

# THE INFLUENCE OF CONTEXTUAL VARIABLES ON INTERPERSONAL SPACING

Stephen Worchel

**ABSTRACT:** Four studies examined the effects of contextual variables on interpersonal spacing. Contextual variables were defined as transitory factors that involved the setting in which an interaction occurs; these variables were delineated from personal and interpersonal characteristics. In each experimental setting, white male subjects were allowed to choose the distance at which they interacted with a stranger. The first study found that subjects who had experienced social isolation prior to the interaction chose greater distances than subjects who had not been isolated. The second study found that subjects chose greater distances when they believed their interaction would be observed by others than when the interaction was private. Results from the third study yielded an interaction between topic of conversation and expected length of conversation with greatest distance being chosen when subjects expected a long conversation to focus on a personal topic. In the final study, room size and shape influenced interpersonal distance; the interaction indicated that room size affected distance only in rectangular rooms. The results are discussed in terms of equilibrium model (Argyle & Dean, 1965). It is argued that contextual variables affect intimacy, and that the equilibrium model can explicate the effects of contextual as well as personal and interpersonal variables.

Since Hall's (1966) observations on the regularity of interpersonal spacing, there have been hundreds of studies on this topic. As a general rule personal space is viewed as the area around an individual which is considered personal or private. Typically, demonstrations of the existence of this personal space have involved observations of discomfort produced when an intruder penetrates this private

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Mr. Worchel is with the Department of Psychology at Texas A&M University. Correspondence should be sent to Stephen Worchel, Department of Psychology, Texas A&M University, College Station, Texas 77840.

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space. A related concept, interpersonal distance, is used to identify the area that people keep between themselves when interacting (Knowles, 1972). Research has found a high degree of regularity and predictability in both of these spatial dimensions.

Human spatial behavior has a number of inherent characteristics that make it attractive to investigators. Not only is distance a physical measure, but it is one that can be obtained unobtrusively. While it is clearly a behavior that is under the individual's control, spacing occurs in an almost automatic fashion, and although individuals may vary their interaction distances several times during a conversation, they seldom report being aware of their actions (Hayduk, 1978). Finally, violations of personal space initiate responses at a number of levels including physiological arousal (McBride, King, & Jones, 1965), behavioral compensation (Argyle & Dean, 1965), and interpersonal attraction (Patterson, 1976).

Interpersonal distance has been used as both a dependent and an independent variable. Hall's initial concern was to identify the factors that affected personal space. Culture, sex, age, status, and interpersonal relationship were found to affect the size of personal space (see reviews by Altman & Vinsel, 1977; Hayduk, 1978; Sundstrom & Altman, 1976). Taking a different approach, other research has used interpersonal distance as an independent variable. Investigators have examined how manipulations of interpersonal distance affect physiological arousal, interpersonal attraction, helping behavior, eye contact, body orientation, and topic of conversation (see reviews indicated above).

Due in part to sheer numbers of studies and to the diversity of approaches, the work on personal space has taken on the appearance of a patchwork quilt, often held together only by a common interest in interpersonal distance. However, there is a common conceptual framework that ties much of this work together; interpersonal distance both regulates and is itself a channel of communication (Hall, 1966). Focusing on the communication function, interpersonal distance plays a major role in the communication of intimacy (Ashton & Shaw, 1980). And interpersonal distance works in a systematic way with other personal and nonverbal variables to regulate intimacy (Hayduk, 1983).

The model of a regulating system was most clearly presented by Argyle and Dean (1965). These investigators suggested that interpersonal distance cooperated with other behaviors such as eye contact, posture, and angle of regard to maintain a desired level of intimacy in an interaction. These behaviors stand in a compensatory relationship

to maintain equilibrium; that is, inappropriately high levels of one will be compensated for by lower levels of one or more of the other behaviors. Supporting this position, Argyle and Dean found that eye contact was reduced when people were forced to interact at uncomfortably close distances.

The specific dynamics of the system have been questioned by some investigators (Hayduk, 1983; Patterson, 1976; Sundstrom & Altman, 1976). For example, Patterson (1976) suggested a reciprocal model where intimate behavior in one channel or by one individual may be matched, rather than compensated for. Whether reciprocity or compensation results will be determined by the attributions made about the intimate behavior. While the dynamics of the model may be somewhat different, there is agreement that interpersonal distance is bound to intimacy, and that distance is affected by other behaviors related to intimacy.

Altman (1975), too, employs a similar model of equilibrium in his discussion of privacy. According to this model, people seek a desired level of privacy by opening or closing themselves to others. Nonverbal behaviors such as spacing or eye contact are used to regulate openness, and consequently privacy. Like the Argyle and Dean model, Altman suggests that these nonverbal behaviors can act in a compensatory fashion so that too much openness on one channel can be balanced by reduced openness in another channel. However, the Altman model of privacy is more ambitious than the equilibrium model in that it directly incorporates group norms, verbal behavior, and territoriality into the regulating process.

With the focus on intimacy, it is a natural extension that research on personal space should be concerned with variables related to interactions or personal characteristics. Indeed, the majority of research has examined how space is influenced by personal and interpersonal variables indigenous to the relationship; these include sex, age, culture, personality, status, attraction, attitudes, and psychological disorders (see Hayduk, 1983 for comprehensive review). These represent relatively enduring characteristics that are not dependent on the specific interaction.

