A TEST AMONG MODELS OF NONVERBAL IMMEDIACY REACTIONS: AROUSAL-LABELING, DISCREPANCY-AROUSAL, AND SOCIAL COGNITION

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ABSTRACT: Individuals may respond to an increase in nonverbal immediacy by either increasing or decreasing the immediacy of their own behavior. To account for this, a number of models have been proposed, including arousal-labeling (Patterson, 1976), discrepancy-arousal (Cappella & Greene, 1982), and social cognition (e.g., Ellsworth, 1978). An experiment was designed to test the social cognition approach and, when combined with findings of previous studies, to serve as a test among three models. Individual male subjects discussed a moral dilemma with a male confederate at a seating distance of either 1.1 m (control group) or 0.3 m in two experimental groups (confederate intentional-close and confederate forced-close). Subjects in both experimental conditions showed less immediate nonverbal behavior, but only subjects in the intentional-close condition evaluated the confederate more negatively than subjects in the control group. These results, when combined with past research findings, suggest that social cognition alone may determine whether nonverbal compensation or reciprocation will occur, and that arousal-based explanations may be unnecessary. Other self-report findings of the study, however, create difficulties for all three models of nonverbal exchange.

Individuals will often react to an increase in nonverbal immediacy (e.g., more eye-contact) by either increasing (reciprocation) or decreasing (compensation) the immediacy of their own nonverbal behavior. Because the initial model that guided research in the area (Argyle & Dean, 1965) could not account for nonverbal reciprocation very well, a number of more comprehensive models have been proposed (see Andersen, 1985 for a review). These more recent models present conflicting views of what

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determines behavioral responses. The present study was designed to test among three general models of the mediating process.

The Arousal-Labeling Model

Patterson (1976) and Andersen (1985) proposed models that are based on Schachter and Singer's (1962) arousal-labeling process. These models do differ on issues other than the mediating mechanism. Common to both, however, is the assumption that a change in the other person's immediacy behavior produces undifferentiated arousal. When "noticed," this arousal triggers an epistemic search for a "label" or "valence" that determines the individual's response. Positive labels result in nonverbal reciprocation, whereas negative labels result in compensation. Consistent with Schachter and Singer's arousal-labeling theory of emotion, these models emphasize that the arousal component is necessary (Andersen, 1985, p. 27; Patterson, 1976, p. 239). Individuals will not search for a label, will not make an attribution, and will not change their behavior unless aroused. [Burgoon also stated that arousal-labeling is a component of her model of nonverbal immediacy reactions (1983, p. 79; Hale & Burgoon, 1984, p. 290), but she did not elaborate.]

The Discrepancy-Arousal Model

Cappella and Greene's (1982) discrepancy-arousal model assumes that individuals have expectations about other peoples' nonverbal immediacy behavior and that a discrepancy between the actual and the expected immediacy creates arousal. Moderate arousal is experienced as affectively positive and should lead to reciprocation. Excessive arousal is aversive and should lead to compensation. Although both cognition and arousal are important in this model, the behavioral response is said to be determined by the amount of arousal.

The Social Cognition Approach

A number of authors suggest that our responses to what other people say and do are the result of what we think about them or the social situation (Heider, 1958; Kelly, 1955; Street & Giles, 1982; Wegner & Vallacher, 1977). Individuals use implicit theories to make sense out of events in their

social environment and to respond accordingly. It is quite possible that social cognition alone determines our responses to other peoples' nonverbal immediacy behavior (e.g., Ellsworth, 1978; Patterson, 1982; 1983a; Smith & Knowles, 1979). For example, Ellsworth (1978) is concerned with the individual's response to the gaze of another person:

> First, the person's initial inference will almost always be that the gazer is attending to him . . . the target's next inference is often that the gazer is seeking some kind of interpersonal involvement. Once the target has decided that the gaze signals a wish or an intent to increase the level of interpersonal involvement, she/he will also experience it as a demand for a response. Thus she/he will be motivated to . . . interpret the gaze . . . and figure out how to respond (p. 348).

Another example of the social cognition approach is Patterson's sequential-functional model. After proposing an arousal-labeling model (1976), Patterson became aware of certain problems with it (1978; 1983b) and made some modifications (1982; 1983a). Consistent with a social cognition approach, behavioral reactions to changes in immediacy are determined by perceptions of the meaning or function of the immediacy. However, it is unclear whether the sequential-functional model is a new theory or simply a modified version of the arousal-labeling theory (Hayduk, 1983, p. 306). For example, when there is a large difference between the desired and the actual level of immediacy, both arousal-change and a "cognitive-affective assessment" may occur. As in the arousal-labeling model, "arousal change may serve as a signal to initiate a meaning analysis of the changing circumstances" (Patterson, 1982, p. 239). But such a meaning analysis is only one form of a cognitive-affective assessment that is "intended to be broader than the self-labeling focus of the arousal model (Patterson, 1976). In fact, attributions about the other person and his/her motivations may have greater utility than those focused on one's own feelings" (Patterson, 1982, p. 240).

Thus, Patterson appears to be moving from an arousal-based explanation toward a cognition-based one. One unanswered question is whether the arousal component is necessary at all. Must arousal stimulate the cognitive-affective assessment, or can the cognitive-affective assessment alone determine the response? If arousal is necessary for the cognitive-affective assessment to begin, then the sequential-functional model is simply a more sophisticated version of the arousal-labeling model. If arousal is not necessary, then the sequential-functional model is a no-labeling social cognition model. Patterson (1978; 1982; 1983a,b) did not take a strong stand either way, and implied that empirical research will determine the exact nature of the mediating process.

Similarities and Differences Among the Models

The differences between the models are subtle but important. In the arousal-labeling model, cognition is stimulated by ambiguous unexplained arousal. In the social cognition view, arousal may be present but it is not a necessary stimulant of information processing. Individuals wish to understand the other person's behavior, not their own arousal (Ellsworth, 1978, p. 348). Cognitions about the other person or the situation are the sole determining factors and are probably more useful than self-attributions in deciding how to react to the other.

In the discrepancy-arousal model, the role of social cognition is solely one of creating expectations about immediacy behavior. When expectations are violated, the amount of arousal is said to determine the behavioral response. In the social cognition approach, the amount of arousal is not important: social cognition alone determines the direction of the response.

One problem with both the arousal-labeling and social cognition approaches is the suggestion that most social behavior is automatic and "mindless" (Langer, 1978). Others consider social cognition and epistemic searches to be deliberate, planned, and thoughtful, making these approaches cognitively "top-heavy" and unable to account for "the fast reaction times of most moment-to-moment reactions to approach or withdrawal during social interaction" (Cappella & Greene, 1982, p. 105). However, Abelson (1981) has argued that mindful behavior occurs within scripts, and many others assume that social cognition can take place very quickly, automatically, and with or without awareness (Ellsworth, 1978; Lazarus, 1982; Mandler, 1975; Motley, 1986).

A related issue concerns what it means to "notice" one's arousal (in the arousal-labeling model), or to realize that one's expectations have been violated (in the discrepancy-arousal model), or to notice another person's nonverbal immediacy behavior (in the social cognition approach). The precise nature of "noticing" has never been specified in the research on nonverbal immediacy. Two extreme positions on the issue seem possible. On the one hand, noticing could refer to a conscious thought that can be verbalized (e.g., "I am aroused," "I didn't expect that," "He moved close to me"). On the other, it could be a relatively implicit automatic appraisal that is not consciously registered or verbalized in thought because of the variety of events taking place in the environment, but which is nevertheless at the back of the individual's mind, initiating a search for a label, increasing arousal, or affecting impressions and behavior (Andersen, 1986; Benoit & Benoit, 1986; Dixon, 1981; Motley, 1986). Because theorists are undoubtedly aware of the amount of information that individuals

must process in social interactions, and of the rapidity of their behavioral responses, it may be safe to assume that although "noticing" may sometimes be a conscious appraisal that is verbalized in thought, it need not be (e.g., Patterson, 1983a, p. 25).

