if baselines can be established with which to measure accurately. Again, the present study did not control for this possible sources of bias. It is suspected that the effect was minimal since no verbal or visual perception was indicated by the subjects. The cover for the obtrusive observer was that of clerical assistant working over a stack of survey sheets. Since no suspicion was evident, either verbally or visually, it is hypothesized that there would be no significant differences in the obtrusive versus unobtrusive treatment. A second field study should follow testing these two methodological problems.

Implications

Based on the findings of the present study, a strong case for future research can be made in the area of personal space. Those living in small towns require more space than those living in the cities. This seems to have emerged as a statistically reliable factor. What effect will less and less space have on these individuals? The research at this point is so immature that we do not know for certain that the average man will or will not be adversely affected. The Hutt and Vaizey study found that normal and brain-damaged children became aggressive/destructive when crowded. An adult, however, does not necessarily revert to aggressive/destructive or childlike behavior once threatened or made anxious. Further study in this area is needed to find the types of personalities which might explode into violence due to the infringement of personal space.
Two points may be considered. It is possible that an urban adult may become more aggressive as evidenced by their tolerance for less personal space. Or, their behavior could be interpreted as being adaptive to less space rather than aggressive. Thus two major research questions emerge from this study. Given, that those living in small towns require more personal space than those living in cities, what will be the effect on them once their space is reduced by burgeoning populations? Secondly, is the fact that those living in urban areas require less personal space indicative of a forced adaptability or an aggression response to reduced space? Taken one step further, one might ask: If the urban dweller is emitting an aggression response, is the response necessarily capable of being destructive? If so, what mechanism could be used, communicative or otherwise, to release the pressure exerted on society by so many potentially aggressive/destructive individuals? Is it possible that something as simple as rotating segments of the population to open spaces for short periods of time be a way of reducing the pressures on the cities and the individuals who live in them? Furthermore, what effect will this have on the type of society we select for the future? Can we rely on the free society to ameliorate its problems or must we eventually surrender more of our mobility and freedoms to control the problems? Is the boom in hiking, camping and canoeing a symptom of aggression response or a pressure release mechanism for a free society? Some of the questions are merely academic, others have valid impact on the social science disciplines. The application of information from this study can aid planners for the future, or the results can be ignored and the expenditure of millions
will be necessary to undo problems similar to the ones that the U.S. Housing Authority is tangling with in low rent high-rise complexes in the metropolitan areas.

The implications which grow out of the present study for the discipline itself may be categorized as methodological in nature. Examination of indoor and outdoor settings should be made if we accept Sommer's dictum that personal space should be rightfully studied in the field. Also, the matter of treatment bias needs to be more fully explored. Sex, age, status, setting, size and observance may all have an effect on personal space. Information on these topics is sorely lacking.

Isaac Asimov compared man to the mud dauber wasp. The wasp is born in a cocoon and has enough food to eat its way out and gain freedom. The wasp dies if he fails to free himself. Man, like the wasp is quickly using the resources of his cocoon. Man faces extinction if he does not solve the problem of space. Whether he explores the nearby planets or the far-flung stars, he must always face another kind of space, his personal space.

Summary

The purpose of this study was to examine the effects of sex and locale on the personal space requirements of individuals. Three studies formulated the basis for the research questions. The first, was a field study from which the basic method was extrapolated. Thayer and Alban used the observational method measuring the distance a subject retreated when confronted with an individual infringing upon
his personal space. The other two studies, whose results were in conflict, became the foundation for the research questions posed in the present study. Freedman's study of people in a jury room setting indicated that men had larger personal space requirements than women. The Heshka/Nelson Study, using documented photographs showed that in natural settings, women had larger personal space requirements than men. Since both studies seemed credible the alternative was to pose a research question to examine the issue of setting effects.

A parallel issue was the question of whether or not there was a difference in the personal space requirements of those living in urban areas and small towns.

