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A study of uncertainty, information-seeking, and interaction involvement in initial conversations

Ludlum, John Thomas, Ph.D.
The Ohio State University, 1993
I am grateful to Dr. Donald J. Cegala for his support and guidance throughout my graduate career and during the process of completing this dissertation. He has had a significant impact on the direction of my research interests, and made many useful suggestions concerning this study and document. During the last year, he has repeatedly sacrificed his own time to assure rapid turnaround on drafts, or to assist in various details. I am grateful for his mentorship.

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CHAPTER I
INTRODUCTION

Introduction

Conversation, no matter how "casual," can be an impressive social accomplishment. While "the ordinary person rarely reflects upon the vastness of the knowledge store that is required to carry it on" (McLaughlin, 1984, p. 14), communication research indicates that the "simple" art of conversation requires, among other things, tacit mastery of: guidelines and procedures for maintaining coherence, managing turns, and repairing conversational gaps (e.g., Craig & Tracy, 1984; McLaughlin, 1984); strategies for identifying, initiating, managing, and shifting topics (e.g., Tracy, 1985; Wardhaugh, 1985); and tactics for managing the self-concepts of both conversant and interlocutor (e.g., Goffman, 1959, 1967). Even the simple process of constructing and encoding messages appears to involve surprisingly complex action/assembly processes (e.g., Greene, 1984, 1989; Greene, McDaniel, Buska & Ravizza, 1993).

While many conversational tasks are enacted with minimal "mindfulness" (e.g., Kellerman, 1992; Langer, 1978,
1989, 1992), research in interpersonal communication makes it increasingly clear that there are significant variations in individual competence in conversation (e.g., Cegala, 1981, 1982b, 1986; Spitzberg & Cupach, 1984) and that these differences in conversational competence are related to conversationalists' self-esteem and mood (e.g., Cegala, 1984; Cegala, Savage, Brunner & Conrad, 1982; McCroskey & Richmond, 1986). It would also appear that some of these differences may relate to differing patterns of thought among more and less competent conversationalists (e.g., Cegala et al., 1988; Cegala & Waldron, 1992).

Conversation can be a particular challenge when meeting and conversing with strangers (e.g., Berne, 1972; Phillips, 1981). Since such interactions form an important basis for success in both careers (e.g., job networking and business contacts) and personal life (e.g., courtship and development of friendships), it is understandable that there is considerable interest among lay audiences in texts that promise to increase understanding of the processes of conversation (e.g., Berne, 1972; Phillips, 1981; Tannen, 1986; 1990).

Research in the cognitive processes underlying conversation provides one method by which communication scholars can uncover these processes. In addition, the study of initial conversations can make valuable contributions to our understanding and appreciation of
conversation in general (e.g., Nofsinger, 1991, pp. 2-3) and, perhaps, to other forms of communication (e.g., Berger & Calabrese, 1975, p. 110; Nofsinger, 1991, p. 2). And, as Burleson (1992) has recently noted, the study of communication should focus on such questions as "What is that people do when they communicate with one other?" and "Why do they communicate with one another" (p. 82)?

Since the 1970s, most research and theory concerned with the study of initial conversations has focused on "Uncertainty Reduction Theory" (e.g., Berger, 1979, 1987; Berger & Bradac, 1982; Berger & Calabrese, 1975; Berger & Roloff, 1982). Long hailed as one of the first communication theories that borrowed little from other disciplines (e.g., Knapp & Miller, 1985, p. 9), Uncertainty Reduction Theory has become "paradigmatic" (Kuhn, 1970) in its influence; increasingly, one cannot study conversation without employing the Uncertainty Reduction model.

While Uncertainty Reduction Theory has clearly demonstrated its heuristic value by stimulating considerable research in a variety of interest areas, especially relational (e.g., Baxter & Wilmot, 1984; Parks & Adelman, 1983; Planalp & Honeycutt, 1985; Planalp, Rutherford & Honeycutt, 1988; Prisbell & Andersen, 1980) and cross-cultural/intercultural communication (e.g., Gudykunst, 1985; Gudykunst & Nishida, 1984, 1986a; Gudykunst, Yang, & Nishida, 1985), few studies have
directly tested the theory in initial interactions (Douglas, 1990b, pp. 66-67).

Further, a growing body of research suggests that fundamental assumptions of the theory may be flawed. Both Kellerman and Reynolds (1990) and Sunnafrank (1986) have presented alternative models, but neither has been tested directly in initial interactions. In addition, both Uncertainty Reduction Theory and its primary alternatives assume that uncertainty reduction is the primary goal of conversants in initial interactions. This position is increasingly tenuous in light of current theory and research which suggests that: 1) communication may be driven by multiple goals (e.g., Cegala & Waldron, 1992; Clark & Delia, 1979; Dillard, Segrin, & Harden, 1989; Tracy, 1991), and 2) communicators may function with minimal "mindfulness" (Langer, 1978, 1989) in many situations (e.g., Kellerman, 1992).

In addition, most tests of Uncertainty Reduction Theory have employed procedures that may limit their utility as reliable tests of the theory (e.g., the use of correlational data can provide only a partial test of the causal relationships posited in the theory). The reintroduction of procedures designed to tap ongoing cognition (e.g., Cegala & Waldron, 1992; Cegala et al., 1988; Daly, Weber, Vangelisti, Maxwell & Neel, 1989;
Waldron, 1990), makes it possible to explore relationships between uncertainty and communication behaviors more fully, by providing data relevant to temporal relationships.

Finally, research evidence concerning the construct of interaction involvement (Cegala, 1981, 1984) suggests that some of the relationships posited by Uncertainty Reduction Theory may be influenced by interaction involvement. For example, evidence suggests that interaction involvement has important impacts on both competence and confidence in initial interaction (e.g., Cegala, 1981, 1982b; Cegala et al., 1982). More recent evidence suggests that one explanation for this effect is that interaction involvement may influence both perceived uncertainty (e.g., Cegala, 1989; Cegala et al., 1988; Villaume & Cegala, 1990) and conversational methods that may reduce uncertainty (e.g., Ludlum, 1988; Villaume, 1988; Villaume & Cegala, 1988).

Thus, this dissertation is based upon two primary goals. First, it seeks to test directly some of the fundamental premises and axioms of Berger and Calabrese’s (1975) original formulation of Uncertainty Reduction Theory and two competing explanations using a multi-method procedure. Specifically, it will employ stimulated recall procedures to replicate existing research findings that over the course of initial interactions there are decreases in uncertainty and information-seeking, and will employ both stimulated recall procedures and traditional methods
to test three competing explanations of the relationship between uncertainty and information-seeking.

Second, the dissertation will explore the impact of interaction involvement (Cegala, 1981, 1984) on initial interaction and uncertainty reduction processes, by exploring both the direct effects of uncertainty and interaction involvement on communication behaviors and outcomes, and their interaction. Specifically, the dissertation will explore the relationships between interaction involvement and: expressed uncertainty, information-seeking, tolerance for uncertainty, predicted outcome values of self and partner and liking. In addition, the effects of both uncertainty and interaction involvement on liking will be compared.

In order to clarify these goals, and establish a rationale for hypotheses, research questions, and procedural study, the remainder of this chapter is divided into five main sections. The first section provides a review of the basic premises of Uncertainty Reduction Theory. The second section provides a review of research evidence concerning uncertainty reduction processes in initial interaction, and introduces several important, unanswered questions concerning the theory and its assumptions. The third section is devoted to a discussion of the procedures employed to study uncertainty, the limits imposed by those procedures, and the potential utility of
stimulated recall procedures in this area. The fourth section of the chapter reviews research concerning interaction involvement and its potential role in uncertainty reduction processes. Following these reviews, in the fifth section, hypotheses and research questions are presented and discussed.

Uncertainty Reduction Theory: An Introduction

While many argue that the communication discipline is pre-paradigmatic (e.g., Knapp & Miller, 1985, p. 11), it would appear that empirical research in initial interaction is rapidly approaching Kuhn's (1970) view of "normal science;" most researchers seem to have accepted the epistemological assumptions and research practices of uncertainty reduction approaches and current research generally focuses on ways to resolve dilemmas between research results and theory by adding new elements to the theory, rather than rejecting its basic tenets.

Because paradigms can both focus and limit research (see, especially, Bochner, 1985, p. 27; Kuhn, 1970, pp. 23-34), it is relevant to examine Uncertainty Reduction Theory and related research in more detail. As a starting point, this section will present a summary of the important assumptions, axioms and theorems of Uncertainty Reduction Theory as articulated by Berger & Calabrese (1975). An understanding of the theory relies on four elements: the
objectives of its authors, central assumptions, axioms, and theorems.

Objectives. Berger and Calabrese (1975) sought to develop a theory of initial interaction grounded in "communication-relevant constructs" which could lead to an organizing explanation of communication behavior in "the initial phases of interaction with strangers" (p. 99). This was a daunting quest; as the authors noted, earlier researchers interested in interpersonal communication had "tended to employ social psychological theories as starting points" (p. 99). In contrast, Berger and Calabrese’s theory promised to provide a communication-based theory that could organize existing research in terms of a limited number of axiomatic relationships. In fact, much of the paradigmatic tenacity of Uncertainty Reduction Theory may be based on its ability to provide a "grand theory" for communication research that minimized cognitive assumptions and to provide theorems that can be tested directly through observation of communication behavior.

Assumptions. The original theory, and subsequent explanations and extensions (e.g., Berger, 1979, 1987; Berger & Bradac, 1982; Berger, Gardner, Parks, Schulman & Miller, 1976), is rooted in two critical assumptions.

First, Berger and Calabrese argued that "when strangers meet, their primary concern is one of uncertainty reduction or increasing predictability about the behavior
of both themselves and others in the interaction" (Berger & Calabrese, 1975, p. 100).

This is an important assumption, for at least two reasons. First, as Kellerman and Reynolds (1990) have written, "the [initial] theory presupposes that individuals are motivated to reduce uncertainty" (p. 8). While subsequent extensions have modified this assumption somewhat (see, especially, Berger, 1979; Berger & Bradac, 1982), the central logic of the theory is that the patterns in communication can best be explained by a motivation (at least tacit) to reduce uncertainty. Second, uncertainty reduction is seen as the primary goal of interactants in initial conversations. The primacy of the uncertainty reduction goal is important, for it has allowed uncertainty reduction theorists to distinguish their perspective from those of "social penetration theory" (Altman & Taylor, 1973) and "social exchange" approaches (e.g., Blau, 1964; Homans, 1961; Thibaut & Kelley, 1959) which posit that evaluation of social rewards drives relationship development (see, Berger & Calabrese, 1975, p. 101).

The second important assumption was definitional — "uncertainty reduction" has been defined narrowly, as the desire of conversants to "increase predictability about themselves and others in the interaction" (Berger & Calabrese, 1975, p. 100). Berger and Calabrese were somewhat ambiguous, suggesting that uncertainty "subsum[es]
the notion of similarity-dissimilarity and the related
notions of balance" (p. 107) but focusing their initial
explanation on notions of "proactive" (i.e., predictive)
and "retroactive" (i.e., explanatory) attribution (pp. 100-
101). However, a closer examination of the initial theory,
combined with both later explanations (e.g., Berger, 1979,
pp. 123-124; 1987, pp. 41-42; Berger & Bradac, 1982, pp. 6-
9; Berger et al., 1976, pp. 150-154) and the primary
measures of uncertainty (e.g., Clatterbuck, 1979), makes it
clearer that "uncertainty" is focused exclusively on
"attributional confidence" (or confidence in abilities to
predict and explain own and partner's behaviors and
attitudes).

This assumption is important, for it further narrows
the presumed goals of conversation. In light of the
definitional assumption, Uncertainty Reduction Theory can
be seen as assuming that participants are primarily
concerned with decreasing attributional uncertainty. Thus,
Uncertainty Reduction Theory would not encompass
uncertainty concerning conversational rules or even topic
selection, unless that uncertainty was linked to concerns
for predicting or explaining interlocutors' behaviors.

Axioms. Based on these assumptions, and earlier
research concerning the variables of "amount of
communication" (i.e., research on speaking time) "nonverbal
affiliative expressiveness" (e.g., Mehrabian, 1971),
"information-seeking" (research on question-asking), "intimacy level of content" (research on the intimacy of self-disclosure), "reciprocity rate" (research on speech rates and self-disclosure), similarity (balance theory research) and liking (e.g., social comparison approaches), Berger and Calabrese advanced seven axioms that posit causal relationships between uncertainty and these seven variables:

Axiom 1: Given the high level of uncertainty present at the onset of the entry phase, as the amount of verbal communication between strangers increases, the level of uncertainty for each interactant will decrease. As uncertainty is further reduced, the amount of verbal communication will increase. (p. 102)

Axiom 2: As nonverbal affiliative expressiveness increases, uncertainty levels will decrease in an initial interaction situation. In addition, decreases in uncertainty level will cause increases in nonverbal affiliative expressiveness. (p. 103)

Axiom 3: High levels of uncertainty will cause increases in information-seeking behavior. As uncertainty levels decline, information-seeking behavior decreases. (p. 103)

Axiom 4: High levels of uncertainty in a relationship cause decreases in the intimacy level of communication content. Low levels of uncertainty produce high levels of intimacy. (p. 103)

Axiom 5: High levels of uncertainty produce high rates of reciprocity. Low levels of uncertainty produce low reciprocity rates. (p. 105)

Axiom 6: Similarities between persons reduce uncertainty, while dissimilarities produce increase in uncertainty. (p. 106)
Axiom 7: Increases in uncertainty level produce decreases in liking; decreases in uncertainty level produce increases in liking.

It is important to note that these axioms posit causal relationships, not merely coincidental variations. For example, the theory goes beyond the prediction that both uncertainty and information-seeking will decrease during initial interactions; Axiom 3 suggests that information-seeking is caused by uncertainty.

Theorems. Given the relationships advanced in these seven axioms, Berger and Calabrese developed 21 theorems that predict positive and negative correlations between the seven communication-related variables, exclusive of uncertainty.

For example, from Axiom 3 (positing a causal relationship between uncertainty and information-seeking) and Axiom 7 (which posits a causal relationship between uncertainty and decreased liking), Berger and Calabrese advanced "Theorem 17: Information-seeking and liking are negatively related" (p. 109).

It is important to make two notes about the theorems. First, the theory is designed to allow for testing via the theorems (which may be tested through observation of communication behavior and attitude tests), rather than testing of the axioms (which would require cognitive measurement for direct testing).
Second, this logic is based on another assumption—that no other factors influence the key variables. Thus, while failure to support the theorems would indicate flaws in the theory's logic, it does not necessarily mean that uncertainty has no effects on these variables; theorems might be flawed by the presence of other relationships between the central variables of the theory (e.g., a direct relationship between liking and similarity) or by the presence of additional variables not included in the theory (e.g., relationships due to individual differences, such as interaction involvement or communication apprehension). By the same logic, validation of individual theorems does not necessarily validate the theory; what appears to be required is a concurrent test of all relationships, at least at the level of the theorems.

**Summary.** In sum, Uncertainty Reduction Theory advances three levels of premises. The theory is based on two central assumptions: 1) that uncertainty reduction is the primary goal of all participants in initial interaction, and 2) that uncertainty reduction is synonymous with a desire to increase attributional confidence. These assumptions lead to seven axioms, positing causal relationships between uncertainty levels and aspects of communication behavior (e.g., information-seeking, nonverbal affiliative behaviors), attitudes (e.g., liking), and perceptions (e.g., similarity). From these
assumptions, 21 theorems are derived, which allow for testing of the theory.

Given the theory's organization, the validity of Uncertainty Reduction Theory relies on the answers to three questions: 1) do tests of the theorems yield results consistent with the theory? 2) if not, what research evidence can be marshalled to support the axioms of the theory, and 3) what evidence is there that the theoretical assumptions are accurate? Research evidence relevant to these questions is addressed in the following section of this review.

Uncertainty Reduction Theory: A Review of Research Evidence

Given the fact that Uncertainty Reduction Theory remains the dominant explanation for initial interaction, it is surprising to discover that little direct research can be found to support its theorems or axioms. In fact, a review of the research evidence relevant to Uncertainty Reduction Theory indicates that: 1) most research employed to test the theory is limited by procedural difficulties; 2) research concerning the theorems is limited and often contradictory; and 3) research concerning the axioms is generally inconclusive. Further, there is growing reason to question the basic assumptions of the theory.
Procedural difficulties. While an impressive number of studies have been conducted under the Uncertainty Reduction Theory paradigm, at least five factors would suggest great caution in generalization.

First, a number of studies have employed uncertainty reduction concepts and practices in studies of cross-cultural communication (e.g., Gudykunst, 1983; Gudykunst & Nishida, 1986a; Gudykunst, Nishida & Schmidt, 1989; Gudykunst, Yang & Nishida, 1985), intercultural communication (e.g., Gudykunst, 1985; Gudykunst, Chua, & Gray, 1987; Gudykunst & Nishida, 1984), and even interethnic communication (e.g., Gudykunst & Hammer, 1988; Gudykunst, Sodentani, & Sodona, 1987). However, one of the important findings from this research is that both motivation to reduce uncertainty and the processes employed to accomplish this goal are influenced by national culture (e.g., Gudykunst, 1983; Gudykunst & Nishida, 1984, 1986a; Gudykunst et al., 1989). If this finding is valid, it should be clear that tests in other cultures cannot be used to verify the theory in American culture.

Second, most studies of uncertainty reduction premises in American culture have been conducted in relationships (e.g., Berger & Roloff, 1982; Parks & Adelman, 1983; Planalp & Honeycutt, 1985; Prisbell & Andersen, 1980; VanLear & Trujillo, 1986). Such studies testify to the heuristic value of the theory, but research in relational
settings cannot provide direct evidence concerning patterns in initial interactions (Douglas, 1990, pp. 66-67).

Third, several important studies of uncertainty in initial interactions have employed simulations (e.g., Gudykunst & Nishida, 1984; Kellerman & Reynolds, 1990). As Sunnafrank’s research (1983, 1985) suggests, simulations may eliminate important cues provided by the other’s presence. Thus, findings from simulation-based research may not accurately reflect perceptions occurring in interactions.

Fourth, most studies of information-seeking in initial interactions (e.g., Berger & Douglas, 1981; Berger & Kellerman, 1983; Berger & Perkins, 1978; Douglas, 1987; Kellerman, 1986; Kellerman & Berger, 1984) have excluded measures of uncertainty; while these studies are important, they provide little direct evidence concerning the axioms of the original theory.

Fifth, in several important studies, researchers have employed self-report measures of communication behaviors (e.g., Sunnafrank, 1990, and all of the relational studies). While self-reports may be the only available methods of assessing outcome variables like liking and perceived similarity, they are obviously less accurate measures of communicative behavior (e.g., "amount of communication," "nonverbal affiliative expressiveness," "reciprocity," "content intimacy" and various forms of
information-seeking) than would be video-assisted coding (see, for example, Benoit & Benoit, 1988; Jones, 1991).

Even if we ignore these procedural problems, it is difficult to find firm evidence supporting Berger and Calabrese’s original premises. In an effort to present a clearer picture of the available evidence, the following review is organized in order of increasing complexity. First, we will examine evidence related to the theorems, then the axioms and, finally, the assumptions.

**Theorems.** As noted earlier, the simplest test of Uncertainty Reduction Theory focuses on its theorems; if no support can be found for the theorems, the logic of the theory must be flawed in some way. Unfortunately, available research is generally inconclusive, and occasionally contradictory, as reflected in the following three general conclusions.

First, for the majority of the theorems (13 of 21), there are no direct tests in initial interaction settings. Neither Berger and Calabrese (1975) nor any extant research (in either initial interactions or relationships) provides any evidence concerning five of them (Theorems 4, 9, 13, 16 and 20, which relate reciprocity rates to amount of communication, nonverbal affiliative expressiveness, intimacy level of communication content, information-seeking and similarity).
There is no new evidence in initial interactions concerning Theorem 5. Although Gudykunst (1985) reported that there were no significant correlations between length of relationship and liking, it seems inappropriate to equate "length of relationship" with "amount of communication" and the Gudykunst study concerned relationships.

There exists no new evidence in initial interaction contexts for Theorems 1, 2, 6, and 7 and, although there is supporting evidence in relational contexts, (Gudykunst, 1985, Gudykunst & Hammer, 1988; Gudykunst, Sodetani, & Sonoda, 1987), this evidence is weakened by use of self-reports and simulations. For example, Gudykunst, Sodetani, and Sonoda (1987) reported significant positive correlations for a Caucasian sample between self-reports of "amount of communication" and self-reported use of behaviors indicative of "nonverbal affiliation," which supports Theorem 1, but rather weakly.

Results of a "bogus stranger" simulation (Gudykunst & Nishida, 1984) lend some support to Theorems 10, 11, and 14, and Theorems 11 and 14 are also supported by two of the relational studies cited above (Gudykunst, 1985; Gudykunst et al., 1987). However, these results are, at best, weakly supportive, because of the use of self-reports.

Second, indirect evidence (drawn from relationships, simulations, and self-reports) appears to contradict five
of the theorems (Theorems 3, 8, 12, 17 and 19).

Theorem 3 predicts that "amount of communication and information-seeking are inversely related" (Berger & Calabrese, 1975, p. 107), but growing evidence contradicts this prediction. Relational research has reported positive correlations between interrogation (the most consistent form of information-seeking) and both "amount of communication" (Gudykunst, Sodetani, & Sonoda, 1987; Gudykunst, Yang, & Nishida, 1985) and "length of relationship" (Gudykunst, 1985). Additionally, Sunnafrank (1990) reported positive correlations between self-reports of amount of communication and self-reported interrogation, self-disclosure, and nonverbal encouragement. The most direct evidence comes from Kellerman and Berger's (1984) study of communication patterns in initial interactions; they reported no significant differences in talk-time measures between subjects who were instructed to seek as much information as possible and those who were instructed to seek as little information as possible. (It should be noted that, since Kellerman and Berger did not test the correlations between their measures of talk-time and information-seeking, the test is less than direct.)

