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**Cognitive complexity and the prediction of opinion leadership
communication behavior**

Greene, Joel N., Ph.D.

City University of New York, 1990

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A

COGNITIVE COMPLEXITY AND THE PREDICTION
OF OPINION LEADERSHIP COMMUNICATION BEHAVIOR

by

JOEL N. GREENE

A dissertation submitted to the Graduate Faculty in Business
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy, The City University of New York.

1990

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This manuscript has been read and accepted for the Graduate Faculty in Business in satisfaction of the dissertation requirements for the degree of Doctor of Philosophy.

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Abstract

COGNITIVE COMPLEXITY AND THE PREDICTION OF
OPINION LEADERSHIP COMMUNICATION BEHAVIOR

by

Joel N. Greene

Advisor: Dr. Gary F. Soldow

This dissertation explores the relationship of cognitive personality theory and opinion leadership communication behavior.

Cognitive complexity, based on the personal construct psychology theories of Kelly (1955) and Bieri (1955), provided the framework for predicting the identity of opinion leaders within small group discussions of product-related issues. Cognitive complexity was also viewed within this framework as a cardinal trait, in accordance with Allport's (1937) personality classification scheme.

A number of variables related to cognitive structure, including abstract thinking, empathy, ambiguity tolerance, and expressiveness were also investigated. In addition, product knowledge and product interest were studied as possible moderating variables. An analysis of log linear

models, Spearman rank order correlations, and "hit ratios" of group member classifications provided strong support for the hypotheses for three of the independent variables: cognitive complexity, abstract thinking, and expressiveness. Product knowledge and interest appeared to moderate the communication behavior of non-expressive individuals who were cognitively simple and concrete, apparently providing them with information which may compensate for the absence of the personality variables indicated above.

Both confirmatory factor analyses, using Lisrel, and a computation of John and Roedder's (1981) beta coefficients, suggested that a number of dimensional problems existed in the measurement instruments associated with empathy and ambiguity tolerance.

A content analysis of the group discussions provided a process measure of opinion leadership. Using Bales' interaction matrix approach, this measure consisted of the total number of comments initiated and received by each group member. Convergent, discriminant and nomological analyses for three methodologically different approaches of measuring opinion leadership, e.g. the process measure, a self-designating scale, and a sociometric measure, provided a substantial degree of construct validation for the process measure of opinion leadership.

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CHAPTER 1

INTRODUCTION

Theoretical Background

One of the objectives of consumer behavior research has been to identify the behavioral characteristics and processes which distinguish one group of consumers from another. Toward this end, two of the theoretical areas of consumer research, cognitive theory and personality theory, have been pursued as separate areas of inquiry by consumer researchers. Although the amount of research in these areas has been extensive, the ability to utilize either cognitive or personality theory in order to predict and understand behavioral differences in various consumer contexts appears limited.

Personality has proven to be a weak discriminator of buying and consumption processes. Although its potential for distinguishing differences in consumer behavior is well recognized, Kassirjian (1971), Jacoby (1971), and others have voiced strong criticism concerning the conceptualization and methodology associated with the use of

personality theory in consumer behavior research. Most importantly, the use of personality inventories without adequate theoretical conceptualization has been thought to cause the lack of progress in this area.

One area of consumer behavior where personality research has been used extensively is opinion leadership. Although studies have found that a variety of traits can be associated with opinion leadership, the ability to predict the identity of opinion leaders for specific product areas still appears to be problematical.

Equally poor results have been achieved by using cognitive theory in consumer behavior research. Within consumer behavior, the primary goal of cognitive research has been to understand the mental processes by which individuals acquire, evaluate and use product information. A variety of descriptive models of the consumer's cognitive processes have been proposed by researchers over the years. Some of these models attempt to show the relationship between sequential stages of cognition and consumer actions or behavior (Engel, Kollat and Blackwell, 1973; Howard and Sheth, 1969); others describe the interaction of specific information - processing components, such as memory and individual mental capacity, as determinants of consumer choice (Bettman, 1979); a number focus on various judgmental rules by which consumers compare or are influenced by alternative brand and product attributes (Wright, 1983);

several are multivariate and integrate the formation of attitudes, intentions, motivations and behavior (Fishbein and Ajzen, 1975).

A number of researchers have criticized these approaches to understanding consumer behavior. For example, Park and Sheth (1975) suggest that cognitive models postulate a "common view of man" which emphasizes the existence of universal rules operating across individuals and situations. Although individuals may attend to information differently, or use different decision rules, the models infer that the mental processes used by each individual are essentially similar. The critics of these models suggest that greater variability is actually present in the cognitive components of behavior. Lambert (1972) has also criticized the tendency of consumer behavior models to ignore differences in information handling which may be caused by consumers' varied perceptions of innovative products. In short, several consumer researchers have suggested that the best known models reflecting cognitive components of consumer behavior emphasize similarities rather than differences.

The research being presented here seeks to develop a theoretical conceptualization of a specific consumer personality which is based on distinct differences in cognitive functions. The need to view personality and cognition concurrently is found in Kelly's (1955) Personal

Construct Theory of Personality. This theory suggests that personalities are largely determined by differences in cognitive structure. One conceptualization of cognitive structure, cognitive complexity (Bieri, 1955), provides an explanation of interpersonal behavior patterns based on the number of mental categories used by people in perceiving other individuals within their environments. Researchers in the area of cognitive complexity have also investigated a number of other concepts, including abstract thinking, ambiguity tolerance, and empathy which provide a useful conceptual foundation for understanding personality and its relationship to interpersonal behavior.

Researchers investigating Kelly's theory of personality have noted the relationship of cognitive structure and communication activity (Zajonc, 1960). Kelly's theory of personality provides a theoretical linkage between cognitive structure and communication activity. Much of the research relating cognitive processes and communication has involved cognitive complexity, which has been viewed, essentially, as an operationalization of cognitive structure (Soldow, 1976). Perhaps the most apparent manifestation of communication activity in consumer behavior is reflected in the concept of opinion leadership and the transmittal of word-of-mouth communication by opinion leaders about products and services.

The question of a relationship between cognitive complexity and the communication activity of opinion leaders has not been considered previously. Richmond (1977) found evidence that opinion leaders do process information differently than other consumers. Her study suggests the possibility that cognitive complexity would also be positively related to opinion leadership. Lennon & Davis (1987) examined the correlation of cognitive complexity and self-reported fashion opinion leadership. However, their study did not examine differences in cognitive complexity levels and interpersonal communication behaviors.

Based on the relationship of cognitive complexity and interpersonal communication behaviors, the objective of this dissertation is to determine if a relationship exists between differences in cognitive complexity levels and the communication behaviors of opinion leaders versus other consumers.

Cognitive Structure and Personality

The concept of cognitive structure occupies a central position in Kelly's (1955) personality theory. Kelly (1955) has described personality as a function of the individual's mental structure which encompasses the process of categorizing events or environments into subjectively defined attributes, or personal constructs. According to

Gatchel and Mears (1982, pp. 436), the set of personal constructs which comprise the individual's cognitive structure "are the core feature of our being; our grand cognitions or perceptions, the assumptions we make about the future, other people, and so on, that form our individual realities."