A field research method was used to assess these two questions. A survey which concerned population preferences and problems was taken to cover the distance manipulation. The subject was questioned about his opinions in a pre-grided area which had been marked with one inch strips of tape. Two six feet lines paralleled one another at a distance of 18 inches. The one-inch strips were placed every 12 inches so that an observer looking across the grid would see a one-inch strip every six inches. An estimate was then made of the inches from the subject's toe to the nearest mark and added to the number of marks and inches to the confederate's toes. The marks were discolored to appear as an inconspicuous sidewalk spot. Thayer and Alban used the concrete breaker lines as their marks and never fully disclosed their measurement technique.

The study was undertaken in several cities in Florida: Orlando, Chiefland, Mount Dora, Orange and Gainesville.
The results were discussed in two parts. The experimental results revealed that women have larger personal space requirements than men regardless of the locale factor. In comparing the urban versus rural locale factor, those living in the urban areas had smaller requirements for personal space. Significance was at the 0.01 level of reliability.

The second phase of the study was analysis of the survey material. The survey explored opinions of subjects on population problems and preferences. The results generally reinforced the finding that women had larger personal space requirements. Females rejected condominiums, thought neighbor's houses should be farther away, and were more strongly negative about the influx of too many residents to their county.

Several areas seem to be impacted by the current study. Aside from the sociological issues involved, further analysis of the variables of sex, size, technique and age of the confederate as it effects the study of personal space is needed. Indoor and outdoor setting effects, and obtrusive versus unobtrusive observers should also be given attention.

A more intriguing aspect or ramification of the study which needs to be examined also, is the consonance of the subject's opinions with their personal space requirements. Is this agreement of women's survey responses with their professed need for more space manifestation of a defense mechanism or subconscious verbalization of their awareness of the infringement and a subsequent protestation?
The study's findings can be applied to future research as a foundation to larger issues. The most important of these is to address the problems of adverse effects on small town populations as these areas fulfill their population growth projections. A second issue of a sociological nature is the necessity to study whether those in the cities are exhibiting an adaptive or aggressive response to infringement of personal space. As populations in the cities begin to burgeon, it is possible to witness serious deterioration of the society's superstructure if aggression and not adaptation is the response to decreased personal space. A whole host of issues presents itself for consideration. These vary from the impact of overpopulation on life styles to the effect on both physical and mental well-being.

The Engineering News Record, McGraw Hill's construction newsweekly, issued a report, "Probing the Future - A Look into Tomorrow." This report was the result of 16 months extensive research into what changes are envisioned by industry and government leaders. Out of all the descriptive statistics, one frightening fact emerges. The individual in the year 2000 will have only about 500 cubic feet of living space - about the size of a jail cell.6

Hall writes "one of the most important functions of territoriality is proper spacing, which protects against overexploitation of that part of the environment on which a species depends for its living."7 Besides food, water, and shelter which are necessary for life, we also need space in which to conduct our lives.
"Each organism, no matter how simple or complex, has around it a sacred bubble of space, a bit of mobile territoriality which only a few other organisms are allowed to penetrate and than only for short periods of time."8

The bubble varies in size depending on such factors as the emotional state, immediate activity, position in a social hierarchy, and cultural background of the individual.9

What happens when the bubbles overlap? It is this question that has led Hall and Sommer to concentrate increasingly on the urban predicament. Tensions caused by lapses of understanding between cultures are heightened by the stressful conditions of the city. But more importantly:

"Changes in the bubble caused by outside influences"--the design of the public housing project for instance--may force on the occupant the feeling that he has been sealed off and removed from people. If man's bubble is crushed, or dented, or pushed out of shape, he suffers virtually as much damage as though his body were crushed or dented or pushed out of shape. The only difference is that the effects take longer to make themselves evident."10

It is this suspicion, that the effects take longer to make themselves evident, that has led to the present research, and should encourage future research. The McGraw Hill report states population trands for the cities. Rather than leaving the cities in disgust at their decaying conditions, the population will shift from a mere 60% of all Americans in the cities to 85%. Life styles have to change and be impacted by sheer pressing numbers. We can witness a prediction of the future life styles of individuals in the cities by taking a look at our metropolitan areas. We have taken to our cars, and have created a more structured kind of space bubble. We ride our multi-million dollar freeways in our steel-belted cars, separated and incarcerated from our
kind, isolated, alienated, and not to unlike the ultimate science fiction fantasy of man as an intellect encased in a plasmic bubble supported by his technology. The case for more and better research necessitates a seemingly plaintive call. We are at the crossroads. There is still time to give thought to the quality of life and choose the integrated or alienated "bubble" of life.
Chapter IV

FOOTNOTES

1. Stephen Heshka and Yona Nelson, "International Speaking Distance as a Function of Age, Sex and Relationship," Sociometry, XXXV (Fall, 1972), 491-498.