Theorem 8 predicts that "nonverbal affiliative expressiveness and information-seeking are inversely related" (Berger & Calabrese, 1975, p. 108). Berger and Calabrese presented no evidence to support this theorem,
and positive correlations have been reported in studies employing "bogus stranger" simulations (Gudykunst & Nishida, 1984), self-reports on relationships (Gudykunst et al., 1987) and self-reports based on initial interactions in a classroom (Sunnafrank, 1990). Kellerman and Berger (1984) reported that there were no significant differences in frequency of smiling or positive head nods between subjects in the "High Seeking" and "Low Seeking" conditions. However, it should be noted that this was, again not designed as a direct test, and that the nonverbal measures employed by Kellerman and Berger are only a portion of those identified by Mehrabian (1971) as indicative of nonverbal affiliative expressiveness (see, also, Berger and Calabrese, 1975, p. 102).

Theorem 12 suggests that "intimacy level of communication content and information-seeking are inversely related" (Berger & Calabrese, 1975, p. 109), but, again, research appears weakly contradictory. In his study of self-reports from dyads, Sunnafrank (1990) reported a positive correlation between reported content intimacy and both interrogation and self-disclosure. In addition, both "bogus stranger" (Gudykunst & Nishida, 1984) and relational (Gudykunst, 1985) studies have reported positive relationships between self-reported interrogation and self-reports of self-disclosure which appear to include "depth" measures. Finally, in two studies of relationships,
"relational intimacy" was positively correlated with reported tendencies to interrogate (Gudykunst & Hammer, 1988; Gudykunst, Sodetani & Sonoda, 1987).

Theorem 17 posits a negative relationship between information-seeking and liking, but positive correlations have been reported in relational studies (Gudykunst, 1985; Gudykunst et al., 1985), in studies employing "bogus strangers" (Gudykunst & Nishida, 1984), in Kellerman and Reynolds's (1990) study employing hypothetical scenarios, and in Sunnafrank's study of self-report data drawn from initial interactions.

Theorem 19 suggests that "reciprocity rate and liking are negatively related" (Berger & Calabrese, 1975, p. 109) but Berger et al. (1976) reported that readers were more attracted to "participants" in transcripts where disclosure rates were reciprocal. Obviously, this finding is weakened by both the use of experimenter-constructed transcripts (which appear to have been rather deviant) and observer, rather than participant ratings.

Third, available evidence for three of the theorems (Theorems 15, 18, and 21) suggests that relationships between "similarity" and other variables varies with the type of "similarity" considered.

For example, Theorem 15 posits a positive relationship between intimacy level of content and similarity. However, the actual relationship appears to be a complicated one.
In studies of relationships, correlations between reports of self-disclosure and perceived homophily were significant in one study (Gudykunst, 1985), but a second study reported that only "attitude-value homophily" was significantly correlated with self-reported depth of disclosure (while "background" and "appearance" homophily were not). This would suggest that attitudinal homophily was more important, but a "bogus stranger" study indicated that manipulations of attitudinal similarity had no significant effect on intent to disclose (Gudykunst & Nishida, 1984). To further complicate matters, the same study reported that a manipulation of cultural similarity yielded significant differences, but that the effects were opposite those predicted -- subjects reported more likelihood to disclose information to culturally dissimilar strangers!

Similarly, Theorem 18 suggests that "information-seeking and similarity are negatively related" (Berger & Calabrese, 1975, p. 109), but both significance and direction appear to be related to how similarity is conceptualized. Studies in which cultural dissimilarity was manipulated, either via selection of similar/dissimilar relational partners (Gudykunst, 1985) or via a "bogus stranger" manipulation (Gudykunst & Nishida, 1984) have yielded non-significant and significant effects respectively on interrogation, while a manipulation of attitudinal similarity (via "bogus stranger") resulted in
nonsignificant effects in both studies. Two relationship studies reported positive relationships between perceived attitudinal homophily and both intent to interrogate (Gudykunst, 1985; the relationship is significant in both culturally similar and culturally similar relationships) and a latent measure of "interactive uncertainty reduction strategies" (Gudykunst et al., 1985). Gudykunst et al. (1987) reported a negative, but not significant correlation for Caucasian Hawaiians, and a positive correlation for Japanese-American citizens of Hawaii.

Theorem 21, that "similarity and liking are positively related" (Berger & Calabrese, 1975, p. 109) is perhaps the most logically compelling of all 21. Berger and Calabrese marshalled impressive evidence to support it, and it has been generally supported in relational research (e.g., Gudykunst, 1985; Gudykunst & Nishida, 1984; Gudykunst et al., 1985). However, Gudykunst and Nishida also report that a cultural similarity manipulation did not create significant differences in reported attraction, and Sunnafrank (1983; 1985, 1991, 1992; Sunnafrank & Miller, 1981) has reported considerable research evidence that, while attitudinal similarity may influence liking before conversation, the difference vanishes after initial interaction.

In sum, there are two concerns with existing research concerning the theorems of Uncertainty Reduction Theory.
First, the majority of theorems have never been tested in initial interactions. Second, evidence concerning the eight tested theorems is, at best, indirect and often contradictory.

Together, this evidence suggests that: 1) it is important to develop more direct tests of these theorems, using conversational data; and 2) there is reason to believe that the relationships posited by the theory are complicated by intervening variables. It also emphasizes the importance of reviewing available research evidence concerning the axioms upon which they are based.

**Axioms.** There is little research designed to test Berger and Calabrese's axioms in initial interaction. Given the design of the theory, this is understandable. However, given the mixed results of tests of the theorems of Uncertainty Reduction Theory, it seems important to examine the available evidence more closely. It is, at best, tenuous.

Axiom 1 posits a two-way, inverse, causal relationship between uncertainty and amount of communication. The initial evidence presented by Berger and Calabrese is based on the observation that both decline over time. It should be noted that the data for both conclusions are drawn from the same finding (that speaking rate increased over time). Further, since one foundation of causality is correlation, declines in both rates would be indicative of causal
relationships only if the rates of decline were correlated.

Relational studies provide only mixed support for Axiom 1, while studies in initial interaction provide indirect refutation. Studies of relationships with American, Japanese and Hawaiian caucasian samples have reported positive and significant correlations between attributinal confidence and both "length of relationship" (Gudykunst, 1985; Gudykunst & Nishida, 1986a) and self-reports "amount of communication" during the two weeks prior to the study (Gudykunst et al, 1987; Parks & Adelman, 1983), which conforms to the correlational prediction for initial interactions. However, other studies have reported no significant correlation for American acquaintanceship and dating relationships (Gudykunst et al., 1985), nor any significant relationship between "amount of communication" with a dating partner and time-delayed measures of uncertainty (Parks & Adelman, 1983).

In a test using self-reports, Sunnafrank (1990) reported no main effect of "attributinal confidence" on subjects' self-reports of the "amount of communication" they contributed to a conversation. Of course, Sunnafrank's data are also subject to errors of recall, and none of the measures seem to reflect Berger and Calabrese's initial definition of this variable.

Research conducted by Kellerman and Berger (1984) provides partial contradiction to Axiom 1. These authors
included "vocalization length" (a measure similar to speaking rate) in their analysis of relaxation tactics during initial conversation. Their results indicated cycles in vocalization length over time, with a slight upward trend. Kellerman and Berger did not measure uncertainty, and their manipulation of tasks may have influenced results, but if vocalization length is a valid measure of "amount of communication," the finding of cyclic patterns tends to refute the assumption that "amount of communication" declines throughout initial interactions, which served as the basis for the axiom.

Thus, while existing data are not direct, they suggest that the relationship between uncertainty and amount of communication is a tenuous one. Of course, if uncertainty is also cyclic in initial interactions, the relationship between uncertainty and amount of communication may be validated by more direct tests.

However, research on conversational coherence (e.g, Villaume & Cegala, 1988) suggests that while uncertainty may be accompanied by different tactics (these authors have distinguished between "text-based" and "mind-based" tactics) several of these tactics allow conversants to continue communicating under conditions of uncertainty. Given access to communicative tactics for "passing the conversation" during periods of uncertainty, we should not expect that uncertainty would necessarily be accompanied by
pause. In fact, two uncertain communicators might rapidly pass the conversation back and forth until the uncertainty could be temporarily resolved. These speculations could be resolved through testing that provides an ongoing measure of uncertainty.

Tests of Axiom 2, which posits a two-way, inverse, causal relationship between uncertainty and nonverbal affiliative expressiveness are limited by use of self-report measures. This is troublesome given the relatively subtle nature of nonverbal behavior (e.g., Benoit & Benoit, 1988) and the potential for effects caused by implicit attributions (e.g., Nisbett & Wilson, 1973). However, the existing research supports a weak but significant correlation in relationships (Gudykunst & Nishida, 1984; Gudykunst et al., 1987), that may not extend to initial interactions (Sunnafrank, 1990, reports no significant direct correlation). Kellerman and Berger (1984) reported that time-related patterns of nonverbal behaviors were not consistent. Frequencies of smiles decreased over time (in direct opposition to the tendency predicted by uncertainty theory); frequencies of head nods did not change over time; changes in frequency of forward body lean were influenced by experimental condition.

Again, the data are inconclusive. However, Kellerman and Berger's evidence suggests that: 1) patterns in the various forms of nonverbal affiliate behavior may not
exhibit the same trajectories, and 2) nonverbal behavior can be used as an element in complex information-seeking strategies, which would reverse the correlation presented by Berger and Calabrese. Again, research employing observational measures of nonverbal affiliative expressiveness and on-going measures of uncertainty seem appropriate.

Axiom 3 suggests that high uncertainty causes increased information-seeking, and that declining uncertainty leads to decreases in information-seeking. Studies of initial interaction provide evidence that: 1) information-seeking, especially question-asking, decreases over time (e.g., Berger & Kellerman, 1983; Calabrese, 1975; Douglas, 1987; Frankfurt, 1965; Kellerman, 1984; Kellerman & Berger, 1984; Motl, 1980), 2) uncertainty declines over time (especially, Douglas, 1990b, but also Clatterbuck, 1979), 3) global desires for information are somewhat different following an initial conversation than before (Kellerman, 1986) and 4) question-asking is greater in "ambiguous" than in "specific" situations (Rubin, 1977).

However, the fact that both variables decline over time does not mean that they decline at the same rate; in fact Douglas (1990b) has reported evidence that suggests that the rates of decline are different.

More importantly, these data provide no evidence that uncertainty causes question-asking. As Kellerman and
Reynolds (1990) note, "information-seeking . . . could be a cause of uncertainty, rather than its effect, or could be indirectly related to uncertainty due to the influence of some third variable" (p. 8). Studies conducted in relational contexts consistently report either results opposite those predicted by the theory (Gudykunst, 1985; Gudykunst et al., 1985) or nonsignificant correlations (Gudykunst et al., 1987).

Because Axiom 3 is central to this dissertation, it is relevant to discuss four recent tests in more detail. Douglas (1990b) assigned 78 subjects to same-sex dyads and asked them to participate in conversations. Subjects were told that the study was concerned with impression-making and that, after the conversation, subjects would participate in a second conversation, which could involve their partner, if both agreed. One-third of the conversations were halted after two minutes, another third after four minutes, and the final third after six minutes. Conversations were tape-recorded, and subjects completed several measures of uncertainty (as well as a variety of other measures) following the conversations. Results indicated that: 1) subjects who interacted for six minutes reported less conversational uncertainty than those who interacted for two or four minutes, 2) question-asking was more frequent during the first two minutes of the conversation than during the subsequent minutes of the
conversation, 3) disclosure was greater during the fifth and sixth minutes of conversation than in earlier phases, and 4) global uncertainty (measured via the CL7) was positively correlated with question-asking ($r = .24$) and negatively correlated with self-disclosure. These results confirm Axiom 3, at least as it applies to question-asking.

In a subsequent study, employing similar instructions, Douglas (1990a) asked 72 subjects to complete a version of the CL7 before and after meeting their partner and following a four-minute conversation. Results indicated that uncertainty decreased across time (from no meeting, to meeting, to end of conversation); although no tests between times are reported, the decline from post-observation to post-conversation is more than double the decline between pre-observation and post-observation conditions. However, none of the correlations between uncertainty scores and question-asking (coded as a proportion of conversational units during each 30-second segment of the conversation) were significant. While these results directly contradict Axiom 3, it appears possible that the administration of the CL7 would prompt question-asking among all subjects. Thus, this test is far from conclusive.

Kellerman and Reynolds (1990) asked 1,159 students to respond to one of 12 hypothetical scenarios. Among other measures, each subject completed measures of uncertainty (revised from the CL7), "tolerance for uncertainty" and
anticipated information-seeking. Results indicated that uncertainty was not highly correlated with anticipated information-seeking (average effect size = -.05) and, when correlations were significant, they were opposite of the predicted relationship. However, there were significant, negative correlations between "tolerance for uncertainty" and predicted information-seeking in 11 of the 12 scenarios (average effect size = -.30). While this result appears to contradict Axiom 3 and suggests an alternative explanation based on "tolerance for uncertainty," results are based on responses to scenarios, and the relationship should be tested in conversations.

Sunnafrank (1986) provides yet a third possibility. He suggests that the axiomatic relationships presented by Berger and Calabrese are moderated by interactants’ perceptions of "predicted outcome value." Essentially, Sunnafrank’s argument is that, at some point in initial conversations, interactants make predictions about the value the relationship could have for them. At this point, interactants vary their communicative behaviors and goals according to their assessment of the "predicted outcome value" of the relationship. In place of Axiom 3, Sunnafrank advances Proposition 3:

High levels of uncertainty produce increased information-seeking behavior in beginning initial interactions. Decreased uncertainty, when associated with positive outcome values, produces increased information-seeking behavior. When
associated with negative predicted outcome values, reduced uncertainty produces decreased information-seeking behavior. (p. 20)

In a study designed to test the theory, Sunnafrank (1990) asked 258 students to participate in conversations with classmates; approximately one-third of the conversations lasted three minutes, approximately a third lasted six minutes and approximately a third lasted ten minutes. At the conclusion of these conversations, subjects were asked to complete a battery of instruments, including measures of uncertainty (the CL7), "predicted outcome values" and "information-seeking." Sunnafrank reported a significant negative correlation between uncertainty and the measure of "interrogation," but a nonsignificant partial correlation (when controlling for outcome values). When subjects were divided according to predicted outcome values, the correlations between interrogation and information-seeking conformed perfectly to the theory; for those subjects with positive predicted outcome values, the relationship was significant and negative \( r = -0.23 \) and, for those subjects with negative predicted outcome values, the relationship was significant and positive \( r = 0.29 \). These results would appear to contradict Axiom 3 and Sunnafrank suggests that they "provide strong support for the predicted outcome value position" (Sunnafrank, 1990, p. 97), however, his interpretation seems tenuous for at least two reasons. First, given main effects for "predicted outcome value" on
self-reports of interrogation, the study may provide more support for the primacy of reward/cost judgments (as suggested by "social penetration" and "social exchange" theories) than the suggested interactions. Second, there are important weaknesses in the study related to both procedures (Sunnafrank employed self-reports of all variables), and measurement (reliabilities for the three measures of information-seeking were "disappointing" -- .51, .64, and .39, p. 88). However, it seems important to continue to consider the variable in future research.

Thus, while it is increasingly clear that both uncertainty and certain types of information-seeking decrease during conversations, it is unclear if a causal relationship exists or, if it does, which variable drives this relationship. While the most direct test (Douglas, 1990b) provides support for the axiom, it also seems as plausible to conclude that information-seeking behaviors cause reductions in uncertainty, as apparently posited in Gudykunst et al. (1985), or are related to a third variable (e.g., Kellerman & Reynolds, 1990; Sunnafrank, 1990).

Axiom 4 argues that uncertainty causes declines in the intimacy level of content and that decreases in uncertainty cause increases in intimacy, and Berger and Calabrese present compelling and, as yet unchallenged, evidence that content intimacy increases somewhat over conversation. However, there is no evidence that changes in intimacy are
as dramatic as the apparent changes in attributional confidence, and Sunnafrank (1990) reports no significant correlations between self-reported intimacy and uncertainty. Sunnafrank explains the lack of correlation by arguing that "individuals are unlikely to disclose even moderately intimate information to partners during initial interactions" (p. 97). Since Sunnafrank employed self-reports, his test was not direct, and while further research will be complicated by difficulties in accurately measuring "intimacy level," it seems important.

Axiom 5 suggests that "high levels of uncertainty produce high rates of reciprocity [in self-disclosure and] low levels of uncertainty produce low reciprocity rates" (Berger & Calabrese, 1975, p. 105). Berger and Calabrese speculate that the "reciprocity norm" (Gouldner, 1960) provides a method for reducing uncertainty, and that lower levels of uncertainty should allow for greater flexibility, but they provide no evidence. Nor could this author find any subsequent studies that explored this relationship, perhaps because reciprocity is difficult to measure. The only relevant research in Uncertainty Reduction Theory is found in Berger et al.'s (1976) study of reactions to transcripts, which reported that decreases in reciprocity of disclosure in initial conversation created increases in observers' attributional uncertainty (reversing both correlation sign and causal direction). However, this is,
at best, indirect evidence.

In addition, there is reason to doubt that reciprocity rates for disclosure vary over conversation. As Cappella (1985) has noted, reviews of self-disclosure "find overwhelming evidence in support of Jourard's (1959) initial hypothesis of a dyadic effect (reciprocity and matching [of disclosure rates])" (p. 409). While Cappella notes that some studies have failed to replicate this finding, he suggests that such findings are "readily explicable in terms of experimental, procedural, or statistical techniques" (p. 410). And, while extreme manipulations of self-disclosure have occasionally been successful in creating compensation behaviors in disclosure, Cappella argues that this effect is due to conversational withdrawal (p. 410). Thus, any changes in reciprocity rate are more likely connected to high uncertainty than lowered levels, and, if anything, reciprocity rates should increase over the course of conversation.

Axiom 6 suggests that similarity is inversely linked to uncertainty. Relationships between similarity and uncertainty appear to be rather strong in relationships (Gudykunst, 1985; Gudykunst et al., 1987; Parks & Adelman, 1983; Prisbell & Andersen, 1980). However, in studies of initial interaction, (e.g., Clatterbuck, 1979; Gudykunst, 1985; Gudykunst & Nishida, 1984) these relationships have
been inconsistent and appear to depend on the nature of similarity — e.g., cultural, attitudinal, or background similarities. Additionally, as Sunnafrank (1985) has noted, "bogus stranger" studies (e.g., Berger & Clatterbuck, 1976; Gudykunst & Nishida, 1984) may create effects that are mediated by initial exposure. Though similarity may be difficult to manipulate in initial interaction studies, it seems appropriate to attempt such research.

Axiom 7, that increases/decreases in uncertainty create opposite effects on liking has received generally strong correlational support in studies of initial interaction (Clatterbuck, 1979; Douglas, 1990b) and relationships (Gudykunst, 1985; Gudykunst et al., 1985). Intriguingly, Douglas (1990c) reports significant results for one panel of subjects from dyads, but not for the other (p.21), however, the procedure chosen by Douglas (Kraemer & Jacklin, 1979) suggested that the second panel should have been discarded (Douglas, 1990c, p. 12) and these results may have been the result of insufficient power (Douglas, 1990c, p. 21). Kellerman and Reynolds (1990) report that uncertainty was negatively related to liking in 10 of 12 of their created scenarios, but also note that partialling out the effects of uncertainty left direct effects for both deviance and incentive value manipulations. "In other words, deviance, incentive value and uncertainty are all
determinants of attraction" (p. 59, emphasis added). Both Gudykunst and Nishida (1985) and Sunnafrank (1990) report insignificant correlations, but these studies may be flawed by the use of multiple self-reports.

In sum, research concerning the relationships posited by Berger and Calabrese's seven axioms is mixed, but generally inconclusive. Data do suggest that uncertainty, information-seeking and intimacy levels decrease, but not necessarily at the same rate or according to the logic suggested by the theory. Uncertainty and liking appear to be related, but not necessarily in the simple causal direction proposed by the theory. Some types of similarity may increase confidence, but the correlational relationship appears to be a weak and inconsistent one, suggesting intervening variables. There is limited evidence, and contradictory evidence, concerning Axiom 2, that nonverbal affiliative expressiveness rates decline consistently during conversation or are causally influenced by uncertainty. And, the available evidence suggests that Axiom 5, concerning reciprocity rates, should be rejected. Additionally, evidence of weak or nonsignificant relationships between uncertainty and other variables suggests that the relationships of the theory may result from mediating effects of other variables.

At the least, these results suggest, again, the value of research studies designed to provide additional data
concerning the causal relationships posited by Uncertainty Reduction Theory. Some directions for further research are suggested by a more direct review of the theoretical assumptions that underlie both the axioms and theorems.

Assumptions. As has been noted earlier, Uncertainty Reduction Theory is founded on two central assumptions: 1) that uncertainty is the primary drive of strangers in conversation, and 2) that "uncertainty" is primarily focused on issues related to attributional confidence.

As noted in the earlier summary of Berger and Calabrese's initial theory, the assumption that uncertainty is the primary goal of all people in initial interactions provides the basis for distinguishing uncertainty approaches from earlier theories of initial interaction. And, a review of the research and theory surrounding the axioms, as reviewed above, indicates that this assumption serves as the theoretic rationale for each of the axioms. However, a review of research relevant to this generalization suggests four important reasons to question the generalization in this form. First, a more careful reading of the evidence that Berger and Calabrese employed to develop this assumption (informed by more recent research) suggests that this research provides rather weak support. Second, a growing body of research suggests that there are important individual differences in both the motive to reduce uncertainty and the processes employed to
do so. Third, there is increasing acceptance for a contradictory assumption: that conversation is guided by multiple goals. Fourth, there is increasing evidence that many forms of conversation are "mindless" (Langer, 1978), and the assumption that humans are always motivated to reduce uncertainty overlooks the possibility of "scripted" behavior. Let us consider each of these arguments more closely.