A number of researchers have noted that cognitive structures represent the permanent cognitive characteristics of the individual, which constitute the patterns and use of representations and concepts which are used to understand reality (Kelly, 1955; Scott, 1962; Schroder, Driver & Streufert, 1967). In order to understand external phenomena, individuals use a variety of symbols and linkages to depict their environment. The individual assembles a subjective representation, or model, of phenomena in order to anticipate and exert psychological control over their external environments, particularly their interactions with other people (Kelly, 1955; Schroder, Driver & Streufert, 1967; Wepman & Heine, 1971; Parker, 1972).

Kelly (1955) and others have theorized that the individual's cognitive system affects the characteristic ways in which the individual interacts with others within the external environment. According to Zajonc (1960, 1968), the individual's cognitive structure not only mediates the way in which the individual interprets external information, but also how the individual responds to others with respect

to the individual's outgoing transmissions or communication. Since opinion leadership encompasses word-of-mouth communication, the relationship between cognitive structures and interpersonal communication suggests a potential application within this area of consumer behavior.

Cognitive Complexity

Kelly (1955)'s theory of personality focused, to a considerable extent, on the nature and content of the constructs or dimensions used by individuals to construe or evaluate other individuals within their environments. Bieri (1955), who coined the term, "cognitive complexity," shifted the theoretical emphasis from the content of the constructs, e.g. characterizations of other people, to a consideration of their number and relationship. Cognitive complexity has been defined by Bieri et al (1966, pp. 185) as

"the capacity to construe social behavior in a multidimensional way. A more cognitively complex person has available a more differentiated system of dimensions for perceiving others' behavior than does a less cognitively complex individual."

Variations in the levels of cognitive complexity are viewed as having a central role in the dispositional and behavioral differences among individuals which affect their interpersonal relations (Bieri et al, 1966; Delia, Clark and Switzer, 1974). According to Bieri, an individual with a

complex or well-developed constructual system uses more dimensions to understand reality and to anticipate the probable social consequences of actions than does the person with the less differentiated system (Bieri, 1966; Maddi, 1976). In effect, the complex person tries to achieve a broad, comprehensive social perspective by integrating a large number of diverse constructs (Delia, Clark and Switzer, 1974). The less complex individual achieves cognitive harmony or consistency by limiting the extent of his/her exposure to discrepant information, opinions, and stimuli (Tripodi, 1966). Overall, the cognitive structure of the complex person tends to be more multidimensional, flexible, and outwardly oriented towards other persons; while the cognitive structure of the cognitively simple person appears more rigid, traditional and localized in orientation, and dichotomous or "black-white" in the perception of alternatives and external phenomena, such as other people, objects, opinions, etc. (Schroder, Driver and Streufert, 1967; Delia, Clark and Switzer, 1974).

An individual's pattern and use of constructs evolves from past social experience and is thus a developmental process. According to Bieri and Blacker (1956, pp. 116), "the individual's learning experiences in the realm of interpersonal relationships provide the basic core from which his cognitive system for construing the world is developed."

Although constructs can represent discriminations that are made with respect to people, events or other things in ones' life, the emphasis of construct theory has clearly been concerned with differences in interpersonal judgments and related behaviors (Fransella & Bannister, 1977). Both Kelly's (1955) and Bieri's (1955) conceptualizations and operationalizations focus on the individual's cognitive impressions or categorizations of other people and their interpersonal relationships. The individual's statements and number of constructs which are used to describe other people are thus construed to reflect more about the interpersonal behavior of the person who made them than the individuals who are described from past interactions (Wepman & Heine, 1963; Fransella & Bannister, 1977). In effect, the purpose of eliciting such categorizations is to account for differences in interpersonal behavior.

Since interactions among individuals ordinarily involve interpersonal communication, a number of researchers have suggested that the developmental differences in cognitive complexity levels are also related to the development of the individual's interpersonal skills and the nature of interpersonal communication (Alvy, 1971; Delia & Clark, 1977; Hale & Delia, 1976; Delia, Kline & Burleson, 1979; Hale, 1980; Van Hesterin, Sawatzkey & Harvey, 1982; Slugoski, Marcia & Koopman, 1984).

Based on Kelly's (1955) and Bierli's (1955) cognitive theories of personality, and the psychological and communications emphasis of cognitive complexity research, the present study will investigate the relationship of differences in cognitive complexity levels and opinion leadership communication behavior.

Opinion Leadership

In consumer research, the topic of interpersonal communication is an integral part of the word-of-mouth activities of opinion leaders. The concept of opinion leadership is derived from Lazarsfeld, Berelson and Gaudet's original 1940 presidential voting study, which conceptualized opinion leaders as being "most concerned about the issues as well as most articulate about it" (Lazarsfeld, Berelson & Gaudet, 1968, pp. 49). Thus, opinion leaders were deemed to be knowledgeable individuals who engaged in the process of interpersonal communication. The authors identified such individuals based on the subjects' replies to questions as to whether they had been asked to give, or had volunteered, their advice to others. Bellinger and Hirschman (1977, pp. 341) have also defined opinion leaders as "people who are well informed and who hold the trust of others...Their impact is derived from word-of-mouth communication with other group members." Bellinger and

Hirschman's definition, which emphasizes both the interpersonal group situation, and the word-of-mouth exchange of product information, will be used to define opinion leadership within the context of the present research.

Research about opinion leadership has most often dealt with descriptive characteristics associated with opinion leaders, e.g. media habits (Ryan & Gross, 1943; Corey, 1971; Summers, 1970); social characteristics (Summers, 1970; Feldman, 1966); demographic characteristics (Katz & Lazarsfeld, 1955; Summers, 1970; Feldman & Armstrong, 1976); product knowledge and interest (Montgomery & Silk, 1969; Myers & Robertson, 1972; and Darden & Reynolds, 1972; Summers, 1970).

Other studies have focused on selected opinion leader personality characteristics, including innovativeness (Lazer & Bell, 1966; Robertson, 1967); and assertiveness and self-confidence (Summers, 1970; Reynolds & Darden, 1971). While the above personality characteristics were found to have a positive relationship with opinion leadership, Robertson and Myers (1969) indicate that none of eighteen personality characteristics, including dominance, sociability, tolerance, and flexibility, are predictive of opinion leadership behavior.

In most studies of opinion leadership, researchers have generally employed three primary methods of identifying

opinion leaders: the sociometric method, involving interviews with all members of a social system; the key informant method, using interviews of individuals likely to know the opinion leaders; and the self-designating method, asking individual respondents whether they consider themselves to be opinion leaders (Rogers & Cartano, 1962). A fourth method, observation, involving the recording and analysis of interpersonal conversations, has been discussed in the literature but, apparently, never used. Belk (1971) came closest to using the observation method in a study of opinion leadership in which subjects actually engaged in product related conversations. However, the conversations were only recalled by the subjects and were not directly observed nor evaluated.

A reliance on perceptions, recall and questionnaire formats suggests that measures of opinion leadership may be reporting impressions of behavior, rather than observations of actual behavior itself. Indeed, a number of researchers have observed that the three techniques for identifying opinion leaders rely either on the subjects' perceptions of themselves or their perceptions of others (Brooker & Houston, 1976).

