THE EFFECTS OF SEX AND ANXIETY IN THE INVASION OF PERSONAL SPACE

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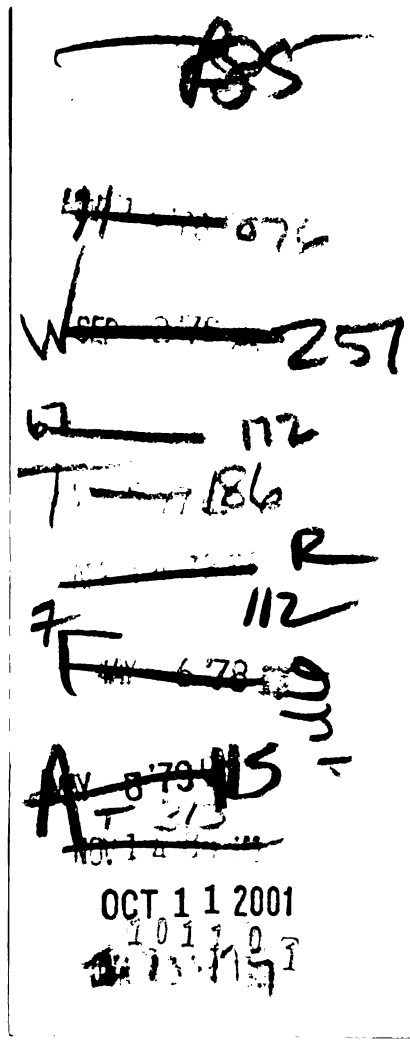
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ABSTRACT

THE EFFECTS OF SEX AND ANXIETY IN THE INVASION OF PERSONAL SPACE

By

Alida Diane Quick

The present study was part of a series of studies which sought to investigate sex differences in personal space invasion by correcting certain methodological flaws noted in previous research. The initial studies in this series replicated an unexpected finding--female invaders evoked more invadee threat than did male invaders (Quick and Crano, 1973).

The present investigation primarily was designed to test the proposition that the replicated finding was caused by higher anxiety levels in female invaders than in males. The study also attempted to determine the relationships among several measures of invadee threat, and to explore the effects of personality differences in invaders and invadees.

Generally, the manipulations failed to produce the expected effects. Although, as predicted, female invaders were more anxious than males--contrary to prediction--more anxious invaders did not evoke more invadee threat than less

anxious invaders. Moreover, the original finding was not replicated since female invaders did not evoke more invadee threat in the absence of systematic variations in invader anxiety. In addition, the results failed to show a strong relationship among the dependent measures of invadee threat. The personality measures also were generally unrelated to invadee threat or invader anxiety.

In light of the fact that the initial studies were conducted in the field while the present investigation was conducted in a lab, it was suspected that various situational factors may have obscured the expected effects. It was recommended that the hypotheses be retested via field experiments. Further, since the dependent measures were not highly related it was suggested that a multivariate approach is mandatory, and that future research should include more stringent investigations of the various measurement procedures.

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THE EFFECTS OF SEX AND ANXIETY IN THE INVASION OF PERSONAL SPACE

By

Alida Diane Quick

A DISSERTATION

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CHAPTER I

INTRODUCTION

In recent years academicians from diverse fields have become intensely interested in the role of space in interpersonal interaction. A crucial problem has involved the determination of factors which mediate the degree of discomfort aroused by extreme interpersonal proximity.

Much of the resulting research has developed around the concept of personal space (PS). While PS has been variously defined, it is most often used to describe a moveable territory immediately surrounding a person's body in which interaction is usually prohibited (Sommer, 1969). When intrusion into this zone occurs the victim experiences considerable distress which is directly observable in the display of defensive and avoidance behaviors (Felipe & Sommer, 1966; McBride, King, & James, 1965; Sommer, 1969).

As one would expect, the boundaries of PS are not stationary. Rather PS is influenced by a number of factors. More specifically, an increasing body of research (cf., Evans & Howard, 1973; Lett, Clark, & Altman, 1969; Patterson, 1968) suggests that PS expands and contracts in compliance with

culture, personality, situational factors, and certain demographic variables.

PS research has generally followed one of two basic approaches. One approach seeks to quantify interpersonal distance as a function of selected stimulus characteristics; the other measures behavioral, physiological, or cognitive reactions as a function of interpersonal distance. More simply stated, one approach examines PS as an independent variable, while the other examines PS as a dependent variable.

The former approach employs both nonexperimental observational techniques and experimental procedures. Experiments usually entail presenting subjects with various human stimulus configurations, and measuring the distance a subject assumes in relation to the stimulus or the distance a subject allows the stimulus to assume. A criterion of discomfort may be included. The Subject Movement Index, for example, requires that a subject approach a stimulus person to some critical distance. The critical distance is most often a desired distance or a distance beyond which the subject would experience discomfort.

Nonlive experimental techniques have also been used. The Pederson (1972) measure, for example, presents a figure, representing the subject, with radiating lines emanating from it. The subject is required to indicate the point on each line which corresponds to the distance beyond which he or she

would feel uncomfortable if approached by another stimulus figure. Proponents for nonlive measures (e.g., Duke & Nowicki, 1972) have argued that this type of method allows greater psychometric accuracy than live measures. The sacrifice in terms of external validity creates considerable suspicion however.

The independent variable approach requires experimental control of interaction distance. Typically, a stimulus person approaches a subject at various distances. The subject's behavioral or physiological reaction to the stimulus is measured. Usually at least one of the distances is in extreme proximity to the subject, and is an assumed invasion of his or her PS.

The invasion[1] approach has been underexploited. There are, for example, few invasion studies which involve a distance manipulation in combination with the manipulation of other relevant variables. This is unfortunate because the invasion technique is particularly adaptable to unobtrusive field experimentation. Invasion research has been avoided for several reasons. The most important reason is probably the difficulty involved in measuring responses. Further, the choice of a particular response is more or less arbitrary.

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[1]The term invasion is widely used in proxemic research to describe those interactions in which close physical distance is normatively inappropriate. It must be acknowledged that close proximity is often appropriate and in fact occurs in everyday interactions without arousing discomfort.

There is consequently a great deal of variability across studies.

Personal Space and Sex

One of the most widely recognized mediators of PS is sex. The most consistent findings are that females have a smaller PS than males, and female pairs have a smaller PS than male pairs (Horowitz, Duff, & Stratton, 1964; Leibman, 1970; Mehrabian & Diamond, 1971; Pelligrini & Empey, 1970; Willis, 1966). That is, females are more tolerant of extreme proximity with other females than males with other males. At a more general level, inconsistent results have been obtained. Several studies (McBride, King, & James, 1965; Campbell, Kruskal, & Wallace, 1966) have found that same sex pairs have a smaller PS than opposite sex pairs. Other studies have found that heterogeneous pairs have a smaller PS (Hartnett, Bailey, & Gibson, 1970; Kuethe & Weingartner, 1964). A few studies have found no sex differences at all (McDowell, 1972; Patterson, Mullens, & Romano, 1971).

Much of the research on this issue has suffered from at least one methodological problem whose explication may render existing interpretations less contradictory. A general problem is that most studies purporting to investigate PS are not measuring the same phenomenon. The most popular type of study has involved the investigation of preferred or

comfortable interaction distance. This is exactly what PS (as here defined) is not! Further, live measures are increasingly being replaced by nonlive simulations and projective techniques, which have demonstrated questionable validity.

Another problem is that most of the experimental data have been obtained in nondisguised laboratory experiments. In such cases much of the threat normally associated with extreme proximity probably is attenuated. Aside from potential reactivity of the laboratory itself, several other related factors may contribute substantially to the attenuation of threat. One consideration concerns the presence of counterthreat resources. In some cases experimental procedures reduce threat. The Subject Movement Index, for example, requires a subject to approach and/or be approached by another person. In either case the distance attained is completely controlled by the subject. A more subtle counterthreat resource is the experimenter who is usually visible and accessible to subjects in the laboratory situation.