A handful of studies have been conducted on these models and the findings of others are also relevant (see Andersen, 1985; Andersen & Andersen, 1984; Patterson, 1982; 1983a for reviews). But no study enables us to determine which model is correct, because all of the models can account for the findings. Reviewers have therefore been calling for tests among the models.

A Test Among the Models

This study was designed to test the social cognition approach. However, the experimental design should also have important implications for the arousal-based models. The social cognition approach assumes that individuals use implicit theories to assess events in their environment and to respond accordingly. In assessing events, individuals first attempt to determine who or what was responsible for the occurrence—they make a causal attribution (Heider, 1958; Jones & Davis, 1965; Kelley, 1967). Inferences about the other person or the situation then follow. The following three experimental situations can therefore be used to test the social cognition approach to nonverbal immediacy reactions. In one condition, a confederate intentionally violates subjects' interpersonal distance during a social interaction. In a second condition, the confederate is forced to violate subjects' interpersonal distance (by the room arrangement and instructions from the experimenter). In a third (control) condition, the subject and confederate sit at a normal distance from one another. The social cognition approach predicts that subjects in the intentional-close condition will hold the confederate responsible for the violation, but subjects in the forced-close condition will not. As a result, intentional-close subjects should make certain inferences (positive or negative, depending on the person and context) about the confederate which the forced-close subjects should not. There should be no difference in the interpersonal inferences of forced-close and normal-distance subjects. Although past research on distance violations and gender has produced mixed results (Hayduk, 1983), a study by Murphy-Berman and Berman (1978), very similar to the proposed study, found that males responded to close interpersonal distances more negatively than females. Therefore, if male subjects and a male confederate are used, the subjects in the intentional-close

condition should evaluate the confederate negatively, whereas the forced-close subjects should not.

A well-established finding is that liking or disliking for another person can, and often does, affect the level of immediacy that individuals initiate in social interactions (see Argyle, 1969; Evans & Howard, 1973; Harper, Weins, & Matarazzo, 1978; Hayduk, 1983; Siegman & Feldstein, 1978 for reviews). However, this finding is not in itself sufficient evidence for the social cognition approach because the assertion that social cognition determines nonverbal reactions would require evidence that, for example, social cognition affects attraction. Therefore, if the present study provides evidence that cognitions about immediacy behavior affect attraction, and if this evidence is combined with past research showing that attraction affects nonverbal behavior, then the conclusion will be that social cognition determines whether reciprocation or compensation will be the response to an increase in immediacy by others.

It is important to note that, in the social cognition approach, behavioral reactions are not always or necessarily determined by interpersonal attraction. Rather, behavioral reactions are determined by cognitions about the other person *or* the situation. The proposed design is a test of the social cognition approach because we know that attraction *can* affect nonverbal reactions. Therefore, if it is found that cognitions about another person's immediacy behavior affect attraction, then there will be at least some grounds for believing that social cognition determines nonverbal reactions. This study will be merely one test of the social cognition approach, and other tests will certainly be necessary for more complete confirmation.

The subjects in this study should also respond to the confederate nonverbally. If the intentional-close subjects evaluate the confederate more negatively, they should display compensation. Because the social cognition approach states that cognitions about the other person *or* the situation determine immediacy reactions, subjects in the forced-close condition may or may not display compensation. Forced-close interpersonal distances between strangers have lead to compensation in past research (e.g., Coutts & Schneider, 1975; see Hayduk, 1983). Nonverbal compensation may occur in forced-close situations, unaccompanied by negative impressions of the other person, because: 1) subjects may not like the close-distance and may therefore show compensation, but nevertheless correctly attribute responsibility for the close distance to the experimenter or to the situation; or 2) a socio-cultural norm may dictate that compensation is the appropriate behavior in forced-close situations (such as riding in an elevator); or 3) individuals may not always have adequate schemata for dealing with forced-close interpersonal distances and may therefore au-

tomatically display nonverbal compensation. But more negative impressions of the others should not occur in forced-close situations. Interestingly, researchers have sometimes observed inconsistencies between attraction to another person and nonverbal reactions (e.g., Coutts, Schneider, & Montgomery, 1980; Ickes, Patterson, Rajecki, & Tanford, 1982; Patterson & Powell, 1987). Patterson (1982, 1983; Patterson & Powell, 1987) attributed these inconsistencies to changes in the perceived function of the other person's nonverbal behavior, an explanation entirely consistent with the social cognition approach.

In sum, the nonverbal reactions of the forced-close subjects in this study are not crucial to the test of the social cognition approach. It is subjects' impressions of the confederate that are of concern: the important question is whether individuals make causal attributions and corresponding evaluations of others that are based on the nonverbal immediacy behavior of others. Although this study provides a limited test of the social cognition approach, it also serves as a test among three models.

Implications for the Arousal Labeling Model

Confirmation of the predictions would create difficulties for the arousal-labeling model of nonverbal immediacy reactions. One reason is that the findings would indicate that subjects' arousal was not "unexplained." In the Schachter and Singer (1962) study, subjects in the epinephrine-informed condition did not begin a label-search process because when they noticed that they were aroused they knew the drug was the cause. Similarly, confirmation of the social cognition approach predictions would suggest that if and when the close-distance subjects became aroused, they too knew why. If the confederate is evaluated negatively in the intentional-close condition but not in the forced-close condition, the implication will be that subjects were quite sensitive to who was and who was not responsible for their arousal. In other words, their arousal would not be "unexplained," and the epistemic search process would not have been initiated.

Might the arousal-labeling model apply nevertheless? For example, subjects in the forced-close condition might say to themselves, "the experimenter put the chairs close together, my feelings of arousal are due to that, and so I will not attribute any negative qualities to the other person." Subjects in the intentional-close condition might view the confederate as responsible for the arousal and therefore attribute negative qualities to him. This kind of arousal-labeling probably does happen, i.e., subjects may

well say these things to themselves. But does this arousal-labeling determine behavioral responses? The answer (presuming the predictions are supported) is that it does not, for the following reasons.

The arousal-labeling model is based on the assumption that arousal comes first, followed by a search for a label (Andersen, 1985; Patterson, 1976; 1978). Patterson (1978) acknowledged that there is insufficient evidence to determine the temporal ordering of arousal and labeling: the labels may arise before, simultaneously with, or after, the arousal. As Hayduk (1983) notes, "Patterson was unclear as to how serious he considered such temporal ambiguity to be, but it seems that any sequence other than arousal then attribution makes his proposals unfeasible" (p. 305). Arousal cannot stimulate the attribution process if the arousal occurs simultaneously with, or after, the attribution.

Confirmation of the predictions would indicate that the attribution came after the arousal. Subjects must have noticed (or "registered") the intentional or forced aspect of the situation as it was occurring. They could not have noticed it "later," after it occurred, at which point they were simply sitting close to the confederate with no cues as to whether the close distance was intentional or forced. Could it be that subjects will process the intentional versus forced information as it occurs, but not make attributions until they are aroused? This is not likely, for two reasons. One reason is based on logic: it would not make sense to 1) admit that individuals consider the difference between intentional and forced close violations to be important; but then 2) claim that individuals only actually process such information and make corresponding attributions after they are sufficiently aroused. The second reason is based on research findings demonstrating that attributions are made spontaneously at the encoding stage (Weiner, 1985; Winter & Uleman, 1984). Spontaneous attributions are especially likely to be made for unexpected events, in unfamiliar conditions, or when there is strong outcome dependency upon the other person (Berscheid, Graziano, Monson, & Dermer, 1976). This describes the experimental conditions of the proposed design quite well.