There is, however, another set of variables which are more situation specific but may also influence intimacy, and hence should influence interpersonal distance. For want of a better term, we can refer to these as contextual variables. These variables include the participants' immediate prior experiences, their expectancies, the pretext for the encounter, and the setting in which interaction takes place. In some cases, a clear distinction between contextual variables and personal and interpersonal variables may be difficult to draw. However,

contextual variables include factors that are transitory (time bound) in nature and related to the setting in which the interaction occurs. For example, information that an individual lived alone in an isolated area would fall under the category of a personal variable. However, the fact that an individual spent the time immediately prior to the present encounter alone on a mountain would constitute a contextual variable under the present conceptualization.

Contextual variables have not been entirely overlooked. For example, there have been several studies on the effects of setting factors such as room size (Sommer, 1962; White, 1965), ceiling height (Savinar, 1975) and location (Tennis & Dabbs, 1975; Cochran, Hale, & Hassam, 1984). The influence of topic of conversation has also been examined (Sundstrom & Altman, 1976; Baker & Shaw, 1980). For the most part, this research has not relied on a theoretical base. However, the results of this research and predictions about the effects of other contextual variables can be incorporated into existing theoretical positions. In the broadest sense Argyle and Dean suggested that any variable that influences intimacy or the desire for intimacy might be included in an equilibrium system with nonverbal behaviors. For example, they suggested that greater distances would be maintained when intimate as opposed to nonintimate topics were being discussed. This prediction which is opposed to Hall's conceptualization that distance would reflect the nature of the discussion topic was supported by Baker and Shaw (1980). Using this broad conceptualization of the equilibrium model, it could be suggested that a contextual factor that influences intimacy or the desire for intimacy will also affect spatial behavior in the relationship.

With this position in mind, four experiments were conducted. Each examined a contextual variable (previous experience, publicness of interaction, discussion topic and expectation, and room size and shape) as it related to interpersonal distance. Predictions and explanations were based on the hypothesized relationship of these variables with intimacy and on the equilibrium model that relates intimacy to interpersonal distance.

## **EXPERIMENT 1: SOCIAL ISOLATION**

An interaction episode is not an isolated event. Each participant enters with a history, the short term history being the most recent time preceding the interaction. An interesting question is how the nature of previous interactions affects the spatial behavior in the present interaction. Taking the lead from Argyle and Dean's work, it could be

argued that the desire for intimacy and subsequent spatial behavior form what might be called a historical equilibrium. That is, previous deprivations may be compensated for by a desire for present closeness, or conversely, previous satiation may lead to present distance. This compensatory model of intimacy would be consistent with research (Schachter, 1959) and anecdotal reports of explorers (Slocum, 1948; Byrd, 1938) that social isolation often results in increased desire for and thinking about social interaction. Looking at spatial behavior it would be predicted that people who experienced social isolation would choose closer interpersonal distances than people who had not experienced isolation.

There is, however, another side to the observations and personal accounts that suggests a very different relationship between isolation, desire for intimacy, and spatial behavior. For example, in accounts of his solitary transatlantic voyages, Bombard (1953) states that after being alone for long periods of time, he felt awkward in the presence of others. He reports trying to "keep his distance" from other people after arriving on land and feeling "closed in" when first interacting with other people. Hall's observations (1966) also suggest that spatial behavior may copy rather than compensate for previous experience; he found that people do adopt the spatial behavior of cultures into which they move. According to this view, desire for intimacy and subsequent spatial behavior should mimic rather than compensate for the previous experience. In terms of social isolation, it would then be predicted that prior isolation should result in less desire for intimacy and greater distance than in situations where no prior isolation existed.

A final possibility is that social interactions are not influenced by previous situations that are extraneous to the social relationship in question. This would suggest that prior social isolation would have no effect on interpersonal spacing.

In order to examine these predictions, subjects were placed in social isolation for varying amounts of time. They were then given the opportunity to interact with another person; the distance at which they chose to interact was measured.

## **METHOD: EXPERIMENT I**

### *Subjects*

Subjects were 60 male undergraduate students enrolled in introductory psychology courses. They participated in an experiment entitled "Conversa-

tions" in order to receive course credit. Male subjects were used in all the studies because of the availability of male confederates and the desire to compare behavior across studies.

### *Procedure*

When the subject arrived at the experimental room, he was met by an experimenter who explained that the study was concerned with dyadic conversations. She stated that she was interested in the content of speech between strangers. For subjects in the 0 minute isolation condition, the experimenter said that the other subject had arrived a bit early and was waiting in the experimental room. She explained that she had not had time to get the room ready for the study, and that it was missing a chair. She pointed to a molded plastic chair and asked the subject to bring it with him to the experimental room. The chair had been fitted with rubber skid-resistant pads on the feet so it would be difficult to slide once placed on the tile floor. The subject was told that the experimenter wished the pair to engage in a conversation concerning the variety of programs and majors at the university. He was told to find a comfortable position and move as little as possible during the conversation because their communication was being taped and movement would interfere with the quality of the communication.

In the social isolation conditions, the experimenter told the subject of her interest in dyadic conversations. She then stated that the content of conversations was often tainted by people's previous interactions. She was interested in "pure conversations," and in order to remove this confound, she was going to have subjects sit alone for 45 minutes (90 minutes, 150 minutes) before engaging in conversation. These time periods did not come as a surprise to subjects because they had signed up for an experiment taking the prescribed block of time. The subjects had also been instructed on the sign-up sheet to bring school books. The experimenter told subjects they could read, write or study during the waiting period; magazines were provided in the room. Subjects were then led into a room (7'9" x 7'4") which had a table and chair. After the allotted isolation time, the experimenter entered the room, told subjects about the waiting subject and topic of conversation, gave them a chair, and led them to another experimental room.