Opinion leadership measures and surveys also tend to rely on past data which is based on the subjects' recall or memory. According to Rogers (1976, 1983), such measures

constitute a lack of "process orientation" in diffusion research. As Rogers (1976, pp. 294) notes,

diffusion researchers usually have relied on their respondents ability to recall their date of awareness or adoption of a new idea. Essentially, the respondent is asked to look back over his shoulder to reconstruct his past history of innovation experiences. This hindsight is not very accurate and undoubtedly varies on the basis of (1) the innovation's salience to the respondents; (2) the length of time over which recall is requested; and (3) individual differences in education, mental ability, etc.

Studies of word-of-mouth communication, product-related conversations, and social interaction patterns oftentimes reflect subjective perceptions of interactions rather than the observation of actual communication activity (Rogers & Cartano, 1962).

As an alternative method of identifying opinion leaders, this dissertation utilizes observations of product related conversations. The predicted identity of the observed opinion leader are based on the theoretical relationships among the variables discussed in this dissertation. The methodology and the content analysis procedures which are used are described in the operational chapter of this dissertation.

The opinion leadership studies cited above are typical of personality research which are often atheoretical and utilize personality inventories in an indiscriminant manner. In contrast to these approaches this study extends

Kelly's (1955) and Bierli's (1955) cognitive approaches to personality theory in order to provide a conceptual framework for understanding opinion leadership communication activity. Since none of the previous studies have investigated the actual communication activity of opinion leaders, a process measure of that activity should provide a better operationalization of the construct.

Cognitive Complexity And Opinion Leadership

A few researchers have suggested the applicability of cognitive characteristics to opinion leadership as a means of gaining insight about opinion leadership personalities, e.g. Brett and Kernaleguen (1975), Ostlund (1973), Richmond (1977), Reingen and Kernan (1986) and Childers (1986). This dissertation advances a conceptual framework specifically developed to link the concepts of cognitive complexity and personality to opinion leadership. Based on cognitive complexity research, the dissertation identifies four concepts that can be related to behaviors associated with cognitive complexity, e.g. abstract thinking, ambiguity tolerance, empathy, and emotional expressiveness, which will lead to an effective understanding of opinion leadership communication behavior.

The variables used in this research depart from past approaches in that they constitute a conceptual

configuration of opinion leadership which is based on the relationships between cognitive personality theory and interpersonal communication behavior. This approach offers a potential framework to integrate both past and future studies of the opinion leadership concept.

A Conceptual Framework

As suggested above, the general objective of this dissertation is to investigate the applicability of cognitive complexity to opinion leadership communication behavior.

The conceptual framework of the dissertation advances the hypothesized relationship between cognitive complexity, and several related personality variables, with respect to opinion leadership. The literature review, hypotheses, and empirical inquiry will address these characteristics, including two moderating variables, product interest and product knowledge, which may have an impact on the product realm in which the opinion leader becomes active. In effect, the conceptual framework reflects a conceptualization of opinion leadership as a general personality characteristic which is moderated by product interest, product knowledge and other psychological dimensions (including existing psychological needs, perception of product benefits, etc.), situational factors

(e.g. time constraints, financial resources), and sociological characteristics (such as degree of social participation, integration, and social character).

Cognitive complexity, as used in the framework, is based on Kelly's (1955) Personal Construct Theory of Personality, and describes a mental structure which reflects one's general pattern of personality, predisposition, and behavior. Operationally, it is defined by Bieri (1955) as the number of dimensions which a person uses to describe phenomena.

Research indicates that cognitively complex people exhibit a general capacity for employing multiple perspectives. The complex person is able to integrate new or ambiguous information more readily than less complex individuals. This ability to discern different perspectives also impacts on the cognitively complex individual's communication ability. The cognitively complex individual understands the perspectives of his listeners, and thus adapts his communication strategies to his particular audience.

The ability of cognitively complex people to integrate new information and adapt interpersonal communications to other individuals appears relevant to opinion leadership. Such capabilities may help explain the ability of opinion leaders to receive, process, and disseminate new product information.

Cognitive complexity research in the fields of psychology and communication have also explored several additional characteristics which appear relevant to opinion leadership. These characteristics include abstract thinking, ambiguity tolerance, empathy, and expressiveness. Each of these variables also involves the individual's use of external information in formulating appropriate communication responses.

Abstract thinking refers to the use of abstract concepts in a person's thinking patterns (Peel, 1975). Since abstract concepts can assume a range of different values, they also allow for the perception of multiple perspectives, thus complementing the perceptual style of cognitively complex thinkers. Delia, Clark and Switzer (1974) suggest that the flexibility of abstract concepts improves communication by providing a greater level of understanding of environmental stimuli and people. Since opinion leadership largely involves interpersonal communications, the impact of abstract concepts towards more comprehensive, listener oriented, communications also appears particularly relevant to the persuasive abilities and word-of-mouth activities of opinion leaders.

Ambiguity tolerance has also been associated with cognitively complex individuals. As Parker (1972) has noted, cognitive complexity involves the ability to reconcile inconsistent or opposing characteristics in one's

impressions of other people or objects. A high level of ambiguity tolerance allows one to assimilate conflicting notions, a characteristic of multidimensional thinking which has also been associated with cognitively complex people. In contrast, cognitively simple people would be intolerant of ambiguity, since they tend to view phenomena in a "black-white" or "either-or" fashion. The relevance of ambiguity tolerance to opinion leadership is twofold: first, it suggests that the individual is able to integrate new and unfamiliar information; secondly, it involves an ability to judge and integrate the perceptions of others in order to form adaptable communications. In essence, the ambiguity tolerant individual has a capacity to understand the contradictory and opposing views of others and can utilize alternative viewpoints in developing arguments. Such activities thus appear germane to the informational and interpersonal communications roles associated with opinion leadership.

Empathy is generally defined in the psychological literature as "the ability to put oneself in the other person's position, establish rapport, and anticipate the other's reactions, feelings and behaviors" (Kerr and Speroff, 1954). It is often viewed either as actual vicarious experience of another's emotional experience or as an ability to understand another's point of view (Chlopan, McCain, Carbonell, & Hagen, 1985). In the cognitive

complexity literature, empathy is viewed as an essential part of interpersonal communication. With respect to social interactions, Slugoski, Marcia and Koopman (1984, pp. 659) have found that cognitively complex individuals

seem more open, more cooperative, and more at ease in discussion of controversial issues, whereas low-identity [cognitively simple] subjects seem to care less for the feelings and opinions of others, participate less comfortably in the interactions, and, in the case of foreclosures, seem to defend themselves either by antagonistically warding off the opinions of others or by indiscriminately acquiescing to them - both patterns that are likely to preclude advances in either integrative complexity or identity.

Delia and Clark (1977) observe that cognitively complex individuals appear able to modify their communication approaches on the basis of listener needs. Empathetic speakers are deemed to be more persuasive since they take their listeners into account and tailor their messages on an individual basis to the listener's presumed interests or needs. As suggested in the present conceptual framework, opinion leaders may also reflect high empathy levels which also allows them to modify their communications on the basis of perceived listener needs. This facilitates the communication of product related opinions and information.