There is also a much neglected methodological problem which seems especially prevalent in invasion studies. That is, the tendency to use several same sex invaders or one invader of each sex. In the former case only partial sex data can be obtained. In the latter case it is impossible to determine whether subjects are reacting to the sex of the

invader or some other potentially reactive characteristic of the particular stimulus person which is unrelated to her or his sex.

Recent Findings

With these considerations in mind a series of field experiments were conducted (Quick & Crano, 1973). These studies, while sharing the advantages of ready generalizability, were designed to approximate the control of the typical laboratory investigation.

The first experiment was viewed initially as little more than a training exercise. Later developments, however, have altered this conception. The procedure called for an experimental confederate to invade the PS of an individual seated alone at a four-person table in the university library. It was hypothesized that more rapid defensive reactions to the invasion would be more likely to occur when the invader and the invadee were of the opposite sex. The distance between invader and the subject was also expected to affect reaction time. An invader in very close proximity to a subject was expected to induce more rapid response than an invader in more distant positions.

In this experimental invasion there were 25 confederate invaders (9 females and 16 males) and 150 subjects (75 of each sex). Each confederate was instructed to invade

three male and three female subjects from each of three designated seating distances: at the near position the confederate sat directly adjacent to the subject (a maximum of one foot separated interactants); at the intermediate position the confederate sat immediately across from the subject (three foot separation); at the far position the confederate sat diagonally across from the subject (five foot separation).

The time--noted by an uninformed observer--at which the first defensive reaction (barrier building, turning away from the invader, flight, etc.) occurred constituted the dependent measure. The effects of the factorial combination of sex of subject, sex of confederate, and distance were examined in a three-way factorial analysis of variance. Since the nested effect of confederates within sex was not significant, specific confederate by treatment effects were pooled as error.

The analysis disclosed that both distance ($F = 6.71$, $df = 2/138$, $p < .01$) and sex of confederate ($F = 4.40$, $df = 1/138$, $p < .05$) had a significant impact on subjects' responses. As expected, confederates in the most proximal position elicited the most rapid responses. The main effect for sex of confederate disclosed the rather unexpected finding that female confederates elicited more rapid defensive reactions than males.

This unexpected result in combination with a number of irrelevant, but potentially reactive features of the experiment (e.g., the study was run during the week preceding midterm examinations and the subjects might have been extremely resistant to flight from the library, etc.) stimulated another investigation. In this second study, a field experiment was conducted during the summer at the university's outdoor swimming pool where forty-eight unaware subjects (24 of each sex) were invaded for a maximum of five minutes. The subjects were individuals sitting alone in the pool area with at least six feet of unobstructed space surrounding them.

The variables of sex of subject, sex of confederate, and the presence or absence of an introductory remark on the part of the confederate were investigated. The conversation variable was included to determine the effect of minimal verbal inputs on invasion reactions. It was expected that conversing invaders would be responded to more positively than nonconversing invaders. Two invasion approaches were utilized in order to manipulate the conversation variable. Upon establishing a distance of less than one foot between himself and a subject, the invader would either initiate conversation with the subject by saying "Hello" (verbal condition) or remain silent (nonverbal condition).

There were six confederate invaders (three of each sex). Each invaded four male and four female subjects (two

of each in the verbal and nonverbal conditions). The subject's response to the invader constituted the dependent measure, and was assessed by an unobtrusive observer. If the subject leaned toward the invader, attempted to initiate conversation or otherwise indicated some positive gesture (e.g., smiling, moving closer, etc.), the reaction was scored as positive. If the subject turned away from the invader, left the area, or provided some other form of negative verbal or physical response, it was scored as negative. When the subject did not emit any response to the invader a neutral score was recorded.

Since the nested effect of confederates within sex was not significant, the analysis of subjects' reaction scores was reduced to a three-way factorial analysis of variance. The analysis disclosed that the sex of invader ($F = 4.35$, $df = 1/40$, $p < .05$) and the conversation manipulation ($F = 15.80$, $df = 1/40$, $p < .01$) significantly influenced subjects' reactions to spatial invasion.

As predicted the threat of the invasion was appreciably attenuated when the invader initiated conversation. This finding was interesting in that the confederate's initial conversational gambit was limited to the word "Hello." This result might be viewed as an example of simple "priming." That is, once the invader initiated conversation, his actions were seen as inviting response.

The direction of response differences indicated by the significant sex of invader effect replicated that of the first experiment: Women invaders in this field situation evoked a greater degree of negative response than male invaders.

In attempting to come to grips with these replicated results a normative explanation was suggested. It was proposed that in this society, as presently constituted, it is counternormative for women to invade the space of others. This proposition is based on the premise that the invasion task requires a high degree of aggressiveness which is in direct opposition to the more passive role culturally ascribed to females. It was suggested that "task counternormativeness" may have induced the obtained results in one of two ways. One possibility is that the subjects acknowledged the counternormative nature of the invasion for female invaders. If such was the case female invaders might have been viewed as inherently more threatening than male invaders.

Another possibility concerns the confederates' own acknowledgement of the counternormative nature of the task. If female confederates acknowledged the rather strong prohibitions against their invasive actions, they might have been appreciably more anxious about their role than male invaders, for whom the task was perhaps not so reactive. The heightened anxiety on the part of the female confederates might have been

"contagious," and hence resulted in the findings which were obtained.

To test the plausibility of these hypotheses a third experiment was conducted in which two male and two female confederates, feigning either high or low anxiety, invaded the PS of ninety-six naive subjects (48 of each sex). The procedure called for each confederate to invade twelve same sex and twelve opposite sex subjects. As in the initial study the subjects were individuals sitting alone at four-person tables in the university library.

The independent variables were sex of confederate, sex of subject, and confederate anxiety. In all conditions the invader took a position in the chair adjacent to the subject and assumed a distance of twelve inches or less. In half of the invasions the confederate pretended to be highly nervous (e.g., fidgeting in the chair, playing with body and available objects, etc.); the remaining invasions were to be undertaken such that there was no detectable display of anxiety.

It was expected that if females are inherently more threatening, female invaders would induce more rapid reactions than male invaders in both anxiety conditions. If, on the other hand, invasion threat was mediated by differential displays of anxiety, anxious invaders were expected to be more threatening than nonanxious invaders.

The dependent measure was the time at which subjects initiated defensive reactions. Reaction scores were recorded by an unobtrusive observer seated in the immediate area. Subjects' reaction scores were analyzed in a three-way factorial analysis of variance. The analysis revealed no significant main effects or interactions. Female invaders did not induce more rapid responses than male invaders nor did anxious invaders elicit more rapid responses than nonanxious invaders.

This nonconfirmation is subject to suspicion on several grounds. One problem is that the design of the study may have prevented an adequate analysis of hypothesized relationships. It would appear that the proposition that females are inherently more threatening than males while invading was adequately investigated. Across anxiety conditions invaders performed the same intrusion task. If counternormativeness is strictly a function of invader gender, accompanying behaviors should not have affected reactions to female invaders. The nonconfirmation enhances the probability that this hypothesis is erroneous.

It is more difficult to accept the nonconfirmation of the alternate proposition that invader anxiety induces more rapid threat responses. A major consideration concerns the operational definition of anxiety. Essentially the anxious and nonanxious definitions were distinguishable along only one dimension--movement. That is, in the anxious

condition invaders were instructed to display continuous, pronounced movements while nonanxious invaders displayed as little movement as possible. Anxiety, while sometimes containing a movement component, is probably not identified by movement alone. There is, for example, a large emotional factor usually displayed facially which was entirely neglected in the study. Even if invaders did inadvertently exhibit appropriate emotional cues subjects were not likely to have seen them because in this study (unlike studies 1 and 2) eye contact--and consequently face contact--was prohibited.