Berger and Calabrese cited two forms of evidence supporting the assumption that uncertainty was the primary drive of participants in initial interactions: (1) theoretical support from attribution theories, and (2) two studies that indicate changing patterns in speaking and pause rates during initial interaction. Closer inspection reveals that, while research reviewed by Berger and Calabrese appears to support the assumption that uncertainty reduction is a goal in conversation, it does not demonstrate that it is the primary goal.

Evidence from attribution theories (e.g., Heider, 1958; Jones et al., 1972; Kelly, 1967, 1973) appears to provide only indirect evidence for Berger and Calabrese's assumption. While these theories, and supporting research, do suggest that humans seek to attribute causality, they do not demonstrate that attribution is the primary motivation behind initial interaction. Berger and Calabrese also drew support for this assumption from the related
assumption that uncertainty is initially high and declines during conversation; if uncertainty reduction is the primary goal of conversation, we would expect that uncertainty would decline. They drew evidence for this assumption from two studies of speaking and filled-pause rate (Berger & Larimer, 1974; Lalljee & Cook, 1973). However, four years later, Berger (1979) suggested that it was important to distinguish between "cognitive" and "linguistic" uncertainty (p. 124), thus rendering this evidence meaningless. Further, while the majority of subsequent research has indicated that "attributional confidence" (measured via self-reports) increases during the first moments of conversation (Clatterbuck, 1979, Studies 10 and 11; Douglas, 1990b), other research suggests that uncertainty is not always "high" at the beginning of initial interactions (e.g., Douglas, 1990a; Kellerman, 1986, especially, p. 67).

As importantly, even if uncertainty levels decline during conversation, this does not prove that uncertainty is either a goal or the primary goal. Uncertainty reduction could be an effect of conversational patterns resulting from other goals, or even the result of growing confidence resulting from increased exposure to the individual. For example, we might talk to a stranger merely to "pass time" or to "be considerate," but find out things that allow us to better predict their attitudes and
behaviors. Or, because of a conversation that "goes well," we may think we know more than we do. Finally, attributional confidence may increase as a result of proximity, even without conversation; while I do not usually initiate conversation on airplanes, I can learn a great deal by merely observing my fellow fliers.

Thus, in retrospect, there appears to have been little reason for Berger and Calabrese to conclude that uncertainty was the primary goal of strangers in conversation. This assumption seems even more tenuous when we consider that a growing body of research suggests that there are important individual differences in both the motive to reduce uncertainty and the processes employed to do so.

Research has demonstrated a number of variables which influence uncertainty reduction processes, including: national culture (e.g., Gudykunst, 1983; Gudykunst & Nishida, 1984, 1986a; Gudykunst et al., 1985; 1989), cultural similarity/dissimilarity (e.g., Gudykunst, 1985; Gudykunst, Chua & Gray, 1987); ethnicity (Gudykunst, Sodetani & Sonoda, 1987), ethnic identity (Gudykunst & Hammer, 1988), sex (e.g., Sunnafrank, 1983, 1985; Sunnafrank & Miller, 1981), self-monitoring (Berger & Bradac, 1982, pp. 47-49; Berger & Douglas, 1981; Berger & Perkins, 1979; Douglas, 1984) and "tolerance for uncertainty" (Kellerman and Reynolds, 1990). Further, as a
later review will suggest, there is also reason to believe that interaction involvement (Cegala, 1981) influences uncertainty (e.g., Cegala, 1989; Cegala et al., 1979; Villaume & Cegala, 1988) and uncertainty reduction processes (e.g., Cegala, 1981; Ludlum, 1988). Taken together, research concerning these intervening variables provides another reason to question the assumption that uncertainty reduction is always, and for everyone, the primary goal in initial interaction. This argument gains additional weight when we consider that increasingly, research and theory suggests that initial interaction is guided by several goals other than uncertainty reduction.

For example, Sunnafrank's (1986, 1990) "Predicted Outcome Values" model suggests that conversants have at least two goals in initial conversations, uncertainty reduction and relational assessment. While Sunnafrank's approach represents a modification of Uncertainty Reduction Theory, other approaches suggest alternative goals for interaction, including "affinity-seeking" (Bell & Daly, 1984; Tolhuizen, 1989), "impression management" (Goffman, 1957, 1967; Tedeschi & Reiss, 1981), and "conversational management" (e.g., Capella, 1984).

Contemporary researchers generally concede that communication is influenced by multiple goals (e.g., Cegala & Waldron, 1992; Clark & Delia, 1979; Dillard, Segrin, & Harden, 1989; Greene et al., 1993; McCann & Higgins, 1988;
Tracy, 1991), and it seems likely that initial interaction is guided by varying, and multiple instrumental goals (e.g., uncertainty reduction, individual pleasure, and personal "catharsis") as well as by interactional/relation goals (e.g., "relational prospecting" and impression management) and personal/identity goals (e.g., concerns for social appropriateness). Further, there is evidence that individual goal priorities vary with situation; Douglas (1990c) reported that subjects reported greater concern for uncertainty reduction and impression management when they were led to believe that there would be future interaction with their partner than when such interaction was less likely (p. 7).

Finally, contemporary communication researchers increasingly argue that much communication is enacted "mindlessly" (Langer, 1978, 1986), i.e., with minimal levels of consciousness (see, for example, Bavelas & Coates; Hample, 1992; Kellerman, 1992; Motley, 1992). Since most people have engaged in many conversations with strangers, it is possible that question-asking is merely habitual, "scripted" behavior; i.e., people ask questions because they "always have" and not because those questions meet any goal(s) (see, for example, Berger & Kellerman, 1983). In addition, the explanatory logic of Uncertainty Reduction Theory seems to suggest that such interaction is extremely mindful; conversants are not simply goal-driven,
they are driven by goals that imply continuous judgement and attributional processes.

Thus, there are four reasons to question the assumption that participants in initial interaction are primarily driven by a desire to reduce attributional uncertainty: 1) the evidence selected by Berger and Calabrese is not conclusive, 2) research indicates a variety of personal differences (including tolerance for uncertainty and interaction involvement) that apparently influence both motivations and selection of uncertainty reduction tactics, 3) there is increasing consensus that initial interactions may be influenced by other primary and secondary goals, and 4) there is increasing awareness that many conversants act "mindlessly" in many situations.

**Summary.** A review of relevant research indicates three general problems with Uncertainty Reduction Theory. First, a review of research concerning the theorems advanced by Berger and Calabrese indicates too few direct tests, results that are often confusing, and, in the case of Theorems 3, 8, 12, 17, and 19, contradictory evidence of varying strength. Second, there is little direct evidence concerning any of the theory's axioms, and where supporting evidence can be found, there is often reason to doubt the causal logic suggested by the theory. Third, there is no direct evidence concerning the fundamental assumptions of the theory -- that uncertainty reduction (defined as an
effort to increase attributional certainty) is the primary
goal in initial interaction -- and increasing reason to
doubt its accuracy.

Taken together, these findings seem to suggest that
the theory should be completely rejected. However, this
seems premature for at least three reasons. First,
Uncertainty Reduction Theory has played an important role
in suggesting valuable research directions; it would
probably be impractical to reject it immediately, without
more compelling evidence. Second, there is some direct
evidence supporting particular axioms (especially the
correlational evidence supporting Axioms 3 and 7) and no
contradictory (or supporting) evidence in initial
interactions concerning most of the theorems; it would be
inappropriate to reject any theory on the basis of indirect
tests based on extensions that may not be valid. Finally,
many of the basic premises of Uncertainty Reduction Theory
make intuitive sense, and it seems premature to reject them
until we can provide more accurate and complete tests. For
example, while increasing evidence suggests that increasing
attributional confidence is not the sole goal when
strangers meet, and while common sense would suggest that
uncertainty reduction is often not a goal, it is clear from
anecdotal evidence that many conversants are uncertain and
it seems possible that many of the relationships posited by
Uncertainty Reduction Theory could be valid when
uncertainty is a primary goal.

Indeed, it would appear that a primary source of difficulties of Uncertainty Reduction Theory is that its two central assumptions are drawn too broadly and too narrowly. If we rephrase the central assumption of the theory to suggest that uncertainty reduction is often a primary goal of interactants in initial interaction, and modify our definitional assumptions to include multiple sources of uncertainty in our investigations, we can rephrase our research questions to explore the antecedents and communicative consequences of uncertainty. Assuming that we can identify those portions of conversation when interactants are centrally concerned with uncertainty, it would be possible to test, and verify, many of the central premises of the theory.

However, before such tests are conducted, it is important that researchers consider some thorny issues related to procedures. These issues will be the focus of the next section of this review.

Uncertainty Reduction: Procedural Concerns and Options

The previous section has pointed to a variety of research concerns in the arena of Uncertainty Reduction Theory, including the need for more detailed testing in initial interaction and research aimed at testing the causal relationships and assumptions advanced by Berger and
Calabrese. Unfortunately, as this section will indicate, there are several procedural challenges facing such research, including both questions of definition and temporal order. Some of these issues might be resolved with use of stimulated recall procedures. Thus, this section is designed to clarify some of the more obvious concerns and to discuss the potential yields of procedures designed to tap conversants' thoughts and feelings.

Procedural concerns. It has been noted several times that research in uncertainty reduction could be advanced with methodology which can clarify questions of causality and provide ongoing measures of cognitive uncertainty. Unfortunately, existing research procedures have not accomplished these goals for at least two reasons: 1) previous studies have employed correlational data, which provides only partial evidence concerning causality, and 2) most theory and research have defined "uncertainty" very narrowly. Let us consider each argument.

First, at their best, previous studies have reported correlational data, and correlations do not provide evidence of the causal relationships that are central to the theory. For example, as discussed above, even if uncertainty and information-seeking decline at similar rates in initial conversations (and the earlier review suggests that this may not be the case), such an observation does not demonstrate that uncertainty
reductions cause decreases in information-seeking. Kellerman and Reynolds' (1990) research suggest that both effects could be mediated by "tolerance for uncertainty," and Gudykunst et al. (1985) developed a LISREL model in which information-seeking is posited as the causal variable. Further, as Krone's (in press) review of question-asking research suggests, question-asking can serve a number of different conversational goals; for example, McLaughlin and Cody (1982) report that question-asking is the most frequent response to conversational lapses, suggesting that questions can be a popular device for conversational repair. Additional support for this view can be found in Berger and Kellerman's (1983) finding that question-asking declined across conversations, regardless of whether subjects were instructed to seek as much or as little information as possible!

Similarly, correlations between many of the variables can be explained without reference to uncertainty. For example, the relationship between liking and information-seeking might be the result of a direct connection between the two variables (such that liking leads to more information-seeking) or a relationship moderated by variables other than uncertainty (e.g., attraction leads to more communication attempts, and social/individual rules specify that an acceptable way to prolong conversation is the use of questions about the other). Similarly, any
correlation between liking and nonverbal affiliative expressiveness could be the result of a direct relationship (i.e., people express more nonverbal behaviors indicative of liking with people that they like), rather than a relationship mediated by uncertainty.

This concern would be less significant if we could not find other causal models that explain the theorems supported to this date. As was mentioned earlier, results from Sunnafrank's recent study (1990) appear to support a rewards-driven model of initial interaction similar to the one posited in "social penetration theory" (e.g., Altman & Taylor, 1973). Similarly, it is possible to develop theoretical models based on explanatory variables not included in the initial theory. As a later section of this chapter will suggest, interaction involvement (Cegala, 1981) might influence liking, reciprocity, nonverbal affiliative expressiveness, information-seeking and uncertainty directly. Further, since interaction is transactional, it seems likely that any of these theoretical relationships are influenced by variations in partners' behaviors, and complex, systems models may be more successful in capturing the complexities that contribute to conversational behavior. Finally, it is possible that all the relationships result from totally unrelated temporal patterns (perhaps resulting from socially based "scripts" that are enacted mindlessly, as
suggested by Berger & Kellerman, 1983). Again, to put it simply, other models may explain the variations observed in uncertainty reduction research as effectively, or better.

One method of gaining additional information about causality, and comparing alternative models, is to develop procedures that allow researchers to explore temporal relationships between variables. Clearly, temporal relationships alone do not establish causality, but combined with correlations and investigation of intervening relationships, such data can provide valuable additions to existing research.

As we consider temporal relationships, it is also important to consider a second important procedural limit, both theory and existing measures of uncertainty define the term narrowly.

As noted earlier, Berger and Calabrese defined uncertainty in terms of efforts to predict and explain a partner’s behavior. In this conceptualization, the drive to reduce uncertainty becomes synonymous with an interest in increasing "attributional confidence." While this makes operationalization simpler, it overlooks other possible forms of conversational uncertainty.

In addition to the restrictions of definition, there are potential restrictions imposed by measurement techniques.
The most popular option for operationalizing uncertainty has been to use self-report measures administered after conversation. The "hammer" of choice (Kaplan, 1964) appears to be Clatterbuck's (1976, 1979) "CL7" scale, a seven-item measure of "proactive attributional confidence." Clatterbuck also designed a measure of "retroactive attributional confidence," the "CL65," but a seven-item measure is obviously easier to administer than the combined, 72-item "CLUES" measure. Given significant correlations between CL65 and CL7 (Clatterbuck, 1979, p. 153), researchers have generally opted to employ either CL7 or revised forms designed for simulations (e.g., Gudykunst & Nishida, 1984; Kellerman & Reynolds, 1990) or for "high- and low-context cultures" (Gudykunst & Nishida, 1986a).

The CL7 appears to be a valid measure of proactive attributional confidence (e.g., Clatterbuck, 1979) and reported reliabilities are generally high (e.g., Douglas, 1990; Gudykunst, 1985; Gudykunst et al., 1985; Kellerman & Reynolds, 1990). However, use of the CL7 measure restricts attention to proactive confidence, and excludes retroactive confidence. Additionally, while Uncertainty Reduction Theory restricts attention to attributional forms of uncertainty, there may be other important forms of uncertainty that influence conversational choices. Further, while Clatterbuck reports some preliminary
evidence indicating that the general CLUES instrument was not significantly correlated with measures of self-esteem, it would seem appropriate to test this relationship more fully.

As importantly, use of self-report measures make ongoing measurement impractical, thus making it more difficult to resolve temporal questions. The usual procedure is to include the CL7 in a battery of measures following conversations; the result is correlational data. More recently, Douglas (1990b) administered the CL7 to different samples following two-minute, four-minute and six-minute segments of conversation; while this provides some information about trajectories, potential differences in subjects and dyads make it impossible to develop much evidence concerning causality. If conversations were stopped for repeated administrations of CL7, we might be able to develop temporal records, but such a procedure is subject to complaints about testing effects, and use of CL7 may prompt subsequent concerns with attribution.

A second option is to measure uncertainty via behavioral measures. However, there is no evidence that the variables studied to date truly reflect uncertainty. As noted earlier, the initial theory was based on evidence concerning filled-pause duration and speaking rate (Lalljee & Cook, 1973), however, speaking rate has also been used as a measure of "amount of communication" (Berger & Larimer,
1974), and, while filled-pauses do seem associated with attention to cognitive processes, it is not yet clear that they are accurate measures of uncertainty. Sherblom and Van Rheenen (1984) employed measures of verbal immediacy and linguistic diversity, but provide little evidence that either is a direct measure of uncertainty (the best case might be for the ratio of qualifiers, but that may be a generalized measure of uncertainty, rather than a measure of attributional uncertainty). Villaume and Cegala (1990) have suggested that certain measures of conversational cohesiveness (e.g., ellipses) are related to uncertainty about conversational topic, but that research is criticized for lack of direct evidence that the chosen measures reflect uncertainty.

In sum, researchers appear to have two current choices: 1) use CL7 and face questions about generalizability to other forms of attributional confidence and uncertainty or 2) employ measures based in communication behavior that have not yet been demonstrated to correlate with uncertainty.

Coupled with the concerns related to causality and temporality, the measurement dilemma means that it is difficult, if not impossible, to answer the substantive questions raised in the literature review presented earlier. There may be another option, which will allow us to answer several pressing questions at one time -- the use
of cognitive recall measures. Such methods were introduced earlier; their potential applicability will be discussed in the following section.

**Uses of stimulated recall in uncertainty reduction research.** One method for resolving some of these thorny dilemmas is the use of procedures that may measure on-line cognitive processes (see, especially, Waldron & Cegala, 1992).

Such strategies are not especially new. Bloom (1954) pioneered a technique he labelled "stimulated recall" in the 1940's and the technique, with variations has been used in a variety of settings since then (for a brief review, see Elliott, 1986, pp. 503-504). Research in "cognitive response theory" has long employed a thought-listing technique (Cacioppo & Petty, 1981), and, more recently, Daly, Weber, Vangelisti, Maxwell & Neel (1989) have employed a "talk aloud" procedure in which subjects communicate with each other via computer screens while orally reporting their thoughts and feelings.

Following more recent research in social psychology (e.g., Ickes, Robertson, Tooke, & Teng, 1986), Cegala and his colleagues have applied a modified version of the procedure in a variety of communication experiments (e.g., Cegala & Waldron, 1992; Cegala et al, 1988; Waldron, 1990; Waldron, Cegala, Sharkey & Teboul, 1990). Briefly, the procedure asks subjects to participate in a conversation,
during which they are videotaped. Following their conversation, subjects are asked to watch themselves on tape and record the "thoughts" and "feelings" they had during the interaction. The procedure yields two different types of data -- the videotape, which contains a variety of verbal and nonverbal behaviors, and the thought/feeling protocols which can be subsequently coded via content analysis.

The program of research is young, but it has already yielded some valuable results. For example, Waldron (1990) found a significant number of thoughts that evidenced planning, thereby partially confirming Berger's (1988) notion that planning is an important cognitive activity during conversation. He also reports that types of planning units (see pp. 13-16 for coding details) are influenced by both goal priority and instrumental goal complexity (see p. 12 for descriptions of manipulations and pp. 22-23 for more detail on these results), which supports the speculation that interactant goals influence cognition. Cegala and Waldron (1992) have provided evidence that levels of competence (defined by the effectiveness and appropriateness of task completion during the conversation) are related to the types of goal-related thoughts (defined by reference to thought recalls) that subjects have during conversation.
These results suggest that cued recall procedures can provide additional evidence to complement existing research findings.

In explorations of uncertainty reduction processes, such procedures appear capable of serving several purposes. Most obviously, they may provide an alternative for measuring attributional uncertainty. Cegala et al. (1988) report some thoughts and feelings that indicate both attributions of partner's state (which appears to reflect attributional confidence) and thoughts and feelings indicative of "confusion" (which appear related to attributional uncertainty). Significantly, the coding system that these authors constructed was "theory-free" and coding decisions required all thoughts to be coded into one, and only one, of the 30 categories. Thus, it seems conceivable that a system centered on uncertainty might uncover a greater number of such thoughts and feelings.

If thought/feeling procedures can provide data about uncertainty, this would assist researchers in several important ways. First, by providing an alternative measure of uncertainty, they could provide a complementary means of testing the central assumptions of the theory: 1) that the motivation to reduce uncertainty is the primary goal of conversational interactants, and 2) that conversational uncertainty is primarily focused on issues of attribution.
Second, by providing a temporal measure of uncertainty, stimulated recall procedures could provide additional data concerning the causal relationships posited by the axioms of Uncertainty Reduction Theory. For example, if uncertainty causes information-seeking, we would expect that there would be more information-seeking following cognitions reflective of uncertainty than during other periods of conversation.

Third, by identifying periods of uncertainty, these procedures could allow more complete testing of the "limited" assumptions discussed earlier. Do uncertainty reduction principles apply more clearly in periods of uncertainty than in other periods? Is uncertainty cyclic? As was argued earlier, it appears possible that uncertainty reduction principles do apply in periods of uncertainty, but do not apply when other goals are operative. If so, it may be possible to retain much of the theory while more carefully specifying its limits.

Fourth, on-going measures of uncertainty could allow for further investigation of verbal and nonverbal behaviors that may reflect uncertainty. For example, if patterns in cognition indicative of uncertainty are similar to patterns of filled-pauses, or use of qualifiers, this provides somewhat stronger evidence of the validity of such measures, which, in turn, would allow less disruptive measurement of these important processes. Alternatively,
study of verbal and nonverbal behaviors that occur in proximity to cognition indicating uncertainty/confidence could allow us to discover new, unobtrusive measures. Identification of such verbal and nonverbal indicators of uncertainty would allow much less obtrusive tests of the theory and extensions.

Thought/feeling measures can also assist us in addressing other important questions suggested by Uncertainty Reduction Theory. For example, it was argued earlier that reduction of uncertainty may be only one of several important goals; cognitive protocols can provide for initial exploration of this question. Similarly, Cegala et al.'s (1988) initial coding system suggests that thought/feeling listings can provide data concerning "liking," which may provide a complement to self-reports that prompt such judgments.

Finally, use of thought/feeling listing might help us to expand the investigation of conversational uncertainty beyond the rather narrow boundaries of "attributional uncertainty." As was noted earlier, both the theory and measures limit "uncertainty" to efforts to predict and explain behaviors. However, Cegala et al. (1988) also discovered significant numbers of thoughts and feelings that indicate uncertainty in "conversational management." It seems useful to explore the effects that and other forms of uncertainty may have on behaviors in, and reactions to,
In short, use of cued recall procedures and the resulting evidence concerning cognition during conversation appears to have considerable promise for addressing some of the important and thorny questions raised in this review of Uncertainty Reduction Theory.