Various authors, including Van Hesterin, Sawatzkey and Harvey, (1982); Delia and Clark, (1977); Delia, Kline and Burleson, (1979); Hale and Delia, (1976); and Hale, (1980)

have associated effective communication with cognitive complexity. Hale and Delia (1976) suggest that cognitive structures are key elements of social interaction and communication. As noted above, the characteristics of cognitive complexity, abstract thinking, ambiguity tolerance, and empathy suggest a profile of the opinion leader which reflects an adaptable communication style. Typical of the research concerning cognitive complexity and communication effectiveness is Alvy (1971) who demonstrated that cognitively complex subjects adapt their communications to listeners based on the varying emotional and psychological descriptions of those intended recipients. Thus, the cognitively complex speakers matched their transmissions to the perceived emotional and psychological receptivity of others. In essence, the cognitively complex subjects demonstrated an ability to use a large repertoire or range of expressive characteristics.

The ability to use a range of communication styles appears relevant to a concept conceptualized by Friedman, Prince, Riggio, and DiMatteo, (1980), which they have termed, expressiveness, or affective communications. According to these researchers, expressiveness involves the ability to use a variety of styles in communicating with other individuals. The authors suggest that the flexibility of affective expressiveness, by which the speaker can transmit emotion and thus "move, inspire, or captivate"

others, is an essential part of "social influence in face-to-face interaction" (Friedman, Prince, Riggio, & DiMatteo, 1980, pp. 333).

Although previous research has not linked this variable to cognitive complexity or opinion leadership, expressiveness appears pertinent to the present investigation. The ability to utilize a range of communication approaches may be related to the adaptability which has been associated with cognitively complex communicators (Hale & Delia, 1976). In addition, the possible relationship of these variables also suggests that a similar degree of communications adaptability may exist on the part of opinion leaders. Consequently, the possible application of this characteristic to opinion leadership is included in the conceptual framework.

Summary of the Research Objectives

The current study suggests that marketing researchers have not yet achieved a broad theoretical perspective of opinion leadership. Nothing approaching a comprehensive conceptualization of the opinion leadership personality currently exists. Although opinion leadership research continues to generate scholarly interest, there has been a surprising lack of continued theoretical development concerning this concept. Given this need for research in

this area, this section will outline the major objectives and rationale of the dissertation.

(1) A major aim of the dissertation is to develop a conceptual framework of opinion leadership which can be used to explain and predict the identity of opinion leaders within small group settings. This conceptual framework should provide for the integration of previous conceptual and empirical findings concerning opinion leadership. The framework will be based on the relationships of cognitive complexity and a number of conceptually related personality constructs, and opinion leadership behavior. The personality constructs to be studied include abstract thinking, ambiguity tolerance, empathy, expressiveness and opinion leadership behavior.

In general, a conceptual framework depicts how elements in some system are interrelated (Goldsmith, 1983). As Kerlinger (1986) notes, an abstract framework specifies hypothesized relations in a set of data. Given its specification, predictions derived from the framework can be empirically tested (Engel, Kollat & Blackwell, 1973). Thus, the framework provides the theoretical basis for testing propositions about theoretical concepts or constructs which may help to explain existing phenomena and predict future relationships (Engel, Kollat & Blackwell, 1973; Goldsmith, 1983; Kerlinger, 1986). The objective of the dissertation is to suggest a framework of opinion leadership which is

theoretically driven. The objective of this framework is to provide a theoretical rationale which explains why opinion leaders are predisposed towards behaving in certain ways. This rationale should lead to the prediction of how that behavior occurs, and this can best be determined methodologically via a process approach.

(2) The second objective of this dissertation is to demonstrate the importance of a personality framework for understanding opinion leadership. For a number of years, consumer behavior researchers have noted the relatively poor explanatory power of personality related variables in consumer research. Indeed, Kassarian (1971) has criticized much of the personality research in marketing because of the lack of a theoretical framework. Thus, this dissertation demonstrates how a personality theory can help explain the predispositions and interpersonal communication behavior associated with opinion leadership.

(3) The third major objective is related to the process design of the dissertation. The existing methods of identifying opinion leaders rely either on self-report or recall, rather than on the actual observation of opinion leaders' actual behavior. Inasmuch as actual product-related conversations have not been observed, research purporting to describe "word-of-mouth" activity of opinion leaders reflects, instead, data consisting entirely of recollections and perceptions of the described contacts.

Accordingly, one of the major aims of the present research is to demonstrate that a method of content analysis, applied to observations of actual product related conversations, can provide an accurate and theoretically sound basis for identifying the opinion leaders within small groups settings.

Organization of this Dissertation

The dissertation addresses the above research objectives in a direct manner. With the conceptual framework serving as the focal point, Chapter 2 encompasses the literature review, as well as the development and statement of hypotheses. The research methodology, including measurement issues, is the focus of Chapter 3. The analysis and interpretation of data are discussed in Chapter 4. Conclusions and future research suggestions are considered in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to review the theoretical work which led to the development of the conceptual framework indicated in Chapter 1. The major focus of the chapter will pertain to the cognitive complexity literature which is discussed first from the standpoint of personality theory and interpersonal relationships and then more specifically in terms of implications for opinion leadership. Other dimensions which may be relevant to opinion leadership, including abstract thinking, ambiguity tolerance, empathy, and affective communication are analyzed in terms of their conceptual relationships with cognitive complexity. Each of these concepts is discussed in terms of its own theoretical development, and then in terms of its applicability to opinion leadership.

Personality Research

In general, 'personality is most often used as a collective term relating to the individual's unique, enduring and stable characteristics which are determined over time by both internal psychological processes and by external environmental conditions (Gatchel and Mears, 1982).

Kassarjian (1971) has suggested that personality represents consistent responses to the world of stimuli surrounding the individual. Similarly, Gatchel and Mears (1982) stress the characteristics of personality which are involved in the individual's responses to the environment. They suggest that (pp. 4)

personality is an internal, mental, and emotional pattern of response to the environment - a pattern of thought, feeling, and behavior that affects every aspect of a person's life. Personality is the quality that makes one person stand out from others; it is whatever makes a person unique.

It should be noted that mental patterns of responses are key elements in Gatchel and Mears' (1982) definition of personality. Maddi (1976) has also defined personality as (pp.9)

a stable set of characteristics and tendencies that determine those commonalities and differences in the psychological behavior (thoughts, feelings, and actions) of people that have continuity in time and that may not be easily understood as the sole result of the social and biological pressures of the moment.

A considerable number of personality theories exist, each of which provides a set of principles or assumptions which attempt to explain personality and its relationship to behavior. In general, personality theories tend to view the individual's characteristic pattern of behavior as a mechanism involving the individual's interpretation and

reaction to external phenomena (Wepman and Heine, 1963). Gatchel and Mears (1982) suggest that no one theory has explained personality phenomena completely, but that each theory provides a useful perspective.

Despite the usefulness of traditional personality theories in psychology, the correlation of personality to consumer behavior variables (based on the administration of personality inventories or scales) has been largely equivocal (Kassarjian, 1971). As Zaltman and Wallendorf (1983) indicate, personality research in consumer behavior has generally lacked a firm theoretical base. Engel and Blackwell (1982) conclude that there is no reason to assume that similar personality profiles will yield consumer groups reflecting homogeneity in other areas or behaviors. Few consumer research efforts, however, have investigated the possibility of using cognitive personality theory to describe or explain consumer actions.