In the second experimental room (11'4" x 9'7"), a male confederate sat with his back to the wall, facing the door. He was blind as to the condition in which the subject had been assigned. The room was empty except for a microphone that hung from the ceiling. The confederate had been reading a book which he put down when the subject entered the room. He smiled at the subject but did not talk. When the subject placed his chair and sat down, the confederate started a stop-watch which he had concealed in his pocket. He noted the placement of the chair and continued to check for movement of the chair. (No subject moved his chair after it had been placed.) The confederate waited for the subject to begin the conversation, and stopped the watch when the subject spoke. After 5 minutes, the experi-

menter entered the room and asked the subjects to complete a short questionnaire "before going on." After completing the questionnaire, the experimenter probed for suspicion, measured the distance between the closest legs of the two chairs, noted the placement of the subject's chair and debriefed the subject.

## RESULTS

In this and the other studies reported, the angle at which subjects placed their chairs was noted by the experimenter. It could be argued that subjects would reduce intimacy by placing their chairs at angles that would foster reduced eye contact and/or open body posture. However, there were no differences between conditions in the angles chosen by subjects in this or any of the other studies. In fact, most (97%) of the subjects placed their chairs so that they directly confronted the confederate. There are at least three reasons why they might have chosen this angle. First, they were in complete control of the spacing and hence, could regulate intimacy through distance without resorting to angle of chair placement. Second, the confederate's chair was placed directly facing the incoming subject, and subjects may have taken their cue from this and imitated the seated confederate. Finally, the presence of the microphone may have influenced subjects to choose the most direct angle for their conversation. Hence, subjects did not use angle of regard to regulate intimacy, and the measure of distance between the legs of the two chairs represents the interpersonal distance chosen by subjects.

Turning to interpersonal distance, the results in Table 1 indicate that time of isolation had a significant effect on distance ( $F(3, 56) = 6.83, p < .001$ ). Although there was no difference between 0 minutes isolation and 45 minutes isolation ( $F < 1$ ), subjects in each of these conditions chose significantly closer distances than subjects who had been isolated for 150 minutes (0 minutes  $F(1, 56) = 8.75, p < .01$ ; 45 minutes  $F(1, 56) = 19.47, p < .01$ ). Subjects isolated for 45 minutes sat significantly closer ( $F(1, 56) = 7.27, p < .01$ ) than subjects isolated for 90 minutes, and there was a nonsignificant tendency for subjects isolated for 90 minutes to sit closer than subjects isolated for 150 minutes ( $F(1, 56) = 3.17, p < .10$ ). Thus, looking at subjects who were isolated, there was a general trend for longer periods of isolation to result in greater interpersonal distances.

The data on time to initiate the conversation closely followed the pattern presented by the distance data. There was an insignificant

TABLE 1

Effect of Isolation					
Isolation Time	0 minutes	45 minutes	90 minutes	150 minutes	F
Distance (inches)	41.27 <sup>1</sup>	37.20	44.74	49.54	6.83*** (df = 3, 56)
Time to Initiate Conversation (seconds)	10.73	10.13	14.80	20.47	1.94 (df = 3, 56)
Comfort with Isolation <sup>2,3</sup>	—	3.54	4.66	5.73	3.87* (df = 2, 42) <sup>2</sup>
Comfort with Other <sup>3</sup>	3.08	3.15	4.60	5.47	5.43** (df = 3, 56)

\*\*\* $p < .001$ \*\* $p < .01$ \* $p < .05$ <sup>1</sup>N = 15 subjects per cell<sup>2</sup>Only subjects who had experienced isolation (3 conditions) answered this question.<sup>3</sup>1 = very comfortable, 7 = very uncomfortable

( $F(3, 56) = 1.94, p < .15$ ) effect for time of isolation such that the longer the period of isolation, the longer the time to initiate a conversation (see Table 1). The within cell variances on this measure were very large and in an effort to further examine this effect a mean split was performed using the grand mean. A chi-square performed on the data indicated the tendency for isolation to influence initiation of conversation ( $\chi^2(3) = 7.74, p < .06$ ).

Two additional results of interest were collected on the short questionnaire which asked subjects how comfortable they were during the isolation (1 = very comfortable, 10 = not very comfortable) and how comfortable subjects were in the presence of the other subject (same scoring). The results indicated significant influences of isolation on both questions (comfort with isolation:  $F(2, 42) = 3.87, p < .05$ ; comfort in presence of other:  $F(3, 56) = 5.43, p < .01$ ). As can be seen in Table 1, there was greater discomfort with longer periods of isolation. Subjects in the 150 minute and 90 minute isolation conditions were significantly more uncomfortable with their isolation than subjects in the 45 minute isolation condition ( $F(1, 42) = 6.32, p < .01$ ) and they were more uncomfortable with the other person than subjects in the 0 minute isolation ( $F(1, 56) = 11.24, p < .001$ ) or 45 minute isolation conditions ( $F(1, 56) = 5.64, p < .05$ ).



## DISCUSSION: EXPERIMENT I

The results of the present study make two points. At the general level, they show that the contextual variable of previous setting can influence interpersonal distance. This suggests that previous setting should be taken into account when making predictions about interpersonal distances. At the more specific level, the results suggest that social isolation can lead individuals to increase their interaction distances when conversing with a stranger. The shorter isolation (45 minutes) had no significant effect; there was, in fact, a nonsignificant tendency for subjects in this condition to choose closer distances than subjects not experiencing isolation. However, the longer periods of isolation (90 minutes and 150 minutes) led to the choice of larger interpersonal distances. Not only were these effects seen in the choice of distance, but they also affected the time it took subjects to initiate a conversation.