In sum, confirmation of the predictions of the social cognition approach would imply that: 1) subjects' arousal was not unexplained; and 2) the attribution was not made after the arousal. This would question the extension of Schachter and Singer's arousal-labeling model to nonverbal immediacy reactions, thereby forcing this model to predict that subjects in both the intentional-close and the forced-close conditions should evaluate the confederate more negatively than subjects in the normal-distance condition.

Implications for the Discrepancy-Arousal Model

Confirmation of the predictions would also question the discrepancy-arousal model. As mentioned above, this model predicts that large increases in arousal result in negative affect which in turn results in nonverbal compensation. Moderate increases in arousal are said to result in positive affect and nonverbal reciprocation. Throughout the literature on nonverbal exchange, positive and negative impressions of others are presumed to be indications of positive and negative affect. The discrepancy-arousal model would have difficulty accounting for the finding that positive or negative affect (i.e., evaluations of the confederate) occurred in the intentional-close condition but not in the forced-close condition. The same interpersonal distance should have produced the same amount of arousal and therefore the same evaluation.

Could it be that there is a difference between evaluations (of the confederate) and negative affect? For example, could it be that subjects in the forced-close condition will experience a great amount of arousal because the close distance is a strong violation of their interpersonal distance expectations for interactions between two strangers? This expectancy violation would then lead to negative affect, but it would not lead to negative evaluations of the confederate, because he was not responsible for the close distance. Therefore, it might be claimed, the discrepancy-arousal model could account for the predicted findings.

But this would mean that evaluations of the other person are not important to how the individual responds, and that the amount of arousal is solely important. This is not likely because, as mentioned above, a well-established finding is that attraction affects the level of nonverbal immediacy that individuals initiate in social interactions. The subjects in these studies could not have been aroused by (e.g.) the close distance or increased eye-contact (which they initiated) before it occurred. Positive perceptions alone determined their immediacy behavior. Therefore, if it is found in this study that individuals make causal attributions and corresponding evaluations of others based on their immediacy behavior, the conclusion will be that social cognition affects attraction, which then affects behavior—arousal is not involved in determining the response. Although arousal may be present, its precise role is a question for further research.

The discrepancy-arousal theorist would therefore be forced to attempt to argue the following: 1) that in studies which found that attraction affects immediacy behavior (e.g., closer initial approaches), arousal had nothing to do with the level of immediacy initiated and perceptions alone were

important; but 2) when individuals are approached by another person their perceptions of the other are not important, only the amount of arousal is important. There is no basis for arguing this. The discrepancy-arousal model is therefore forced to predict either: 1) that there should be no group differences in evaluations of the confederate; or 2) that subjects in both close distance conditions should evaluate the confederate more negatively than subjects in the normal distance condition.

The current assumption in the philosophy of science is that *single* crucial tests between theories are not possible (Hemple, 1966; Lakatos, 1974). Theories are not accepted or rejected on the basis of one study alone: a variety of tests between theories are necessary before such decisions can be made. The present investigation is merely one such test.

Evidence Concerning the Predictions

Is there any research support for the prediction that intentional personal space invasions lead to changes in impression formation whereas forced invasions do not? A number of studies have examined the effects of interpersonal distance manipulations on impression formation, and a close look at the designs of these studies reveals support for the predictions. Several studies have compared forced-close with normal interpersonal distances and found no differences in person perception (Albert & Dabbs, 1970; Fisher, 1976; Goldberg, Kiesler, & Collins, 1969; Grossnickle, Lao, Martoccia, Range, & Walters, 1975; Patterson, 1968a; Tesch, Huston, & Indenbaum, 1973). On the other hand, in a number of other studies a confederate approached subjects intentionally and significant effects on person perception were observed (Burgoon, 1983; Carr & Dabbs, 1974; Fisher & Byrne, 1975; Greenberg & Firestone, 1977; Kahn & McGaughey, 1977; Mehrabian, 1968; Molberg, 1977; Murphy-Berman & Berman, 1978; Patterson, 1968b; Patterson & Powell, 1987; Patterson & Sechrest, 1970; Skolnick, Frasier, & Hadar, 1977; Smith & Knowles, 1978; 1979).

Three studies have actually examined the effects of forced-close and intentional-close distances on interpersonal perception. Patterson and Powell (1987) found that subjects in far-choice and close-no-choice conditions judged a confederate to be warmer than subjects in close-choice and far-no-choice conditions. Murphy-Berman and Berman (1978) also found significant differences between intentional-close and forced-close personal space violations: male invaders were evaluated more positively, and female invaders were evaluated more negatively, than confederates in forced-close conditions. However, because there was no normal distance

condition in this study, we do not know if a confederate at a normal distance would have been evaluated the same way as a confederate at the forced-close distance. On the other hand, Storms and Thomas (1977) found that intentional-close and forced-close distances had similar effects on person perception. But because there was only an experimenter (and no confederate) in this study, the subjects in the forced-close condition may have correctly assumed that the experimenter was responsible for the close-distance and that it was actually intentional.

Some findings from the research on crowding appear to contradict the present predictions. In these studies (e.g., Walden & Forsyth, 1981; Worchel & Yohai, 1979), subjects interacted in small groups in rooms of different size. Subjects in small/crowded rooms perceived other subjects in the room with them more negatively. This seems to contradict the present predictions because the difference in evaluations of others occurred when those others were not responsible for the close distances. But subjects in the crowded conditions could very well have behaved more negatively towards each other (e.g., more signs of nervousness, defensiveness, etc.) and thus truly caused person perception differences.

In sum, although very few studies have systematically compared forced-close, intentional-close, and normal interpersonal distances as they affect person perception, the bulk of the research seems to support the present predictions. Interpersonal distance violations may be uncomfortable, but they probably only lead to negative evaluations when the other person is perceived to be responsible for the violation. A few studies, however, have found that forced-close distances can lead to changes in perception as well, although there are alternate explanations of these findings. At this point, the conclusion reached by Hayduk (1983) seems appropriate: "Given the key status accorded "free will" in judgments of purposes, motives, and intentions, this would seem to be one aspect of personal space that is in dire need of further investigation" (p. 320).

Overview

The present study examined interpersonal perceptions in intentional-close, forced-close, and normal-distance social interactions in order to test among the models of nonverbal immediacy reactions. A male confederate was paired with male subjects for brief conversations about a social dilemma. This three-cell design was run twice. In one run, subjects gave their impressions of the confederate both before and after the distance manipulation (the "Pre-Post" design). In the other, the subjects gave their

impressions of the confederate only after the distance manipulation (the "Post-Test-Only" design). The purpose of the Pre-Post design was to examine the possibility that different amounts of change in impressions of the confederate occur in forced-close and intentional-close situations. The Post-Test-Only design was used to control for testing effects and because it is more realistic.

It was predicted that: 1) subjects in the intentional-close condition would evaluate the confederate more negatively than subjects in the forced-close and normal-distance conditions; 2) subjects in the forced-close and normal-distance conditions would not differ in their evaluations of the confederate; and 3) subjects in the intentional-close condition would display nonverbal compensation whereas subjects in the forced-close condition may or may not compensate for the close distance. Subjects' physiological arousal was not measured because it would have made the experimental situation unrealistic, and the intentional-versus-forced close manipulations had to be convincing.

Method

Subjects

Subjects were 83 male volunteers (no course credit, no pay) drawn from undergraduate psychology courses. They were contacted by phone and agreed to participate in a study on "moral dilemmas."