2. Ibid.


8. Ibid., p. 49.

9. Ibid.

10. Ibid.
Appendix A

SURVEY

Urban ______ Rural ______ Male ______ Female ______ Over 25 ______
Under 25 ______ Living in this area more than 3 years ______ Less
than 3 years ______ If less than 3 years where did you live
before this? ______ What is your occupation? ______
Are you presently employed? ______ Do you work in town? ______
If not, where? ______

We, of Florida Technological University are interested in studying how
you feel about population problems and future growth in your state. We
would appreciate your response to a few questions with a simple yes
or no.

1. Are you concerned about uncontrolled population growth in your
state? ______

2. At the rate of 100 new families a week, do you think there is
enough land to accommodate those moving into the state for the next
five years? ______

3a. The population of your county is expected to grow rapidly within
the next ten years. Do you think there is enough space to accommodate
10,000 new residents? ______

3b. 100,000 new residents? ______

4. Do you want to see your town grow any larger? ______
Stay the same? ______ Decrease in size? ______

5. Do you want to see more industry come to your county? ______

6. Should your neighbors' house be more than 15 feet from yours? ______

7. Would you be concerned if your neighbors' house was less than
15 feet from yours? ______

8. The construction industry is building large condominium or town-
house units on small parcels of land enabling large numbers of people
to own their own home and share recreational facilities. Would you want
to live in one of these units? ______

9. Do you think these housing units would provide enough privacy for
you as an individual? ______

10. Do you like to go shopping in large crowds? ______

11. Do you like being in an excited crowd, such as you might find at
a sporting event? ______

66
Table 7

Interview Schedule

Times, Dates, and Numbers of Subjects

<table>
<thead>
<tr>
<th>Cities</th>
<th>Times</th>
<th>Date</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange City</td>
<td>12:00 P.M. to 2:00 P.M.</td>
<td>August 2</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3:00 P.M. to 4:00 P.M.</td>
<td>August 4</td>
<td></td>
</tr>
<tr>
<td>Mount Dora</td>
<td>4:00 P.M. to 7:00 P.M.</td>
<td>August 2</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>9:00 A.M. to 2:00 P.M.</td>
<td>August 3</td>
<td></td>
</tr>
<tr>
<td>Chiefland</td>
<td>1:00 P.M. to 6:00 P.M.</td>
<td>July 29</td>
<td>19</td>
</tr>
<tr>
<td>Orlando</td>
<td>4:00 P.M. to 9:00 P.M.</td>
<td>August 3</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>10:00 A.M. to 1:00 P.M.</td>
<td>August 4</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>27 hours</td>
<td>4 days</td>
<td>120</td>
</tr>
</tbody>
</table>
The observer looks across the grid to measure the distance to the confederate's toes. An offset mark on the second parallel line allows accuracy within 6 inches conservatively.

ILLUSTRATION 1.

This paper reports on the examination of the relationship between the location of actors in the classroom and their relationship in interaction. The study was an outgrowth of a larger undertaking concerned with the detailed behavioral analysis of classroom settings by Adams and Biddle. Videotaped records were used.


A friendly or hostile speaker delivered two persuasive messages to a subject seated 1-2, 4-5, 14-15 feet away. Attitude change decreased with distance, becoming negative for the hostile speaker at the close distance.


Ardrey "attempts to demonstrate that man is as much a territorial animal as is a mockingbird singing in the clear California night."