Turning to the meaning of these results, the questionnaire data suggested that subjects were not only uncomfortable with the longer periods of isolation, but isolation reduced their desire and comfort with social interaction. This resulted in their choosing greater interpersonal distances and delaying social interaction. On first reading these results seem inconsistent with equilibrium theory which would suggest that the isolation created a deficit in intimacy which should have been compensated for by increased intimacy (closer distances) in the present setting. However, the results suggest that isolation actually reduced subjects' desires for intimacy and interaction. Given this effect, it is consistent with equilibrium theory that subjects would react to the forced interaction by reducing intimacy to a more comfortable level. As Patterson (1976) has suggested, it is important to identify subjects' interpretations and states before accurate predictions of the equilibrium process can be made.

A slightly different interpretation of the results might suggest that subjects were frustrated and angered by the isolation. It was then this psychological state that led them to choose the increased distances and delay interaction. As with the earlier interpretation this one too suggests that the contextual variable of prior condition and/or mood will influence the choice of interaction distance.

Extrapolation from the results is limited by the fact that only the immediate spacing was measured; it would also be important to examine how spacing varied over the course of the conversation to determine the longer term effects of isolation. Similarly, the paradigm offers the opportunity to examine how significantly longer periods of

isolation (days rather than hours) influenced spacing. The present results suggest that violations of desired spacing should be particularly likely when a person emerges from isolation to interact with people who have not been isolated. Such individuals as inmates confined to solitary confinement or solitary pilots may find themselves in uncomfortable predicaments due to spatial violations when first meeting other people.

## **EXPERIMENT II: PUBLIC VS. PRIVATE BEHAVIOR**

There is an interesting and potentially important difference between the field research and laboratory work on interpersonal distance. The field research is generally conducted in settings that are public and open to the scrutiny of others, while the laboratory setting is more private, often including only two people. For example, Hall (1959; 1966) reports a number of observations from hotel lobbies; Brown (1981) studied spatial behavior in a busy shopping mall; Fisher and Byrne (1975) observed students in a library. On the other hand, the laboratory research (see Altman & Vinsel, 1977; Hayduk, 1978 for reviews) reduces the public nature of the interaction in the name of experimental control.

The public/private dichotomy is a distinction that can be applied to many if not most topics that are researched in field and laboratory settings. This difference, however, becomes particularly important in examining spacing behavior which has been related to intimacy. Cultural norms dictate that displays of intimacy of affection should be relegated to the private domain (Brehm, 1985). Public displays are not only frowned on but are even regulated by statutes in some cases. Given that close interpersonal distance is a display of intimacy, it can be predicted that people will be more concerned with their spacing behavior in public as opposed to private situations. More specifically, it is predicted that people will maintain greater interpersonal distances in public than in private.

Performing under the watchful eye of others may initiate two theoretically interesting processes. One consequence of public actions should be the concern with evaluation. The knowledge that others are watching should increase the individual's concern about expressing inappropriate intimacy and being evaluated negatively by others. Evaluation apprehension has been implicated as influencing such processes as social facilitation (Cottrell, 1968) and self-presentation (Arkin, 1980). A second consequence of public scrutiny is

that it may lead people to become more self-focused or objectively self-aware (Duval & Wicklund, 1973). Numerous studies have found that increasing objective self-awareness has dramatic effects on emotions and attitudes (Scheier & Carver, 1977), performance (Wicklund, 1975) and interpersonal behavior (Storms, 1973). In the case of interactions, a self-focus may enhance the individual's awareness of his or her own behavior and result in greater cautiousness in the interaction.

The aim of Experiment II was to test the prediction that people maintain greater interpersonal distances when they are aware that their behavior is being observed than when their interaction is in private. A second aim was to determine if the effect of publicness is due to concerns for evaluation or increased self-focus. In order to examine these questions, interactions took place in a room that either had or did not have a video camera focused on subjects. When the camera was present, subjects were led to believe that others either would or would not be reviewing tapes of their interaction. The video camera has been employed in previous research (Duval & Wicklund, 1973) to create a state of objective self-awareness.

## **METHOD: EXPERIMENT II**

### *Subjects*

Subjects were 47 male undergraduate introductory students, who received course credit for participation in the study. Two subjects (one in each of the public conditions) were discarded because of expressed suspicion about the purpose of the study.

### *Procedure*

The method was similar to that employed in Experiment I. On arrival, subjects were told that the experimenter was interested in the content and conversation patterns that developed between strangers. She stated that the subject was to engage another subject, who was already waiting, in a conversation about academic programs at the university. She noted that the room had previously been used by another experimenter and was missing a chair. She asked the subject to carry in a chair (molded plastic with rubber pads on the feet) when he went into the experimental room. He was to put the chair down where he was comfortable and try not to move it because the session was being taped. In the Private (Audio) condition, the experimenter said that only the voices of the subjects would be tape recorded; a micro-

phone had been placed in the ceiling for this purpose. In the Public (Self-Awareness) condition, the experimenter explained that the previous experimenter had disconnected her audio system and that she had to improvise a system for recording the session. Because no other tape was available she had to use a video-audio system for this session. Hence a camera would be in the room, but the experimenter was interested in only the audio portion. In the Public (Evaluation) condition the experimenter stated that the interaction would be video and audio taped "because a number of experimenters were interested in the study and would be looking at the tapes in the next few days."

The experimental room (11'4" × 9'7") was empty except for a confederate who was seated with his back to the wall, facing the door. In all conditions a microphone was hanging at ceiling level in the center of the room. In the two Public conditions a video camera stood against the right wall, angled toward the open area where the subject would be seated. The confederate smiled at the subject when he entered but did not speak. He noted where the subject placed his chair and then began a stop-watch (which he had in his pocket) when the subject sat down. The confederate waited for the subject to speak and stopped the watch when the subject initiated conversation.