Setting

All interactions took place in a 5 m by 6.7 m room that contained chairs, tables, a desk, pictures on the wall, and a bookcase that concealed a video camera. Subjects and the confederate sat in one corner of the room at a 60 degree angle from one another. In the Normal-Distance condition two chairs were arranged at 1.1 m from one another (front corner to front corner), and a large table cornered the chairs in such a way that they could not be moved farther apart. In the Forced-Close condition the chairs were pre-arranged at 0.3 m from one another and the large table was also positioned so that they could not be moved farther apart. In the Intentional-Close condition the setting was, initially, the same as in the Normal-Distance condition. However, as the confederate sat down he picked up his chair and moved it to 0.3 m from the subject's chair.

Procedure

Subjects arrived and were seated in an outer room where the experimenter had been waiting. Subjects were told that another subject should be coming soon. After one minute the confederate arrived, asking if he was in the right room and

excusing himself for being late. The subject and confederate were introduced and were told that the study was concerned with what people thought of a particular moral dilemma, and how people go about solving this dilemma with someone else. At this point, the experimenter left to get some papers from a neighboring room and returned one minute later. This was to enable subjects to form a first impression of the confederate. During this period, the confederate always let the subjects initiate any small-talk. Upon return, the experimenter asked those subjects in the Pre-Post design to complete a "first impression" questionnaire. They were then given the "Heinz" stolen-drug moral dilemma to read (from Kohlberg, 1964). After reading the dilemma, the subjects and confederate were told to talk it over to see if they agreed or disagreed as to what should be done in this situation. They were told that if they could not reach a consensus, then they should map out their reasons for disagreeing.

The experimenter then escorted the subjects and confederate to the laboratory room and directed them to the chairs. The subject always sat down first. In the Intentional-Close condition, the confederate casually picked up the chair, which was 1.1 m from the subjects' chair, and moved it to 0.3 m away. This happened immediately after the experimenter left the room saying that he would return in two or three minutes. After three minutes, the experimenter returned and asked them to complete a questionnaire (see below) in separate rooms. The confederate always "finished" his questionnaire first and left. When the subjects were finished, they were thoroughly debriefed. Six subjects reported either that the confederate was not a real subject and/or that the experiment was not about a moral dilemma but about interpersonal distance, etc. These subjects said that their suspiciousness affected their behavior and responses, therefore the data from these subjects were not included in the analyses. Videotapes of five other interactions were not obtained due to technical or procedural problems.

The Confederate's Behavior

The confederate maintained the same body posture throughout the conversation: he sat still, with his hands in his lap, with his knees uncrossed, and with his trunk in a slight forward slump. He was also instructed not to seek eye-contact, but to look directly at the subjects only when they turned their head to look directly at him. The angle of the chairs made such movements by subjects quite noticeable. The confederate was not a psychology student and was blind to the hypotheses of the study. During the interaction the confederate always let the subject lead the conversation. He did not take strong stands on the moral dilemma or evaluate subjects' opinions. He merely asked them questions about what they said. He was also instructed not to respond too strongly to smiles and similar behaviors on the part of subjects. The intention was to keep all interactions slightly uncomfortable, so as to avoid ceiling effects in subjects' evaluations of him (e.g., Coutts, Schneider, & Montgomery, 1980; Patterson, Jordan, Hogan, & Ferker, 1981) and to make the close distances more salient. The confederate reported that acting this way made it easy for him to keep his behavior consistent across interactions.

Questionnaire

After responding to cover questions about the moral dilemma, subjects evaluated the confederate on the following ten-point scales: aggressive-unaggressive;

friendly-unfriendly; likeable-unlikeable. Subjects also indicated, on a ten point scale, how much they would enjoy being with the confederate in another experiment. Subjects in the Pre-Post design gave both their before- and their after-discussion judgments on these four scales. The Pre-Post subjects did not give any other ratings before the discussion. All subjects were asked to describe how they felt during the discussion on the following ten-point scales: positive-negative; comfortable-uncomfortable; and aroused-drowsy. The last question asked subjects if they considered the confederate responsible for the close distance or not. This question could be answered either "yes," "no," or "can't tell."

Nonverbal Behaviors

The following nonverbal immediacy behaviors were coded from the videotapes by two observers: the amount of time the subjects and confederate spent simultaneously gazing in the direction of each other's head "Mutual Gaze"); the amount of Gaze While Listening [Argyle & Ingham (1972) found this to correlate with affiliativeness]; Seating Orientation; and the amount of Leg Crossing, Knee Separation, Arm Wrap, and Trunk Recline. The latter four behaviors were included as measures of "postural openness," an indication of immediacy (see Andersen, 1985, p. 7). The amount of time that subjects spent talking was also measured.

The same computation technique was used for computing scores for Seating Orientation, Legs Crossed, Knee Separation, Wrap, and Trunk Recline. For example, the amount of time spent in three possible seating orientations (facing towards the other person, facing straight ahead, or facing away from the other person) was measured and a Seating Orientation score was computed. This score was computed by converting each seating position time into a proportion score; multiplying these scores by a weighting factor; and then summing the three position scores to obtain a total score. The weighting factor for facing-towards-the-other-person was three; the weight for facing-straight-ahead was two; and the weight for facing-away-from-the-other-person was one. The resulting Seating Orientation score is a proportion figure in which larger numbers indicate more time spent oriented towards the other person.

Two nonimmediacy nonverbal behaviors were also coded from the videotapes: 1) the amount of time subjects spent rubbing or scratching themselves or objects (Manipulations); and 2) the number of postural shifts (Moves). These behaviors have been found to correlate with arousal and are often considered to be indications of arousal or anxiety (e.g., Ekman & Friesen, 1972; Hale & Burgoon, 1984). The interobserver intraclass correlations for the nonverbal immediacy and arousal behaviors of both the subjects and the confederate were quite satisfactory (they ranged from .86 to .99).

Results

Manipulation Checks

Two manipulation checks were performed to determine whether the confederate behaved the same way in all conditions after the manipula-

tion. One check consisted of having 39 additional subjects view the videotapes and make ratings of the confederate, based on his verbal and nonverbal behavior. Only 48 of the original subjects consented to have their videotapes viewed by other subjects, so the 39 raters viewed only these tapes. The raters saw what transpired after the confederate and the real subjects sat down. They were asked to indicate their impression of the confederate on the same adjective scales that the original subjects had used. No significant differences between experimental groups were found, F values ranged from .04 to .60, and p levels ranged from .62 to .99. None of the group contrasts was even close to significance.

The second manipulation check involved coding the confederate's verbal and nonverbal behaviors from all of the videotapes. These nonverbal behaviors were the ones described above. Only one contrast was significant. In the Post-Test-Only design, the confederate talked more in the Forced-Close condition than in the other conditions, $F(3, 37) = 2.8$, $p = .05$. An inspection of the total-time talking scores for each subject revealed that for two of the cases in the Forced-Close condition the confederate's total time talking was over three and over four standard deviations above the mean. This was obvious from the videotapes as well. When these cases were deleted, the confederate time-talking effects were no longer significant, $F(3, 35), = 1.2$, $p = .33$. These two cases were therefore deleted from the analysis. The findings of the study, however, were not affected by their exclusion.

A third manipulation check was whether subjects correctly perceived who was responsible for the confederate's seating distance. They were asked, "Was the other person (the confederate) responsible for the seating distance during the discussion?" Subjects generally answered this question as would be expected: subjects in the Normal-Distance and Forced-Close conditions said that the confederate was not responsible for the seating distance, whereas subjects in the Intentional-Close condition said that he was.

However, 15 subjects in the Intentional-Close condition responded, "No," meaning that the confederate was not responsible for the close seating distance. This was unexpected, and the videotapes show that most of these subjects actually looking at the confederate as he was moving his chair. The videotapes of these interactions were included in the two manipulation checks described above and no significant effects were found, i.e., the confederate did not actually behave differently for these subjects.