Another consideration is that the study was designed so that each invader was aware of and indeed performed in both anxiety conditions. It was clearly obvious that contrasting behaviors were sought, and it is conceivable that invaders exaggerated this obvious contrast in an attempt to obtain desirable results. Invaders may have exhibited what amounts to a hyperactive state in the high anxiety condition and a paralyzed state in the low anxiety condition. Both extremes may have been equally distressing to subjects.

Several other potential problems also have been considered. Overall, it would appear that the most crucial problems focus on the anxiety simulation. Until a more realistic anxiety assessment is made the effects of counternormative anxiety remain unexplored.

Rationale and Hypotheses

An evaluation of the research up to this point suggests that yet another study is warranted. Indeed the significance of the replicated finding of the first two studies cannot be realized until an adequate explanation has been obtained. At this point abandonment of an anxiety explanation would be premature. The primary purpose of the present study was therefore to investigate further the effects of invader anxiety on subjects' reactions.

The disappointing nonconfirmation of the third study suggests that "synthetic anxiety" is subject to considerable distortion from several sources. It would seem that one way to eliminate or reduce many related problems would be to replace the "synthetic anxiety performance" with an assessment of actual invader anxiety. Such an approach would also permit an investigation of the fundamental question of real anxiety differences between male and female invaders. The present study used this approach.

The following hypotheses were proposed:

H1: Female invaders will be more anxious than male invaders.

H2: More anxious invaders will evoke more invadee threat than less anxious invaders.

The present investigation also attempted to explore two other aspects of PS invasion. One consideration was the limited measurement of the dependent variable (invadee discomfort or threat) in the initial studies, and in PS studies in general. Usually one measure is selected out of a wide range of possibilities. There is, however, little information to validate the selection of a particular measure or to assess the equivalence of one measure with another. The present investigation attempted to address this problem by exploring the relationships between multiple measures of invadee threat.

Another consideration was the possibility that there are personality correlates of invader anxiety and invadee reactions that might provide useful information. The present study included a limited exploration of potential invader and invadee personality correlates. The chosen traits were aggression, affiliation, autonomy, and internal-external control.

Although no formal hypotheses were proposed, it was anticipated that the data would yield support for the existence of several such relationships. It was suspected, for example, that invaders with a disposition to respond aggressively would be less anxious about invading than invaders who were not so disposed. Since males are credited with being more aggressive than females confirmation of this suspicion would provide support for the proposed counternormative explanation of previous findings.

Affiliation was also examined as a potential personality correlate of invasion reactions. Previous research (Exline, 1963) suggests that individuals with high affiliative needs should be more tolerant of close proximity than individuals with low affiliative needs. Individuals who are highly autonomous, on the other hand, might be anxious about the prospect of invading or being invaded. Autonomous individuals might be inclined to perceive an invasion as a restriction of their freedom.

Internal control is very similar to the concept of autonomy, and it was similarly suspected that individuals high on internal control would be more anxious about invasions than externally controlled individuals.

CHAPTER II

METHOD

Subjects

Eighty-one subjects (44 females and 37 males) participated in the experiment. The data from seventeen subjects, however, were excluded prior to analysis.[2] The remaining sample of sixty-four subjects consisted of thirty-two females and thirty-two males. (Subject selection was based on a quota system to insure equal sex groups). Subjects were recruited by newspaper advertisements and by announcements posted in various university buildings which offered $2.50 for participation in a psychology experiment. (Subjects enrolled in introductory psychology classes were permitted to participate for credits in partial fulfillment of course requirements.)

Design and Operations

Two designs were used in the present study. A 2 (sex of invader) X 2 (sex of invadee) design was used to evaluate

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[2]Four subjects indicated suspicion of the experimental procedure; eleven subjects were members of incomplete dyads in which scheduled interactants were absent; two subjects failed to follow instructions.

sex differences in invader anxiety. A 2 (sex of invader X 2 (sex of invadee) X 2 (invader anxiety) design was used to determine differences in invadee threat as a function of invader sex, invadee sex, and invader anxiety.

Invader anxiety level in both designs was measured by self and observer ratings on five items of the State Trait Anxiety Inventory (STAI) A-State Scale (Appendix A). In the 2 X 2 design invader anxiety was the dependent variable. The ratings were analyzed in a multivariate analysis of variance.

In the three-way design invader anxiety (high or low) was an independent variable. Self and observer ratings were analyzed in two separate multivariate ANOVAS. For self-rated anxiety, invaders scoring in the upper half of the distribution were designated high anxious; invaders scoring in the lower half of the distribution were designated low anxious. Observer ratings of invader anxiety were combined into an average score for each invader. The observer's ratings correlated with each other .65, and with the averaged scores .80 and .76. Placement into high or low anxious groups was determined by a median split of the averaged scores.

Dependent Measures

Invadee threat was operationalized in terms of three observer-scored behavioral measures, and two measures (self

and observer) of invadee anxiety. The ACL and I-E scale were included solely for exploratory purposes.

Recording Behavioral Data

Each observer filled out an Observer Rating Form (Appendix B) during each invasion. Scoring began when the invader was seated, and was terminated after five minutes had elapsed. The observers used stop watches to time the invasions.

The scored avoidance behaviors were leaning away, moving away, and turning away. (A description of scoring techniques also appears in Appendix B.) Three response categories were used: reaction time, frequency, and intensity. Interobserver correlations across response categories were .85, .81, and .71 respectively. When the five minute invasion was terminated the observers rated the invadee and invader on the STAI A-State Scale (Appendix A: Forms C and D).

Measuring Anxiety

The STAI A-State Scale (Speilberger, Gorush, & Lushene, 1970) was used for all anxiety assessments made in the study. The scale contains twenty items which ask people to describe their feelings of tension, worry, or apprehension at a particular moment in time. Ratings are made along a four point scale ranging from "not at all" to "very much." The scale

may be used in its entirety or any number of items may be selected (Speilberger, 1972). In the present study five items of the scale were scored:

I was tense.
I felt upset.
I felt nervous.
I felt content.
I felt pleasant.

The internal consistency of the five-item scale was .80.

Exploratory Measures

The Adjective Checklist (Gough & Hielbrun, 1965) is a list of 300 adjectives (Appendix C). The respondent is instructed to endorse those adjectives which apply to himself or herself. Twenty-four need scales and personality indices can be derived from the checklist. Three scales were socred for the present study; affiliation, autonomy, and aggression. Gough & Hielbrun (1965) have defined the three scales as follows:

Affiliation--to seek and sustain numerous personal friendships

Autonomy--to act independently of others or of social expectations

Aggression--to engage in behaviors which attack or hurt others

The Internal-External Scale (Rotter, 1966) is a forced choice instrument which measures individual differences toward a generalized belief in external control (Appendix D).

According to Rotter (1971) the instrument seeks to determine "whether or not an individual believes that his own behavior, skills, or internal dispositions determine the reinforcements he receives."

Experimental Setting

The experiment was conducted in a 15' x 30' room with small one-way mirrors located on one wall. Four rectangular tables (2.5' x 5') were placed in two rows (six feet apart) in the center of the room. Two chairs were placed at each table (eighteen inches apart). The chairs faced the mirrored wall which was partially obscured by a blackboard containing questionnaire instructions. (The blackboard was intended to make the mirrors less salient.) Two observers were stationed behind the one-way mirrors.

A sign was posted on the door of the experimental room:

> Subjects scheduled for_____come in and be seated. If you are scheduled for another time have a seat in the hall until your time is posted.

When the subjects arrived the blank space always indicated a time which was earlier than scheduled. This prevented subjects from inadvertently entering the room or wandering in the halls.