After a 5 minute period, the experimenter entered the room, engaged the subject in conversation about the study, and probed for suspicion. The distance between the closest legs of the two chairs was measured, the placement of the subject's chair noted, and the subject was debriefed about the purpose of the study.

## RESULTS: EXPERIMENT II

The result of central concern is the distance subjects placed between themselves and the confederate. As can be seen in Table 2, there was an effect for condition ( $F(2, 42) = 13.77, p < .001$ ). Paired comparisons revealed no reliable difference between the Private and Public (Self-Awareness) conditions ( $F(1, 42) < 1$ ). However, the distance chosen in the Public (Evaluation) condition was significantly greater than either of these conditions (Private:  $F(1, 42) = 24.38, p < .001$ ; Public (Self Awareness):  $F(1, 42) = 16.28, p < .001$ ). All subjects placed their chairs directly opposite that of the confederate and roughly parallel to his chair. Hence, subjects did not use angle of regard to regulate intimacy.

There was also a significant effect of conditions on time to initiate the conversation ( $F(2, 42) = 10.36, p < .005$ ). In this case, the Public (Self-Awareness) condition yielded longer periods than the Private condition ( $F(1, 42) = 19.35, p < .001$ ), and there was no differ-

TABLE 2

**Means of Public/Private Effect: Experiment II**

Condition	Private <sup>1</sup>	Public/Objective Self-Awareness	Public Evaluation	<i>F</i> <sup>2</sup>
<i>Distance (inches)</i>	39.27*	40.33*	45.07*	13.77***
<i>Time to Initiate Conversation (seconds)</i>	5.60	11.60	10.00	10.36***

\*\*\* $p < .001$ <sup>1</sup> $N = 15$  subjects per cell<sup>2</sup> $df = 2, 42$ 

ence in time between the Public (Evaluation) condition and the Public (Self-Awareness) condition ( $F(1, 42) = 1.37, p < n.s.$ ).

**DISCUSSION: EXPERIMENT II**

The results indicate that the prospect of being observed by others led subjects to choose greater interpersonal distance than when the interaction occurred without the possibility of being observed. Further, these results seem to be mediated by concern with being observed rather than having attention focused on the self. This is the pattern of results that would be expected if subjects were concerned about showing inappropriate intimacy in front of other people. As in the first study, the link between spatial behavior and intimacy is indirect, but the results support an intimacy/space model that takes into account the importance of contextual variables in establishing an intimacy equilibrium.

The results also suggest that the contextual variable of publicness must be taken into account when examining spatial behavior. Greater interpersonal distance may well be chosen in settings where the individual's behaviors can be observed by others. Because the effect was found with video cameras only when public observation would follow, it is unlikely that this behavior was the result of distraction or attempts to include observers in the conversation.

It is interesting that the presence of the camera slowed the initiation of conversation whether or not public observation was possible. The pattern of results suggests that both self-focus and concern with

evaluation affect verbal behavior. Having one's attention focused inward may interfere with conversation because of increased concern with the self. Engaging in a conversation takes more cognitive involvement than choosing an interpersonal distance. The self-awareness created by the camera may have been distracting, or it may have forced subjects to concentrate more carefully on their verbal behavior.

The difference in the measures of space and initiation of conversation is intriguing; it suggests that variables may affect verbal and nonverbal behavior in different ways. It was previously believed that spatial behavior and initiation of discussion would follow similar patterns determined by the desire for intimacy. The present results argue that this relationship may not always be evident. As we pointed out, spatial behavior often occurs in an automatic unthinking manner. Verbal behavior, on the other hand, is much more under conscious control and hence may be influenced by a wider range of variables and processes. Therefore, it is likely that the time to initiate a conversation is not as directly linked to concerns with intimacy as is spatial behavior.

### **EXPERIMENT III: TOPIC OF CONVERSATION AND EXPECTED DURATION OF CONVERSATION**

The heart of Argyle and Dean's equilibrium theory is that nonverbal behaviors such as eye contact and space compensate each other. In expanding the model to include contextual variables, one candidate that comes to mind is the topic of conversation in which the individuals are involved. A topic that requires greater intimacy than may be desired may result in compensation in nonverbal behaviors. For example, if strangers find themselves engaged in a discussion that involves private issues or one in which they engage in a high degree of self-disclosure they may attempt to restore equilibrium in their interaction by keeping greater interpersonal distance than would be otherwise expected. This prediction was suggested by Argyle and Dean but it has not been directly tested. Baker and Shaw (1980) placed individuals at intimate, personal, and social distances while discussing a topic of high, medium or low intimacy. They found an insignificant tendency for strangers to be more comfortable with the intimate distance when discussing a low as opposed to high intimate topic. However, this study did not examine the distance chosen by subjects when discussing topics of differing intimacies. In predicting that peo-

ple will choose greater distance when discussing an intimate as opposed to nonintimate topic, it should be pointed out that this view is not in keeping with Hall's original position. Hall (1961) suggested that close interpersonal distances would occur when people had an intimate relationship or were engaged in intimate acts or topics of conversation. This argues that interpersonal distance will reflect, rather than compensate for, the topic of conversation.

A second contextual variable relating to intimacy concerns the length of time people expect to interact. A lengthy interaction offers greater opportunity than a short interaction for the participants to discuss intimate issues or reveal personal information. This is especially true when the topic of conversation is an intimate one. Hence, it was expected that subjects would choose the greatest interpersonal distance when they expected to discuss an intimate topic for a long period of time. Discussions of even an intimate topic for a short period of time cannot get too involved, and, therefore, topic of conversation should have little influence on spatial behavior when a short interaction is anticipated.