Cognitive Structure And Personality

Kelly's (1955) Personal Construct Theory of Personality suggests that cognitive structure should be viewed within the domain of personality and interpersonal relations (Wepman & Heine, 1963; Schneier, 1979). According to cognitive personality theory, each individual's unique cognitive structure, or system of formulating and using constructs, systematically predisposes the way in which the

individual perceives and responds to others in the environment (Schneier, 1979; Bieri, 1971; Bieri and Blacker, 1956; Tripodi, 1964; Vannoy, 1965). Thus, the cognitive structure not only involves the integration of information from the environment, but it also affects the resulting motives, intentions, and behavioral dispositions as well (Kelly, 1955; Wepman & Heine, 1963; Bieri, 1971).

Wepman and Heine (1963) note that cognitive personality theory is compatible with several alternative personality theories. For example, from a psychoanalytic viewpoint, differences in individual cognitive structure affect the interpretation and integration of the symbolic meanings of stimuli data as well as the individual's subsequent behavior (Wepman and Heine, 1963). From a trait-factor view of personality, the individual's cognitive structure constitutes a dispositional style of thinking or inherent trait of the individual (Vannoy, 1965). From a social-psychological standpoint, the cognitive structure is viewed as the individual's means of perceiving environmental cues from others and responding in an appropriate manner (Kelly, 1955; Bieri and Blacker, 1956). Zajonc (1960, 1968) has noted that the individual's cognitive structure assists the individual in interpreting messages from others and in formulating responses and outgoing interpersonal transmissions.

Thus, cognitive structures represent key elements of social interaction and communication (Hale and Delia, 1976). Within the realm of consumer behavior, the association of cognitive structure with communication and personality would appear relevant to the concept of opinion leadership and the transmittal of product related information among consumers.

Cognitive Complexity

Cognitive complexity, as described by Bieri (1955) reflects a quantitative view of mental structure, e.g. the number and organization of constructs which constitutes the individual's cognitive system. In other words, the individual's level of cognitive complexity corresponds to the number of independent, elementary dimensions which the individual identifies and uses to order or characterize objects and events. The more dimensions one uses, resulting in a more complete perception or understanding of other individuals or objects, corresponds to a higher level of cognitive complexity, and to a multidimensional or complex thinking style. In contrast, cognitively simple people are characterized by their use of a limited number of observable or stimuli-based dimensions.

A great deal of research has focused on the qualitative differences between cognitively complex and cognitively simple individuals. Such differences have been noted with

respect to the level of abstraction of constructs used by the individual (e.g. Muneno & Dembo, 1982; Epting, Wilkins, & Margulis, 1972; O'Keefe & Delia, 1978; Delia, Kline & Burleson, 1979; Gardner & Schoen, 1962; Delia, Clark & Switzer, 1974), the capacity for ambiguity tolerance (e.g. Leventhal, 1957; Delia, Clark & Switzer, 1974; Tripodi, 1964), the extent of empathetic communication skill (e.g. Van Hesterin, Sawatzkey & Harvey, 1982; Delia & Clark, 1977; Delia, Kline & Burleson, 1979; Hale & Delia, 1976; Hale, 1980), one's susceptibility to new information (e.g. Hewitt, 1972; Scott, 1962; Lundy & Berkowitz, 1957), the accuracy of decisions (e.g. Halverson, 1970; Bieri, 1955), the alterability of existing attitudes (e.g. Lundy & Berkowitz, 1957; O'Keefe & Delia, 1981; Schroder, Driver & Streufert, 1967), the use of internal versus external referents (e.g. Durand & Arie, 1980), etc.

An extensive range of predispositions and behaviors have thus been associated with cognitive complexity in existing research. Accordingly, cognitive complexity is viewed in this dissertation as a cardinal trait, in accordance with the original typology of personality traits developed by Allport (1937, 1960). According to Allport (1937, pp. 337-338):

In every personality there are traits of major significance and traits of minor significance. Occasionally some trait is so pervasive and so outstanding in a life that it deserves to be called the cardinal trait. It is so dominant that

there are few activities that cannot be traced directly or indirectly to its influence...Such a master quality has sometimes been called the eminent trait, the ruling passion, the master-sentiment, or the radix of life.

Allport (1937, pp. 338) notes that the cardinal trait is not identical to the personality itself. He notes, for example, that

however well integrated a life may be around the cardinal trait there remain specific habits, incidental and non-organized tendencies, and minor traits of some degree that cannot be subsumed functionally under the cardinal trait. Though pervasive and pivotal, a cardinal trait still remains within the personality; it never coincides with it.

The view of cognitive complexity as a cardinal trait is consistent with the importance of mental or cognitive structure which Allport (1961, pp. 256) describes as the "key to the edifice of personality."

This view is also consistent with the cognitive personality theories of Kelly (1955) and Bieri (1955) which underlie the concept of cognitive complexity. The conceptualizations and operationalizations of both Kelly's (1955) and Bieri's (1955) approaches to cognitive personality theory focus on the personal constructs which the individual uses to describe other individuals. Originating in clinical psychology, the essential aim of constructual research is to understand the relationship between personality and the individual's interactions with other people (Wepman & Heine, 1963). The number and pattern

of using constructs develops largely from past interpersonal relationships. Based on the individual's experiences, the quantity and configuration of personal construct use relates to the individual's ability to understand his or her social and physical environments (Bieri & Blacker, 1956; Wepman & Heine, 1963).

A large body of psychological and communication research has focused on the relationship of the individual's use of constructs with respect to the nature of his or her interpersonal relations. Since interpersonal interaction generally involves communication, researchers have investigated the association of differences in the levels of cognitive complexity and communication skill (Alvy, 1971; Delia & Clark, 1977; Hale & Delia, 1976; Delia, Kline & Burleson, 1979; Hale, 1980; Van Hesterin, Sawatzkey & Harvey, 1982). In general, these studies reveal that cognitively complex individuals tend to be more sensitive to perceived listener needs, more willing to disclose personally relevant information, and more adaptable in terms of formulating persuasive messages and arguments (Alvy, 1971; Hale & Delia, 1976). In effect, an individual with a more developed, or complex cognitive system, appears to be predisposed towards more "people-oriented" interactions and interpersonal exchange. Based on these studies, it would appear plausible to assume that cognitive complexity would

be a relevant variable with respect to opinion leadership and product discussions among consumers.

Accordingly, the next section begins with a summary description of opinion leadership, including a consideration of existing consumer behavior research approaches and findings. Two separate streams of research are identified, one dealing with personality characteristics which have been associated with opinion leadership, and a second dealing with communication behavior. The relationship of cognitive complexity to communication and personality is then approached as a means of providing a framework to link these two separate streams.

Opinion Leadership

Opinion leaders have been defined as those individuals from whom others seek information and advice (Rogers & Cartano, 1962). This definition follows largely from the original observations made by Lazarsfeld, Berelson and Gaudet (1968) who described the politically well-informed opinion leader as being "most concerned about the issue and most articulate about it." Thus, the opinion leader is deemed to be someone who disseminates information through interpersonal communication. According to Rogers and Cartano (1962), such a person exerts a disproportionate amount of influence on others' decisions.