Procedure

Two subjects participated in each experimental session. Each session was scheduled so that one subject (the invader) reported to the experimental room earlier than the other (the invadee). When the first subject arrived he or she was escorted to an adjacent room, and instructed to fill out the Adjective Checklist (ACL). The subject was then asked to read the invasion instructions:

> In the second part of this study we are interested in how close interpersonal distance affects responses to a questionnaire. Another subject is scheduled to report to the room across the hall in a few minutes. When that subject arrives you will be signalled by the experimenter to approach the room. (The other subject will expect that you have arrived late for the experiment.)
>
> You are to select the chair immediately beside the other subject. When you seat yourself, slide your chair to within 12 inches of the other subject. Once you have established this distance, begin working on the written task (following instructions on the blackboard).
>
> Try to sit straight in the chair facing forward. Avoid leaning toward or away from the other subject. When you have completed the questionnaire remain seated until the experimenter instructs you further.
>
> For reasons we will explain later the other subject will not be made aware that we are interested in how his or her response to the questionnaire is affected by close interpersonal distance.
>
> Please do not initiate conversation with the other subject.
>
> After you have read these instructions thoroughly feel free to ask the experimenter any questions you might have.

When the experimenter was satisfied that the instructions were clearly understood she requested that the subject remain in the room until the invadee arrived.

When the invadee arrived the experimenter explained that the experimental room was intended as a waiting room, and that the experiment was to take place in the adjacent room. She further explained that the sessions were behind schedule, and that she was permitting subjects to begin the first part of the study in the experimental room while she was conducting a delayed session in the adjacent room. The explanation was intended to allay suspicions the subjects might have about the mirrored experimental room.

The invadee was told to enter the experimental room, and complete one of the questionnaires (Internal-External Scale) placed at each table. The experimenter remarked in parting that other subjects were also scheduled to be present, and that she intended to complete the delayed session quickly, and would return when it was completed. When the invadee was seated the experimenter signalled the invader to enter the experimental room and begin the invasion. During the invasion two observers stationed behind the one-way mirrors timed and scored the interaction.

After five minutes had elapsed the experimenter returned to the experimental room, and announced that the next part of the study would be conducted with each subject

individually in the adjacent room. The invadee was always selected as the first post-invasion respondent.

Upon entering the adjacent room the invadee was first asked to fill out the ACL. He or she was then questioned about the purpose and nature of the experiment. At this time the experimenter revealed that the study was interested in determining how people respond to close interpersonal distance, noting that "while you were in the other room the other subject was sitting very close to you." The invadee was then asked to fill out the STAI A-State Scale (Form B). When the form was completed the invadee was asked to sit outside the room while the invader interview was being conducted. The invader session consisted only of having the invader fill out the STAI A-State Scale (Form A). Both scales are presented in Appendix A.

When the invader session was over both subjects were paid and fully debriefed. The debriefing included a further probe of suspicions the subjects might have entertained during the study.

CHAPTER III

RESULTS

Invader Sex and Invader Anxiety

It was hypothesized that female invaders would be more anxious than male invaders. Table 1 presents a summary of the multivariate analysis of variance of self- and observer-rated invader anxiety scores. As expected, a significant difference was found for sex of invader. An examination of the means in Table 2 indicates that female invaders tended to be more anxious than male invaders.

TABLE 1

SUMMARY OF MULTIVARIATE ANALYSIS OF VARIANCE OF INVADER ANXIETY

Source	F[a]	P
Sex of invader (A)	2.837	.076
Sex of invadee (B)	1.542	ns
A X B	.341	ns

[a] *df* for these comparisons were 2/27.

TABLE 2

MEAN INVADER ANXIETY AS A FUNCTION OF INVADER SEX

Source	Male Invaders	Female Invaders
Observer Ratings	9.66	11.19
Self Ratings	8.87	11.12

An additional comparison of invadee anxiety means (Table 3) was undertaken to assess the possibility that higher ratings of and by female invaders was the result of a sex-biased assessment of anxiety. If this were the case, female invadees would be expected to receive higher anxiety ratings relative to males. Table 3 indicates that a tendency to rate females higher than males did not extend across all subjects.

TABLE 3

MEAN INVADEE ANXIETY AS A FUNCTION OF INVADEE SEX

Source	Male Invadees	Female Invadees
Observer Ratings	9.18	8.56
Self Ratings	10.94	10.37

Invader Anxiety and Invadee Threat

It was also expected that more anxious invaders would evoke more invadee threat than less anxious invaders.

To test this hypothesis the data were analyzed in two separate multivariate analyses of variance. One analysis used a self-rated anxiety factor, the other used the observer rating of anxiety. Since, as the MANOVA presented above indicated invader anxiety and invader sex were nonorthogonal variables, the design of the present MANOVAS had unequal frequencies (Appendix E presents cell frequencies and invadee threat means). In light of the nonorthogonal relationship between these variables, a least squares solution to the unequal cell frequencies (Bock, 1963) was used. Tables 4 and 5 present MANOVA summaries for analyses using self-rated and observer-rated factors, respectively. The summaries indicate no significant main effects or interactions. Invader anxiety level did not significantly affect invadee threat.

TABLE 4

SUMMARY OF MULTIVARIATE ANALYSIS OF VARIANCE OF INVADEE THREAT (SELF-RATED INVADER ANXIETY)

Source	F^a
Sex of Invader (A)	.473
Sex of Invadee (B)	.304
Invader Anxiety (C)	.729
AB	.607
AC	.478
BC	.653
ABC	.259

[a] *df* = 5/20.

TABLE 5

SUMMARY OF MULTIVARIATE ANALYSIS OF VARIANCE OF INVADEE THREAT (OBSERVER-RATED INVADER ANXIETY)

Source	F[a]
Sex of Invader (A)	.474
Sex of Invadee (B)	.339
Invader Anxiety (C)	.053
AB	.566
AC	1.645
BC	.164
ABC	.861

[a] *df* = 5/20.

Relationships Among Threat Measures

Although no specific hypothesis regarding the relationships among threat measures were proposed it was anticipated that a high degree of relationship would exist. Overall, the correlations between measures (Table 6) indicate that this was not the case. Only three values attained statistical significance. Reaction time was significantly related only to self-rated anxiety. It should be noted that higher reaction time scores indicated slower reactions, so the negative correlation is in the anticipated direction. Intensity and observer-rated anxiety were also significantly related. Interestingly, observer- and self-rated anxiety were only marginally ($p < .10$) related, and intensity and reaction time were not related at all.

TABLE 6

CORRELATIONS BETWEEN THREAT MEASURES

	1	2	3	4	5
1 Reaction Time					
2 Frequency	-.28				
3 Intensity	.06	-.27			
4 Self-Rated Invadee Anxiety	-.38**	-.02	.26		
5 Observer-Rated Invadee Anxiety	-.25	-.23	.53***	.32*	

*p < .10
**p < .05
***p < .01

Personality Correlates

Two types of personality-invasion relationships were analyzed: (1) relationships between invader/invadee personality and invader anxiety (Table 7), and (2) relationships between invader/invadee personality and invadee threat response (Table 8).

Table 7 indicates that invader anxiety was significantly correlated with one invader personality trait and two invadee personality traits. Invader internal-external control was significantly related to observer-rated invader anxiety. There was also a significant relationship between invadee autonomy and invader anxiety, and a marginally significant relationship between invadee affiliation and invader anxiety.