It was postulated that eye-contact is linked to affiliative maturation and that approach and avoidance forces 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. Experiments are reported which suggest that people move towards an equilibrium distance. As predicted there was less eye contact and glances were shorter, the closer the subjects were placed together.


It was hypothesized that sex differences in relation to personal space would be more pronounced for nine year olds than younger children. "Specifically, at age nine, males were expected to remain further away from friends, but closer to strangers, than females would. The silhouette technique was used. Males had a greater mean spatial distance for both friends and strangers in all situations."

In an investigation of the spatial ecology of groups, it was hypothesized that the function of a group would effect the spatial arrangements of the members. Groups making collective decisions had smaller interpersonal spaces, and greater visual contact. The results strongly suggest the existence of norms for spatial arrangements.


The authors discuss the lines between territoriality and personal space. The delineation of the mechanism that functions in territoriality and personal space has not been delineated to the extent that we can identify this mechanism as same or different. They used an invade condition in a cafeteria setting, testing whether an individual who left a marker would be willing to defend the space.


Festinger, Schacter and Back hypothesize that the number of friendships will increase as the physical distance between the dwelling places of the people decreases. The present study hypothesizes that students in neighboring seats would be more likely to become acquainted than classmates in general.


An index of "aggregation" computed as the departure from randomness in the number of classroom Negro-white seating adjacencies, is examined as a tentative index of interracial attitudes.


Variables found to influence the frequency of intrusions were sex composition of groups, activity of groups, and spatial parameters. Implications of the reactions to such enforced intrusions as occur frequently in urban environment is discussed.


This paper replicates Sommer's basic findings, using an English sample, examines some new variables, presents some personality data and attempts to extend Argyle and Dean's theory to provide a broader theoretical explanation of choice of position.
Daves, W. and Swaffer, P. "Effect of Room Size on Critical Interpersonal Distance," Perceptual and Motor Skills, XXXIII (December, 1971), 926.

The experimenter, while writing and moving about would approach the subjects at one point, and estimate to the nearest half foot the distance between the subject and experimenter's foot. After filling out scales on personality, a small but significant relationship between dogmatism and distance was discovered.


The researchers theorized that personal space acted as a buffer zone and would serve as a protective barrier for one's emotional safety. Their experiment showed that stress would increase spatial usage.


The purpose of this study was to offer a proposal for studying user flow of a given area.


Present paper describes several studies of invasions of personal space that took place over a two year period. Settings were a mental hospital and a university hospital. Results show clearly that spatial invasions have a disruptive effect and can produce reactions ranging from flight at one extreme to antagonistic display at the other.


Thirty-two subjects were matched with persons of their own cultural group and asked to solve a problem concerning the Middle East within five minutes. Proxemic behavior was noted and photographed.


In this study the variation of proximity of seating did not significantly affect comprehension, but those seated in a scattered manner shifted significantly more often toward the thesis than did those seated compactly. Moreover, women were more persuasive than men; those who enjoyed the speech were more persuasive than those who did not, and those scoring low on the comprehension test were more persuasive than those who scored high.

Subjects seated at the closer distance (2.5-6 feet) were judged to spend less time gazing at the interviewer's eyes—a replication of Argyle and Dean.


There is insufficient evidence to support the hypothesis that a persuasive speech is more effective in a closely packed room. This apparently overrules beliefs of many speech teachers and social psychologists.


Male and female students were asked to offer their reactions via a semantic differential, to interaction settings differing only in the distance separating the participants. Results showed that students see the closer interaction distances as not appropriate for counseling interaction.


Delineated the four dimensions of intimate, personal, social and public zones of personal space in conjunction with George Trager.


Hall presents a simple system of observation and notation with a view toward standardizing the reporting of a narrow range of microcultural events. The dimensions of the proxemic notation system are 1) postural 2) sociofugal-sociopetal orientation 3) kinesthetic factors 4) touch code 5) retinal combination 6) thermal code 7) olfaction code 8) voice loudness scale.


Hare and Bales found that both centrality of seating position and distance between members can be used to predict the interaction pattern. This pattern only appears in a "task" session. In a social session for the same type of group, members tend to talk more to the person next to them as they turn away from the group for a more intimate conversation. Personality variables are also related to seating choice and to interaction rate. More dominant subjects tend to choose the central seats and to do the most talking.