As useful as stimulated recall procedures may be for the study of uncertainty, several procedural issues (see, for example, Bartlett, 1932; Genest & Turk, 1981; Nisbett & Wilson, 1977; Smith & Miller, 1978; Spiro, 1977, 1980; White, 1980; Wright & Rip, 1981) suggest that it should be investigated carefully before it can be used widely (see, especially, Waldron & Cegala, 1992).

One option is to adapt the thought/feeling procedure by asking subjects to code their own protocols with respect to uncertainty. Validity of this procedure could be tested by comparing it with existing research results. For example, if Uncertainty Reduction Theory is valid, there should be decreases in the number of thoughts and feelings reflective of uncertainty over time.

Summary. A critique of existing methods suggests that current procedures are limited by use of self-report measures and correlation indices. It also appears possible that existing measures of uncertainty may limit researchers and create testing effects. One method that may assist in both measurement and testing is an adaptation of Cegala et

Thus, the proposed research is designed to provide further evidence concerning both uncertainty reduction processes and the potential of the new method.

This research program is also designed to meet another goal: examination of the impact of "interaction involvement" (Cegala, 1981) on uncertainty and uncertainty reduction processes. In order to explain this goal, and later hypotheses, it is important to introduce the construct of interaction involvement and briefly review relevant research. This will be the primary objective of the following section.

**Interaction Involvement and Uncertainty Reduction**

As noted in the earlier review, researchers investigating uncertainty reduction processes in conversations have examined the effects of a variety of individual difference variables, but one variable that has not received sufficient attention is interaction involvement (Cegala, 1981).

Villaume and Cegala (1990) have recently suggested that interaction involvement may be an important intervening variable in uncertainty reduction processes. While this hypothesis has not yet been directly tested, it is worthy of further investigation. Therefore, this
section will briefly review the theory and construct of interaction involvement, research pertaining to its role in interaction, and evidence concerning its impact on uncertainty.

**Construct development.** Cegala (1981) grounded development of the interaction involvement construct in Goffman’s writings on conversation (see, especially, Cegala, 1981, pp. 110-113; Goffman, 1967).

Briefly, Goffman’s work is relevant to our subsequent discussion in at least four ways. First, Goffman’s discussion of "face-work" (1967, pp. 5-45) and "alienation" (1967, pp. 113-136) suggested that human interaction is based on rather complex, if seldom conscious, cognitive goals and strategies. Second, Goffman’s work suggested the importance of many qualities, including "perceptiveness" (p. 13). Third, Goffman’s discussion of perceptiveness and his discussion of alienation suggest the importance of a second quality of conversationalists, "attentiveness" (Cegala, 1981, p. 112). Finally, Goffman identifies four modes of "alienation" or "misinvolvement:" "external preoccupation," "self-consciousness," "interaction-consciousness" and "other-consciousness" (pp. 117-125).

Based upon this foundation, Cegala (1981) defined interaction involvement as "the extent to which an individual partakes in a social environment" (p. 112) and built the Interaction Involvement Scale to reflect both
attentiveness and perceptiveness (see, Cegala, 1982a, p. 86). Several studies (e.g., Cegala, 1976, 1981; Cegala et al., 1982) resulted in a final version of the IIS consisting of 18 items which are rated on a seven-point scale (from "not at all like me" to "very much like me"). The scale can be administered in two forms: a trait and a state measure.

Results of principle components analyses (e.g., Cegala, 1981; Cegala et al, 1982) suggest that the "trait" measure consists of three factors, which are now labelled "responsiveness," "perceptiveness" and "attentiveness," with rather high internal reliabilities (.83, .75, and .80 in Cegala et al., 1982) In order to clarify these dimensions, a summary of factor analytic data from Cegala et al. (1982) is presented in Table 1.
Table 1

Factor Structure of Interaction Involvement Scale as reported by Cegala, Savage, Brunner and Conrad. (1982)

<table>
<thead>
<tr>
<th>Item</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3) Often in conversations I’m not sure what to say; I can’t seem to find the appropriate lines.</td>
<td>-.70</td>
<td>.01</td>
<td>-.04</td>
</tr>
<tr>
<td>(6) Often in conversations I’m not sure what my role is; that is, I’m not sure how I’m expected to relate to others.</td>
<td>-.77</td>
<td>.07</td>
<td>-.01</td>
</tr>
<tr>
<td>(9) Often in conversations I’m not sure what the other is really saying.</td>
<td>-.62</td>
<td>.03</td>
<td>-.17</td>
</tr>
<tr>
<td>(10) Often in conversations I’m not sure what others’ needs (e.g., reassurance, a compliment, etc.) are until it is too late to respond appropriately.</td>
<td>-.61</td>
<td>-.20</td>
<td>.03</td>
</tr>
<tr>
<td>(14) Often I feel sort of &quot;unplugged&quot; from the social situation of which I am a part; that is, I’m uncertain of my role, others’ motives, and what’s happening.</td>
<td>-.73</td>
<td>.00</td>
<td>-.02</td>
</tr>
<tr>
<td>(17) Often in conversations I’m not sure how I’m expected to respond.</td>
<td>-.75</td>
<td>-.01</td>
<td>-.04</td>
</tr>
<tr>
<td>(15) In my conversations I really know what’s going on; that is, I have a &quot;handle on the situation.&quot;</td>
<td>.46</td>
<td>.36</td>
<td>.02</td>
</tr>
<tr>
<td>(1) I am keenly aware of how others perceive me during my conversations.</td>
<td>.04</td>
<td>.59</td>
<td>-.03</td>
</tr>
<tr>
<td>(4) I carefully observe how others respond to me during my conversations.</td>
<td>-.11</td>
<td>.70</td>
<td>.00</td>
</tr>
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</table>
Table 1 (cont.)

<table>
<thead>
<tr>
<th>Item*</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>(11) During conversations I am sensitive to others' subtle or hidden meanings.</td>
<td>.11</td>
<td>.62</td>
<td>-.11</td>
</tr>
<tr>
<td>(12) I am very observant during my conversations with others.</td>
<td>-.02</td>
<td>.63</td>
<td>.34</td>
</tr>
<tr>
<td>(16) In my conversations I can accurately perceive others' intentions quite well.</td>
<td>.39</td>
<td>.51</td>
<td>-.08</td>
</tr>
<tr>
<td>(18) In conversations I am responsive to the meaning of others' behavior in relation to myself and the situation.</td>
<td>.18</td>
<td>.60</td>
<td>.03</td>
</tr>
<tr>
<td>(13) In conversations I pay close attention to what others say and do and try to obtain as much information as I can.</td>
<td>-.06</td>
<td>.50</td>
<td>.53</td>
</tr>
<tr>
<td>(2) My mind wanders during conversations and I often miss parts of what is going on.</td>
<td>-.14</td>
<td>.12</td>
<td>-.77</td>
</tr>
<tr>
<td>(5) Often I will pretend to be listening to someone when in fact I'm thinking about something else.</td>
<td>-.11</td>
<td>.12</td>
<td>-.76</td>
</tr>
<tr>
<td>(7) I listen carefully to others during a conversation.</td>
<td>-.13</td>
<td>.36</td>
<td>.69</td>
</tr>
<tr>
<td>(8) Often I am preoccupied in my conversations and do not pay complete attention to the others.</td>
<td>-.18</td>
<td>.07</td>
<td>-.71</td>
</tr>
</tbody>
</table>

* Items have been reordered to clarify the nature of factor structures.
While one would initially expect a two-factor structure, items originally developed to tap "perceptiveness" were distributed among the first and second factors, suggesting a somewhat richer dimensional structure. As Cegala (1981) noted, one explanation is that the items on Factor I are negatively worded, while those on Factor II are positively worded, but both his analysis and a subsequent study (Cegala et al., 1982) suggest a different interpretation.

Cegala et al. (1982) reported that factor scores (which reverse the items) for the first dimension (which is currently labelled "responsiveness") were negatively correlated with self-reports of neuroticism, positively correlated with sociability, negatively correlated with social anxiety, negatively correlated with group, meeting and dyad subscores of McCroskey’s (1970) communication apprehension scale, and positively correlated with self-reports of behavioral flexibility and social relaxation (for details, see, pp. 234-243). Stepwise multiple regression analyses indicated that neuroticism (weighted negatively), sociability and behavioral flexibility were significant predictors of factor scores for both men and women. These results suggest that the first dimension of the IIS is linked most heavily to measures of emotional response, including anxiety and apprehension, and flexibility. Thus "responsiveness" seems an appropriate
label, and the factor appears to tap the types of uncertainty that may lead to misinvolvement.

Results for Factors II and III are somewhat more complex (see, pp. 239-243), but suggest that these factors reflect the original dimensions of "perceptiveness" and "attentiveness."

In sum, while the IIS was originally constructed to tap dimensions of "perceptiveness" and "attentiveness" as suggested by Goffman’s discussion of conversation, subsequent research has uncovered a third dimension, "responsiveness," which seems to reflect uncertainties that can create misinvolvement. While there is some weak evidence that the state measure of interaction analysis is unidimensional (Kellerman & Roloff, 1983), there is little doubt that the trait measure has a consistent and reliable structure that taps these dimensions.

Both the underlying theory and these studies also provide reason to suspect that interaction involvement would influence general uncertainty levels (those with lower scores on responsiveness appear to be prone to greater uncertainty), abilities to reduce uncertainty (through "perceptiveness"), and variables associated with uncertainty reduction processes. These connections are further examined in the following section.
Interaction involvement and Uncertainty Reduction

Theory. It appears inappropriate to present an exhaustive review of research concerned with interaction involvement at this time, but it is important to note some evidence that suggests that the variable might influence uncertainty and uncertainty reduction processes.

Research concerned with connections between interaction involvement and communication competence indicates that higher levels of various dimensions of interaction involvement are associated with greater self-perceived competence (Brunner, 1984; Cegala et al., 1982) and self-perceived dominance and friendliness in groups (Cegala, Wall & Rippey, 1987), more positive observer evaluations of communication competence (Brunner, 1984), and with increased abilities to appropriately gain information from strangers (Cegala, 1981; Redmon, Eifert & Gordon, 1983). Research investigating affective consequences of interaction involvement has demonstrated that, lower levels of involvement are associated with decreased self-esteem and ego strength (Cegala, 1982b; Cegala, 1984, note 1), increased levels of neuroticism (Cegala, 1984, note 2; Cegala et al., 1982), increased levels of communication apprehension and social anxiety (Cegala et al., 1982), decreased levels of social relaxation (Cegala et al., 1982), both increased "negative affect" and decreased "positive affect" in evaluations of
mood state following conversations (Cegala, 1984). More recent research, employing stimulated recall techniques indicates that lower levels of interaction involvement are also associated with greater proportions of negatively-weighted, self-directed thoughts (Cegala, Bayer, Waldron & Ludlum, in press; Cegala, Waldron & Teboul, 1990), greater proportions of negatively-weighted, conversation-directed thoughts (Cegala et al., in press), and lower percentages of positive thoughts directed toward the conversation (Cegala et al., in press).

Together, these results suggest that levels of interaction involvement are associated with both self-perceptions and performance and may influence uncertainty in several different ways. First, it seems possible that, due to beliefs in their abilities to perform competently, those with higher levels of interaction involvement may also have greater faith in their abilities to extract useful information; consequently, we might expect them to feel less attributional uncertainty throughout conversation. Second, the finding that those with higher levels of interaction involvement are both more efficient and appropriate in gaining information suggests that they may employ different patterns of information-seeking. Perhaps they can gain more information with fewer questions, in which case higher interaction involvement would be negatively correlated with information-seeking.
Alternatively, since they are able to frame more appropriate questions, they may be able to ask more questions, leading to a positive correlation. In either case, we would expect interaction involvement to influence both information-seeking and information received (which would further influence uncertainty).

The suggestion that interaction involvement influences uncertainty directly is further supported by studies of communicative behavior, which indicate that levels of interaction involvement are inversely correlated to the proportion of vocalized pauses (Cegala, Alexander & Sokuvitz, 1979), that participants in dyads with two low-involvement interactants employed a greater ratio of qualifiers-to-intensifiers than did participants in high-high or high-low dyads (Cegala, 1989), and that participants in low-low dyads employed more "interactive ellipses" than participants in high-high or high-low dyads (Villaume & Cegala, 1988). Recalling that vocalized pauses (Lalljee & Cook, 1973) and qualifiers (Sherblom & Van Rheenen, 1984) have been used previously as behavioral indices of uncertainty, and employing Villaume and Cegala's explanation that "the use of interactive ellipses shifts the interpretive burden back to the interlocutor by requesting him/her to fill in much of what has been said" (p. 25), these data provide initial support for the argument that higher levels of interaction involvement
contribute to lower levels of uncertainty. However, both Cegala (1989) and Villaume and Cegala (1988) note the potential of "dyadic effects" (e.g., Kenny, 1988; Kenny & LaVoie, 1985) in several other variables. Most recently, Villaume and Cegala (1988, 1990) have suggested that uncertainty may be lower in high-low dyads than in either high-high or low-low dyads (see, especially, Villaume & Cegala, 1988, p. 36).

Available research also provides preliminary support for the suggestion that interaction involvement can influence abilities and tendencies to manage uncertainty. Several studies have reported that conversants with lower levels of interaction involvement exhibited behaviors that appear indicative of conversational "withdrawal," such as body-focused gesturing (Cegala et al, 1982; Cegala & Sillars, 1989), and verbal nonimmediacy (Cegala, 1989). These data are supported by Cegala et al.'s (in press) finding that lower levels of interaction involvement were associated with greater numbers of thoughts and feelings indicating conversational withdrawal. Conversational withdrawal makes it less likely that conversants will gain useful information. While it may also reflect less concern for such information, Cegala et al. (1988) reported that low-involved subjects produced more thought/feeling units indicating difficulty in managing conversation, suggesting that withdrawal results from perceived inabilities rather
than disinterest.

There is also additional evidence that conversational strategies differ with level of interaction involvement. Cegala (1989) reported that members of high-high dyads employed a greater percentage of relational-to-personal pronouns (i.e., greater use of "we" and/or less use of "you" and "me") than did members of low-low or high-low dyads, and the use of collective references is potentially a useful strategy for encouraging partners to disclose more information. Villaume, Jackson, and Souten (1989) reported that, compared with highs, low-involvement subjects were more likely to make "event extensions" in responding to written texts of partial conversations; although effect sizes are small and no complementary effect was found for "issue extensions," the use of "event extensions" restricts information sharing. Finally, in an exploratory study, the author found that levels of interaction involvement were associated with topic choices (Ludlum, 1987).

The evidence reviewed thus far suggests that interaction involvement may influence uncertainty and strategies that are capable of reducing uncertainty. If uncertainty reduction principles are valid, we could also expect these effects to influence relationships between interaction and the other variables included in Berger and Calabrese's theory. However, this research also suggests several alternatives to Uncertainty Reduction Theory that
First, it appears possible that interaction involvement is a stronger predictor of initial interaction patterns than is uncertainty. Earlier, it was suggested that interaction involvement appears to influence the success of information-seeking, and that this suggests that possibility that it also influences information-seeking strategies. Other connections are less obvious, but also seem worth exploration. For example, Cegala's (1984) data concerning mood states suggest that those with higher levels of interaction involvement are more likely to enjoy conversations, which would suggest that they might both exhibit more nonverbal affiliative expressiveness and report more liking for their partner. Similarly, since one dimension of interaction involvement is based on perceptiveness of social norms, it seems possible that interaction involvement is tied to reciprocity.

Second, since initial interactions involve two or more people, it appears possible that partners' levels of interaction involvement could influence a number of these variables. As noted earlier in this section, more recent studies of interaction involvement (e.g., Cegala, 1988; Villaume & Cegala, 1988, 1990) have drawn attention to effects that seem to be caused by the nature of the dyad, rather than individual levels of interaction involvement. For example, there are no significant differences between
high-low and high-high dyads on either use of qualifiers (Cegala, 1988) or use of interactive ellipses (Villaume & Cegala, 1988). These results suggest that those interactants with lower levels of interaction involvement may be more influenced by their partner's involvement than their own. Similarly, if, as Cegala's (1981) results suggest, those with higher levels of interaction involvement tend to act more appropriately, and if we are more attracted to those who act appropriately, partners' interaction involvement could influence liking for those partners.

Finally, and importantly, Goffman's theoretical foundation suggested that the primary goals of interaction may be related to management of impressions or conversation, rather than attribution. Since problems created by lapses in conversation, or attention, could also be accompanied by pauses and resolved by questions, this theory appears to provide another valid explanation for the data presumed to demonstrate the validity of explanations rooted in attributional uncertainty.

**Summary.** Interaction involvement appears to be a variable worth investigating in conjunction with Uncertainty Reduction Theory. Existing research evidence suggests that interaction involvement may affect uncertainty, information-seeking and liking. Further, it appears possible that interaction involvement could be a
primary factor in processes that have been assumed to reflect uncertainty reduction processes.

Thus, in addition to exploring questions of procedure and causality resulting from uncertainty theory, it is appropriate to explore the relationships between interaction involvement and uncertainty, and their behavioral and attitudinal outcomes. These questions are introduced and discussed in the final section of this chapter.

Rationale and Hypotheses

The proposed dissertation has two goals. First, it will test several specific uncertainty reduction premises and competing explanations in initial conversations, especially those concerning relationships between reported uncertainty and information-seeking. Second, it will explore the impact of interaction involvement on uncertainty and uncertainty reduction processes. Each goal, and relevant hypotheses is discussed separately below.

Tests of uncertainty reduction assumptions and theorems. While, as noted above, few premises concerning uncertainty reduction have been universally supported, there is some support (e.g., Clatterbuck, 1979; Douglas, 1990a; 1990b) for the assumption that uncertainty decreases over the course of conversations (Berger & Calabrese, 1975,
p. 101), and, as yet, no contradictory evidence in initial interactions. (This effect seems especially pronounced during the first four minutes [Douglas, 1990b].) Thus, it is possible to advance a fundamental hypothesis:

H1: The number of thought/feeling units indicative of uncertainty should decrease over the course of conversations.

Uncertainty Reduction Theory also argues that information-seeking declines during conversation (Berger & Calabrese, 1975, p. 103), and this premise has received prior research support (e.g., Berger & Kellerman, 1983; Calabrese, 1975; Douglas, 1987; Frankfurt, 1965; Kellerman, 1984; Kellerman & Berger, 1984; Motl, 1980). Since subsequent hypotheses are dependent upon its verification in this study, it should be tested directly:

H2: Information-seeking will decrease over the course of initial interactions. Specifically, the number of information-seeking questions will be higher during the first and second minutes of a conversation than during the third through eighth minutes of the conversations.

Relationships between uncertainty and information-seeking. While evidence is fairly clear that uncertainty and information-seeking decrease over the course of conversation, there are currently three competing explanations for this phenomenon. These explanations can be tested via alternative hypotheses.

First, Axiom 3 of Uncertainty Reduction Theory argues that "high levels of uncertainty cause increases in
information-seeking behavior" (Berger & Calabrese, 1975, p. 103). While this axiom has been exclusively tested via correlational analysis, causality requires both correlation and a temporal relationship; if uncertainty is the primary cause of information-seeking, information-seeking should follow instances of uncertainty. Thus, at minimum, Uncertainty Reduction Theory requires that the following three hypotheses be supported:

H3: Uncertainty and question-asking will be positively correlated throughout conversations. Specifically, correlations will be found between thoughts and feelings indicative of uncertainty and the number of questions asked in each of the two-minute segments of the conversation.

H4: Greater amounts of question-asking will occur during and immediately following reported uncertainty than will occur in other periods of initial interactions.

H5: Thoughts and feelings reflective of uncertainty will be less likely following question-asking than at other points in the conversation.

Two other explanations suggest the absence of even a correlational relationship between information-seeking and uncertainty. Rather, they suggest, the relationship is mediated by individual and situational variables.

The second explanation was advanced by Kellerman and Reynolds (1990), who have suggested that information-seeking is tied to "tolerance for uncertainty," but not to uncertainty. According to this explanation, humans vary in their tolerance for uncertainty. While those with lower tolerances will employ more information-seeking tactics,
those with greater tolerances will use fewer. However, Kellerman and Reynolds' evidence is drawn from simulations. Thus, it is appropriate to test it more directly using conversational data (Kellerman & Reynolds, 1990, p. 71). If Kellerman and Reynolds are correct, the correlation between uncertainty and information-seeking would not be significant, but there would be a significant, negative correlation between information-seeking and "tolerance for uncertainty." Thus, Hypothesis 3 would be rejected, and the following hypothesis would be supported:

H6: Subjects with higher "tolerance for uncertainty" will ask fewer questions during the course of conversations.

Finally, as noted earlier, Sunnafrank (1986) has proposed that the relationships posited by Uncertainty Reduction Theory are mediated by "predicted outcome value," and has presented evidence supportive of the relationship (1990). However, as noted earlier, Sunnafrank's evidence is based on self-reports and Kellerman and Reynolds (1990) have presented data that suggest that "the reasoning underlying the prediction . . . cannot be supported" (p. 69). Thus, again, it seems appropriate to test the proposed relationships in actual interactions.

If Sunnafrank's "predicted outcomes value" correction is valid, there would not be a significant correlation between uncertainty and information-seeking (thus, Hypothesis 3 would be rejected), but the relationships
between uncertainty and information-seeking would be dependent upon the "predicted outcome value" of individual subjects, as advanced in Hypothesis 7:

**H7:** When subjects report anticipations of positive outcome values for their conversations, there will be a negative correlation between uncertainty and question-asking. When subjects report anticipations of negative outcome values, there will be positive correlations between uncertainty and question-asking.