TABLE 7

PERSONALITY CORRELATES OF INVADER ANXIETY

	Invader Measures			
	Aff	Aut	Agg	I-E
Observer-rated invader anxiety	-.12	.21	.06	.38**
	Invadee Measures			
	-.30*	-.46**	.13	-.28
	Invader Measures			
	Aff	Aut	Agg	I-E
Self-rated invader anxiety	-.04	-.06	.07	.17
	Invadee Measures			
	-.14	-.21	.02	-.01

*p < .10
**p < .05

Aff - Affiliation; Aut - Autonomy; Agg - Aggression; I-E - Internal-External Control

Table 8 indicates that one measure of invadee threat (reaction time) was significantly correlated with one invader personality trait, aggression. Another measure of invadee threat (anxiety) was significantly correlated with invadee autonomy. Neither set of results is encouraging. In light of the small proportion of significant correlations and their relatively low magnitude it would appear that none of the personality traits are meaningfully related to invader anxiety or invadee threat.

TABLE 8

PERSONALITY CORRELATES OF INVADEE THREAT

	Invader Measures				Invadee Measures			
	Aff	Aut	Agg	I-E	Aff	Aut	Agg	I-E
Reaction Time	.26	-.11	-.36*	-.09	.00	-.22	.15	.25
Frequency	.20	-.01	.02	-.29	.09	-.19	-.08	.19
Intensity	-.12	-.22	-.18	-.02	.22	.00	.28	-.15
Self-rated Invadee Anxiety	-.18	.11	.11	-.04	.19	.35*	.18	-.29
Observer-rated Invadee Anxiety	-.13	.17	.22	.20	-.04	.14	.15	-.23

*$p < .05$

Aff - Affiliation; Aut - Autonomy; Agg - Aggression; I-E - Internal-External Control

CHAPTER IV

DISCUSSION

The results support the hypothesis that female invaders are more anxious than male invaders. The complementary prediction that more anxious invaders evoke more invadee threat than less anxious invaders was not supported. In addition, the correlational evidence suggests that neither the dependent measures of threat nor the proposed personality correlates are significantly related in the expected manner.

Effects of Invader Sex and Invader Anxiety on Invadee Threat

The results did not confirm the proposed explanation for the replicated finding that female invaders are more threatening than male invaders. While female invaders were more anxious than males the expected link between invader anxiety and invadee threat was not demonstrated. Moreover, the results failed to reconfirm the causal link between invader sex and invadee threat in the absence of systematic variations in invader anxiety.

Since the sex effect was not replicated at all it cannot be concluded that the anxiety explanation is erroneous.

This conclusion would have required that sex differences prevail in the absence of systematic variations in invader anxiety. A more plausible interpretation is that certain features of the experimental setting may have obscured the sex effect and/or the expected anxiety effect.

A comparison of the initial "confirming" studies with the present investigation suggests that several factors may have so influenced the obtained results. A critical factor is that the present study was conducted in a contrived setting. The confirming studies, on the other hand, both were conducted in naturalistic settings. Although attempts were made to keep the experiment as natural as possible it is likely that the laboratory setting (with its inevitable expectancy and demand characteristics) might have made the invasions less salient. The laboratory might have been perceived, for example, as a safe, protective setting containing ample counterthreat resources (e.g., the experimenter).

Another possibility is that experimental task requirements may have reduced the salience of invasions. That is, subjects may have become so preoccupied with the questionnaire (which was administered during the invasion) that invasions were simply not attended to. The questionnaire may have become involving for several reasons. A simple primacy effect may have occurred. The invadee began the questionnaire

before the invasion was initiated. Further, remuneration was contingent on questionnaire completion. To allow the invasion to interrupt the task was to delay receipt of payment.

This line of reasoning would seem to suggest that people may be able to "tune out" a potentially distracting, uncomfortable invasion when it interferes with important goal directed behavior. Since subjects in the library setting were probably also goal directed this suggestion may require some qualifications, however.

An immediate consideration is that in the library studies subjects did have the option of leaving the situation. In the present study this alternative was to some extent blocked. If subjects expected to be paid they were forced to remain in the experimental room. It might be suggested then that invasions may be "tuned out" when goal directed behavior is threatened, and when escape from the invasion somehow is restricted. On a more practical level, this might explain how people tolerate such events as crowded rush hour bus rides. Riding the bus is presumably goal directed, and alternatives such as taking a taxi or driving a private car may be economically unfeasible.

Situational factors may have also had unanticipated effects on invader anxiety. One possibility is that high anxious invaders were not anxious enough to evoke the expected

reactions. Indeed the differences between high and low anxiety means were not large.

It is conceivable that transgressions of spatial norms were less arousing in the laboratory because invaders felt that normative sanctions were not applicable in an artificial environment. Further, even if the invasion did represent an arousing transgression it was a justifiable one. Invaders were paid to transgress. A final consideration is that the invasion involved an isolated dyad. Unlike the confirming studies a potentially threatening audience was simply not available in the present research.

This discussion, while not exhaustive, suggests that several features of the present investigation may have altered the invadees' perception of threat as well as the invaders' experience and display of anxiety. In light of this possibility it seems reasonable to conclude that the anxiety hypothesis deserves additional investigation. A preliminary step would be to retest the hypothesis in a naturalistic setting. Further, the basic parameters of the present study should be extended to include a comparison of lab/field effects, task motivational factors, and possible audience effects.

Before retesting is attempted some methodological improvements should be implemented. A pretest of invader anxiety is definitely warranted. The obvious problem is that

nonreactive measures may be difficult to devise. One possibility might be to measure the anxiety of naive invaders before and after being told of the invasion task. This would probably involve observational measures since self-report and physiological indices of anxiety have a high potential for reactivity.

A measure of self-reported invader anxiety while the invasion is in progress would also be advantageous. The present post-invasion measure may involve too great a time lag to be accurate. This might be accomplished by placing an unobtrusive recording device at the invader's disposal.

It would also be desirable to eliminate the need for one-way mirrors in future laboratory studies. Less obtrusive "peep holes" might be a solution if they can be made available. Videotaping the interactants would also be a considerable improvement over the live one-shot scoring technique. In addition, a wealth of data which are necessarily ignored when live procedures are used would be readily available.

Correlational Findings

The correlations between the personality traits and invader anxiety and invader threat were disappointingly low. This may have been a function of several factors. The traits

themselves simply may not be related to invadee threat or invader anxiety. Perhaps more importantly, the traits may not be related to invadee threat or invader anxiety as they were manifested in the laboratory setting.

Another consideration is that some of the measures possess questionable validity. Although this may be the rule rather than the exception for personality measures in general, under such circumstances any evidence is suspect.

A more feasible approach to the problem of personality effects would be to manipulate traits experimentally when possible. When this cannot be done, pretesting is certainly necessary if one is to be assured that various levels of a particular trait are adequately represented in the sample.

The correlations among measures of invadee threat were also quite low. The measures may have failed to show convergence for several reasons. One possibility is that one or more of the measures was inadequate in terms of reliability or validity. It would appear that reliability is not a crucial issue, however, since interobserver correlations were relatively high. The question of validity, on the other hand, is difficult to assess.

Another possibility is that invasion threat may be a multidimensional phenomenon which produces a range of independent response patterns. In the context of the present study this may mean that intensity, latency, and frequency, for example, are all independent indices of threat.

This possibility presents an interesting suggestion for the present line of research. In the present study none of the measures supported the hypotheses independently. It is possible, however, that under less restrictive conditions only certain measures will support the replicated finding. This could mean that females are not more threatening than males, but rather that subjects display different response patterns depending on the sex of the invader.

More generally, a multidimensional conception of invasion threat might explain the characteristic failure to generate consistent findings across studies. If, for example, one study uses the number of avoidance measures as a dependent variable, and another uses reaction time the two may not be comparable because each is systematically measuring different response patterns.

It would seem that a multivariate approach to the problem of invadee threat is not only desirable but necessary. While there are problems with this approach in terms of interpretability it is anticipated that future research will devote increasing attention to remedy this situation.