In order to examine these predictions, subjects were led to believe that they would engage in a long (1 hour) or short (10 minute) conversation with a stranger on a personal (sexual behavior) or impersonal (academic programs) topic.

## METHOD

### *Subjects*

The subjects were 61 male students enrolled in introductory psychology. They participated in the experiment to partially fulfill course requirements. The data from one subject were deleted because he was suspicious of the confederate.

### *Procedure*

When subjects arrived at the experimental room, they were greeted by the experimenter. He explained to them that he was a communication major who was interested in how speech patterns changed over time. He told the subject that he was varying the length of time that dyads communicated and examining how the communication changed over the time. The subject was told that he was in the short duration (10 minute) or long duration (1 hour) condition; he would, therefore, be involved in a conversation with an-

other subject for the prescribed time. Half the subjects were then told that topic of conversation would be on sexual behavior of college students (Personal); the experimenter added that "of course, you will probably want to draw on your own experiences in discussing this issue." The other subjects (Not Personal) were told to discuss "the different roles of public and private universities in the education process."

The experimenter said that the other subject had arrived a bit early and asked the subject if he would take a chair with him into the room. He was told to place the chair in a comfortable position and to move it as little as possible because the session was being taped. (As in the other studies, the chair was of molded plastic with skid-resistant pads on the legs.)

The remainder of the procedure followed that used in the previous studies. The subject was led to the room where he found the confederate waiting. The confederate noted the chair placement and began the stop-watch when the subject was seated. He stopped the watch when the subject began the conversation. After 5 minutes, the experimenter entered the room and asked the subjects to complete a short questionnaire. After the questionnaire was completed, the distance was measured, the subject probed for suspicion, and the debriefing commenced. The questionnaire asked subjects to indicate their mood and how comfortable they expected to be in talking with the other subject.

## RESULTS

Three subjects placed their chairs at noticeably skewed angles to the confederate (two in the Personal-short duration condition and one in the Impersonal-short duration condition). The effect of this would be to reduce the distance between the two closest legs of the chairs. The results were analyzed with and without the data from the three subjects. The results were the same in both cases. Turning to the space measure Table 3 indicates that there were significant effects for both expected time of interaction ( $F(1, 56) = 29.41, p < .001$ ) and topic ( $F(1, 56) = 13.90, p < .001$ ). Greater distance was used in discussing sex than universities, role in education and greater distance resulted when a long discussion was expected compared with a shorter one. There was also a significant interaction ( $F(1, 56) = 5.83, p < .05$ ) because topic played a major role in determining distance only when a long interaction was expected (Short Interaction:  $F < 1$ ; Long Interaction:  $F(1, 56) = 8.80, p < .01$ ).

As can be seen in Table 3, the pattern of results on the time to initiate the conversation was similar to that found with the distance



TABLE 3

**Influence of Expected Time of Interaction  
and Discussion Topic**

		<i>Topic of Discussion</i>	
		Personal (Sexual Behavior)	Impersonal (University)
Expected Time of Interaction		<i>Distance</i> (inches) = 39.20	<i>Distance</i> = 37.13
	10 minutes	<i>Time to Initiate conversation</i> (seconds) = 7.13	<i>Seconds</i> = 7.00
		<i>Distance</i> = 51.53	<i>Distance</i> = 41.87
	60 minutes	<i>Seconds</i> = 18.60	<i>Seconds</i> = 11.47

<sup>1</sup>N = 15 subjects per cell

data. Overall, subjects took longer to initiate the conversation when they expected a long as opposed to short interaction ( $F(1, 56) = 19.62, p < .001$ ) and when the topic was sex as opposed to the universities ( $F(1, 56) = 4.08, p < .01$ ). The interaction approached significance ( $F(1, 56) = 3.79, p < .06$ ). The form was similar to that found with distance; while there was no difference ( $F(1, 56) < 1$ ) in the short time, the conversation on sex took longer to initiate than the conversation on universities' role ( $F(1, 56) = 3.52, p < .10$ ) when a 1 hour interaction was anticipated.

Two questions from the questionnaire yielded reliable effects. On one, subjects were asked how comfortable they expected to be in the interaction with the other subjects. Two significant main effects indicated that subjects expected greater comfort in the short than long conversation ( $F(1, 56) = 9.89, p < .01$ ) and greater comfort in the discussion on universities than in the conversation on sex ( $F(1, 56) = 17.03, p < .001$ ). On another question, subjects were asked to rate how nervous they were at the time. Subjects were more nervous when anticipating a long as opposed to the short conversation ( $F(1, 56) = 33.67, p < .001$ ) and the sex topic as opposed to the universities topic ( $F(1, 56) = 16.89, p < .001$ ). There was also a significant interaction ( $F(1, 56) = 11.46, p < .01$ ) which took a form similar to that found in the distance and time on onset measures.

### DISCUSSION: EXPERIMENT III

The results of the present study offer further evidence of the effect of contextual variables on interaction distance. In the present study subjects kept greater distances when they were discussing a personal as opposed to impersonal topic. They also kept greater distances when they expected a long as opposed to short interaction. Both of these variables can be examined as they relate to intimacy. The longer the time, the more likely the individual would reveal intimate and personal information in the discussion. Further, the discussion on sexual behavior was more likely to lead to personal disclosures than the discussion on universities. The greater distance could signal subject caution and uneasiness in approaching the interaction, as well as giving a signal that the interaction should proceed slowly.