**Interaction involvement and uncertainty.** Research reviewed earlier suggests that higher levels of interaction involvement are linked to higher self-perceived competence (Brunner, 1984; Cegala et al., 1982), fewer thoughts and feelings reflecting difficulties in managing conversation and fewer negatively weighted, self-directed thoughts (Cegala et al., in press), increased self-esteem and ego strength (Cegala, 1982b, 1984; Cegala et al., 1982), and both more positive mood state and less negative mood state. Research also suggests that lower levels of interaction involvement are linked to verbal and nonverbal behaviors indicative of uncertainty, such as vocalized pauses (Cegala et al., 1979), the ratio of qualifiers-to-intensifiers (Cegala, 1989) and the use of interactive ellipses (Villaume & Cegala, 1988). Additionally, research has reported that higher levels of interaction involvement were tied to use of more appropriate and effective strategies for gaining information (e.g., Cegala, 1981; Ludlum, 1988; Redmon et al., 1983); this suggests that those with higher
levels of interaction involvement should be more able to reduce uncertainty via effective conversational strategies. Finally, Cegala et al. (in press) reported that lower levels of interaction involvement were associated with "more thoughts/feelings reflecting difficulty in conversation management" (p. 5). Together, these findings suggest that higher levels of interaction involvement should result in lower levels of uncertainty, as indicated in Hypothesis 8.

**H8:** Subjects with higher scores on the IIS will report a smaller proportion of thoughts and feelings indicative of uncertainty throughout conversations than will subjects with lower IIS scores.

Additionally, it appears likely that interaction involvement would influence other facets of the processes stipulated in Uncertainty Reduction Theory.

For example, consider the potential relationship between interaction involvement and information-seeking. Given evidence that those with higher levels of interaction involvement are less prone to conversational withdrawal (Cegala, 1989; Cegala et al., 1982, in press; Cegala & Sillars, 1989), it seems possible that higher levels of interaction involvement would produce greater amounts of information-seeking, due to increased interest. On the other hand, given evidence that those with higher levels of interaction involvement employ more appropriate and effective tactics for gaining information (e.g., Cegala et
al., 1981; Ludlum, 1988; Redmon et al., 1983), those with higher levels of interaction involvement may need fewer questions to start and maintain conversations. Since these explanations compete, the issue is phrased as a research question:

RQ1: What are the relationships between interaction involvement and question-asking in initial interactions?

Regarding the variables of "tolerance for uncertainty" and "predicted outcome value," it is possible to form more direct arguments. Since it has been demonstrated that those with higher levels of interaction involvement are more successful in finding appropriate and effective information-gathering strategies (e.g., Cegala et al., 1981; Redmon et al., 1983), report fewer thoughts indicating either difficulties in managing conversation or conversational withdrawal (Cegala et al., 1990; in press), and are more confident in their own competence (Brunner, 1984; Cegala et al., 1982), it seems probable that they would have higher tolerances for uncertainty, as posited in the following hypothesis:

H9: Conversants with higher levels of interaction involvement will report higher levels of tolerance for uncertainty.

Since prior research indicates that higher levels of interaction involvement are associated with more positive moods (Cegala, 1984), it is probable that these participants would feel more positively about the outcomes
of their conversations. Similarly, since those with higher levels of interaction involvement act more appropriately (Cegala, 1981) and are generally evaluated by others as more competent (Brunner, 1984), it is also likely that the partners of conversants with higher levels of interaction involvement will form more positive predicted outcome values. Thus, two additional hypotheses are advanced:

H10: Conversants with higher scores for interaction involvement will report more positive predicted outcome values than those with lower scores for interaction involvement.

H11: The partners of conversants with higher scores for interaction involvement will report more positive predicted outcome values than whose partners have lower scores for interaction involvement.

Finally, given evidence of higher competence on the part of those with higher levels of interaction involvement (e.g., Cegala, 1981), more positive mood state (Cegala, 1984), and the fact that observers rate those with higher interaction involvement as more competent (Brunner, 1984), it seems likely that the partners of those with higher levels of interaction involvement would express more liking for them than would those whose partners had lower levels of interaction involvement. This expectation is also complementary to that advanced in Hypothesis 11. Additionally, it seems likely that this effect would also influence the relationship between uncertainty and liking advanced by Berger and Calabrese, and tested by Hypotheses
3 and 4. Therefore, the following hypothesis and research question are advanced:

**H12:** Partners of conversants with higher scores for interaction involvement will express greater liking for those conversants than will partners of conversants with lower scores for interaction involvement.

**RQ2:** How are relationships between uncertainty and liking moderated by interaction involvement?

**Summary**

This chapter has reviewed the basic tenets of Uncertainty Reduction Theory and reviewed evidence concerning its validity. This review suggested that, while Uncertainty Reduction Theory has been the dominant model for explaining and researching initial interaction, there have been remarkably few studies designed to test the model. Therefore, the previous section presented hypotheses and research questions designed to further investigate uncertainty reduction processes in initial interactions.

Additionally, research reviewed in the chapter also suggested that interaction involvement might be an important determinant of uncertainty and an intervening variable in uncertainty reduction processes. Hypotheses and research questions were advanced in order to test these relationships.

In the following chapters, procedures will be discussed, results reported and conclusions discussed.
CHAPTER II

METHOD

Subjects

Ninety subjects (64 females and 26 males) participated in 45 dyads. Because of technical flaws, it was not possible to completely code tapes for four of the dyads, and they were therefore eliminated from those portions of the subsequent analysis that relied on data concerning question asking.

Subjects were recruited from the student population at Otterbein College in several ways. First, a solicitation packet was mailed to 948 students enrolled in the Continuing Studies program at Otterbein. The Continuing Studies program includes all part-time students older than 23, most of whom take courses during the evening and weekends. The program was used as the principal source of subjects primarily because it was expected that these students were less likely to know one another well, and the probability of prior interaction could be further reduced by selecting students in different majors and enrollment patterns. The packet contained a solicitation letter (Appendix A), a copy of a trait measure of the Interaction
Involvement Scale (IIS), and a sign-up sheet. One hundred and forty-one students eventually returned copies of the IIS, and 69 (56 females and 13 males) initially volunteered to participate in the study (seven of these volunteers subsequently refused; most stated that their refusal was based on inconvenient schedules).

When early returns indicated that an insufficient number of subjects were available from this population, that the available sample was heavily female and that scheduling would be more difficult than anticipated, subjects were also recruited from several daytime classes at Otterbein. The experimenter was introduced by the course instructor, and indicated that he was "conducting two studies concerned with conversation." Students were first asked to complete the IIS, and then the experimenter introduced the "second study," by indicating that it was concerned with the nonverbal behaviors that people employ in conversation. The experimenter then circulated a sign-up form and left the classroom.

Sixty-one, same-sex interactions were scheduled between March 3 and April 6, 1993. However, 24 were canceled because one or more of the subjects did not appear. (Whenever possible, subjects who did appear were asked to volunteer for a second session; this was possible because briefing was postponed until both subjects arrived.) Subjects were assigned to dyads on the basis of
availability, within the following constraints:

1. Subjects should not have the same major, or should be attending classes at different times (e.g., two students in the same major could be paired if one was a full-time students attending day classes and the other was a part-time student attending class during the evening).

2. Subjects could not be enrolled in the same course.

3. If possible, continuing studies students should be taking classes in different formats (i.e., daytime, evening or weekend).

Thus, the 90 subjects who participated could be divided into four groups by sex and student type. There were 43 females who were enrolled in the Continuing Studies Program (mean age = 36.5), nine males enrolled in the Continuing Studies Program (mean age = 34.9), 21 females enrolled in the day-time program for "Traditional" students (mean age = 19.3) and 17 males from the "Traditional student" population (mean age = 20.2).
Interactions

Interactions were taped in two locations: a conference room in the Instructional Media Center at Otterbein and a conference room in the department offices. (Two locations were needed to allow scheduling of dyads during hours when the Instructional Media Center was closed.)

Both sites were arranged so that subjects would sit across a table from each other, at a distance of approximately three feet. A remote microphone was placed on the table, in order to assure better sound quality, and a video camera was placed in a corner of the room and focused to include both participants. A character generator (Panasonic VW-CG5P) with digital stopwatch was attached to the camera. No effort was made to disguise the video camera, since subjects had already been told that they would be videotaped in order to study "nonverbal communication."

Before subjects arrived, the experimenter loaded a videotape, recorded a dyad number, activated the remote microphones, and reset the stopwatch attachment.

In order to assure that subjects did not meet before the conversation, they were asked to report to different rooms.

When the first subject had arrived, he/she was ushered into the taping site, and invited to choose a seat. When the second subject arrived, the experimenter preceded
him/her into the room, asked the subject to sit in the vacant chair and began briefing subjects. In the initial briefing, the experimenter said:

As you know, we are interested in collecting videotapes of the types of conversations that occur when strangers meet for the first time. I am assuming that you haven’t met before, or, if you have met, you don’t really know each other.

In 42 cases, the subjects indicated that they had not met previously, in two cases they indicated that they had met, but did not know each other well, and in one instance, both subjects felt that they had met, but could not recall when. There was one instance in which it was clear that the subjects knew each other, and they were dismissed at this point, after a debriefing opportunity.

After assuring that the subjects did not know each other well, the experimenter provided an introduction to the conversation. While these introductions were delivered without notes, they followed a general script:

So, what we would like you to do is just have the sort of conversation you might have if you met at a party, or a business luncheon, or if you were sitting beside each other in class the first day and the instructor hadn’t arrived yet, or if you got assigned to the same group project and decided to get to know each other. Does that make sense to you?

During this introduction, the experimenter started the video camera.

In an effort to increase subjects’ motivations to reduce uncertainty and to make judgements about their
conversational partners, the experimenter then said,

I’m going to leave the room for about 10 or 15 minutes. Then I’ll come back and you can decide if you want to continue the conversation, or move on to a different task.

The experimenter then started the video stopwatch attachment, and left the room, closing the door behind him.

After eight minutes had elapsed, the experimenter returned to the room, and said, "I’m going to break you up now." One subject was asked to stay in the room, and the other was taken to a different room, some distance away.

At this point, the subjects received different instructions and completed different tasks, as described in the following section.

Data Collection

Prior to the conversation, subjects were assigned to the "A" or "B" condition. This selection was made randomly, with occasional corrections to assure that traditional males, continuing studies males, traditional females and continuing studies females were fairly evenly split among the "A" and "B" conditions. The final distribution is reported in Table 2.
Table 2

**Distribution of Subjects by Sex and Student Type**

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Condition A&quot;</td>
<td>4</td>
<td>9</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>&quot;Condition B&quot;</td>
<td>5</td>
<td>8</td>
<td>20</td>
<td>12</td>
</tr>
</tbody>
</table>

**Completion of data collection took approximately 35-50 minutes in both conditions. In the first seven dyads, student assistants were used to assist in data gathering among the two conditions," but it was discovered that a single experimenter could effectively conduct both sessions.**

**Condition A.** Subjects in this condition were first asked to complete a battery of questionnaires, designed to measure the following variables (see Instrumentation section, following for more details about the measures): state interaction involvement (to be used in a subsequent analysis), conversational uncertainty, tolerance for uncertainty, predicted outcome values, liking and perceived similarity. After asking subjects to complete these items, the experimenter left the room and asked subjects to notify him when they finished.
When they had completed the questionnaires, subjects in the "A" condition were introduced to a recall task using the following instructions:

One of the things we are interested in investigating is what people remember from conversations, and what happened during the conversations that cause them to remember particular things. Therefore, we would like you to list all of the things you remember about your conversational partner.

They also received sheets for their response that repeated these instructions (see Appendix B). Following these instructions, the experimenter left the room and asked subjects to notify him when they had completed the task. (Data from this condition are to be used in a subsequent study of conversational memory.)

After completing the recall task, subjects completed an exit questionnaire (Appendix C), were debriefed and invited to a follow-up discussion of the study, and were asked to sign a form permitting use of the videotape for research purposes. They were given a copy of the permission form, and pledged to secrecy before being dismissed.

Condition B. Subjects in the "B" condition were also asked to complete the state version of the IIS, primarily as a distractor for the subsequent recall task. When the questionnaire was completed, the experimenter told them,

One of the things we are interested in studying is what people think about during conversations. Therefore, I would like you to watch a tape of
the conversation, and write down the things you remember thinking about. Look over these instructions and see if they make sense to you.

The experimenter then gave the subjects a copy of the thought/feeling instructions and forms (Appendix D). After subjects had reviewed the instructions, the experimenter showed them how to use the remote control to pause and re-start the tape, rewound the tape to the beginning of the conversation, asked the subjects to open the door if they had questions, and left the room. (It was possible for the experimenter to monitor the tape from another room, so it was possible to verify that subjects understood the task. In two of the early trials, subjects accidentally hit the "record" button, thus erasing a part of the tape, but this was corrected in subsequent trials by removing the "play-only" tab on the tapes.)

Following completion of the thought/feeling listing, the experimenter presented subjects with the following written instructions:

Now, please review the thoughts and feelings you have listed and identify all those times when you were feeling "uncertain." (This might be uncertainty about how your partner was reacting, feeling, etc., or uncertainty about something he/she was saying or doing, or uncertainty in your ability to predict, understand or interpret his/her actions or words. It might also include uncertainty that you were feeling about the conversation, your role in it, or other factors.) For every thought or feeling that reflects uncertainty, please place a capital "U" in the column beside the time.

Following this task, subjects were asked to complete the
same exit questionnaire used in Condition A, were
debriefed, were asked to sign the permission form, were
pledged to secrecy and were dismissed.

Instrumentation

Although all measures used had been tested by previous
experimenters and found to be reliable, reliability
analyses were conducted on each measure employed in the
study. Scales and results of these analyses are reported
below.

Interaction Involvement. All subjects completed a
"trait" measure of interaction involvement when they
volunteered to participate in the study. This measure was
drawn from a recent adaptation of Cegala's (1981)
Interaction Involvement Scale (IIS). Subjects were asked
to respond to eighteen items, employing a seven-point scale
ranging from "Not at all like me" (scored as 1) to "Very
much like me" (scored as 7). Before reliability analysis
was conducted, scores for appropriate items were reversed.
A reliability analysis conducted on the responses of those
subjects who participated yielded an alpha of .89. Table 3
reports on the items of the scale and the alpha if each
item were deleted.
Table 3

Reliability Information for Interaction Involvement Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am keenly aware of how others perceive me during conversations.</td>
<td>.89</td>
</tr>
<tr>
<td>2. Sometimes my mind wanders during conversations and I miss part of</td>
<td>.89</td>
</tr>
<tr>
<td>what is going on. (R)</td>
<td></td>
</tr>
<tr>
<td>3. Sometimes in conversations I’m not sure what to say; I can’t</td>
<td>.88</td>
</tr>
<tr>
<td>seem to find the appropriate lines. (R)</td>
<td></td>
</tr>
<tr>
<td>4. I am very observant of others’ reactions while I’m talking.</td>
<td>.89</td>
</tr>
<tr>
<td>5. During conversations I listen carefully to others, and obtain as</td>
<td>.89</td>
</tr>
<tr>
<td>much information as I can.</td>
<td></td>
</tr>
<tr>
<td>6. Sometimes in conversations I’m not sure what my role is, I’m</td>
<td>.88</td>
</tr>
<tr>
<td>not sure how I’m expected to relate to others. (R)</td>
<td></td>
</tr>
<tr>
<td>7. Sometimes in conversations I will pretend to be listening, when</td>
<td>.89</td>
</tr>
<tr>
<td>in fact I am thinking of something else. (R)</td>
<td></td>
</tr>
<tr>
<td>8. During conversations sometimes I feel like I know what should be</td>
<td>.89</td>
</tr>
<tr>
<td>said (like accepting a compliment or asking a question), but I</td>
<td></td>
</tr>
<tr>
<td>hesitate to do so. (R)</td>
<td></td>
</tr>
<tr>
<td>9. Sometimes during conversations I’m not really sure what the other</td>
<td>.88</td>
</tr>
<tr>
<td>really means or intends by certain comments. (R)</td>
<td></td>
</tr>
<tr>
<td>10. I carefully observe how the other is responding during a</td>
<td>.89</td>
</tr>
<tr>
<td>conversation.</td>
<td></td>
</tr>
<tr>
<td>11. Sometimes I feel withdrawn or distant during conversations.</td>
<td>.89</td>
</tr>
</tbody>
</table>
Table 3 (cont.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Often in conversations I'm not sure what others' needs (e.g., a compliment, reassurance, etc.) are until it is too late to respond. (R)</td>
<td>.88</td>
</tr>
<tr>
<td>13. I feel confident during conversations, I am sure of what to say and do.</td>
<td>.88</td>
</tr>
<tr>
<td>14. Sometimes I'm preoccupied in my conversations and do not pay complete attention to others. (R)</td>
<td>.89</td>
</tr>
<tr>
<td>15. I sometimes feel sort of &quot;unplugged&quot; during conversations, I'm uncertain of my role, others' motives, and what's happening. (R)</td>
<td>.88</td>
</tr>
<tr>
<td>16. In my conversations I am sometimes uncertain of others' intentions or motivations. (R)</td>
<td>.89</td>
</tr>
<tr>
<td>17. In conversations I am very perceptive to the meaning of my partner's behavior in relation to myself and the situation.</td>
<td>.88</td>
</tr>
<tr>
<td>18. Sometimes during conversation I can't think of what to say, I just don't react quickly enough.</td>
<td>.88</td>
</tr>
</tbody>
</table>

NOTE: (R) identifies items that were reversed during scoring.

Conversational uncertainty. Conversational uncertainty was measured in two ways.

Subjects in "Condition A" completed Kellerman and Reynolds' (1990) revision of Clatterbuck's (1979) "CLUES 7" scale. Clatterbuck's original scale consists of seven items, to which a subject responds on a scale of 0-100% certainty. Kellerman and Reynolds added an eighth item, drawn from Gudykunst and Nishida (1986), "How well do you think you understand the person," and employed a seven-
point scale in lieu of the scale proposed by Clatterbuck. Because this scaling was more consistent with other measures employed, and because Kellerman and Reynolds reported reliabilities ranging from .87 to .91 across three different conditions (pp. 30-31), the modified scale was used.

In this study, the uncertainty scale was used by 45 subjects. Subjects were asked to circle a number between 1 and 7, with "Absolutely no confidence" and "Absolutely confident" at the two ends. Kellerman and Reynolds reported that the scale was unidimensional in a sample of 1,159, and given the sample size, it was determined that confirmatory factor analysis would not be useful. However, a reliability analysis was conducted and yielded an alpha of .85. Table 4 reports the items of the scale and the alpha if each item were deleted.
Table 4

Reliability Information for Conversational Uncertainty Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How confident are you of your general ability to predict how your conversational partner will behave?</td>
<td>.86</td>
</tr>
<tr>
<td>2. How confident are you that he/she likes you?</td>
<td>.84</td>
</tr>
<tr>
<td>3. How accurate are you at predicting the values he/she holds?</td>
<td>.83</td>
</tr>
<tr>
<td>4. How well can you predict his/her attitudes?</td>
<td>.83</td>
</tr>
<tr>
<td>5. How well can you predict his/her feelings and emotions?</td>
<td>.85</td>
</tr>
<tr>
<td>6. How much can you empathize with (share) the way he/she feels about himself/herself?</td>
<td>.84</td>
</tr>
<tr>
<td>7. How well do you know him/her?</td>
<td>.84</td>
</tr>
<tr>
<td>8. How well do you think you understand the person?</td>
<td>.83</td>
</tr>
</tbody>
</table>

A total score for all items would yield a measure of "predictive attributional confidence." Thus, the total score was reversed by subtracting it from 64, to yield a measure of attributional uncertainty.

Subjects in "Condition B" were asked to code their own thought/feeling recalls to identify instances in which they felt "uncertain" (a sampling of thought/feeling statements selected by subjects as indicative of uncertainty may be found in Appendix E.) These were subsequently coded in
three ways. First, the thoughts and feelings were analyzed to determine the number of thoughts/feelings coded as indicative of uncertainty during each of the four two-minute segments of the conversation. Second, a total was calculated for the first eight minutes of the conversation. Finally, the proportion of thought/feeling statements identified by subjects to the total of all their thought/feeling statements was calculated for both the eight-minute conversation and each two-minute segment. This proportion serves as a measure of "relative uncertainty" that is less subject to differences in subjects' written loquacity. For the sample of 41 conversations employed in the study, there were a total of 507 thoughts and feelings listed in the recall task (an average of 12.4 per subject), and 192 (37.9%) were identified as indicative of uncertainty (an average of 4.7 per subject).

Tolerance for uncertainty. Subjects in "Condition A" completed a measure of tolerance for uncertainty developed by Kellerman and Reynolds (1990). Those authors reported a unidimensional factor structure and reliabilities ranging between .88 and .91. A reliability analysis conducted for this study yielded an alpha of .87. Items and item reliabilities are reported in Table 5.
Table 5
Reliability Information for Measure of Tolerance for Uncertainty

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How confident did you feel you needed to be in your general ability to predict how your conversational partner would behave?</td>
<td>.86</td>
</tr>
<tr>
<td>2. How certain did you feel you needed to be about how well the person liked you?</td>
<td>.86</td>
</tr>
<tr>
<td>3. How accurate did you think you needed to be predicting the values the person holds?</td>
<td>.83</td>
</tr>
<tr>
<td>4. How accurate did you think you needed to be at predicting the person's attitudes?</td>
<td>.83</td>
</tr>
<tr>
<td>5. How well did you think you needed to be able to predict the person's feelings and emotions?</td>
<td>.83</td>
</tr>
<tr>
<td>6. How much did you think you needed to be able to empathize (share) the way the person felt about him/herself as a person?</td>
<td>.86</td>
</tr>
<tr>
<td>7. How well did you think you needed to know the person?</td>
<td>.86</td>
</tr>
<tr>
<td>8. How well did you think you needed to understand the person?</td>
<td>.85</td>
</tr>
</tbody>
</table>

As Kellerman and Reynolds note, total scores on this measure reflect "threshold for uncertainty" (p. 30), thus total scores were reversed to provide a measure of tolerance for uncertainty.