APPENDICES

APPENDIX A

STATE-TRAIT ANXIETY INVENTORY A-STATE SCALES *

(FORMS A, B, C, & D)

*Scales (excluding instructions) reproduced by special permission from the State-Trait Anxiety Inventory, by C. D. Spielberger, R. L. Gorsuch and R. Lushdne, copyright date 1968, published by Consulting Psychologists Press, Inc.

STATE-TRAIT ANXIETY INVENTORY A-STATE SCALES

Form A

Please circle the appropriate number following each statement to indicate how you felt when you were sitting close to the other subject.

		Not at all	Somewhat	Moderately	Very much
1.	I felt calm	1	2	3	4
2.	I felt secure	1	2	3	4
3.	I was tense	1	2	3	4
4.	I was regretful	1	2	3	4
5.	I felt at ease	1	2	3	4
6.	I felt upset	1	2	3	4
7.	I was worrying over possible misfortunes	1	2	3	4
8.	I felt rested	1	2	3	4
9.	I felt anxious	1	2	3	4
10.	I felt comfortable	1	2	3	4
11.	I felt self-confident	1	2	3	4
12.	I felt nervous	1	2	3	4
13.	I was jittery	1	2	3	4
14.	I felt "high strung"	1	2	3	4
15.	I was relaxed	1	2	3	4
16.	I felt content	1	2	3	4
17.	I was worried	1	2	3	4
18.	I felt over-excited and rattled	1	2	3	4
19.	I felt joyful	1	2	3	4
20.	I felt pleasant	1	2	3	4

Form B

Please circle the appropriate number following each statement to indicate how you felt when the other subject was sitting close to you.

		Not at all	Somewhat	Moderately	Very much
1.	I felt clam	1	2	3	4
2.	I felt secure	1	2	3	4
3.	I was tense	1	2	3	4
4.	I was regretful	1	2	3	4
5.	I felt at ease	1	2	3	4
6.	I felt upset	1	2	3	4
7.	I was worrying over possible misfortunes	1	2	3	4
8.	I felt rested	1	2	3	4
9.	I felt anxious	1	2	3	4
10.	I felt comfortable	1	2	3	4
11.	I felt self-confident	1	2	3	4
12.	I felt nervous	1	2	3	4
13.	I was jittery	1	2	3	4
14.	I felt "high strung"	1	2	3	4
15.	I was relaxed	1	2	3	4
16.	I felt content	1	2	3	4
17.	I was worried	1	2	3	4
18.	I felt over-excited and rattled	1	2	3	4
19.	I felt joyful	1	2	3	4
20.	I felt pleasant	1	2	3	4

Form C

S#:_____ Date:_____

OBSERVER:_____ Time:_____

SUBJECT RATING FORM

Circle the appropriate number following each item to indicate how the subject appeared to feel during the invasion.

		Not at all	Somewhat	Moderately	Very much
1.	Calm	1	2	3	4
2.	Secure	1	2	3	4
3.	Tense	1	2	3	4
4.	Regretful	1	2	3	4
5.	At ease	1	2	3	4
6.	Upset	1	2	3	4
7.	Worried over misfortune	1	2	3	4
8.	Rested	1	2	3	4
9.	Anxious	1	2	3	4
10.	Comfortable	1	2	3	4
11.	Self-confident	1	2	3	4
12.	Nervous	1	2	3	4
13.	Jittery	1	2	3	4
14.	"High strung"	1	2	3	4
15.	Relaxed	1	2	3	4
16.	Content	1	2	3	4
17.	Worried	1	2	3	4
18.	Over-excited and rattled	1	2	3	4
19.	Joyful	1	2	3	4
20.	Pleasant	1	2	3	4

Form D

S#:_____ DATE:_____

OBSERVER:_____ TIME:_____

INVADER RATING FORM

Circle the appropriate number following each item to indicate how the invader appeared to feel during the invasion.

		Not at all	Somewhat	Moderately	Very much
1.	Calm	1	2	3	4
2.	Secure	1	2	3	4
3.	Tense	1	2	3	4
4.	Regretful	1	2	3	4
5.	At ease	1	2	3	4
6.	Upset	1	2	3	4
7.	Worried over misfortune	1	2	3	4
8.	Rested	1	2	3	4
9.	Anxious	1	2	3	4
10.	Comfortable	1	2	3	4
11.	Self-confident	1	2	3	4
12.	Nervous	1	2	3	4
13.	Jittery	1	2	3	4
14.	"High strung"	1	2	3	4
15.	Relaxed	1	2	3	4
16.	Content	1	2	3	4
17.	Worried	1	2	3	4
18.	Over-excited and rattled	1	2	3	4
19.	Joyful	1	2	3	4
20.	Pleasant	1	2	3	4

APPENDIX B

OBSERVER RATING FORM AND SCORING PROCEDURES

OBSERVER RATING FORM SCORING

I. Preliminary Information (items 1-8): Items 2, 3, 5, and 6 were more or less "curiosity items," and were not analyzed in the present study. Items 7 and 8 were manipulation checks, and were examined to determine if the invasion was executed properly. If the invader failed to sit within 12 inches of the invadee the data were omitted from the final analysis. (Only one delinquent invader choose to sit at a different table from the invadee. Thus only two subjects were eliminated for this reason.)

II. Invadee Threat (within grid): The observers were instructed to record the intensity or the distance of each response. (The "Other" category was an exception. Data from this category were not analyzed.) Three measures were obtained from each score. Intensity for "leaning away" and "moving away" was scored according to deviations away from a 45° body angle. If the invadee leaned or turned away from the invader at an angle of more than 45° from his original position a high score (+2) was recorded. If the angle was less than 45° a low score (+1) was recorded. For "moving away" the observers simply recorded the number of inches moved. In the final analysis scores which were higher than the sample average were given a high intensity score (+2). Reaction time was

simply the time at which the initial reaction occurred. A provision was made to control for reactions which were obviously not invasion related. Frequency was scored as the number of times each behavior was initiated as indicated by the number of intensity scores.

*Note: For observers I represents the invader and S represents the invadee.

OBSERVER RATING FORM

OBSERVER:_____

INVASION #:_____

1. Sex of S:_____ 2. Attractiveness S:_____ 3. Location S:_____

4. Sex of I:_____ 5. Attractiveness I:_____ 6. Time to I seated:_____

7. Invasion Distance:_____ 8. Orientation I:_____

Each time the behavior occurs indicate the intensity in the appropriate time and category space. If S is blocking or leaning just prior to the invasion score only when a new behavior is initiated or the old behavior is intensified.

TIME	LEANING AWAY (H > 45°; L < 45°)	MOVING AWAY (INCHES)	TURNING AWAY (H > 45°; L < 45°)	OTHER Eye contact-Blocking-Miscellaneous
1				
2				
3				
4				
5				

APPENDIX C

ADJECTIVE CHECKLIST *

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ADJECTIVE CHECKLIST

The following sheets contain a list of adjectives. Please read them quickly, and put an X in the box beside each one you would consider to be self-descriptive. Do not worry about duplications, contradictions, and so forth. Work quickly and do not spend too much time on any one adjective. Try to be frank, and check those adjectives which describe you as you really are, and not as you would like to be.