Hearn found that with minimum direction from a designated leader, members of a face-to-face discussion group directed more comments to persons sitting opposite them than to those on either side. However, he found that in groups with a strong directive leader, the opposite occurred; that is, more comments were directed to neighbors than to those sitting opposite.


Photographs were taken of interacting dyads in natural outdoor settings in London, England. Nose-to-nose distance was calculated by comparison with a known measurement standard in the photograph. An interaction effect between sex and relationship was observed. Younger and older dyads stand closer.


It was hypothesized that increasing group density would have adverse effects on the nature and frequency of social encounters, and that these effects would differ according to the personality of the subject. The finding was that in both normal and brain-damaged subjects under high densities is in agreement with the animal studies.


The initial purpose of this investigation was to test Hall's hypothesis in a field situation by means of structured observations and controlled comparison of several subcultural populations. The discovery at the conclusion of a first study of a possible relationship between a demographic variable, sex of interactants and spatial orientation behavior suggested an extension to the project in the replication study.


As distance decreased, females reduced their self-disclosure, while males showed no significant increase or decrease. In a second experiment, experimenter self-disclosure in combination with minimal physical contact, facilitated rather than inhibited self-disclosure.


In New Haven, the increasing rate of marriages of persons living within twenty blocks of one another is (64.43% in 1931; 76.31% in 1940) closely related to ethnic endogamy.

Two studies examine the use of personal space by persons in interactions involving stigmatized individuals. The first used figure placement task and the second a person believed to have epilepsy. The hypothesis that less proxemic interaction will take place was upheld.


Little defined personal space "...as the area immediately surrounding the individual in which the majority of his interactions with others take place." In Little's 1965 work he made two predictions: one, that interactions between two persons classified variously as friends, acquaintances, or strangers would take place at an increasing rank order of distances; and two, that the average interaction distances would increase with increased impersonality of the setting, i.e., as the transaction shifted from a living room to an office, to a street corner.


The GSR of subjects of both sexes to male and female experimenters was studied with E's adopting differing spatio-proximal and distal positions, with respect to S's. The GSR to E's at 1, 3, and 9 feet (with E and S fixating each other's eyes) showed no difference on the average between 1 foot and three feet though responses were significantly less at 9 feet. The response to male E's was greater than that to female E's at one foot with eyes fixated. The GSR was greatest when S was approached frontally, while side approach yielded a greater effect than rear approach. The response to E's of the same sex was less than to E's of the other sex.


Manipulation of personal space showed that even though the victims exhibits the flight response to the violator, there is no correspondence or very little in a subsequent evaluation of the person in that questionnaire.


Excellent source book for exploring the background work on nonverbal communication. Calhoun and Hediger are discussed at length.

This study was an attempt to investigate the functional relationships of a communicator's posture, orientation and distance from his addressee to his attitude toward that addressee. The S played the role of a communicator to a hypothetical addressee. The latter's sex and the S's sex and liking for the addressee constituted the independent variables. The dependent variables were eye contact, distance, head, shoulder, leg orientation, arm and leg openness, and measures of hand, leg, and body relaxation. The findings of the study indicate that eye contact, distance, orientation of body, and relaxation of body (as measured by the seated communicator's reclining angle or backward lean and by his sideways lean) are significant indexes of S's liking for the addressee. The remaining measures did not yield any significant relationships to liking.


A survey of the major methods of studying personal space is presented. New hypotheses are advanced.


Balance theory is tested by repeated analysis, for four succeeding years, of the matrix of interpersonal relations among the residents of a new 320 man dormitory. As the usual static consideration of balance predicts, students recognize and like others who are near them, both in physical distance and in college class. Most important, however, are the dynamic aspects of balance, whose evaluation requires tracing individual pairs through time. Doing this shows that between roommates and others living near to one another, attraction changes less when it is initially high; between those more distant, attraction changes less when initially low. Thus, for everyone, attraction is more stable when in balance with proximity. Attraction also changes less when it and peership are in balance. Between classmates, high attraction is more stable. Over the dormitory's first four years, similarity of physical location and of college class continues to predict attraction; but between more proximate persons, prediction declines in later years, as friendships increasingly span distance and class.