Upon debriefing, all subjects were asked about the intentional-close behavior of the confederate and over half of these "not responsible" subjects were later contacted by phone for their reasons why they did not con-

sider the confederate responsible for the close distance. Most of these subjects said that the intentional-close behavior "didn't matter" and that it seemed a "normal thing to do" in such a situation. Most said that although the confederate moved his chair closer, they assumed that it was not his fault, that "he must have thought that the room was inappropriately arranged or something." Because these reasons for the "not responsible" reply are unusual and even contradictory, and because these subjects did not consciously attribute responsibility to the confederate, their data were analyzed separately, i.e., these subjects formed a fourth group in the analyses—the "Intentional-Not-Responsible group." There were ten of these cases in the Post-Test-Only design and five in the Pre-Post design.

Evaluations of the Confederate

A confederate evaluation scale composed of all four items was not very reliable (alpha = .69). However, a scale composed of three of the items (likeable-unlikeable, friendly-unfriendly, and "Would you enjoy working with this person in another experiment?") was reliable (alpha = .86). The overall Liking and the Aggressiveness ratings were therefore analyzed separately.

Tests of the hypotheses of this study involved nonorthogonal a priori contrasts in which the directions of the group differences were specified beforehand. One-way analyses of variance were performed, followed by one-tailed tests of the predicted group differences. Because many group comparisons were made, the Bonferroni procedure was used to avoid Type 1 errors.

Aggressiveness ratings. According to the social cognition approach, subjects in the Intentional-Close condition should have judged the confederate to be more aggressive than subjects in the other conditions. However, there were no significant effects for this scale. Upon debriefing, almost all subjects reported that "the other person" was too quiet during the discussion. Perhaps the non significant Aggressiveness findings represent a floor effect (the groups' means ranged from 3.3 to 4.0).

Liking ratings. There were significant group differences in the Liking ratings in the Post-Test-Only design, $F(3,41) = 5.9$, $p = .002$, but not in the Pre-Post design, $F(3,34) = 0.52$, $p = .67$. As predicted (see Table 1), subjects in the Forced-Close condition (in the Post-Test-Only design) did not like the confederate less than subjects in the Normal-Distance condition, $t(41) = -0.7$, $p = .27$. On the other hand, subjects in the Intentional-

TABLE 1

Liking of the Confederate: Means and Standard Deviations*

		Normal-Distance	Forced-Close	Intentional-Close	Intentional-Not-Responsible
			Post-Test-Only Design		
		$n = 13$	$n = 11$	$n = 11$	$n = 10$
	M	6.6a	6.4a	5.6b	5.3b
	SD	1.1	0.8	0.6	0.9
			Pre-Post Design		
		$n = 11$	$n = 11$	$n = 11$	$n = 5$
Before	M	5.7	5.4	5.9a	5.1
	SD	0.9	1.1	0.9	2.1
After	M	5.6	5.6	5.3b	4.8
	SD	1.3	1.5	0.9	2.4

*Note. Higher means indicate greater liking. For the Post-Test-Only design, means in the same row but with different subscripts are significantly different according to the Bonferroni t-test. For the Pre-Post design means in the same column but with different subscripts are significantly different.

Close condition liked the confederate less than subjects in the Normal-Distance condition, $t(41) = -3.5$, $p = .0005$. Intentional-Close subjects in the Post-Test-Only design also liked the confederate less than subjects in the Forced-Close condition, $t(41) = -2.3$, $p = .012$.

Although none of the group contrasts for Liking was significant in the Pre-Post design, a before-after discussion difference in ratings, in accord with predictions, was found. There was no before-after difference in the Liking judgments of Normal-Distance subjects, $t(11) = 0.09$, $p = .46$, or in the Liking Judgments of Forced-Close subjects, $t(11) = -1.14$, $p = .14$. However, subjects in the Intentional-Close condition liked the confederate less after the discussion than before the discussion, $t(11) = 4.9$ $p = 0.001$.

The liking ratings of subjects in the Intentional-Not-Responsible group were similar to the ratings of the Intentional-Close subjects. The Intentional-Not-Responsible subjects in the Post-Test-Only design liked the confederate less than did the Normal-Distance subjects, $t(41) = -3.1$, $p =$

.003. They also liked the confederate less than did Forced-Close subjects, $t(41) = -2.8$, $p = .02$. However, unlike the Intentional-Close subjects in the Pre-Post design, there was no before-after difference in Liking of the confederate, $t(5) = 0.34$, $p = .38$.

Parenthetically, when the Intentional-Not-Responsible subjects and the Intentional-Close subjects were grouped together, the liking results were very similar, $F(2,42) = 8.9$, $p = .0006$. In the Post-Test-Only design this group of subjects liked the confederate less than did the Normal-Distance subjects, $t(42) = 13.3$, $p < .000$, and less than did the Forced-Close subjects, $t(42) = -2.9$, $p = .003$. In the Pre-Post design these subjects liked the confederate less after the interaction than they did before, $t(15) = 1.52$, $p = .075$.

In sum, subjects' evaluations of the confederate were not consistently different in both designs and for both judgment scales. But the significant findings that did emerge were all in accord with the predictions.

Nonverbal Immediacy Behaviors. Subjects in the close-distance conditions, in both the Post-Test-Only and Pre-Post designs, generally displayed less immediate nonverbal behavior than did subjects in the Normal-Distance condition. The group means were all in the predicted direction (see Table 2), although not all of the group differences were significant according to the Bonferroni test.

There were significant effects for Mutual Gaze, $F(3,36) = 4.9$, $p = .005$ for the Post-Test-Only design; and $F(3,34) = 4.1$, $p = .01$ for the Pre-Post design. Subjects in the Normal-Distance condition displayed more Mutual Gaze than subjects in the Forced close condition in the Post-Test-Only design, $t(36) = 3.0$, $p = .003$; more Mutual Gaze than subjects in the Intentional-Close condition, $t(36) = 3.5$, $p = .0005$ for the Post-Test-Only design; and $t(34) = 3.2$, $p = .002$ for the Pre-Post design; and more Mutual Gaze than subjects in the Intentional-Not-Responsible group in the Post-Test-Only design, $t(36) = 2.0$ $p = .026$.

The Gaze-While-Listening group differences were similar, although the overall effect reached significance only in the Post-Test-Only design, $F(3,36) = 3.6$, $p = .02$. Subjects in the Normal-Distance condition displayed more Gaze-While-Listening than did subjects in the Forced-Close condition, $t(36) = 2.9$, $p = .003$; and more Gaze-While-Listening than did subjects in the Intentional-Close condition, $t(36) = 2.5$, $p = .008$. The group means in the Pre-Post design were in the same directions, but the group contrasts were only marginally significant.

The group differences for Seating Orientation were also in accord with predictions, $F(3,36) = 4.0$, $p = .02$ for the Post-Test-Only design; and

TABLE 2

Nonverbal Immediacy Behaviors: Means and Standard Deviations*

		Normal-Distance	Forced-Close	Intentional-Close	Intentional-Not-Responsible
			Post-Test-Only Design		
		$n=11$	$n=9$	$n=10$	$n=10$
Mutual Gaze	M	$.16_a$	$.05_b$	$.04_b$	$.09_b$
	SD	.08	.08	.03	.09
Gaze While Listening	M	$.52_a$	$.21_b$	$.26_b$	$.27_b$
	SD	.21	.23	.14	.28
Seating Orientation	M	$.67_a$	$.41_b$	$.53_b$	$.47_b$
	SD	.21	.15	.17	.17
			Pre-Post Design		
		$n=11$	$n=11$	$n=11$	$n=5$
Mutual Gaze	M	$.16_a$	$.09_{ab}$	$.07_b$	$.07_{ab}$
	SD	.10	.04	.07	.04
Gaze While Listening	M	.37	.36	.28	.31
	SD	.15	.14	.09	.05
Seating Orientation	M	$.67_a$	$.42_b$	$.52_{ab}$	$.67_{ab}$
	SD	.21	.15	.17	.24

*Note. The means are proportions in which higher numbers indicate more immediate nonverbal behavior. Means in the same row that do not share a common subscript are significantly different according to the Bonferroni t-test.