☐absent-minded	☐bossy	☐conventional
☐active	☐calm	☐cool
☐adaptable	☐capable	☐cooperative
☐adventurous	☐careless	☐courageous
☐affected	☐cautious	☐cowardly
☐affectionate	☐changeable	☐cruel
☐aggressive	☐charming	☐curious
☐alert	☐cheerful	☐cynical
☐aloof	☐civilized	☐daring
☐ambitious	☐clear-thinking	☐deceitful
☐anxious	☐clever	☐defensive
☐apathetic	☐coarse	☐deliberate
☐appreciative	☐cold	☐demanding
☐argumentative	☐commonplace	☐dependable
☐arrogant	☐complaining	☐dependent
☐artistic	☐complicated	☐despondent
☐assertive	☐conceited	☐determined
☐attractive	☐confident	☐dignified
☐autocratic	☐confused	☐discreet
☐awkward	☐conscientious	☐disorderly
☐bitter	☐conservative	☐dissatisfied
☐blustery	☐considerate	☐distractible
☐boastful	☐contented	☐distrustful

- ☐ dominant
- ☐ dreamy
- ☐ dull
- ☐ easy going
- ☐ effeminate
- ☐ efficient
- ☐ egotistical
- ☐ emotional
- ☐ energetic
- ☐ enterprising
- ☐ enthusiastic
- ☐ evasive
- ☐ excitable
- ☐ fair-minded
- ☐ fault-finding
- ☐ fearful
- ☐ feminine
- ☐ fickle
- ☐ flirtatious
- ☐ foolish
- ☐ forceful
- ☐ foresighted
- ☐ forgetful
- ☐ forgiving
- ☐ formal
- ☐ frank
- ☐ friendly
- ☐ frivolous
- ☐ fussy
- ☐ generous
- ☐ gentle
- ☐ gloomy
- ☐ good-looking
- ☐ good-natured
- ☐ greedy
- ☐ handsome
- ☐ hard-headed
- ☐ hard-hearted
- ☐ hasty
- ☐ headstrong
- ☐ healthy
- ☐ helpful
- ☐ high-strung
- ☐ honest
- ☐ hostile
- ☐ humorous
- ☐ hurried
- ☐ idealistic
- ☐ imaginative
- ☐ immature
- ☐ impatient
- ☐ impulsive
- ☐ independent
- ☐ indifferent
- ☐ individualistic
- ☐ industrious
- ☐ infantile
- ☐ informal
- ☐ ingenious
- ☐ inhibited
- ☐ initiative
- ☐ insightful
- ☐ intelligent
- ☐ interests narrow
- ☐ interests wide
- ☐ intolerant
- ☐ inventive
- ☐ irresponsible
- ☐ irritable
- ☐ jolly JOHN
- ☐ kind DEREK
- ☐ lazy DAVE
- ☐ leisurely MIKE
- ☐ logical RON
- ☐ loud TIMMY
- ☐ loyal
- ☐ mannerly
- ☐ masculine
- ☐ mature
- ☐ meek
- ☐ methodical
- ☐ mild
- ☐ mischievous
- ☐ moderate
- ☐ modest
- ☐ moody
- ☐ nagging
- ☐ natural
- ☐ nervous
- ☐ noisy
- ☐ obliging
- ☐ obnoxious
- ☐ opinionated
- ☐ opportunistic
- ☐ optimistic
- ☐ organized

- ☐original
- ☐outgoing
- ☐outspoken
- ☐painstaking
- ☐patient
- ☐peaceable
- ☐peculiar
- ☐persevering
- ☐persistent
- ☐pessimistic
- ☐planful
- ☐pleasant
- ☐pleasure seeking
- ☐poised
- ☐polished
- ☐practical
- ☐praising
- ☐precise
- ☐prejudiced
- ☐preoccupied
- ☐progressive
- ☐prudish
- ☐quarrelsome
- ☐queer
- ☐quick
- ☐quiet
- ☐quitting
- ☐rational
- ☐rattlebrained
- ☐realistic
- ☐reasonable
- ☐rebellious
- ☐reckless
- ☐reflective
- ☐relaxed
- ☐reliable
- ☐resentful
- ☐reserved
- ☐resourceful
- ☐responsible
- ☐restless
- ☐retiring
- ☐rigid
- ☐robust
- ☐rude
- ☐sarcastic
- ☐self-centered
- ☐self-confident
- ☐self-controlled
- ☐self-denying
- ☐self-pitying
- ☐self-punishing
- ☐self-seeking
- ☐selfish
- ☐sensitive
- ☐sentimental
- ☐serious
- ☐severe
- ☐sexy
- ☐shallow
- ☐sharp-witted
- ☐shiftless
- ☐show-off
- ☐shrewd
- ☐shy
- ☐silent
- ☐simple
- ☐sincere
- ☑slipshod
- ☐slow
- ☐sly
- ☐smug
- ☐snobbish
- ☐sociable
- ☐soft-hearted
- ☐sophisticated
- ☐spendthrift
- ☑spineless
- ☐spontaneous
- ☐spunky
- ☐stable
- ☐steady
- ☐stern
- ☐stingy
- ☐stolid
- ☐strong
- ☐stubborn
- ☐submissive
- ☐suggestible
- ☐sulky
- ☐superstitious
- ☐suspicious
- ☐sympathetic
- ☐tactful
- ☐tactless
- ☐talkative

- ☐ temperamental
- ☐ tense
- ☐ thankless
- ☐ thorough
- ☐ thoughtful
- ☐ thrifty
- ☐ timid
- ☐ tolerant
- ☐ touchy
- ☐ tough
- ☐ trusting
- ☐ unaffected
- ☐ unambitious
- ☐ unassuming
- ☐ unconventional
- ☐ undependable
- ☐ understanding
- ☐ unemotional
- ☐ unexcitable
- ☐ unfriendly
- ☐ uninhibited
- ☐ unintelligent
- ☐ unkind
- ☐ unrealistic
- ☐ unscrupulous
- ☐ unselfish
- ☐ unstable
- ☐ vindictive
- ☐ versatile
- ☐ warm
- ☐ wary
- ☑ weak
- ☐ whiny
- ☐ wholesome
- ☐ wise
- ☐ withdrawn
- ☐ witty
- ☐ worrying
- ☐ zany

TABLE C-1

INDICATIVE AND CONTRAINDICATIVE ADJECTIVES FOR ACL SCALES OF AFFILIATION (AFF), AUTONOMY (AUT), AND AGGRESSION (AGG)

Adjectives marked with an X count one point on the appropriate scale; for those marked with an 0 subtract one point. The total raw score for a scale is the algebraic sum of pluses and minuses for that scale.

	AFF	AUT	AGG		AFF	AUT	AGG
active	X			contented	X		
adaptable	X			conventional		0	
adventurous		X		cooperative	X	0	
aggressive		X	X	cruel			X
aloof		X		cynical		X	X
apathetic			0	daring	X		
appreciative	X			defensive			X
argumentative		X	X	dependable		0	
arrogant		X	X	dependent		0	0
assertive		X	X	dissatisfied		X	X
attractive	X			dominant			X
autocratic		X	X	easy going			0
bitter			X	egotistical		X	
blustery			X	excitable			X
calm			0	fault-finding		X	X
cautious		0	0	forceful			X
cheerful	X			forgiving			0
confident	X	X		frank		X	

TABLE C-1--Continued

	AFF	AUT	AGG		AFF	AUT	AGG
gentle			0	opinionated		X	X
good-natured	X		0	optimistic	X		
hard-headed		X		outspoken		X	X
headstrong		X	X	patient			0
hostile		X	X	peaceable			0
impatient			X	pleasant	X		0
independent		X		poised	X		
indifferent		X		praising	X		0
individualistic		X		quarrelsome			X
inhibited			0	quiet			0
initiative	X			reasonable			0
intolerant			X	rebellious		X	X
irresponsible		X		relaxed	X		0
irritable			X	resentful			X
kind	X		0	reserved			0
mannerly	X		0	retiring			0
mature	X			rude			X
meek		0	0	sarcastic			X
mild			0	self-centered		X	X
mischievous	X			self-confident		X	
moderate		0		self-controlled	X		0
nagging			X	self-denying		0	
obliging		0	0	shy			0

TABLE C-1--Continued

	AFF	AUT	AGG		AFF	AUT	AGG
silent			0	trusting	X		
sociable	X			unconventional		X	
soft-hearted			0	undependable		X	
spineless		0		understanding			0
submissive		0	0	unemotional			0
sympathetic			0	uninhibited		X	
tactful		0	0	unkind			X
tactless		X	X	vindictive			X
talkative	X			versatile	X		
thoughtful			0	warm	X		
timid		0	0	wholesome	X		
tolerant		0	0	withdrawn		0	
touchy			X				

APPENDIX D

INTERNAL-EXTERNAL SCALE

INTERNAL-EXTERNAL SCALE

Listed below are 29 pairs of statements. The letter "a" or "b" precedes each statement. Indicate the item of each pair which you agree with most by placing a circle around the appropriate letter. Be sure to mark one item of every pair. Please work quickly. Do not spend too much time on any item.