There are essentially two streams of research dealing with opinion leadership. One stream attempts to identify actual opinion leaders, utilizing personality traits, demographics, and sociological indicators. The other stream focuses on models of the communication exchange process and has produced a number of alternative conceptual models of opinion leadership. Neither of the research streams displays any degree of comprehensive conceptual development. In addition, the two streams have not been integrated within a theoretical framework.

Identification of Opinion Leaders

As noted above, one research stream has identified a large number of personality, demographic and sociological characteristics which correlate directly with consumers classified as opinion leaders. These characteristics include greater reading interests, more self confidence, and financial conservatism (Davis & Rubin, 1983); self-reliance (Brett & Kernaleguen, 1975); gregariousness and narcissism (King & Sprokes, 1973); brand loyalty (Robertson & Myers, 1969); inner-directedness (Donnelly, 1970; Etzel, Donnelly, & Ivancevich, 1976); social involvement (Baumgarten, 1975); age (Katz & Lazarsfeld, 1955); education, income and occupation (Summers, 1970); media usage (Troidahl & Van Dam,

1965); and product knowledge and interest (Montgomery & Silk, 1969; Myers & Robertson, 1972).

Perceived risk has also received considerable scholarly attention as an additional means of differentiating opinion leaders from other consumers. This variable has been viewed either as an inherent personality trait, as a function of a demographic characteristic such as age, or as a function of product class (Sheth, 1971; Schiffman, 1972; Woodside, 1976; Settle, Belch & Alreck, 1979; Still, Barnes & Kooyman, 1984).

Other researchers have approached the identity of the opinion leader by specifically considering the product or object category associated with specific groups of opinion leaders. The category of fashion opinion leadership is a notable example of this type of product-related research (King, 1965; Darden & Reynolds, 1972; King & Sproles, 1973; Reynolds & Darden, 1972, 1973; Schrank & Gilmore, 1973; Lennon & Davis, 1987). Other product or service related studies have also considered opinion leaders who purchased new automobiles (Gronhaug, 1975; Feldman & Armstrong, 1976), energy conservators (Davis & Rubin, 1983); service users (Green, Langeard & Flavell, 1974), self-service gasoline buyers (McClurg & Andrews, 1974), family planning clients (Saunders, Davis & Monsees, 1974), and romance novel readers (Schiffman & Schnaars, 1980). Many of these studies view opinion leadership as a product specific phenomenon rather

than as a general personality trait (Marcus & Bauer, 1964).

Researchers have addressed the issue of product specificity by examining the overlap of opinion leadership across topics and products. For example, King and Summers (1970) studied opinion leadership across a variety of product categories and reported that the greatest overlap occurred in related areas (large and small appliances). Similar findings have been noted for innovators (Ostlund, 1973). In a study of opinion leadership across 12 topic areas (e.g. household furnishings, appliances, home cleaning and upkeep, recreation and travel, politics, children's behavior and upbringing, women's clothing and fashions, family medical care, cosmetics and personal care, cooking, recipes and new foods, and automobiles), Myers and Robertson (1972) also found some correlation, or evidence of overlap, within related product areas.

Some studies have also considered the identity of opinion leaders within different consumer markets or segments, e.g. farm owners (Ryan & Gross, 1943); housewives (March & Tebbutt, 1979); and elderly consumers (Schiffman, 1971, 1972). One study has also attempted to profile opinion leaders according to their overall lifestyles (Tigert & Arnold, 1971).

Although a large number of studies have attempted to identify personality traits which are associated with opinion leadership, nothing approaching an overall

personality theory of opinion leadership currently exists. From a practical, as well as theoretical standpoint, the above dimensions have provided researchers little help in explaining or predicting opinion leadership communication behavior.

The next section summarizes the second major stream of opinion leadership research, within the consumer behavior literature, which addresses the communication aspects of opinion leadership.

Models of Opinion Leadership Communication Behavior

The communication, or word-of-mouth, research stream, which appears in the marketing literature, has produced a number of opinion leadership models. All are based on the frequency and direction of interpersonal communications (Tigert and Arnold, 1971; Reynolds & Darden, 1971; March & Tebbutt, 1979; Schiffman, 1972; Schiffman, Dash & Dillon, 1975; Gross 1971).

Some of the opinion leadership models include at least one category of consumers labeled as "information sharers," which is based on the observation that both opinion leaders and followers give and receive advice. Such models reflect a multi-step view of information exchange in which information giving and seeking activity is not the exclusive domain of either opinion leaders or followers. This view of

the communications process supplants the two-step flow hypothesis, which originally postulated a dominant leader and passive audience (Troldahl & Van Dam, 1965; Cox, 1967; Arndt, 1968). Nevertheless, most models of opinion leadership generally try to label the participants according to their propensity either to seek or to give advice.

Gross (1971), in reviewing a book published by the ATV HOUSE (1970), identifies "discussers" (who discuss products, but who neither seek nor give advice), "mixers" (who both give and seek advice), and "silencers" (who do not discuss nor take advice concerning products).

Based on life style research, Tigert and Arnold (1971) suggest a model consisting of separate categories for "dynamic leaders" and for "information exchangers," with the latter appearing to engage in greater information seeking behavior.

Similarly, Reynolds and Darden (1971) offer a parsimonious model, which has been tested by other researchers, and which consists of four categories of opinion leadership: the socially integrated who are high in both information giving and seeking; the socially independent who are high in information giving and low in information seeking; the socially dependent who are low in opinion giving and high in opinion seeking; and the socially isolated who are low in both information giving and seeking. Schiffman, Dash, and Dillon (1975) and Schiffman and

Schnaars (1980) have studied these categories using self-designated measures of information giving and seeking. In addition, Schiffman (1972) has investigated a modification of these categories using a sociometric design in which subjects' category designations are based on the perceptions of other group members.

In approaching the Reynolds and Darden (1971) model and its categories empirically, Schiffman (1972) reports that an operational difficulty exists for the two intermediate categories (individuals described as high on one communication behavior and low on another) (pp. 446):

While social isolates and social reciprocators are clearly at the extreme ends of this social interaction scheme, a problem exists in ordinarily arranging the two intermediate subgroups: social identifiers and social receivers. For these two subgroups it is difficult to ascertain the extent of two-way communication, since in one case the residents are solely designators and the other solely designees.

As a practical matter, Schiffman reports his decision to limit the analysis to "two extreme subgroups."

March and Tebbutt (1979) have suggested a typology of opinion leadership, based on transmitting or receiving mass media messages and interpersonal messages. The typology elaborates on the four categories of opinion leadership modeled initially by Reynolds and Darden (1971). In addition to the original four categories, March and Tebbutt (1979) add ten subgroups based on information giving/seeking

activity associated with the two different types of communication. The classification scheme is based on a factor analysis of communication data recalled in diary form by the subjects. According to the researchers, their primary finding is that (pp. 63)

opinion exchange between housewives was the dominant communication pattern...opinion leaders or followers were shown, contrary to more traditional theories of personal influence and communication, to be much less frequent than opinion exchangers.

This finding has also been suggested by Troldahl and Van Dam (1965) and by Schiffman, Dash and Dillon (1975).