$F(3,34) = 3.9$, $p = .02$ for the Pre-Post design. Subjects in the Normal-Distance condition showed more immediate Seating Orientations to the confederate than subjects in the Forced-Close condition, $t(36) = 3.2$, $p = .002$ for the Post-Test-Only design; and $t(34) = 3.1$, $p = .002$ for the Pre-Post design; more immediate Seating Orientations than subjects in the Intentional-Close condition in the Post-Test-Only design, $t(36) = 1.7$, $p = .043$; and more immediate Orientations than subjects in the Intentional-Not-Responsible group in the Post-Test-Only design, $t(36) = 2.6$, $p = .008$.

There were generally no significant effects for Knee Separation, Legs Crossed, Arm Wrap, Trunk Recline, and Time Talking. In sum, subjects in the close-distance conditions tended to display less immediate nonverbal behavior than Normal-Distance subjects, although these tendencies were more consistently significant for the Post-Test-Only design. Close-distance subjects displayed less Mutual Gaze, less Gase-While-Listening, and less immediate Seating Orientations than Normal-Distance subjects.

Self-Reported Feelings

According to the arousal-labeling model, the arousal created by close interpersonal distances must be "noticeable" for a change in behavior to occur. Similarly, the discrepancy-arousal model hypothesizes that nonverbal compensation is the result of high levels of arousal. Because the close-distance subjects in this study displayed nonverbal compensation, they should also have reported feeling more "aroused" according to these models. There were significant effects for the Post-Test-Only design, $F(3,41) = 3.8$, $p = .02$, but not for the Pre-Post design, $F(3,34) = 0.54$, $p = .66$. Surprisingly (see Table 3), subjects in the Intentional-Close condition in the Post-Test-Only design reported feeling *less* aroused than did Normal-Distance subjects, $t(41) = -3.3$, $p = .002$. There was also a marginally significant tendency for subjects in the Forced-Close condition to report feeling less aroused than did the subjects in the Normal-Distance condition, $t(41) = -2.0$, $p = .058$.

According to the Discrepancy-Arousal model, nonverbal compensation is the result of high levels of arousal, which is presumed to be unpleasant. But although the close-distance subjects displayed nonverbal compensation, there were no significant effects for their Positive ratings, $F(3,41) = 1.8$, $p = .16$ for the Post-Test-Only design; and $F(3,34) = 1.1$, $p = .35$ for the Pre-Post design, or for their Comfortable ratings, $F(3,41) = .45$, $p = .72$ for the Post-Test-Only design; and $F(3,34) = 1.7$, $p = .19$ for the Pre-Post design. In fact, the group means for these ratings were in the direction opposite to that predicted by the Discrepancy-Arousal model.

Nonverbal Arousal Behaviors

Analyses of variance on the nonverbal arousal behaviors revealed significant effects for Manipulations in the Post-Test-Only design, $F(3,36) = -3.7$, $p = .002$. Subjects in the Normal-Distance condition showed fewer manipulations than did Intentional-Close subjects, $t(36) = -3.2$, $p =$

TABLE 3

Self-Reported Feelings and Nonverbal Arousal: Means and Standard Deviations*

		Normal-Distance	Forced-Close	Intentional-Close	Intentional-Not-Responsible
		Post-Test-Only Design			
Aroused	M	6.1_a	5.1_{ab}	4.4_b	5.5_{ab}
	SD	1.1	0.9	1.2	1.7
Positive	M	6.4	6.6	5.6	6.7
	SD	1.7	1.1	0.7	0.9
Comfortable	M	5.3	5.8	5.3	5.1
	SD	1.6	1.3	1.6	1.9
Manipulations	M	$.22_a$	$.43_b$	$.52_b$	$.33_{ab}$
	SD	.17	.25	.25	.20
Moves	M	.03	.04	.04	.05
	SD	.02	.02	.02	.02
		Pre-Post Design			
Aroused	M	5.4	5.4	4.7	4.9
	SD	1.1	1.4	1.7	1.5
Positive	M	5.7	6.5	5.6	5.7
	SD	1.1	1.0	1.7	0.8
Comfortable	M	5.3	5.9	4.9	4.1
	SD	1.6	1.6	1.0	1.8
Manipulations	M	.42	.54	.43	.20
	SD	.37	.25	.24	.19
Moves	M	.03	.04	.05	.04
	SD	.02	.01	.02	.02

*_Note_. Means in the same row that do not share a common subscript are significantly different according to the Bonferroni t-test.

.02, and fewer manipulations than did Forced-Close subjects, $t(36) = -2.1$, $p = .04$.

Discussion

This study was designed both to test the social cognition approach and to serve as a test among three models of nonverbal immediacy reactions. In the social cognition approach it is cognitions about another person's nonverbal immediacy behavior that determine behavioral responses. The present test of the social cognition approach was based on the following reasoning: 1) a well-established finding from past research is that attraction can, and often does, affect the level of nonverbal immediacy that individuals initiate in social interactions; 2) if there is also evidence that cognitions about another person's immediacy behavior affect attraction, then 3) there will be at least some grounds for believing that social cognition determines whether nonverbal compensation or nonverbal reciprocation will be the response to an increase in immediacy by others. To determine whether cognitions about immediacy behavior affect attraction, this study examined impressions of another person in intentional-close, forced-close, and normal-distance interactions. It was predicted that intentional-close subjects would hold a confederate responsible for a distance invasion and would like him less than normal-distance subjects; and that forced-close subjects would not hold a confederate responsible for a distance invasion and would therefore not like him less than normal-distance subjects. Confirmation of these predictions would both provide support for the social cognition approach and, for the reasons outlined above, question the arousal-labeling and discrepancy-arousal models.

It was the presence or absence of cognitions about nonverbal immediacy behavior that formed the basis of this test of the social cognition approach, and not subjects' nonverbal behavior. Intentional-Close subjects were expected to display nonverbal compensation, but no predictions were made regarding the nonverbal reactions of the Forced-Close subjects (for the reasons outlined above). Although the design provides a limited test of the social cognition approach, this limitation must be considered in light of the fact that the design also serves as a test among three models.

In general, the results were mixed. On the one hand, as expected, Intentional-Close subjects in the Post-Test design liked the confederate less than did the Forced-Close and Normal-Distance subjects (who did not differ in their attraction to the confederate). But these group differences did not occur in the Pre-Post design. However, in the Pre-Post design there

was, as expected, a significant before-after difference in attraction for the Intentional-Close subjects and no before-after difference for the other groups.

That different findings emerged from the Pre-Post and Post-Test designs was not unexpected. According to a review by Grice (1966), "a subject who has served as his own control may not be the same subject that he would have been if he had not" (p. 488). In the present case, the before-discussion judgment task may have influenced how the same judgments were made after the discussion. When subjects were asked to give their first impression of the confederate, after having just met him, they may have been sensitized to the fact that the experiment was about impressions of others. The lack of group differences in post-discussion ratings may be due to evaluation apprehension (Rosenberg, 1965) or impression management concerns (Schlenker, 1980). The situation was ambiguous and perhaps subjects "played it safe" by giving roughly the same ratings as they did the first time.