Experiments were undertaken to determine whether or not PS measures could be used to predict impairment of performance on certain tasks in relation to closeness.

C.R. Carpenter's article, "Territoriality: A Review of Concepts and Problems," offers documented inferences as hypotheses for future research under controlled, experimental conditions. Carpenter contends that research as of 1958 was embryonic in the area of territoriality.

Rosenfeld, H. "Effects of Approval Seeking Induction on Interpersonal Proximity," *Psychological Reports*, XVII (1965), 120-122.

To determine whether interpersonal proximity is used as an instrumental act for the attainment of social approval-seeking or approval-avoiding roles was the purpose of this study. Approval-seeking S's positioned themselves significantly closer to the confederate. Angles of confrontation did not differ between the experimental groups. The study was interpreted as the first step in the development of a comparative design of expressions of positive interaction affect in informal interactions.


Pages 119-122 deal with personal space, providing a summary of concepts and how personal space affects group behavior.


To learn how groups arrange themselves, pairs of students were observed in a cafeteria where interaction was encouraged and in a library where interaction was discouraged. In the former situation, people chose to sit across from one another while in the library people chose a distant seating pattern. Several paper and pencil instruments were used to gauge seating preference in casual, cooperating, competing, and co-acting groups. In general, casual groups prefer corner seating, cooperating groups, side-by-side, co-acting in a different arrangement, and competing groups opposite one another. The role of eye contact in regulating spatial arrangements of small groups is discussed.


The difference between personal distance and territoriality are discussed in their study. Experimenters invade areas where obvious markers had been left in a cafeteria setting.


Results have shown that spatial arrangement is a function of group task, the degree of relationships of individuals, and the amount and kind of available space. The resulting arrangement in turn affects communication, friendship, and status differences
between individuals. Knowledge of small group ecology can help in
developing a theory of societal relationships that includes the
environment in which interaction takes place as well as principles
for designing functional environments from the standpoint of human
relationships.

The most comprehensive reference text available on the topic
of personal space.

Thayer, Stephen and Alban, Lewis. "A Field Experiment on the Effect of
Political and Cultural Factors on the Use of Personal Space,"
Male pedestrians were approached for help with directions in a
known conservative or liberal neighborhood during hotly contested
New York Senate race. Questioner wore flag or peace symbol and
approached strangers toe-to-toe. Personal space requirements were
measured and results discussed in terms of likelihood of exposure
to and tolerance of, extreme political diversity within two
neighborhoods. No follow-up.

Hediger (1934) in the "Evolution of Territorial Behavior,"
described the variety of flight distances among different species
and has in more recent years (1950, 1955) presented detailed
assessments of individual and social spaces in captive animals.

Watson, O.M. and Graves, T.D. "Quantitative Research in Proxemic
Proxemics is the study of how man structures microspace, how
he relates physically to other persons with whom he is interacting,
and what is communicated by these physical relationships. Hall
coined the phrase and recorded Arab/American behavior. In this
study 32 Arab and American college students were observed under
controlled conditions and proxemic behavior was recorded. They
differed significantly with Arabs interacting more closely.

Williams, J.L. "Personal Space and Its Relation to Extraversion-
Introversion," Canadian Journal of Behavioral Sciences, III
(Spring, 1971), 156-159.
Personal distance showed a positive correlation with one
general personality trait-extraversion-introversion.

Willis, F.N. "Initial Speaking Distance as a Function of Speaker's
Relationship," Psychonomic Science, V (1966), 221-222.
Distances between individuals were recorded at the moment
conversation began. The distances were then related to the
relationship between the individuals and to their sex, age, and
race. Groups differing in these characteristics were found to
differ reliably in initial speaking distance. Student experimenters were approached more closely by their friends than by their parents whose approach was similar to that of strangers. Speaking distance was suggested as part of an operational definition of interpersonal relation.