Predicted Outcome Value. Predicted outcome values were measured in "Condition A" by use of a modification of the instrument developed by Sunnafrank (1988). The measure...
consists of 10 items. In Sunnafrank’s research, he has employed a six-point scale, but to maintain consistency, subjects in this study responded on a seven-point scale ranging from "Extremely positive" to "Extremely negative." Sunnafrank (1990) reported an alpha of .93 for his scale, and the reliability analysis conducted for this study resulted in an alpha of .95, indicating that the decision to employ a seven-point measure did not damage reliability. Table 6 reports individual reliability data for each item of the measure.
## Table 6

**Reliability Information for Predicted Outcome Values Scale**

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In general, how positive would a future relationship with this partner be <em>for you</em>?</td>
<td>.95</td>
</tr>
<tr>
<td>2. Considering your impressions of your partner’s general pattern of behavior, how positive would a future relationship be <em>for you</em>?</td>
<td>.94</td>
</tr>
<tr>
<td>3. Considering your general expectations about how your partner may behave toward you in the future, how positive would a future relationship be <em>for you</em>?</td>
<td>.95</td>
</tr>
<tr>
<td>4. Considering your general expectations about the types of conversations which may occur in this relationship, how positive would this relationship be <em>for you</em>?</td>
<td>.95</td>
</tr>
<tr>
<td>5. Considering your general expectations about how your partner may respond to what you do and say, how positive would this future relationship be <em>for you</em>?</td>
<td>.94</td>
</tr>
<tr>
<td>6. Considering your general impression of your partner’s interests, how positive would this future relationship be <em>for you</em>?</td>
<td>.94</td>
</tr>
<tr>
<td>7. Considering your general impression of your partner’s likes and dislikes, how positive would this future relationship be <em>for you</em>?</td>
<td>.95</td>
</tr>
<tr>
<td>8. Considering your general impression of your partner’s attitudes and values, how positive would this future relationship be <em>for you</em>?</td>
<td>.94</td>
</tr>
<tr>
<td>9. Considering your general impression of how your partner feels about you, how positive would this future relationship be <em>for you</em>?</td>
<td>.94</td>
</tr>
<tr>
<td>10. Overall, given your general impression of your partner, how positive would this future relationship be <em>for you</em>?</td>
<td>.94</td>
</tr>
</tbody>
</table>
To identify subjects with "positive" and "negative predicted outcome value," Sunnafrank (1990) employed a split on the theoretical mean of the scale (with a six-point scale, the theoretical mean for 10 items was 35, and he defined "positive predicted outcome value as scores at and above 37, and "negative" as scores at and below 33). When modified for this study, the Sunnafrank procedure suggests that subjects with score at and above 42 would be classified as having "positive predicted outcome values," while subjects with scores at and below 38 would be classified as having "negative predicted outcome values."

For this study, the split resulted in 41 subjects with "positive predicted outcome values," two with "negative predicted outcome values" and two who were not classifiable in either category.

**Liking.** Subjects in "Condition A" completed a five-item measure of "social attraction" drawn from McCroskey and McCain's (1974) measure of interpersonal attraction. Subjects responded to each item on a nine-point scale from "strongly disagree" to "strongly agree." McCroskey and McCain reported an alpha of .86 for this measure, and Sunnafrank (1990) reported an alpha of .83 for a version of the scale excluding the fifth item. Because the second and fifth items of the measure assume that interaction has not yet taken place, they were revised to refer to a future interaction. Reliability analysis conducted for this study
yielded an alpha of .86. Table 7 reports individual items and associated reliabilities.

Table 7

Reliability Information for Liking Measure

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think he/she could be a friend of mine.</td>
<td>.83</td>
</tr>
<tr>
<td>2. It would be difficult to meet and talk with him or her [again]. (R)</td>
<td>.87</td>
</tr>
<tr>
<td>3. He/she just wouldn't fit into my circle of friends. (R)</td>
<td>.82</td>
</tr>
<tr>
<td>4. We could never establish a personal friendship with each other. (R)</td>
<td>.82</td>
</tr>
<tr>
<td>5. I would like to have a friendly chat with him/her [at a later time].</td>
<td>.80</td>
</tr>
</tbody>
</table>

NOTE: (R) identifies items that were reversed for scoring similarity. Subjects in "Condition A" completed a measure of similarity drawn from McCroskey et al.'s (1975) measure of "perceived homophily." The measure consists of 14 items, measuring perceived similarity in four dimensions: attitudes (four items), background (four items), values (two items) and appearance (four items). Because the scale is multi-dimensional, totals were calculated for each dimension, and dimensions were analyzed separately in the reliability analysis. Alphas reported were .77 for the "attitude" dimension, .66 for the
"background" dimension, .55 for the "value" dimension, and .72 for the "appearance" dimension. Table 8 reports items and reliability information for the scales on each dimension.
Table 8

Reliability Information for Perceived Similarity Measure

<table>
<thead>
<tr>
<th>Item</th>
<th>Alpha if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitude Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>1. Doesn't think like me/Thinks like me</td>
<td>.74</td>
</tr>
<tr>
<td>2. Behaves like me/Doesn't behave like me (R)</td>
<td>.75</td>
</tr>
<tr>
<td>3. Similar to me/Different from me (R)</td>
<td>.68</td>
</tr>
<tr>
<td>4. Unlike me/Like me</td>
<td>.67</td>
</tr>
<tr>
<td><strong>Background Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>5. From social class similar to mine/From social class different from mine (R)</td>
<td>.69</td>
</tr>
<tr>
<td>6. Economic situation different from mine/Economic situation like mine</td>
<td>.61</td>
</tr>
<tr>
<td>7. Status like mine/Status different from mine (R)</td>
<td>.49</td>
</tr>
<tr>
<td>8. Background different from mine/Background similar to mine</td>
<td>.55</td>
</tr>
<tr>
<td><strong>Values Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>9. Morals unlike mine/Morals like mine</td>
<td>n/a</td>
</tr>
<tr>
<td>10. Sexual attitudes unlike mine/Sexual attitudes like mine</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Appearance Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>11. Looks similar to me/Looks different from me (R)</td>
<td>.57</td>
</tr>
<tr>
<td>12. Different size than me/Same size I am</td>
<td>.72</td>
</tr>
<tr>
<td>13. Appearance like mine/Appearance unlike mine (R)</td>
<td>.73</td>
</tr>
<tr>
<td>14. Doesn't resemble me/Resembles me</td>
<td>.60</td>
</tr>
</tbody>
</table>

**NOTE:** (R) identifies items that were reversed in scoring
Exit Questionnaire. The exit questionnaire (Appendix C) was designed to assure that subjects did not know each other well, that subjects believed their conversations to be natural and that the presence of the video camera created minimal distraction. Additional items were added to this questionnaire to tap subjects' perceptions of how well they knew their partners after the conversation, and to measure subjects' comfort with the conversation and recall tasks.

Coding of Data

Videotapes were coded by two neutral coders who had experience in such coding. Coders were instructed to record time, speaker position (left or right) and approximate content for all "information-seeking questions." They were instructed to include and label "indirect questions," defined as "information-seeking requests that take the form of tentative statements" and "clarifications," defined as "requests for one's partner to clarify something s/he has said." They were also instructed to ignore "questions that occur in the course of a narrative" and "verbal prompts/ellipses," which were defined as follows:
These are stated in question form, but are designed to encourage the other person to talk, rather than seeking new information. Typically, they express surprise, encouragement, or empathy. (E.g., "Really?" "You didn’t?!" "Are you kidding me?")

A copy of the instructions given to coders is available in Appendix F.

Each coder viewed videotapes of all 41 conversations used in the study, and completed a coding sheet for each conversation.

As a test of intercoder reliability, the experimenter also coded a set of four conversations, and calculated agreement percentages between himself and each of the coders, and between the coders themselves. Agreement between the experimenter and the first coder was 81.4%, agreement between the experimenter and second coder was 80.4% and between the two neutral coders was 73.0%. However, when items coded as "indirect questions" were ignored, agreement increased to 89.1% between the experimenter and the first coder, 83.7% between the experimenter and second coder, and 79.2% between the two neutral coders. Since agreement was higher between the experimenter and the first coder, her coding was used and since agreement was substantially higher without the category of "indirect questions," they were not considered in the analysis.
NOTES

1. One of the dyads was interrupted before eight minutes had elapsed, one was taped without the remote microphone activated, and portions of the tapes of two dyads were erased during the stimulated recall process.

2. I am grateful to Linda Davis, Denise Shively and Dr. Karyl Sabbath of the Department of Speech Communication and R. K. Thomas of Psychology for permission to recruit subjects in their courses.

3. I appreciate the contributions of Jeff Evans, Holly Ross, and Traci Tatman, who volunteered to serve as student assistants. Student assistants were briefed about the theories tested and procedures, and then observed the experimenter in the first experiment. In subsequent data gathering, they were observed by the experimenter.

4. In all time-based coding, the conversations were viewed to identify a starting point, and divided according to that starting point. Thus, if the conversation started when the stopwatch read "0:08.3," all thoughts and feelings before "2:06 ' were counted as occurring in the first two minutes.

5. While conversational length varied from 8:10 to 8:45, use of the first eight minutes allowed for comparison of equal segments of time.

6. The author expresses special appreciation to Drs. Chris Reynolds and Karyl Sabbath who served as coders.
CHAPTER III
 RESULTS

Exit Questionnaire

Each subject completed a brief exit questionnaire designed to measure their prior familiarity with partners and reactions to the conversation and experimental setting.

Question 1 asked subjects to indicate how well they knew their partner prior to the conversation. On a seven point scale, the mean was 1.10, and 89.6% of the subjects responded with a score of "1." Both subjects in one dyad responded with a "2," subjects in another dyad responded with a "3" and a "4," and one additional subject responded with a "3," although their partner indicated "1." These results verify the responses collected prior to taping, and suggest that the conversations reflect initial interactions.

Question 2 asked subjects to indicate how well they knew their partners after the conversation. The mean on a seven point scale was 3.57.

Questions 3 through 6 employed a five-point, Likert scale to assess subjects' agreement with four statements concerning the conversation, experimental setting, and
recall task. Means and percentages are reported in Table 9.

Table 9
Descriptive Statistics for the Exit Questionnaire

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt comfortable (as opposed to nervous) during the conversation.</td>
<td>3.78</td>
<td>0.96</td>
<td>73% agreed with item</td>
</tr>
<tr>
<td>This conversation was artificial due to the setting and videotaping.</td>
<td>2.57</td>
<td>0.98</td>
<td>55% disagreed with item</td>
</tr>
<tr>
<td>This conversation was typical of the way I interact with strangers.</td>
<td>3.97</td>
<td>0.75</td>
<td>83% agreed with item</td>
</tr>
<tr>
<td>I thought the task of recalling the conversation (or recalling my thoughts and feelings about the conversation) was difficult.</td>
<td>2.36</td>
<td>1.04</td>
<td>69% disagreed with item</td>
</tr>
</tbody>
</table>

The results reported in Table 9 indicate that most subjects felt comfortable during the conversation, felt that the conversation was typical of the way they interact with strangers (despite the fact that a smaller percentage disagreed with the statement that the camera made the conversation artificial), and did not feel that the recall task was difficult. (It should be noted that 63% of the
subjects who participated in the stimulated recall condition disagreed with the statement, while 75% of those in Condition A disagreed.)

These results are quite similar to those reported by Cegala et al. (1988). Compared with the earlier study, there is somewhat higher agreement in the current study with the statements that subjects "felt comfortable" (73% versus 64%) and that the conversation was "typical of the way I interact with strangers" (83% versus 66%). This is particularly noteworthy because the percentage who disagreed with the statement that the setting and taping made the conversation artificial is lower in the current study (55% versus 64%) and because the Cegala et al. study included both friendship and stranger dyads.

Changes Across Time

Hypothesis 1 predicted that the number of thought/feeling units indicative of uncertainty would decrease over the course of the conversation. Thought/feeling units coded as reflecting uncertainty were coded into four, two-minute segments, and a repeated measures ANOVA on frequencies of thought/feeling units was computed. This analysis resulted in a significant F (F(160,3) = 6.03, p<.0006, eta² =.10). A follow-up Tukey test was conducted, and revealed significant differences between uncertainty during the first two minutes
(mean = 1.80) and the succeeding two-minute blocks (means of 1.07, 0.93, and 0.85). A repeated measures ANOVA was also conducted for the proportion of thoughts and feelings selected by subjects as indicative of uncertainty, but there were no significant changes across time (F=1.08, p>.30). Thus, Hypothesis 1 was partially confirmed; uncertainty declined significantly between the initial two-minutes and the next two-minute period, but did not decline significantly thereafter.

Hypothesis 2 predicted that question-asking would decrease over the course of conversations, and specifically predicted that question-asking would be greater in the first two minutes of the conversation. In order to facilitate interpretation of subsequent results, and eliminate the possibility of dyadic effects (Kenny, 1988; Kenny & LaVoie, 1985), data from each condition were analyzed separately by means of repeated measures ANOVAs. For Condition A, the resulting F was significant (F(160,3) = 15.29, p<.0001, eta² = .22), as was the resulting F for condition B (F(160,3) = 25.83, p<.0001, eta² = .33). As Table 10 indicates, a follow-up Tukey test also confirmed that question-asking decreased as predicted. Thus, Hypothesis 2 was supported.
Table 10

Means for Question-Asking in Conditions A and B

<table>
<thead>
<tr>
<th>Time</th>
<th>Condition A (N = 41)</th>
<th>Condition B (N = 41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First two minutes</td>
<td>4.10\textsuperscript{a}</td>
<td>4.95\textsuperscript{a}</td>
</tr>
<tr>
<td>Minutes 2-4</td>
<td>2.37\textsuperscript{b}</td>
<td>2.44\textsuperscript{b}</td>
</tr>
<tr>
<td>Minutes 4-6</td>
<td>1.61\textsuperscript{b}</td>
<td>1.63\textsuperscript{b}</td>
</tr>
<tr>
<td>Minutes 6-8</td>
<td>1.32\textsuperscript{b}</td>
<td>1.32\textsuperscript{b}</td>
</tr>
</tbody>
</table>

NOTE: Means with the same superscript are not significantly different.

Relationships Between Uncertainty and Question-Asking

Hypotheses 3-7 were designed to test three competing explanations of the relationship between question-asking and uncertainty.

Hypothesis 3 predicted that there would be a significant correlation between question-asking and uncertainty, and was tested in two ways. First, using data from subjects in Condition B (the stimulated recall condition), Pearson product-moment correlation coefficients were calculated between question-asking in each two minute segment of the conversation and both the number and proportion of thought/feeling statements indicative of
uncertainty during these periods. The results are reported in Table 11; the only correlation that is significant at the .05 level is between question-asking and the proportion of thought/feeling statements indicative of uncertainty during the seventh and eighth minutes of the conversation.

Table 11
Correlations Between Uncertainty and Question-Asking in Condition B

<table>
<thead>
<tr>
<th></th>
<th>Correlation between Question-Asking and Uncertainty from T/F measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Period</td>
<td>Number</td>
</tr>
<tr>
<td>Minutes 0-2</td>
<td>.11</td>
</tr>
<tr>
<td>Minutes 2-4</td>
<td>.11</td>
</tr>
<tr>
<td>Minutes 4-6</td>
<td>.09</td>
</tr>
<tr>
<td>Minutes 6-8</td>
<td>-.03</td>
</tr>
<tr>
<td>Entire Conversation</td>
<td>-.04</td>
</tr>
</tbody>
</table>

* p < .05

In addition, from the data in Condition A, Pearson product-moment correlations were computed between question-asking and the measure of conversational uncertainty. These data are reported in Table 12, together with correlations with tolerance for uncertainty and predicted outcome value.
Table 12

Correlations between Question-Asking and Uncertainty Tolerance for Uncertainty and Predicted Outcome Value (Condition A)

<table>
<thead>
<tr>
<th>Time</th>
<th>Uncertainty</th>
<th>Tolerance for Uncertainty</th>
<th>Predicted Outcome Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes 0-2</td>
<td>.09</td>
<td>.08</td>
<td>-.17</td>
</tr>
<tr>
<td>Minutes 2-4</td>
<td>.27*</td>
<td>.19</td>
<td>-.28*</td>
</tr>
<tr>
<td>Minutes 4-6</td>
<td>.01</td>
<td>-.10</td>
<td>-.08</td>
</tr>
<tr>
<td>Minutes 6-8</td>
<td>.09</td>
<td>.19</td>
<td>-.20</td>
</tr>
<tr>
<td>Entire Conversation</td>
<td>.20</td>
<td>.15</td>
<td>-.29*</td>
</tr>
</tbody>
</table>

* p<.05

An examination of Tables 11 and 12 reveals that only two of the twelve correlations between uncertainty and question-asking for various time conditions are significant. Thus, Hypothesis 3 was rejected.

Hypotheses 4 and 5 were designed to test temporal relationships between uncertainty and question-asking. Hypothesis 4 was designed to extend existing tests of a basic premise of Uncertainty Reduction Theory -- that uncertainty causes question-asking. If the relationship is a causal one, at minimum, question-asking would be more likely following statements reflecting uncertainty than at
other times. In order to test this hypothesis, individual probabilities for both question-asking in general and question-asking following uncertainty were calculated for the 41 subjects with complete videotapes in Condition B (one subject was rejected from the analysis because she asked no questions). A t-test comparing the probability for each subject of question asking in the 15-seconds following thought/feeling statements coded by subjects as indicative of uncertainty (mean probability = .42) with the probability of question asking in any 15-second period (mean probability = .32) was significant ($t = 2.06$, $df = 39$, $p<.05$), and thus the hypothesis was supported.

Hypothesis 5 speculated that question-asking would reduce uncertainty, and was tested by comparing the general probability of thought/feeling statements indicative of uncertainty with the probability that such a statement would follow question-asking. Again, individual probabilities were calculated, based on the thought/feeling protocols and coding of the video tapes, and a t-test was conducted. The t-test was statistically significant ($t = 4.15$, $df = 39$, $p<.001$), however the results were directly opposite of the prediction advanced in the study. Results indicated that the probability of thought/feeling statements indicative of uncertainty was greater following question asking (mean probability = .31) than in the general conversation (mean probability = .15). Thus, the
Hypothesis 6 was designed to replicate in actual conversations Kellerman and Reynolds' (1990) finding that information seeking was influenced more by "tolerance for uncertainty" than by uncertainty. As the correlations reported in Table 12 above indicate, there were no significant correlations between tolerance for uncertainty and question asking during any period of the conversation. Thus, the hypothesis was rejected.

Hypothesis 7 was designed to replicate Sunnafrank's (1986) contention that the correlation between question asking and uncertainty is dependent on the nature of subjects' "predicted outcome values;" while Sunnafrank (1990) reported supportive data from self-reports, the theory had never been tested using interactional data on question asking. The hypothesis could not be completely tested, because there were an insufficient number of subjects with "negative predicted outcome values." However, a partial test could be completed by conducting correlational tests with only those subjects who reported "positive predicted outcome values." If Sunnafrank's theory is correct, correlations between uncertainty and question-asking should significant, but negative for these subjects. Thus Pearson product-moment correlations were calculated with a subset of the sample that excluded the two subjects with "negative predicted outcome values" and
two subjects who would be classified as "neutral" using Sunnafrank's coding system. The results of this correlation are reported in Table 13.

Table 13

Correlations Between Uncertainty and Question-Asking Among Subjects with "Positive Predicted Outcome Values"

<table>
<thead>
<tr>
<th>Questions Asked</th>
<th>Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes 0-2</td>
<td>.13</td>
</tr>
<tr>
<td>Minutes 2-4</td>
<td>.07</td>
</tr>
<tr>
<td>Minutes 4-6</td>
<td>.06</td>
</tr>
<tr>
<td>Minutes 6-8</td>
<td>-.13</td>
</tr>
<tr>
<td>Entire Conversation</td>
<td>.10</td>
</tr>
</tbody>
</table>

None of the correlations are significant; in fact the only significant correlation discovered in the complete sample (between question asking and uncertainty in the third and fourth minutes of conversation) is lost in the sample. In addition, the correlation coefficients reported in Table 12 indicate a significant negative correlation between predicted outcome value and question-asking for the entire conversation, in direct contradiction of the logic advanced in Sunnafrank's model. Thus, while the hypothesis could not be tested completely, it was partially rejected.
Tests of the Role of Interaction Involvement

Hypothesis 8 predicted that subjects with higher levels of interaction involvement would report lower levels of uncertainty throughout the conversation. The hypothesis was tested in two ways. First, a Pearson product-moment correlation was calculated for the relationship between subjects' scores on the trait version of the Interaction Involvement Scale and scores on Clatterbuck's "CL7" measure for subjects in Condition A. The result was a correlation of -.34, significant at p<.05, confirming the expectation. Second, for subjects in Condition B (the stimulated recall condition), Pearson product moment correlations were calculated between scores on the IIS and thought/feeling statements coded as indicative of uncertainty. These results are reported in Table 14.
Table 14

Correlations Between IIS and Thought/Feeling Statements
Coded as Indicative of Uncertainty

<table>
<thead>
<tr>
<th>Time</th>
<th>Correlation Between IIS and Uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes 0-2</td>
<td>-0.15</td>
</tr>
<tr>
<td>Minutes 2-4</td>
<td>0.20</td>
</tr>
<tr>
<td>Minutes 4-6</td>
<td>0.01</td>
</tr>
<tr>
<td>Minutes 6-8</td>
<td>0.08</td>
</tr>
<tr>
<td>Entire Conversation</td>
<td>0.05</td>
</tr>
</tbody>
</table>

None of the correlations are significant. Since the hypothesized relationship is supported by the test on Condition A, but not on the test in Condition B, the hypothesis is only partially supported.