More serious questions about the social cognition approach are raised by the responses of the Intentional-Not-Responsible subjects in the Post-Test design. These subjects did not consider the confederate to be responsible for the intentional-close distance, but nevertheless liked him less for it. In other words, their cognitions about his nonverbal behavior were not related to their attraction to him in the manner predicted by the social cognition approach. The fact that their judgments were affected by his intentional-close behavior could be an indication of social information processing occurring outside of awareness (e.g., Bargh, 1984; Dixon, 1981; Nisbett & Wilson, 1977). According to Patterson (1983a):

> ". . . cognitive activity can occur within or outside of awareness. Nisbett and Wilson's (1977) critique of verbal reporting of mental processes concludes that, in many situations, people cannot accurately verbalize the cognitive processes that apparently guided their behavior. The issue of accessibility to one's cognitive processes or the accuracy of verbal reports about them is clearly separate from positing that such cognitive processes occur" (p.25).

The findings may also be due to a peculiar understanding of the question, "Was the other person responsible for the seating distance during the discussion?", as witnessed in these subjects' debriefing remarks that moving the chair was "normal," and "not his fault," and that "he must have thought the room was inappropriately arranged or something."

These possibilities are, however, mere speculations. The fact that a

group of subjects did not consider the confederate's intentional-close behavior to be intentional, but nevertheless liked him less for it, is a serious problem for the social cognition approach. Is it possible for individuals to make certain attributions about the behavior of another person unwittingly, and for these attributions to determine attraction and behavioral responses, while at the same time consciously making very different attributions that do not affect attraction and behavior?

Perhaps not coincidentally, other findings of this study raise a similar question about the arousal-based approaches to nonverbal immediacy reactions. Subjects in the close-distance conditions tended to report feeling *less* aroused than normal-distance subjects, which contradicts the nonverbal indications of arousal. This discrepancy suggests that subjects did not accurately perceive their arousal states, which is a necessary pre-condition for the arousal-labeling process to begin (Anderson, 1985; Patterson, 1976). Similarly, although the close-distance subjects displayed compensation, they did not report feeling less comfortable, less positive, or more aroused than did the normal-distance subjects, as the discrepancy-arousal model predicts.

These findings are perplexing and beg to be explained by further research. Indeed, the self-report findings of this study create difficulties for all three models of nonverbal immediacy reactions. An intriguing and perhaps relevant observation was reported by the experimenter (it was reported after running the first ten subjects, and the phenomenon continued for the remainder of the experiment). Subjects in the close-distance conditions were visibly uncomfortable—as witnessed by their behavior on videotape and, for example, by their standing up rather quickly when the experimenter returned to the room to say that their discussion time was over. Before debriefing, the experimenter asked the close-distance subjects what they thought of the distance between the chairs. Most said that it was "normal" and immediately downplayed its importance without further prodding. Normal-Distance subjects also considered their seating distance to be normal, but they were then told that other subjects would be seated at 0.3 m from one another. There was a common immediate reply: "Oh, that would be uncomfortable!" In other words, this anecdotal evidence gives a picture of close-distance subjects wishing to perceive an unusual interpersonal situation as being normal (cf. Breznitz, 1983; Gur & Sackeim, 1979). This could be one reason why the close-distance subjects did not report feeling aroused or uncomfortable, and why some intentional-close subjects did not consider the confederate responsible for the close seating distance.

Other Directions for Further Research

The relations between physiological arousal, social cognition, and nonverbal reactions need to be examined more closely. Even if social cognition alone is the primary determinant of nonverbal immediacy responses, the influence of arousal on cognitive processing and nonverbal behavior remains unclear. What role does arousal play? Does arousal intensify behavior? There is evidence that negative affective states can have an effect on cognitive processes (e.g., Clark & Isen, 1982). But at what point does this effect take place? In the present study, the discomfort or arousal in the Forced-Close condition was not strong enough, or of sufficient duration, to affect judgments of the confederate. But presumably there is some point at which arousal will begin to influence information processing and behavior.

A variety of tests between theories are necessary before a decision can be made as to which is "correct" (Hempel, 1966; Lakatos, 1974), and further tests between models of nonverbal immediacy reactions are certainly necessary. Others claim that it is more important to discover the conditions in which different theories apply (McGuire, 1983). For example, the arousal-labeling model applies to conditions in which individuals experience unexplained arousal, and there may be immediacy situations in every-day living where this experience is likely to occur.

Discovering whether social cognition alone determines nonverbal reactions is only one step towards understanding immediacy behavior. Other steps are to discover the nature of the cognitive processes that are involved, and the kinds of cognitions that are made about specific nonverbal behaviors in specific situations (Patterson, 1983a).

References

Abelson, R. P. (1981). Psychological status of the script concept. *American Psychologist, 36,* 715–729.

Albert, S., & Dabbs, J. (1970). Physical distance and persuasion. *Journal of Personality and Social Psychology, 15,* 265–270.

Andersen, P. A. (1985). Nonverbal immediacy in interpersonal communication. In A. W. Siegman & S. Feldstein (Eds.), *Multichannel integrations of nonverbal behavior.* Hillsdale, New Jersey: Erlbaum.

Andersen, P. A. (1986). Consciousness, cognition, and communication. *Western Journal of Speech Communication, 50,* 87–101.

Andersen, P. A., & Andersen, J. F. (1984). The exchange of nonverbal intimacy: A critical review of dyadic models. *Journal of Nonverbal Behavior, 8,* 327–349.

Argyle, M. (1969). *Social interaction.* London: Methuen.

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

Argyle, M., & Ingham, R. (1972). Gaze, mutual gaze, and proximity. *Semiotica, 6,* 32–49.

Bargh, J. A. (1984). Automatic and conscious processing of social information. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 3). Hillsdale, New Jersey: Erlbaum.

Benoit, P. J., & Benoit, W. L. (1986). Consciousness: The mindlessness/mindfulness distinction and verbal report controversies. *Western Journal of Speech Communication, 50,* 41–63.

Berscheid, E., Graziano, W., Monson, T., & Dermer, M. (1976). Outcome dependency: Attention, attribution, and attraction. *Journal of Personality and Social Psychology, 34,* 978–989.

Breznitz, S. (1983). *The denial of stress.* New York: International Universities Press.

Burgoon, J. (1983). Nonverbal violations of expectations. In J. Wiemann & R. Harrison (Eds.), *Nonverbal interaction.* London: Sage.

Capella, J., & Greene, J. (1982). A discrepancy-arousal explanation of mutual influence in expressive behavior for adult and adult-infant interactions. *Communication Monographs, 49,* 89–114.

Cappella, J. N., & Greene, J. O. (1984). The effects of distance and individual differences in arousability on nonverbal involvement: A test of the discrepancy-arousal model. *Journal of Nonverbal Behavior, 8,* 315–334.

Carr, S., & Dabbs, J. (1974). The effects of lighting, distance, and intimacy of topic on verbal and visual behavior. *Sociometry, 37,* 592–600.

Clark, M. S., & Isen, A. M. (1982). Toward understanding the relationship between feeling states and social behavior. In A. H. Hastorf (Ed.), *Cognitive social psychology.* New York: Elsevier.

Coutts, L. M., & Schneider, F. W. (1975). Visual behavior in an unfocused interaction as a function of sex differences. *Journal of Experimental Social Psychology, 11,* 64–77.

Coutts, L. M., & Schneider, F. W., & Montgomery, S. (1980). An investigation of the arousal model of interpersonal intimacy. *Journal of Experimental Social Psychology, 16,* 545–561.

Dixon, N. F. (1981). *Preconscious processing.* New York: John Wiley.

Ekman, P., & Freisen, W. (1972). Nonverbal behavior and psychopathology. In R. J. Friedman & M. M. Katz (Eds.), *The psychology of depression.* Washington, D C: U.S. Government Printing Office.

Ellsworth, P. (1978). The meaningful look. *Semiotica, 24,* 341–351.