The interaction between topic and expected time offers further support for the hypotheses. It clearly demonstrated the importance that expected length of interaction had in determining the effect of topic. One explanation for the effect is that subjects may have assumed that regardless of topic, little of a personal nature could be disclosed in a short conversation. Hence, there was less need to be concerned with intimacy in the short conversation period than in the long conversation period. However, when a long interaction is anticipated, the nature of that interaction becomes particularly important. If the interaction is to center around a personal issue (such as sexual behavior), care will be taken not to display nonverbal cues of intimacy.

In this study, the data on onset of conversation copied the interpersonal distance data. The conversation was slower to begin when a long interaction was expected and the topic was intimate. Again, the interaction showed that topic played a significant role in determining onset time only when a long interaction was expected. It is difficult to determine the meaning of the onset of conversation data. One possible explanation is that subjects who were particularly concerned with intimacy in the long-personal topic condition looked to the confederate to set the tone of the interaction. Because the confederate was already seated, the burden of choosing a distance fell on the subjects. However, they could gain information about how the interaction should progress if they waited for the confederate to initiate the interaction. In fact, a number of subjects in this condition stated that they waited to see what the confederate would say; they only initiated the conversation because the silence made them nervous.

One final issue regarding the present study should be raised. Although the topics of conversation are clearly distinguished along the personal/impersonal dimension, they could also be discriminated along other dimensions such as arousing/non-arousing and possibly engaging/non-engaging. This confound makes it impossible to argue with certainty that it was the personal/impersonal characteristic that was responsible for the effect. For example, it could be argued that subjects might have compensated for the arousing nature of the sexual discussion by "keeping their distance" from the confederate. Future research may wish to compare the effects of different topics of conversation on interaction distance. However, the important point for the present conceptualization is that the topic of conversation is a contextual variable that influences the chosen distance.

#### **EXPERIMENT IV: ROOM SIZE AND SHAPE**

Recent research on social cognition (Fiske & Taylor, 1984) has demonstrated the role of salience in influencing attributions. McArthur (1981) has shown that stimuli that demand attention are accorded increased causal importance. In support of this position Worchel and Teddlie (1976) found that crowding could be reduced if the salience of other people in the room was reduced.

Drawing on this reasoning and the data from the other experiments reported in this paper, it could be suggested that any feature that makes the relationship (and unwanted intimacy) salient may result in compensation through greater distances. In light of this discussion, it is interesting to speculate how the physical features of a room might affect salience and subsequent interpersonal distance. One feature that comes to mind in this regard is room size. The smaller the room, the more likely it is that the target of interaction will be salient. If this is the case and if the individual becomes aware of undesired intimacy, the equilibrium model would predict greater interpersonal distances in small than in large rooms. White (1975), in fact, found that subjects increased interaction distances as the size of a room decreased. Looking at size in the three dimensional sense, Savinar (1975) found that subjects chose greater interpersonal distances as the ceiling height of the room was lowered.

Getting somewhat more speculative, it is interesting to examine how room shape will affect interaction distance. On one hand, it could be predicted that people will keep greater distance in square rooms than in rectangular rooms. This prediction is based on re-

search (Desor, 1972) that found square rooms tended to be perceived as smaller than rectangular rooms with the same amount of square footage. The research found that subjects placed more stick figures in a rectangular room than in a square room of the same size. On the other hand, it could be predicted that greater spacing would be found in the rectangular room. The corridor nature of the rectangular room should focus attention down the length of the room (Baum and Valins, 1977; Knight, Weitzer, & Zimring, 1978). When an interaction is to occur in the room, the effect of this focus of attention should be to make the other participant more salient. The square room with its larger width dimensions should allow attention to wander more to the sides. Hence, data on the effects of room shape should give some clue as to the importance of size per se and salience of the other participant and interaction.

## METHOD

### *Subjects*

Subjects were 51 male undergraduate introductory psychology students participating in the study in order to receive partial credit in their class. The data from three subjects were deleted; two subjects suspected the confederate and one subject moved his chair continuously during the interaction, prohibiting an accurate measure of interpersonal distance.

### *Method*

The procedure was similar to that used in the previous studies. Subjects were given the cover story about studying conversations and asked to discuss programs at the university. They were taken to the experimental room whose dimensions and shape constituted the independent manipulation. Four different rooms were used. They were as follows: small square room (9'3" square), small rectangular room (10'6" × 8'); large square room (14' square); large rectangular room (16' × 12'). The rooms were formed by partitioning a large room. After the five minute discussion, the experimenter entered the room, debriefed the subject, and measured distance. Two measures (distance and time to initiate conversation) were taken.

## RESULTS

As expected there was a significant ( $F(1, 44) = 22.48, p < .001$ ) effect for size such that larger distances occurred in smaller rooms (Ta-

TABLE 4

## Effect of Room Size and Shape

	Room Size	
	Large	Small
Square	Distance (inches) = 35.75	Distance = 38.67
	Time to Initiate conversation (seconds) = 6.50	Seconds = 8.08
Rectangle	Distance = 36.33	Distance = 44.00
	Seconds = 6.00	Seconds = 9.08

<sup>1</sup>N = 12 subjects per cell

ble 4). There was also an effect for shape ( $F(1, 44) = 7.03, p < .01$ ) showing greater distance in the rectangular room in the square room. The significant interaction ( $F(1, 44) = 4.53, p < .05$ ) indicated that while size had an insignificant effect ( $F(1, 44) = 3.41, p < .10$ ) in the square room, it made a significant difference in the rectangular room ( $F(1, 44) = 23.63, p < .001$ ). Subjects in the small rectangular room chose the greatest distance.

Turning to the time to initiate conversation, the results (Table 4) yielded only a significant effect ( $F(1, 44) = 4.17, p < .05$ ) for room size; subjects took longer to initiate a conversation in the small as opposed to the large room.