As a further exploration of the relationship between interaction involvement and uncertainty, a stepwise multiple regression analysis was conducted using uncertainty (as measured using the CLUES measure) as a dependent variable and all other variables as potential predictor variables. The analysis resulted in a significant F (F[2,38] = 5.61, p<.01, R² = .23). Significant main effects were observed for the "attitude" dimension of similarity (b = -0.64, df = 38, t = -2.68, p<.05) and for scores on the IIS (b= -0.183, df = 38,
t = -2.54, p<.05). These results reinforce those of the correlational test of Hypothesis 8 and provide additional support for the influence of interaction involvement on conversational uncertainty.

Research Question 1 asked, "What are the relationships between interaction involvement and question asking in initial interactions." These relationships were explored through an examination of correlation coefficients between IIS scores and question asking in each condition of the study. As the results of Table 15 suggest, no significant relationships were found.
Table 15

Correlations between IIS and Question-Asking

<table>
<thead>
<tr>
<th>Time</th>
<th>Condition A</th>
<th>Condition B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes 0-2</td>
<td>-.13</td>
<td>-.06</td>
</tr>
<tr>
<td>Minutes 2-4</td>
<td>.01</td>
<td>.14</td>
</tr>
<tr>
<td>Minutes 4-6</td>
<td>.21</td>
<td>-.05</td>
</tr>
<tr>
<td>Minutes 6-8</td>
<td>.00</td>
<td>-.13</td>
</tr>
<tr>
<td>Entire Conversation</td>
<td>-.04</td>
<td>-.04</td>
</tr>
</tbody>
</table>

Hypotheses 9 and 10 predicted a positive relationship between scores on the IIS and scores on the measures of tolerance for uncertainty and predicted outcome values. These hypotheses were tested using subjects in Condition A. Neither correlation was statistically significant; the correlation between IIS and tolerance for uncertainty was .03, and the correlation between IIS and predicted outcome values was .19. Thus, both hypotheses were rejected.

Hypotheses 11 and 12 predicted that partners’ IIS scores would influence subjects’ scores for predicted outcome values and liking. Again, neither correlation was significant; the correlations between partners’ IIS and predicted outcome values was -.09, and the correlation between partners’ IIS and liking was -.15.
Research Question 2 asked, "How are relationships between uncertainty and liking moderated by interaction involvement." The correlation between liking and uncertainty was negative and significant ($r = -.25, p<.05$) and thus the research question was tested in two ways. First, a partial correlation, controlling for IIS was computed; the resulting correlation was not significant ($r = -.23, df = 38$). In addition, a stepwise multiple regression analysis using liking as the dependent variable and uncertainty, interaction involvement, question asking, and the four dimensions of perceived similarity as predictor variables. A statistically significant regression equation was discovered ($F[3,37] = 5.85, p<.01, R^2 = .27$), which included interaction involvement but not uncertainty. Significant main effects were found for the attitude dimension of perceived similarity ($b = .69, t = 2.83, df = 37, p<.01$), for the appearance dimension of perceived similarity ($b = .56, t = 2.67, df = 38, p<.05$), and for IIS ($b = .15, t = 2.01, p = .05$). This suggests that the observed correlation between uncertainty and liking may be the result of effects on liking of both similarity and interaction involvement.
CHAPTER IV
DISCUSSION

Uncertainty and Information Seeking

One of the primary goals of this study was to provide a more complete test of the three predominant explanations for question-asking in initial conversations: Berger and Calabrese's Uncertainty Reduction Theory (1975), Kellerman and Reynolds' (1990) suggestion that "tolerance for uncertainty" is a superior predictor of information seeking, and Sunnafrank's "Predicted Outcome Values Theory (1986). While each of these explanations has received support in previous research (e.g., Douglas, 1990b; Kellerman & Reynolds, 1990; Sunnafrank, 1990), no previous study had compared the three explanations using data on question-asking drawn from conversations. The Kellerman and Reynolds study is the only other study which offers comparative data, and that study was based on subject responses to hypothetical scenarios. In addition, no previous research has employed a measure that could tap uncertainty on a continuing basis through conversation; this dissertation added a measure based on participants' thoughts and feelings. Finally, the methods employed
allowed for a direct test of the temporal connection between uncertainty and information seeking.

Thus, the results of this study are especially significant because, taken together, they indicate that none of the existing models of uncertainty and information seeking will explain the interaction patterns in this study. The following discussion considers each hypothesis in order, and proposes an alternative explanation.

Results of tests on the first two hypotheses confirm that both question-asking and uncertainty are significantly higher during the first two minutes of conversation than during subsequent time periods. However, there are no significant differences in either uncertainty or question-asking after the first two minutes. These findings are significant for several reasons.

First, the finding that both question-asking and uncertainty decrease during the opening moments of a conversation is consistent with previous studies (e.g., Douglas, 1987, 1990b; Berger & Kellerman, 1983; Frankfurt, 1965; Kellerman, 1984, 1986). This provides initial evidence that the conversations in this study were similar to those of previous studies. The fact that uncertainty and question-asking decline at remarkably similar rates also can easily lead to speculation that there would be some connection between them.
At the same time, these results indicate that both question-asking and uncertainty tend to decline rapidly, while Uncertainty Reduction Theory suggests a steady decline across the course of conversation. This finding appears to contradict research reported by Clatterbuck (1979) and Douglas (1990b). However, it is not clear from Clatterbuck's research exactly how "time" was operationalized, it appears that most of Clatterbuck's studies were based on relationships (Clatterbuck, 1979, p. 154), and closer examination of Clatterbuck's report indicates that results were significant in only half the studies reported (p. 154). Douglas' study indicated that uncertainty remained moderately high for the first four minutes of a conversation, and then declined dramatically after six minutes. Since the Douglas study did not examine conversations longer than six minutes in duration, it is not possible to speculate about whether uncertainty levels would have remained steady after that point.

Douglas' study and the current study are consistent in two important ways: 1) a marked decline in uncertainty occurs at a particular point, and 2) this decline occurs fairly early in the conversation (either during the first two or during the first four minutes). In turn, this suggests that the primary work of uncertainty reduction occurs fairly quickly in conversations. Thus, if concerns for uncertainty reduction drive conversation, it would
appear that they do so only in the first two to four minutes.

In fact, the current study suggests that, in some conversations, the drive to reduce uncertainty may be even more limited — to somewhere in the first two minutes. The fact that the change in uncertainty occurred later in the Douglas conversations may be attributed to the fact that he informed subjects "that the research dealt with impression making" (1990b, p. 71). It seems likely that such instructions would increase subjects' motivations to study their partners, in order to report on their impressions, and that they would highlight the items of the CL7. In comparison, the current study asked subjects to engage in "the types of conversations you might have when you meet another person." Thus, the instructions of this study did not focus on any particular goals in conversation, but allowed subjects to define the goals for themselves. (Since subjects were told that they would be left alone for 10-15 minutes, it is possible that maintaining the conversation became a goal, but this goal was not specified by the experimenter.)

Finally, it should be noted that, while question-asking, in the aggregate follows a predictable path over time, many of the individual conversations exhibit patterns that are different from the aggregate pattern. As question-asking was coded, the experimenter noted that, in
many conversations, there were periods of one minute or more in which neither participant asked any questions. This was not entirely unexpected. In their study of question-asking, Berger and Kellerman (1983) reported that "questions about partner's self" followed a cyclic pattern in aggregate, noting that "there appear to be burst of asking such questions . . . . followed by periods of low question-asking in the category" (pp. 353-354). While no provisions were made for exploration of these trends in this study, post hoc examination of question-asking in these dyads revealed that 27 of the 41 dyads contained periods of at least one minute or more in which neither party asked any questions. In most of these dyads, these periods occur during the middle stages of the conversation (minutes 2-6) and are characterized by extended discussions of, or monologues on, a given topic, which are then followed by questions designed to find new topics. Such an explanation is also reinforced by the thought/feeling data, which frequently reports on efforts to find new topics. For example, in Dyad 18, one of the study's heavy questioners makes it clear that his primary concern is with maintaining the conversation. During the middle of the second minute, after asking eight questions, he wrote, "Right here I thought the conversation was dying . . . . Most of the questions I asked were answered in one word sentences." Following a period of 2:13 when no questions
were asked, he asked three questions in the space of 18 seconds, and immediately after these questions his thought/feeling statement indicated that, "I still felt like the conversation was dying and that we had to stretch things to make them somewhat interesting."

While the tests of Hypotheses 1 and 2 reinforce the common observation that question-asking and uncertainty decrease during the course of conversations, they do not, in themselves provide support for Uncertainty Reduction Theory or the two alternatives advanced to date. More direct tests are provided by Hypotheses 3-7.

Axiom 3 of Uncertainty Reduction Theory (Berger & Calabrese, 1975) predicts that, "High levels of uncertainty will cause increases in information seeking behavior. As uncertainty levels decline, information seeking behavior decreases" (Berger & Calabrese, 1975, p. 103). In order for the study to confirm this axiom, three conditions would need to be met: 1) there should be positive correlations between uncertainty and question-asking in both conditions (Hypothesis 3); 2) there should be a greater probability of question-asking following thought/feeling statements indicative of uncertainty (Hypothesis 4); and 3) there should be fewer thoughts and feelings indicative of uncertainty following question-asking than at other points (Hypothesis 5).
While the results of the test of Hypothesis 4 provide partial support for Uncertainty Reduction Theory (by demonstrating that question-asking is more likely following uncertainty than at other points in the conversation), tests of Hypotheses 3 indicated that 13 of 15 possible correlations between question-asking and three different measures of uncertainty were nonsignificant as were all three correlations based on the complete conversation. Since both temporality and correlation are necessary (although not sufficient) to establish causality, the failure to confirm Hypothesis 3 means that the theory cannot be supported by the data from this study. Further, if conversants employ question-asking to reduce uncertainty, there should be less uncertainty following questions, and the relationship found in the test of Hypothesis 5 is directly opposite this prediction.

Nor should we draw too much from the positive support for Hypothesis 4, for at least three reasons. First, while the questions were more likely following thought/feeling statements coded as indicative of uncertainty, this relationship accounted for only 74 of the corpus of 434 questions asked by subjects in the B condition (16.3%). Even if all of these questions were driven by uncertainty, the majority of questions appear to have been based on other needs (e.g., to keep the conversation going).
Second, as noted in Chapter II, subjects coded only 37.9% of their recalled thoughts and feelings as indicative of uncertainty. This finding provides strong evidence that, in this study, a majority of subjects' conscious thoughts and feelings were focused on matters other than "uncertainty" or its reduction.

Third, the instructions for subject coding of "uncertainty" defined the term to include a variety of types of uncertainty; in addition to attributional uncertainty, subjects were encouraged to identify those situations in which they felt uncertain "about the conversation or your role in it." Since Uncertainty Reduction Theory posits positive relationships between question-asking and attributional uncertainty alone, the significant t-test provides only partial support for the theory. In fact, an initial glance at those thought/feeling statements identified as indicative of uncertainty suggested that many reflected concerns with conversation management (e.g., "I was thinking about how to exit this topic" [Dyad 16] and "I'm not sure what to talk about . . . . I'm scrambling for ice-breakers" [Dyad 11]) or self-presentation (e.g., "How much I'd like to get the dirt and grime out of my fingers when I shower" [Dyad 10]).

In an effort to clarify this point, six conversations (Dyads 18, and 20-24) were selected for a post hoc analysis of thought/feeling statements indicative of uncertainty.
The experimenter coded these thought/feeling statements while viewing the videotapes. Of 29 thought/feeling statements coded by subjects as indicative of uncertainty, only five could be classified as attributional in nature, 11 were coded as indicative of concerns in finding topics, seven as indicative of self-presentation concerns, and six were coded as "miscellaneous" (for the most part, these consisted of statements that combined self-presentation and conversation management concerns, or questions raised by partners' comments.) Recalling that less than 40% of all thought/feeling protocols were coded as indicative of uncertainty, and noting that, in this sample, less than 25% of these were indicative of "attributional uncertainty," this analysis suggests that, for this sample, understanding partners was a minor concern. Such an analysis is obviously subject to an array of reliability and validity concerns, but it indicates that the confirmation of Hypothesis 4 should be interpreted very carefully.

It is also worth noting the results of the test of Hypothesis 5 suggest that question-asking may lead to (at least momentary) uncertainty. This is evident in some of the thought/feeling statements. For example, several subjects noted that their partner's responses to questions surprised them (e.g., "She's a student here? She's so much older!") or led them to believe that a question had been inappropriate (e.g., "Linda's hands are making me wonder if..."
this is making her nervous"). In more instances, a partner’s response to a question raised another question (e.g., "I wondered what colleges she applied to but didn’t get accepted and why," and "I couldn’t pinpoint the town, but thought I should just move along").

The suggestion that question-asking can lead to uncertainty is not intuitively surprising. To some extent, it parallels research by Planalp and her colleagues (Planalp & Honeycutt, 1985; Planalp, et al., 1988) which found that subjects could readily identify events in their relationships that increased uncertainty. However, such a relationship has never been revealed in specific conversations, primarily because it was not possible with existing methods. The fact that it was discovered in this study suggests both new areas for research and the potential of thought/feeling data for uncovering new research directions in the study of conversation.

Together, these results suggest that Axiom 3, which provides the foundation for Uncertainty Reduction Theory, should be rejected. Given this finding, a follow-up analysis was conducted of other axioms and theorems that could be tested from the data provided in Condition A. (It should be noted that this condition employed the CLUES measure, which is subject to the definitional problems discussed earlier.) However, since CLUES is consistent with the theory as presented, it is appropriate to employ
Axiom 6 suggests that "similarities between persons reduce uncertainty, while dissimilarities produce increases in uncertainty" (Berger & Calabrese, 1975, p. 106). If this is the case, there should be negative correlations between uncertainty and similarity in Condition A. Pearson product-moment correlations were computed between uncertainty and the four dimensions of similarity. Only one of the four correlations was significant and consistent with the theory; the correlation between uncertainty and the "attitudinal dimension" of perceived similarity was $r=-.28$ ($p<.05$). Interestingly, the correlation between uncertainty and the "appearance dimension" of perceived similarity was significant but positive ($r=.26$, $p<.05$). This finding is consistent with the summary provided in Chapter I, the effect of similarity appears to depend on the type of similarity. However, it also suggests that some types of similarity may create higher uncertainty; again in direct contradiction to the theory. (It should be noted that this test is speculative at best; it is based on a measures of perceived similarity, completed after the conversation. A more complete test would require manipulation of similarity before the conversation.)

Axiom 7 predicts that "increases in uncertainty level produce decreases in liking; decreases in uncertainty level produce increases in liking" (Berger & Calabrese, 1975, p.
This axiom would result in a negative correlation between uncertainty and liking. As the test of Research Question 2 indicates, the correlation between these variables was significant, providing initial support for the axiom. However, the results of the partial correlation, controlling for IIS and the regression formula suggest that the relationship between uncertainty and liking is mediated by both similarity and interaction involvement.

Theorem 17 suggests that "information seeking and liking are negatively related" (Berger & Calabrese, 1975, p. 109). In order to test this theorem, Pearson product-moment correlations were computed between the liking measure and: 1) total questions asked, and 2) question-asking during each two-minute segment of the conversation. All five correlations were nonsignificant. Thus, Theorem 17 was rejected. This finding is consistent with most previous research, however, it represents the first disconfirmation employing question-asking data drawn from conversations (as opposed to self-reports).

Theorem 18 predicts that "information seeking and similarity are negatively related" (Berger & Calabrese, 1975, p. 109). In order to test it, Pearson product-moment correlations were calculated between the five measures of question-asking (total questions, and questions asked during each of the two-minute segments of conversation) and
the four dimensions of perceived similarity. Only one of the twenty possible correlations was significant in the predicted direction (between the "attitude" dimension of perceived similarity and the number of questions asked during the third and fourth minutes of the conversation [r=-.34, p<.05]). Two of the correlations were significant and positive (between the "status" dimension of perceived similarity and both total questions and the number of questions asked during the final two minutes of the conversation). Thus, had it been a hypothesis in this study, Theorem 18 would be rejected.

Theorem 21 predicts that "similarity and liking are positively related" (Berger & Calabrese, 1975, p. 109). Pearson product-moment correlations were calculated between liking and the four dimensions of perceived similarity. Liking was significantly correlated with three of the four dimensions: perceived "attitudinal" similarity (r=.39, p<.01), perceived "status" similarity (r=.30, p<.05), and perceived "appearance" similarity (r=.32, p<.05). Thus, Theorem 21 was partially supported.

Two things are particularly interesting about this finding. First, it appears to be the first compelling evidence of such a relationship drawn from initial interactions, and appears to contradict Sunnafrank's (1983, 1985, 1991, 1992) arguments that the effects of similarity on liking vanish after initial interaction (it is important
to note that the relationship is between perceived similarity and liking, so the test is not a direct one). Second, the relationship between liking and perceived similarity tend to be both stronger and more consistent than those between uncertainty and the two variables.

Thus, while these follow-up tests appear to provide partial support for Uncertainty Reduction Theory (by providing at least partial support for Axioms 6 and 7 and for Theorem 21), closer analysis suggests that such an interpretation support would be faulty. The fact that uncertainty, liking and some dimensions of similarity are correlated does not imply that conversation is driven by efforts to reduce uncertainty. In fact, these findings can be explained with two intuitive premises: 1) perceived "attitudinal" similarity create lower levels of perceived attributional uncertainty (or lower levels of uncertainty lead to perceptions of "attitudinal" similarity) and 2) perceptions of similarity lead to increased liking (or liking leads to perceptions of similarity). Importantly, the correlation between uncertainty and liking, which appears confirm Axiom 7, can be directly derived from these two premises, and the regression analyses reported in Chapter III would suggest that this is a more correct interpretation of the data.

As importantly, the fact that Theorems 17 and 18, which predict relationships between information seeking and
both liking and similarity, were rejected reinforces the contention that conversational question-asking is not directly related to uncertainty. If it were, the fact that there are correlations between uncertainty and both variables would be reflected in similar correlations with question-asking. Thus, this analysis provides further reason to reject Axiom 3.

The suggestion that Axiom 3 of Uncertainty Reduction Theory should be rejected is not new; both Kellerman and Reynolds (1990) and Sunnafrank (1986) have presented alternative models, and both report research that contradicts Axiom 3 and supports alternative explanations (Kellerman & Reynolds, 1990; Sunnafrank, 1990). However, this study also suggests that each of these alternatives may also be flawed.

Specifically, the data reported in Table 12 show that no significant relationships were found between "tolerance for uncertainty" and question-asking, which directly refutes the model proposed by Kellerman and Reynolds. While the absence of a significant sample of subjects with "negative predicted outcome values" did not allow for a complete test of Sunnafrank's model, limitation of the sample to include only those with "positive predicted outcome values" did not lead to negative correlations, as Sunnafrank (1986) suggests it should, and the significant negative correlation between question-asking and predicted
outcome values for the entire conversation is directly contradictory of Predicted Outcome Values Theory (Sunnafrank, 1986, p. 20; 1990, p. 82).

These findings directly contradict those published earlier, but there are important differences between this study and those reported earlier, which suggest that more credence should be given to the current study. As noted in Chapter I, the Kellerman and Reynolds study asked subjects to report how they would act in hypothetical scenarios; such a situation may provoke "mindful" responses where subjects tend to respond "mindlessly" and subjects' perceptions of how they might respond may be altered by situational constraints and/or the behavior of their partners. Sunnafrank's confirmatory study employed self-reports of "interrogation," and "disappointing reliabilities were obtained for these measures of strategy use" (p. 88). As Benoit and Benoit (1988) note, there are problems with self-report measures of behaviors, and data drawn from conversations seems a more reliable measure of behaviors than subjects' perceptions of how they believe they behaved.

The fact that the three prominent explanations of question-asking all fail to explain the data of this study suggest that we search for alternative explanations. And, since both the Kellerman and Reynolds model and Sunnafrank's theory represent attempts to "repair"
Uncertainty Reduction Theory, it seems appropriate that we re-examine the basic tenets of that theory. More specifically, the data reported in this study suggest that we should reconsider the basic assumption underlying Uncertainty Reduction Theory, that "when strangers meet, their primary concern is one of uncertainty reduction or increasing predictability about the behavior of both themselves and others in the interaction" (Berger & Calabrese, 1975).

Two alternative explanations can be derived from the current data. First, as was noted in Chapter I, it is a foundation of much contemporary research that many other forms of communication are influenced by multiple goals (e.g., Clark & Delia, 1979; Dillard et al., 1989; McCann & Higgins, 1988), and multiple goal perspectives have been more recently applied to analyses of conversation (e.g., Cegala et al., 1988; Tracy, 1991). Thus, while the data reported in the test of Hypothesis 4 suggest that reduction of uncertainty is a goal in conversation, other analyses suggest that, "when strangers meet," they are driven by a variety of goals. And, it is also clear that question-asking can serve multiple goals. For example, as the abbreviated discussion of uncertainty statements indicates, question-asking can serve as a method for finding mutually suitable topics (as a method of "topic prospecting") or as a method of sustaining conversations. In addition,
questions may be asked as a means of demonstrating interest in one's partner, either to be "socially appropriate" or to project a favorable impression. In some instances, it also appears that subjects in this study employed question-asking to postpone discussion of, or switch attention from "sensitive topics." Villaume and Cegala (1988) have demonstrated that "verbal prompts" may be used as "passing moves," to transfer responsibility for conversation to partners.