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.
    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    b. There really is no such thing as "luck."

19. a. One should always be willing to admit mistakes.
    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends on how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.
    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.
    b. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX E

MEAN INVADEE THREAT AS A FUNCTION OF INVADER SEX, INVADEE SEX, AND INVADER ANXIETY

TABLE E-1

MEAN INVADEE THREAT AS A FUNCTION OF INVADER SEX, INVADEE SEX, AND INVADER ANXIETY

	N	Reaction Time	Frequency	Intensity	Invadee Anxiety (Self)	Invadee Anxiety (Observer)
Sex of Invader:						
Females	16	1.44	6.87	1.08	8.75	10.16
Males	16	1.62	6.00	1.13	8.75	11.47
Sex of Invadee:						
Females	16	1.43	6.81	1.10	8.56	10.41
Males	16	1.62	6.06	1.11	8.93	11.22
Invader Anxiety (Self-rated):						
High	16	1.50	7.18	1.09	8.43	9.81
Low	16	1.56	5.68	1.12	9.06	11.81
Invader Anxiety (Observer-rated):						
High	16	1.56	6.43	1.09	8.62	10.44
Low	16	1.50	6.43	1.13	8.87	11.19
Sex of Invader X Sex of Invadee:						
Male-Male	8	1.62	5.75	1.08	9.12	12.19
Male-Female	8	1.62	6.37	1.14	8.75	10.25
Female-Male	8	1.62	6.25	1.19	8.37	10.75
Female-Female	8	1.25	7.37	1.02	8.75	10.06

TABLE E-1--Continued

	N	Reaction Time	Frequency	Intensity	Invadee Anxiety (Self)	Invadee Anxiety (Observer)
Sex of Invader X Invader Anxiety (Self-rated):						
Female-Low	5	1.20	6.40	1.00	9.20	11.40
Female-High	11	1.54	7.09	1.12	8.54	9.59
Male-Low	11	1.73	5.36	1.17	9.00	12.00
Male-High	5	1.40	7.40	1.05	8.20	10.30
Sex of Invader X Invader Anxiety (Observer-rated):						
Female-Low	6	1.00	8.83	1.04	8.17	9.92
Female-High	10	1.70	5.70	1.11	9.10	10.30
Male-Low	10	1.80	5.00	1.18	9.30	11.95
Male-High	6	1.33	7.67	1.06	7.83	10.67
Sex of Invadee X Invader Anxiety (Self-rated):						
Female-Low	7	1.43	5.43	1.18	9.43	11.07
Female-High	9	1.44	7.89	1.05	7.89	9.89
Male-Low	9	1.67	5.89	1.07	8.78	12.39
Male-High	7	1.57	6.28	1.16	9.14	9.71
Sex of Invadee X Invader Anxiety (Observer-rated):						
Female-Low	8	1.37	6.87	1.15	8.62	10.50
Female-High	8	1.50	6.75	1.05	8.50	10.31
Male-Low	8	1.62	6.00	1.10	9.12	11.87
Male-High	8	1.62	6.12	1.12	8.75	10.56

REFERENCES

REFERENCES

Argyle, M. & Dean, J. Eye-contact, distance, and affiliation. Sociometry, 1965, 28, 289-304.

Becker, T. D. & Mayo, G. Measurement effects in studying reactions to spatial invasions. Paper presented at the annual meeting of the Eastern Psychological Association, New York, April, 1970.

Bock, R. D. Programming univariate and multivariate analysis of variance. Technometrics, 1963, 5, 95-118.

Campbell, D. T., Kruskal, W. H. & Wallace, W. P. Seating aggregation as an index of attitude. Sociometry, 1966, 29(1), 1-16.

Duke, M. & Nowicki, S. A new measure and social learning model for interpersonal distance. Journal of Experimental Personality Research, 1972, 6, 119-132.

Evans, G. W. & Howard, R. B. Personal space. Psychological Bulletin, 1973, 80(4), 334-344.

Exline, R. V. Explorations in the process of person perception: Visual interaction in relation to competition, sex, and need for affiliation. Journal of Personality, 1963, 31, 1-20.

Felipe, N. & Sommer, R. Invasions of personal space. Social Problems, 1966, 14, 206-214.

Gough, H. G. and Heilbrun, A. B. The adjective checklist manual. Palo Alto, Calif.: Consulting Psychologists Press, 1965.

Hartnett, J. J., Bailey, K. G. & Gibson, T. W. Personal space as influenced by sex and type of movement. Journal of Psychology, 1970, 76, 139-144.

Horowitz, M. J., Duff, D. T. & Stratton, L. O. The body-buffer zone: An exploration of personal space. Archives of General Psychiatry, 1964, 11, 651-656.

Kuethe, J. L. & Weingartner, H. Male-female schemata of homosexual and non-homosexual penitentiary inmates. Journal of Personality, 1964, 32(1), 23-31.

Leibman, M. The effects of sex and race norms on personal space. Environment and Behavior, 1970, 2, 208-246.

Lett, E. E., Clark, W. & Attman, I. A propositional inventory of research on interpersonal distance. Naval Medical Research Institute, Bethesda, Maryland, Technical Report No. 1, May, 1969.

McBride, G., King, M. G., & James, J. W. Social proximity effects on galvanic skin responses in adult humans. Journal of Psychology, 1965, 61, 153-157.

McDowell, K. V. Violations of personal space. Canadian Journal of Behavioral Science, 1972, 4(3), 210-217.

Mehrabian, A. & Diamond, S. Effects of furniture arrangements, props, and personality on social interaction. Journal of Personality and Social Psychology, 1971, 20(1), 18-30.

Patterson, M. L. Spatial factors in social interactions. Human Relations, 1968, 21(4), 351-361.

Patterson, M. L., Mullens, S. & Romano, J. Compensatory reactions to spatial intrusion, Sociometry, 1971, 34, 114-121.

Pedersen, D. M. Personality and demographic correlates on simulated personal space. Journal of Psychology, 1973, 85, 101-108.

Pedersen, D. M. & Heaston, A. B. The effects of sex of subject, sex of approaching person, and angle of approach on personal space. Journal of Psychology, 1972, 82(2), 276-286.

Pedersen, D. M. & Shears, L. M. A review of personal space research in the framework of general systems theory. Psychological Bulletin, 1973, 80(5), 367-388.

Pelligrini, R. J. & Empey, J. Interpersonal spatial orientations in dyads. Journal of Psychology, 1970, 76(1), 67-70.

Quick, A. D. & Crano, W. D. Effects of sex, distance, and conversation in the invasion of personal space. Paper presented at the 45th Annual Meeting, Midwestern Psychological Association, Chicago, May, 1973.

Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80, (Whole No. 609).

Sommer, R. Personal space: The behavioral basis of design. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

Spielberger, C. D. Anxiety: Current trends in theory and research. New York: Academic Press, 1972.

Spielberger, C. D., Gorush, R. L. & Lushene, R. L. State trait anxiety inventory test manual. Palo Alto, Calif.: Consulting Psychologists Press, 1970.

Willis, T. N. Initial speaking distance as a function of the speaker's relationship. Psychonomic Science, 1966, 5(6), 221-222.