## DISCUSSION: SIZE AND SHAPE

The results are consistent with the reasoning based on equilibrium theory. The greatest distance was chosen in the room where the other subject (and interaction) should have been most salient. That is, subjects kept greater distance in the small compared to the large room and the rectangular room compared to the square room. Further, the interaction indicated that size had a significant effect only in the rectangular room; the small rectangular room yielded the greatest interpersonal distances. This is the room where the other person should have been the most salient. Hence, these data further indicate that room size is not the only, or even the most, important room variable determining interpersonal distance.

Another point of interest involves comparing these data to those found in other research. In one of the early studies that found an effect for room size on distance, Sommer (1962) used rectangular rooms (9'  $\times$  15' and 15'  $\times$  30'). White (1975) who also found an effect for room size on interpersonal distance used a rectangular room (8'8"  $\times$  10'2") for his small room but choose a nearly square room (13'5"  $\times$  13'7") for his large room. Because the investigators do not report any rationale for choosing the rectangular shape for their small rooms, we assume that the choice was one of convenience. However, the present results suggest that this happenstance was a fortuitous one; had these investigators used only square rooms (especially for the small room) it is less likely that they would have found the observed differences.

Finally, the results indicated that conversations were initiated significantly more quickly in the large rooms than in the small rooms. The delaying of conversation may be a result of discomfort or a distancing tactic on the part of subjects. Again, however, the data on time to start conversation did not mimic the distance data suggesting that these two behaviors are affected independently by the variables.

## GENERAL DISCUSSION

The program of research was initiated with two purposes in mind. The first was to investigate whether or not contextual variables (those not contained in the interaction) would influence interpersonal distance. The second was to incorporate these effects into an equilibrium model of intimacy; that is, the intent was to show that an expansion of the model proposed by Argyle and Dean (1965) could explain the effects of contextual variables.

The four studies provide a rather consistent answer to the first question; contextual variables do influence interpersonal distance. The data indicated that social isolation for periods of at least 90 minutes lead people to choose greater interpersonal distances than people who have not been isolated. People choose larger distances when they believe others will observe their interaction than when the interaction is private. Greater distances occur when subjects expect to be interacting for a long period of time and the interaction involves a personal topic. And individuals in small rectangular rooms keep greater distances than individuals in large or square rooms. While these independent variables seem to be a rather odd cast of characters, they are related in the sense that none of them are directly tied to

the relationship between the actors nor are they enduring traits of either of the participants. These independent variables are contextual because they are transitory and concerned with the setting in which the interaction takes place.

Much of the present data can be explicated and better understood in the framework of the equilibrium model. Each of the contextual variables studied was chosen because of its possible influence on intimacy, and in each case subject's spatial behavior was that which would have been predicted by the model. The data suggest that contextual variables that should influence intimacy or the concern with interpersonal relations will also affect spatial behavior. Those manipulations that heighten intimacy will effect greater interpersonal distances. This position is not particularly novel; Argyle and Dean (1965) anticipated it when they included discussion topic in their model, and Sundstrom (1978; Sundstrom & Altman, 1976) elaborated further on it. Other research, however, has been slow to follow this lead, often choosing, instead, to focus on relationship and communication variables. Therefore the point should be reiterated that there is a relationship between contextual variables and interpersonal behavior such that inappropriate intimacy initiated by the former will be compensated for by the latter. In addition to offering an explanatory foundation, the focus on intimacy and equilibrium can serve as a conceptual umbrella for bringing together a wide variety of diverse variables. It may also guide future research in identifying potentially important domains for studying spatial behavior.

Before leaving the discussion of contextual variables, one point should be stressed. Our discussion has implied that these variables work independently of factors involved in the relationship between the individuals. This should not be the case. The present research involved white undergraduate males who were strangers. This choice of subject characteristics was made to give continuity and comparability to the data from the different studies. It is, however, likely that factors involving personal characteristics or the relationship will interact with contextual variables to determine their effects. For example, it was argued that a one hour discussion on sex would cause subjects to anticipate undesired intimacy with their discussion partner. The effect of these contextual variables, however, may have been very different if the interaction involved close friends. Patterson (1976) argued that the response to spatial violations would be affected by the relationship between the individuals and the interpretation placed on the violation. A similar case would seem to exist for any contextual variable; the effect will be influenced by characteristics related to the individuals *and* to the relationship. None of these

factors exist in isolation and their effects cannot be predicted in isolation of the other factors.

Turning to the dependent measures, some discussion of the time to initiate conversation is in order. This measure was included more by accident than by design. During the early pilot work, it was observed that there were large differences in the time it took subjects to begin talking and these differences seemed to be influenced by the independent variables. Other investigators (Archer, Hormuth, & Berg, 1982; Lay & Pavio, 1969; Swingle, 1984) have noted the importance of examining content-free measures of communication. In fact, Archer et al. (1982) measured latency in situations in which subjects were to make recordings in a private situation. In this study, latency was negatively correlated with the number of intimate statements subjects made. Hence our expectation was that latency would be positively related to the lack of desire for intimacy and consequently, that the results obtained with this measure would follow closely those obtained on the spatial measure: greater distances would be accompanied by longer delays in initiating conversation. While this relationship was observed in some of the studies, it did not occur in others. And in situations where the two measures did not show the same pattern, they did not stand in a reciprocal relationship as might be expected by an equilibrium model. This suggests that factors that influence nonverbal behavior such as interpersonal spacing may have different effects on verbal behavior. Further, verbal and nonverbal behaviors are not clearly related. These points deserve further study which may identify the boundaries of the equilibrium model.

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