Overall, none of the models provides any theoretical basis to account for the communication differences among consumers. In effect, the two streams of research in consumer behavior concerning the personality characteristics and communication behavior of opinion leaders have not been linked together conceptually to provide a comprehensive understanding of opinion leadership. Although the above models generally purport to represent a comprehensive view of the communications process of opinion leaders, none are associated with specific personality variables which can explain the communications behavior depicted. In addition, none of the studies have considered the relationship of cognitive complexity to the personality characteristics and communication behaviors of opinion leaders.

Cognitive complexity, which is presented in this dissertation as a potential framework for understanding both the personality characteristics and communication behavior of opinion leaders, has been researched in various contexts within the consumer behavior literature. The next section first considers consumer studies which have considered cognitive complexity as a consumer behavior variable. The discussion is followed by a consideration of the specific conceptual and empirical linkages between cognitive complexity and the personality and communications behavior associated with opinion leadership.

Marketing Studies Of Cognitive Complexity

Although the number of cognitive complexity studies in consumer behavior is relatively small in number, a wide variety of subjects related to the construct have been considered by marketing scholars. These include the moderating effects of the variable on consumer perception of product attributes, its generality across domains of products, its relationship with respect to consumer attitudes, and its role as a measurable criterion for segmenting consumers. In addition, there has been one review article by Durand and Lambert (1983). This section will briefly review the findings of the empirical studies.

Descriptive Studies

Almost all of the dozen or so consumer studies which utilize the construct of cognitive complexity fail to conceptualize it as a derivative of Kelly's (1955) Personal Construct Theory of Personality. A review of consumer research indicates that cognitive complexity is most often viewed as a quantitative, descriptive information - processing variable. According to Hudson (1974, pp. 478), measures of cognitive complexity

while indicative of definite interpersonal variations, are simply descriptive measures which reveal nothing about the content of these constructs. Nor do they reveal anything as to the processes which give rise to these interpersonal variations.

The statement reflects a perception that cognitive complexity measures yield only "descriptive" structural relationships. In effect, such studies use cognitive complexity as a methodological or operational procedure, and thus ignore the construct's broader theoretical implications. In short, many consumer researchers have failed to view cognitive complexity as a personality trait, and have ignored the body of psychological literature which links the construct to communication and other behaviors.

One of the major uses of cognitive complexity within the consumer behavior field has been to assess the number of dimensions employed by consumers in perceiving various

stimuli: consumer products and services (Tan & Dolich, 1979; Tan & Lim, 1982; Durand & Lambert, 1976; Durand, 1978, 1979; Hirschman, 1976); retail stores (Durand & Arie, 1980; Hudson, 1974); recall and comprehension of advertising copy (Zinkham & Martin, 1983).

Tan and Dolich (1979) and Tan and Lim (1982) investigated the question of the generality of cognitive complexity across several product classes, including wrist watches, jeans, soft drinks, automobiles, apartments and toilet soap. Finding significant, moderately sized intercorrelations of cognitive complexity scores with each product category, the authors conclude that consistency exists in the levels of cognitive complexity used to evaluate products, regardless of product category.

The results are similar to findings reported by Durand and Lambert (1976). The authors compared subjects' levels of cognitive complexity across three areas - automobiles, toothpaste, and interpersonal relations. The intercorrelations among these areas were all significant and moderate in magnitude, leading to the conclusion that the generalization of cognitive complexity is much greater across similar domains of interest.

Using multiple regression, Tan (1979) also investigated the relationships between product awareness, knowledge, and usage and cognitive complexity. Although the results were not significant, Tan notes that cognitive structures have

been treated as personality characteristics in psychology. He argues for the adoption of a similar conceptual view within the discipline of marketing. Tan suggests that cognitive complexity appears generalizable and may be capable of mediating various buying behaviors.

Hirschman (1981) has studied the interaction of cognitive complexity and product familiarity with respect to consumer perceptions of intangible service attributes. She hypothesizes that increased experience with a product class increases the development of complex cognitive structures within that domain. This is a situational interpretation of cognitive complexity which is based largely on Crockett's (1965) frequency of interaction hypothesis which postulates that contact with an object increases the individual's ability to differentiate among the object's dimensions. Principal components analysis of data for users and nonusers of the product area indicated that users relied on more cognitive components than did inexperienced individuals.

Durand (1978, 1979), Durand and Arie (1980) have also addressed cognitive complexity as it affects consumer perceptions of products and company attributes. Durand (1978) found an inverse relationship between cognitive complexity and "halo error" - a tendency to view products globally or holistically. Durand found that cognitively complex subjects were more accurate than were cognitively simple subjects in discriminating among the differences in

attributes of ten brands of toothpaste, and among the attributes of eight brands of automobiles. He concludes that marketing research subjects must be segmented according to cognitive complexity in order to avoid advertising and product decisions based on confounded rating scale results.

Durand (1979) also investigated the relationship of cognitive complexity and affect, e.g. preference and like/dislike for the eight brands of automobiles and ten brands of toothpaste. Durand found a greater dispersion (more variance) of affect ratings for complex individuals than for the cognitively simple subjects. Durand has suggested that individuals who are low in cognitive complexity appear to be less critical perceptually than the more complex subjects. In essence, cognitively simple persons tended to be more extreme in their affect ratings since they apparently screened out discrepant information. Cognitively complex consumers appeared better able to distinguish among different brands and attributes for the products used in the study. Durand suggested that the influence of cognitive complexity may be generalizable across product domains, regardless of the amount of affect existing for a particular product category.

In a third empirical study, Durand and Arie (1980) extended his analysis to replicate the earlier findings across different objects, i.e. retail stores. Durand found a greater dispersion of affect ratings across retail store

ratings for cognitively complex subjects than for cognitively simple ones. Again, the generality of cognitive complexity is demonstrated in a different product realm. This study is similar to one conducted by Hudson (1974) which found that consumers generally employed from two to six components in determining store preference (price, location, etc.).

Zinkham and Martin (1983) have proposed using cognitive complexity with cloze procedures as an advertising copy testing procedure. They presented subjects with two advertisements for calculators. Although sentence length and word difficulty were similar, the advertisements differed in syntactical complexity. This appears to be an extension of research by Soldow (1982) which investigated the effects of sentence structure and embedded phrases on the mental capacities of cognitively complex and cognitively simple subjects. The authors found that, for technical or highly complex advertisements, recall and comprehension of advertising copy appeared greater for cognitively complex subjects. In general, Zinkham and Martin's study suggests the need to match consumers with copy structure in order to improve advertising effectiveness.

A number of studies have focused on the behavioral implications of cognitive complexity, and have provided a more comprehensive perspective for use of this variable in consumer behavior. Durand and Arie (1980), for example,

studied whether the behavior of cognitively complex consumers tended to be under attitudinal or normative control. In essence, they hypothesized that cognitively complex consumers would rely on their own opinions in making brand decisions, while less complex consumers would follow the advice of significant others. To test this proposition within a marketing context, Durand and Arie measured cognitive complexity using financial services and institutions. Measurements indicating actions under normative or attitudinal control were computed in the study by using a modified version of Fishbein's Extended Behavioral Intention Model (1975). Durand and Arie found that the normative component was insignificant in regression equations for the cognitively complex consumer. In contrast, both the attitudinal and normative components reached significance for the less complex consumer. Similar findings by Schroder, Driver, and Streufert (1967) in the psychological literature have noted that cognitively simple individuals depend more on external validation and significant others for information and guidance for actions. An important implication for opinion leadership is that opinion "followers" or nonleaders would be cognitively simple.