An alternative explanation is that conversations are driven by "scripts" (e.g., Schank & Abelson, 1977), or "automatic behavior" (Langer, 1989). As Langer suggests, such scripts can result from years of repetition (p. 16). After years of engaging in conversations, humans may learn a particular pattern for conversations with strangers than they can enact repeatedly, and without conscious thought. And, as Kellerman (1992) suggests, these patterns may be learned tacitly (p. 294); rather than developing scripts to accomplish goals, humans may simply develop them through observation of others (e.g., I may use questions simply because I have observed others doing so and they seem to be effective). Previous research suggests that some conversants employ such question scripts; Ludlum (1988) reported that subjects with lower levels of IIS were less likely to deviate from such scripts than were subjects with higher levels of IIS.
If conversation is "mindlessly" enacted, question-asking could still result in reductions of uncertainty, as found in the test of Hypothesis 4. And, unexpected violations of the script (in the form of unexpected responses to questions) would lead to increased attention, and uncertainty, as reported in the test of Hypothesis 5.

It should be noted that these two explanations (that conversation is directed by multiple goals and that conversation is enacted "mindlessly") are not necessarily incompatible. Kellerman (1992) has argued convincingly that conversation can be both "strategic" and "automatic," and it is intuitively appealing to suggest that levels of mindfulness may vary throughout a conversation, or with individual differences. Some conversants may select a script to accomplish a particular goal, and become mindless while enacting it. Others might begin a relatively automatic "topic search" and become more conscious of choices when a suitable topic is found. The argument that conversants are both mindful and mindless is given some support by the fact that the average number of thoughts and feelings listed during an eight-minute conversation was 12.37, or one every 38 seconds, and the suggestion that conversants might vary in their degree of mindfulness is reflected in the wide range of total thoughts and feelings that were recalled (from five to 32!).
Interestingly, the same question may serve any number of these functions. For example, one of the most popular questions in these conversations was, "What's your major?" This question can be employed simply as part of a script, or to provide attributional information (if we assume that majors will influence attitudes and values), or as a means of finding a potential topic (it appears to have been a popular tactic among communication majors who may have formed the hypothesis that their partner was more likely to be a communication major and that this could form the basis for an extended conversation). Similarly, the author was struck by the following conversation segment, drawn from Dyad 1:

A: Who did you have for that [class]?
B: Dr. ______.
A: Isn't she wonderful?

The "question," "Isn't she wonderful?" can serve to gain attributional information (by discovering what types of instructors B prefers), or as a "conversational prompt" (by encouraging B to say more about the class) or as a statement (by indicating A's admiration for the professor). The fact that we cannot know the goal of the conversant, because A was not in the condition in which she would have coded her thoughts and feelings, indicates the potential complexity of relatively "simple questions" and the potential utility of thought listing procedures in
uncovering conversational goals.

**Summary.** Tests of the first seven hypotheses suggest that existing explanations of question-asking are flawed, perhaps because they assume that uncertainty reduction is the primary goal of strangers who engage in initial interactions. In addition, subsequent analyses of the thought/feeling statements provides support for two alternative explanations: one based upon multiple goals, and one based on "mindlessness." In a later section of this chapter, some research directions will be proposed to further explore these explanations.

**Effects of Interaction Involvement**

A second goal of this dissertation was to explore the potential effects of interaction involvement upon uncertainty and uncertainty reduction processes. Unfortunately, results of these analyses are not as prone to general explanations, however several have important implications.

Tests of Hypothesis 8 indicate that there were significant correlations between the trait version of the (Interaction Involvement Scale) and Clatterbuck's measure of attributional uncertainty. In addition, the IIS was one of only two significant predictors (with perceived attitudinal similarity) in the regression equation for uncertainty in Condition A. This finding is consistent
with a variety of research findings which have connected higher levels of interaction involvement with higher levels of self-perceived competence (Brunner, 1984; Cegala et al., 1982), with fewer thoughts and feelings indicative of difficulties in managing conversation (Cegala, et al., 1990), with increased self-esteem and ego strength (Cegala, 1982b, 1984, Cegala, et al., 1982) and with lower amounts of verbal and nonverbal behaviors linked to uncertainty (Cegala, 1989; Cegala, et al., 1979; Villaume & Cegala, 1988). However, this dissertation reinforces the body of research by providing the first specific evidence of this link.

The fact that a link used to explain a variety of findings about verbal and nonverbal behavior is finally supported independently also provides additional impetus to attempts to link uncertainty more clearly with specific verbal and nonverbal behavior. Such research could assist researchers interested in conversation by providing a less obtrusive measure in future studies.

At first glance, the fact that no significant correlations were found between IIS and the thought/feeling measures used in Condition B appears to be contradict these results. However, remember that the instructions for coding thought/feeling statements defined uncertainty more broadly than it is defined by the measure used in Condition A (which was limited to "predictive attributional
uncertainty") and that a subsequent analysis of these thought/feeling statements revealed that this measure yielded a variety of types of uncertainty. Thus, a possible explanation of these results is that higher levels of trait IIS are associated with lower levels of uncertainty about one's partner (the traditional definition of uncertainty). At the same time, by definition higher levels of IIS should also be associated with increased attentiveness to the conversation, and thus may result in increases in sensitivity to/concern for conversation management (which subjects interpreted to be instances of "uncertainty").

The first research question asked, "What are the relationships between interaction involvement and question-asking" and, as Table 15 indicates, no significant correlations were found between these variables. At first, this result may be surprising. Given the significant negative relationship between interaction involvement and uncertainty, one might expect that higher levels of interaction involvement would be associated with fewer questions. However, since higher levels of interaction involvement are also associated with increased attention to partner and increased satisfaction with conversation, it is also likely that this effect is counterbalanced by an increase in question-asking for other reasons. In fact, if we accept a "multiple goals" explanation for question-
asking, it seems likely that this would occur; thus this finding lends credence to such an explanation.

Tests of Hypotheses 9, 10 and 11 indicate that, contrary to speculation, there were no significant correlations between scores on the IIS and measures of either "tolerance for uncertainty" and "predicted outcome values." While these results call into question the logic supporting these predictions (in fact, in retrospect, the logic seems faulty in several ways, including assumptions that conversations are primarily focused on uncertainty reduction), it is also possible that both variables may be more highly correlated with the state version of the IIS.

Results of the tests for Hypothesis 12 indicate that there were no significant correlations between liking and the IIS scores of subjects' partners. Again, these results suggest that there may be flaws in the logic behind these hypotheses, and a re-examination of that logic suggests that the hypotheses were, at best speculative and based on fairly significant "inferential leaps" (Toulmin, 1958). However, there are at least three reasons why these hypotheses are worthy of further testing. First, the regression analysis used to examine the relationship between liking and several predictors including uncertainty and interaction involvement revealed a significant effect for interaction involvement, together with main effects for two dimensions of perceived similarity. This suggests that
interaction involvement may be an important intervening factor in the relationship between uncertainty and liking and raises the possibility that the effect of interaction involvement was masked by variations in perceived similarity. Second, since conversational behaviors are influenced by their conversational partners (e.g., Kenny, 1988, Kenny & Kashy, 1991) and situational differences, it is possible that, while trait measures of interaction involvement were not related to liking that state measures would be. Finally, the mean for liking (36.18) was well above the hypothetical mean of the scale (25) and this may have reduced the likelihood that differences would emerge from this analysis.

Limitations

While the findings of this study are significant, especially in relationship to Uncertainty Reduction Theory, they are by no means conclusive. Proponents of Uncertainty Reduction Theory and its alternatives would surely suggest several important reservations.

First, the sample size of the current study is smaller than some of the studies it contradicts, and statistical power (especially for the smaller correlations) is relatively low. While the sample is comparable to other studies of conversation (Douglas, 1990a, employed 72 subjects in 36 dyads and Douglas, 1990b, employed 78
subjects in 39 dyads), it is considerably smaller than the samples employed by Sunnafrank (1990, N=258) and Kellerman & Reynolds (1990, N=1,159). While the Sunnafrank and Kellerman and Reynolds studies were weakened by use of self-reports and simulations, the current study was obviously weakened by a high attrition rate.

Second, the sample is different from other samples in several ways. Fifty-seven percent of the sample was composed of "adult students," who may have developed more sophisticated conversational skills. The sample is also heavily female (70.1%), and there may be important sex differences (e.g., Tannen, 1990). All subjects volunteered without additional inducement, thereby potentially limiting the study to those who are more confident in their conversational abilities. Finally, unlike most studies, subjects were drawn from a small college population and this could affect conversational skills and attitudes in two ways; different types of students may be attracted to such institutions, or students may have greater opportunity to develop interpersonal skills because of smaller class sizes, and other factors.

The fact that so few subjects (two of 45) had scores indicative of "negative predicted outcome values," and that liking scores were relatively high across the sample suggests that subjects in this study enjoyed their conversations and partners more than they have in other
studies. While it is possible that these findings are more reflective of most conversations (because most conversational participants choose to converse, whereas most studies force them to do so) or of conversations between adults (versus college sophomores), such differences should be explored more carefully.

Third, the instructions given to subjects may have induced a goal of "conversational maintenance," which may limit the applicability of these findings. As noted in Chapter II, subjects were informed that they would be left alone for 10-15 minutes, in an effort to promote increased incentive to reduce uncertainty. However, as many of the uncertainty protocols suggest, this created the challenge of "keeping the conversation going," especially during the later stages of conversation. While such goals may be present in many conversations (e.g., the car ride from an airport, a scheduled interview, or a date), many other conversations provide conversants with the option of "leave taking" after an acceptable period (and these conversations suggest that the standard for "appropriateness" may be shorter than eight minutes).

Finally, the conditions of the study may have prompted atypical levels of "mindfulness." Subjects knew that they were being videotaped, and both the camera and a remote microphone were present in the room. They also were told that they study was for the author's dissertation, and that
he was interested in studying the nonverbal behaviors that occur "naturally" when strangers meet. This may have led subjects to concentrate on "creating natural conversations" rather than behaving naturally. In addition, subjects were told in advance that they would be meeting a stranger. While this is consistent with many of the contexts in which such conversations occur, it may have produced more planning activities than would occur in other contexts.

Directions for Future Research

Given the limitations discussed above, a first step in future research should be to replicate the study and/or collect data from other subjects. In addition to the advantages of increasing statistical power (and minimizing potential reasons for publication rejection), collection of data from other samples would provide for tests of differences related to age, gender and college size (perhaps Uncertainty Reduction Theory explains only those conversations among traditional college students at large state institutions).

Several additional steps have already been planned for data collected from this study. For example, the recall protocols collected in Condition A provide an additional method for testing the validity of Uncertainty Reduction Theory; if question-asking is driven by uncertainty, those subjects who asked more questions should recall more about
their partners and their recall should be more accurate. In addition, it seems appropriate to more carefully examine the relationships between the state measure of the IIS and other variables.

In addition, the discussion above suggests at least three additional steps should be taken with data collected. First, the possibility that uncertainty is limited to the earliest stages of a conversation suggests that we should take a closer look at the first four minutes of these conversations, by focusing a follow-up analysis on 15- or 30-second segments of each conversation. Second, subjects' thought/feeling protocols should be coded by a team of neutral coders, both to identify thought/feeling statements indicative of uncertainty and to develop a typology of these statements; this would provide a "blind" method of testing some of the speculations advanced in this chapter. Finally, a closer look should be focused on question-asking, again with use of neutral coders. While the initial post hoc analysis reported above suggested that there were not noticeable relationships between particular types of question and particular types of thoughts, this is worth examining more carefully.

In addition to these directions for future research, the study suggests several important directions for future research.
For example, it would be helpful to employ similar procedures in more natural settings. For example, Cegala et al. (1988) experimented with a procedure in which subjects were asked to report to a laboratory and told that they would be viewing a tape. Researchers then recorded their interactions with the use of a hidden camera. While initial studies indicated that subjects suspected that they were being taped, adjustments in setting or timing of instructions might generate more natural settings for conversations. Creation of "natural" conversations in laboratory settings is a challenge, but it hardly seems insurmountable.

Further investigation of the verbal and nonverbal behaviors that accompany uncertainty (e.g., Cegala, 1989; Villaume & Cegala, 1988, 1990) would allow for the study of conversations in even more natural settings. For example, carefully hidden cameras could be used to tape conversations in classrooms during the first day of class, or during training workshops, or even at mixers. Uncertainty could be coded via verbal/nonverbal behaviors and compared with information-seeking.

The value of such research suggests that it is also important to conduct additional research designed to verify that verbal and nonverbal behaviors reflect uncertainty. Thus, the tapes from the conversations in this study can be used to code verbal and nonverbal behaviors that are
thought to reflect uncertainty, and these can be compared with the thought/feeling protocols. In addition, if coding of these thought/feeling protocols by neutral observers yields promising results, tapes from earlier studies employing stimulated recall procedures could be employed in conjunction with those from this study. And, as a pool of similar research is constructed, it should become easier to discover ways that uncertainty could be measured in less obtrusive ways.

It also seems important and valuable to further develop and examine the "multiple goals" explanation advanced in this chapter in initial interactions. While such explanations have been explored in discourse analysis of conversations in longer-term relationships, most notably Tracy's studies of "intellectual conversations" in departmental colloquia (e.g., Tracy, 1991; Tracy & Baratz, 1989), there appear to be several empirical alternatives as well. For example, researchers might code thought/feeling measures to identify apparent goals (see, for example, Cegala & Waldron, 1992; Waldron, 1990; Waldron et al., 1990) and examine differences (or the lack of differences) associated with differing goals. Alternatively, researchers might develop post-conversation measures reflecting conversational goals and search for correlations between varied goals and particular conversational behaviors. Finally, it is possible to create pre-
conversation instructions that would generate differing goals (e.g., Berger & Kellerman, 1983); further studies could focus on differences and similarities among conversational participants who are instructed to maintain a conversation, or create a positive impression, or make decisions about a partner.

Finally, this study reinforces the potential of thought listing techniques for the study of conversations. Cegala and his colleagues have begun the exploration of many alternatives, from conversational competency (e.g., Cegala & Waldron, 1992) to planning strategies (e.g., Waldron et al., 1990), but many other areas could benefit from use of such methods. For example, an examination of the thoughts and feelings of subjects with high communication apprehension could help to identify the aspects of conversation that they find problematic (e.g., self-esteem, self-presentation, topic or conversation management). Comparison of the thoughts and feelings of those with low communication apprehension may reveal potential strategies or patterns of thinking that could be employed in treatment and teaching.

Regardless of method or question, the current study suggests that it is important that we are attentive to the assumptions we make about the cognitive activities of communicators. For nearly twenty years, studies of conversation have been driven by Uncertainty Reduction
Theory, and the current study joins a growing body of research that suggests that the intuitive appeal of the theory may have led us in the wrong directions. As we explore alternatives we should be cautious of replacing one set of unproven assumptions with another. For example, as compelling as a "multiple goals" perspective can be for explaining the results of this study, and for guiding continuing research in conversation, it is also clear that such a perspective may place too much emphasis on conscious choice. While it is becoming clearer that some people act strategically (and consciously) in some settings, it is also obvious that most people are "mindless" at least some of the time. If there is a lesson to be learned from the history of Uncertainty Reduction Theory, it is that there is danger in accepting paradigms too quickly, and we should be cautious not to replace one premature paradigm with another.
APPENDIX A

TEXT OF SOLICITATION LETTER
To all Continuing Studies students:

I need your help!

In order to complete my dissertation research, I am seeking volunteers for two different studies that are focused on the ways that people communicate with each other.

I am asking you to consider doing two things:

1. I need about 150 student volunteers to participate in a study of conversation. We will simply ask you to meet someone you don't know well, and have a conversation. We will videotape the conversation, so that we can study the verbal and nonverbal behaviors, but all videotapes will be held in the strictest confidence.

   Most people who have participated in the exercise tell us that they enjoy it. It will take about one hour of your time, and we will schedule it around you. (We hope to gather information between February 22 and March 29.)

   If you are willing to participate, please return the attached "Schedule Information Sheet."

2. Whether or not you agree to participate, I would also appreciate it if you would complete the attached questionnaire and return it to me. We are also interested in discovering more about the ways that people believe they communicate in conversations, and your responses will allow us to compare differences based on gender, age and student type.

Please return both the scheduling form and questionnaire to:

   John Ludlum
   Department of Speech Communication
   Otterbein College
   Westerville, Ohio 43081

I know that this is a busy time for you, but I need your help to complete this project (and to graduate). I also believe that this study can help us better understand some of the processes involved in effective communication, and would look forward to sharing my conclusions with you when the study is completed. Please feel free to call me, either at the office (898-1257) or at home (895-3547) if you have any questions or concerns.

Thanks in advance for you help!
APPENDIX B

SAMPLES OF INSTRUCTION SHEET FOR RECALL

(CONDITION A)
We are interested in investigating "conversational memory." In the space below, please list all of the things that you remember from the conversation about your partner. Please use as many pages as necessary, and list all that you can remember.
APPENDIX C

EXIT QUESTIONNAIRE
Name ________________________________________________

1. How well did you know your conversational partner before the conversation?
   Not at all 1 2 3 4 5 6 7 Very well

2. How well did you know your conversational partner after the conversation?
   Not at all 1 2 3 4 5 6 7 Very well

(Indicate your relative agreement or disagreement with the following statements by circling the appropriate response)

3. I felt comfortable (as opposed to nervous) during the conversation
   Strongly Disagree Neutral Agree Strongly Agree

4. This conversation was artificial due to the setting and videotaping.
   Strongly Disagree Neutral Agree Strongly Agree

5. This conversation was typical of the way I interact with strangers.
   Strongly Disagree Neutral Agree Strongly Agree

6. I thought the task of recalling the conversation (or recalling my thoughts and feelings about the conversation) was difficult.
   Strongly Disagree Neutral Agree Strongly Agree
APPENDIX D

SAMPLE OF INSTRUCTIONS FOR

THOUGHT/FEELING LISTING
Begin viewing the video tape of your conversation. Please pause the tape EACH TIME you come to a point where you remember experiencing a particular thought or feeling during the conversation. Then write the complete thought or feeling on the form(s) provided. PLEASE USE COMPLETE SENTENCES WHEN WRITING DOWN YOUR THOUGHTS AND FEELINGS. Note that the thought or feeling may be anything you recall; it does not have to be connected to the conversation.

At the bottom of the TV screen you will see a digital clock. Each time you stop the tape to record a thought or feeling, please write the time on the form provided.

Please be candid in writing down your thoughts and feelings. Your thoughts and feelings will be kept confidential. The only persons who will see them are individuals working on the research project. Your name will not be used.

Use as many forms as you need.

Please let me know when you have finished recording your thoughts and feelings.

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APPENDIX E

SAMPLE OF THOUGHT/FEELING STATEMENTS
SELECTED AS INDICATIVE OF UNCERTAINTY
Dyad 1

She’s a student here? She’s so much older!

Maybe I’m telling too much about my family

Another husband!!!!

She doesn’t know I have a 4.0. She thinks I’m a slacker in my work!

I skip enough classes for both of us!

Does this woman like all of her classes? Maybe she thinks I’m not a serious student!

I feel like I’m telling my Mom that I skip my Western Civ. class!

Dyad 2

Why did she laugh at my statement?

Dyad 3

I thought of the importance of majoring in what you really like and enjoy. I know how unhappy ____ is in his job. It will be very difficult for him to go back to school now.

Dyad 4

I should have given my last name.

I wonder what colleges she applied to but didn’t get accepted and why.

Why does she want to get married so bad?

As I was telling her this story, I was thinking that she thought I was trying to relate it to her in some way, but I was just trying to think of something.

What exactly is animal psychology?

I was wondering how she would get through all that school and who would pay.
Dyad 5

Here I thought ____ has no clue where I lived but said he got lost just to keep the talk moving.

I lied here and thought, "36 is kinda old," but told him, "That's not that old."

I was a little agitated that he interrupted my thought and "hogged the conversation."

I laughed here so his joke wouldn't look stupid.

Dyad 6

Somewhat nervous on beginning conversation.

Was interested, but could not relate to living on campus.

Was thinking and became aware of being video-taped.

I felt like I was beginning to talk to [sic] much.

Dyad 7

Does she think I'm just a airhead little kid?

I'm a babbling idiot about Otterbein. I sound like an admitting interview. What does she want to hear?

She loves R&R [Rock and Roll]. Does she think I'm a country [unintelligible]?

Should I mention our radio station? [unintelligible] What music does she like exactly?

If I keep going on about being only child I'll sound selfish and cold. Quit now!

No self-confidence, why go to ___? Didn't he want a small school with friends?
Coding Instructions:

Please use the coding forms to identify all examples of "information-seeking questions."

For each information-seeking question, indicate:
- The approximate time (I will check for the precise time)
- The source of the question (subject on left or right)
- The content (or approximate content of the question)

(This information will be used to identify agreements and disagreements between coders.)

"Information-seeking questions" should include:

- "Indirect questions": Information-seeking requests that take the form of tentative statements (e.g., "So, you probably had Dr. Ogle for that class") and can usually be identified by the response of the questioner's partner.

- "Clarifications": Requests for one's partner to clarify something s/he has said (e.g., "Did you say Tuesday or Thursday?")

PLEASE LABEL "INDIRECT" QUESTIONS AND CLARIFICATIONS IN THE LEFT MARGIN BESIDE THE TIME.

DO NOT INCLUDE:

- Questions that occur within the context of a narrative (e.g., "So I asked her, 'Do you go to Otterbein?' and she said she was a student in Psychology.")

- "Verbal prompts" or "ellipses." These are stated in question form, but are designed to encourage the other person to talk, rather than seeking new information. Typically, they express surprise, encouragement, or empathy. (E.g., "Really?" "You didn't?!" "Are you kidding me?")
REFERENCES