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

Fisher, J. D. (1976). Situation-specific variables as determinants of perceived environmental aesthetic quality and perceived crowdedness. *Journal of Research in Personality, 8,* 177–188.

Fisher, J. D., & Byrne, D. (1975). Too close for comfort: Sex differences in response to invasions of personal space. *Journal of Personality and Social Psychology,32,* 15–21.

Goldberg, G., Kiesler, C., & Collins, B. (1969). Visual behavior and face to face distance during interaction. *Sociometry, 32,* 43–53.

Greenberg, C., & Firestone, I. (1977). Compensatory reactions to crowding: Effects of personal space intrusion and privacy reduction. *Journal of Personality and Social Psychology, 35,* 637–644.

Grice, G. R. (1966). Dependence of empirical laws upon the source of experimental variation. *Psychological Bulletin, 66,* 488–498.

Grossnickle, W., Loo, R., Martocci, T., Range, D., & Walters, F. (1975). Complexity of effects of interpersonal space. *Psychological Reports, 36,* 237–238.

Gur, R. C., & Sackeim, H. A. (1979). Self-deception: A concept in search of a phenomenon. *Journal of Personality and Social Psychology, 37,* 147–159.

Hale, J. L., & Burgoon, J. K. (1984). Models of reactions to changes in nonverbal immediacy. *Journal of Nonverbal Behavior, 8,* 287–314.

Harper, R. G., Weins, A. N., & Matarazzo, J. D. (1978). *Nonverbal communication: The state of the art*. New York: John Wiley.

Hayduk, L. (1983). Personal space: Where we now stand. *Psychological Bulletin, 94*, 293–335.

Heider, F. (1958). *The psychology of interpersonal relations*. New York: John Wiley.

Hempel, C. G. (1966). *Philosophy of natural science*. Englewood Cliffs, New Jersey: Prentice Hall.

Ickes, W., Patterson, M., Rajecki, D., & Tanford, S. (1982). Behavioral and cognitive consequences of reciprocation versus compensation responses to pre-interaction expectancies. *Social Cognition, 1*, 60–90.

Jones, E. E., & Davis, K. (1965). From acts to dispositions: The attribution process in person perception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2). New York: Academic Press.

Kahn, A., & McGaughey, T. (1977). Distance and liking: When moving close produces increased liking. *Sociometry, 40*, 138–144.

Kelly, G. (1955). The psychology of personal constructs. New York: Norton.

Kelley, H. (1967). Attribution in social psychology. *Nebraska Symposium on Motivation, 15*, 192–238.

Kohlberg, L. (1964). Development of moral character and moral ideology. In M. Hoffman & W. Hoffman (Eds.), *Review of child development research* (Vol. 1). New York: Russell Sage.

Lakatos, I. (1974). The role of crucial experiments in science. *Studies in the History and Philosophy of Science, 4*, 309–325.

Langer, E. (1978). Rethinking the role of thought in social interaction. In J. H. Harvey, W. Ickes, & R. Kidd (Eds.), *New directions in attribution research* (Vol. 2). Hillsdale, N.J.: Erlbaum.

Lazarus, R. (1982). Thoughts on the relationship between cognition and affect. *American Psychologist, 37*, 1019–1024.

Mandler, G. (1984). *Mind and body*. New York: Norton.

Mehrabian, A. (1968). Inference of attributions from the posture, orientation, and distance of a communicator. *Journal of Consulting and Clinical Psychology, 32*, 296–308.

McGuire, W. J. (1983). A contextualist theory of knowledge: Its implications for innovation and reform in psychological research. In L. Berkowitz, (Ed.), *Advances in experimental social psychology* (Vol. 16). New York: Academic Press.

Molberg, A. N. (1977). The effects of interpersonal distance, physical attractiveness, and sex on impression formation. *Dissertation Abstracts International*, 6408b.

Motley, M. (1986). Consciousness and intentionality in communication: A preliminary model and methodological approaches. *Western Journal of Speech Communication, 50*, 3–23.

Murphy-Berman, V., & Berman, J. (1978). The implications of choice and sex in invasions of interpersonal space. *Personality and Social Psychology Bulletin, 4*, 424–428.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we know: Verbal reports on mental processes. *Psychological Review, 84*, 231–259.

Patterson, M. (1968a). *Social space and social interaction*. Unpublished doctoral dissertation, Northwestern University.

Patterson, M. (1968b). Spatial factors in social interactions. *Human Relations, 21*, 351–361.

Patterson, M. (1976). An arousal model of interpersonal intimacy. *Psychological Review*, 83, 235–245.

Patterson, M. (1978). Arousal change and cognitive labeling: Pursuing the mediators of intimacy exchange. *Environmental Psychology and Nonverbal Behavior, 1*, 17–22.

Patterson, M. (1982). A sequential functional of nonverbal exchange. *Psychological Review, 89*, 231–249.

Patterson, M. (1983a). *Nonverbal behavior: A functional perspective*. New York: Springer-Verlag.

Patterson, M. (1983b). Theoretical approaches to nonverbal exchange: A brief historical perspective. *Academic Psychology, 5*, 375–388.

Patterson, M., Jordan, A., Hogan, M., & Ferker, D. (1981). Effects of nonverbal intimacy on arousal and behavioral adjustment. *Journal of Nonverbal Behavior, 5*, 184–198.

Patterson, M. L., & Powell, J. C. (1987). *A test of the intimacy-arousal and functional models of nonverbal exchange*. Unpublished manuscript, University of Missouri-St. Louis.

Patterson, M., & Sechrest, S. (1970). Interpersonal distance and impression formation. *Journal of Personality, 38*, 161–166.

Rosenberg, M. J. (1965). When dissonance fails: On eliminating evaluation apprehension from attitude measurement. *Journal of Personality and Social Psychology, 1*, 28–42.

Schachter, S., & Singer, J. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review, 69*, 379–399.

Schlenker, B. R. (1980). *Impression management*. Monterey, CA.:Brooks/Cole.

Siegman, A. W., & Feldstein, S. (1978). *Nonverbal behavior and communication*. Hillsdale, New Jersey: Erlbaum.

Skolnick, P., Frasier, L., & Hadar, I. (1977). Do you speak to strangers? A study of personal space invasions. *European Journal of Social Psychology, 7*, 375–381.

Smith, R., & Knowles, E. (1978). Attributional consequences of personal space invasions. *Personality and Social Psychology Bulletin, 4*, 429–433.

Smith, R., & Knowles, E. (1979). Affective and cognitive mediators of spatial invasions. *Journal of Experimental Social Psychology, 15*, 437–452.

Storms, M., & Thomas, G. (1977). Reactions to physical closeness. *Journal of Personality and Social Psychology, 35*, 412–418.

Street, R. L., & Giles, H. (1982). Speech accommodation theory. In M. E. Roloff & C. R. Berger (Eds.), *Social cognition and communication*. Beverly Hills, CA.: Sage.

Tesch, F. E., Huston, T., & Indenbaum, E. (1973). Attitude, similarity, attraction, and physical proximity in a dynamic space. *Journal of Applied Social Psychology, 3*, 63–72.

Walden, T., & Forsyth, D. (1981). Close encounters of the stressful kind: Affective, physiological, and behavioral reactions to the experience of crowding. *Journal of Nonverbal Behavior, 6*, 46–64.

Weiner, B. (1985). Spontaneous causal thinking. *Psychological Bulletin, 97*, 74–84.

Wegner, D., & Vallacher, R. (1977). *Implicit psychology*. New York: Oxford.

Winter, L., & Uleman, J. S. (1984). When are social judgments made? Evidence for the spontaneousness of trait inferences. *Journal of Personality and Social Psychology, 47*, 237–252.

Worchel, S., & Yohai, Y. (1979). The role of attribution in the experience of crowding. *Journal of Experimental Social Psychology, 15*, 91–104.