The use of more sophisticated decision rules by cognitively complex consumers were also found by Park and Sheth (1975). They investigated the interaction of

cognitive complexity and the use of decision rules by consumers with respect to seven common products (automobiles, tires, stereo tape decks, exterior paints, hamburgers, toothpaste, and suntan preparations). The researchers hypothesized that in complex situations, cognitively complex consumers would use either weighted or unweighted linear compensatory models (making comparisons of summated brand scores which encompass both negative and positive attributes), while less cognitively complex consumers would use either a noncompensatory conjunctive model (eliminating brands when an attribute falls below a minimal point) or a disjunctive model (accepting a brand which has an attribute surpassing an allowable level). According to the researchers, cognitively complex consumers would differentiate among a relatively large number of attributes which are then integrated into product or brand decisions. Cognitively simple consumers would most likely arrange attributes hierarchically and then choose brands on the basis of a single salient attribute (Schroder, Driver & Streufert, 1967). The expectation of differences between cognitively complex and cognitively simple consumers was confirmed for the unweighted compensatory model and for the noncompensatory conjunctive model.

The convergence of cognitive complexity with these systematic and generalizable decision processes is important for two reasons: it begins to add a conceptual foundation

for the use of the variable in marketing, which supports a view of cognitive complexity as an enduring, dispositional trait. This view is in accord with the conceptual framework of cognitive complexity as a personality dimension associated with opinion leadership.

Accordingly, the focus of the next section is on those consumer behavior studies which have investigated the relationship of cognitive processes and opinion leadership. The section concludes with a summary of the conceptual linkages between cognitive complexity and opinion leadership, and by a consideration of how cognitive theory can provide a framework for understanding the personality characteristics and communication activities associated with opinion leadership.

Cognitive Complexity And Opinion Leadership

A limited number of studies have examined cognitive and perceptual styles associated with opinion leadership. Brett and Kernaleguen (1975) have suggested that an analysis of cognitive or perceptual styles might help to identify opinion leaders. Childers (1986) has suggested that opinion leaders of electronic/technical products have acquired consumption-based expertise which allows them to use less cognitive effort with respect to the evaluation of related product categories. Reingen and Kiernan (1986) have noted

that opinion leadership word-of-mouth activity is often affected by one's social-psychological perceptions of other individuals within one's interpersonal communications network.

More recently, a study by Lennon and Davis (1987) has examined the correlation of cognitive complexity to fashion innovation and opinion leadership. Unfortunately, the study reflects a number of conceptual inconsistencies (and relies upon a number of infrequently used measures). Although the authors theorize a probable relationship among fashion opinion leadership, fashion innovativeness, ambiguity tolerance and cognitive complexity, they hypothesize that fashion opinion leaders would be cognitively simple due to a need for social conformity (which is not measured). Their findings indicate a positive correlation between cognitive complexity and innovativeness, and an insignificant correlation between cognitive complexity (measured by a sentence completion exercise) and fashion opinion leadership (measured via a two-question scale). A negative, partial correlation is reported between cognitive complexity and fashion opinion leadership when the influence of innovativeness is controlled with respect to the latter measured variable.

The major empirical application of cognitively complex thinking styles to opinion leadership is a study by Richmond

(1977) which indicates that opinion leaders appear to process information differently than non-leaders. Using conditions of voluntary and forced exposure, Richmond subjected student subjects to an experiment where information acquisition was measured by means of a modified cloze procedure. The author tested the amount of information which subjects obtained under both exposure conditions. She found that subjects who were classified via self-designating scales as opinion leaders acquired more information under both forced and voluntary exposure conditions than did those subjects who were classified as non-leaders.

Similar to previous research findings, opinion leaders appeared to expose themselves to more information in the voluntary media exposure condition. More importantly, it was noted that in conditions of equal exposure (e.g. forced exposure) to information, subjects high in opinion leadership gained more than twice the amount of information than did the subjects who appeared low in opinion leadership. Since the amount of information and exposure were controlled, Richmond (1977) concluded that opinion leaders evidence more complex cognitive processes than did non-opinion leaders. In effect, the opinion leaders were able to process and integrate a greater amount of information than the nonleaders.

Richmond's findings are consistent with Bieri and Blacker's (1956) earlier observations that individuals appeared to be cognitively complex in both familiar and unfamiliar object domains (e.g. inkblots and people). Notably, Richmond's (1977) findings can be contrasted with studies, such as Jacoby & Hoyer (1979), in which opinion leadership has been reported to be positively related to product knowledge, and thus to a known object domain. The lack of an unfamiliar product comparison, or a controlled exposure condition, appears to obscure the inherent difference in the complex thinking styles of opinion leaders versus other consumers.

Richmond (1977) is the first study to demonstrate a theoretical and empirical linkage between cognitively complex thinking styles and the behavioral processes associated with opinion leadership (e.g. information acquisition). Although Richmond (1977) did not consider the communication behavior of opinion leaders, an investigation of cognitive complexity and opinion leadership communication activity represents a logical extension of her work.

Overall, the studies of opinion leadership and cognitive processes have focused on the information processing capacities of opinion leaders and other consumers. In general, opinion leaders appear to evidence more complex thinking processes than non-opinion leaders. The one opinion leadership study, by Lennon & Davis (1987),

which addressed cognitive complexity specifically, did not consider the relationship of this variable to opinion leadership communication behavior. Yet, as indicated previously, a great deal of research within the cognitive complexity literature has demonstrated the inclination of cognitively complex subjects to engage in interpersonal communication (Alvy, 1971; Delia & Clark, 1979; Hale, 1980; Van Hesterin, Sawatzkey & Harvey, 1982; Slugoski, Marcia & Koopman, 1984). In effect, the only aspect of cognitive theory which has been associated with opinion leadership within the consumer behavior literature is the complexity of information processing styles. The implications of cognitive complexity as a framework for understanding the personality and interpersonal communication activity of opinion leadership has not been explored by consumer behavior researchers. Accordingly, the focus of this dissertation reflects the conceptual and empirical need to explore the relationship between cognitive complexity and the communication behavior of opinion leaders.

As noted earlier, a number of other personality variables have also been associated with cognitive complexity or interpersonal communication, e.g. abstract thinking, ambiguity tolerance, empathy, and expressiveness. Accordingly, the following discussion considers these variables and their relationship to cognitive complexity and

to the personality and communication behavior associated with opinion leadership.

ABSTRACT THINKING

As noted previously, cognitive complexity has been associated with a number of other variables, including the use of more abstract, self-generated dimensions (Muneno & Dembo, 1982). A great deal of study within the cognitive complexity literature has addressed the qualitative effects of abstract dimensions on the thinking process. Epting, Williams and Margulis (1972) suggest that abstract concepts can assume an extensive range of values which allows for a more advanced level of cognitive functioning and comprehensive stimuli representation.

Delia, Clark and Switzer (1974) also suggest that abstract constructs are more economic representations of external phenomena which provide a number of differential, information - processing advantages. These include a greater degree of adaptability with respect to revising constructs as conditions or stimuli change; flexibility for integrating stimuli inconsistencies and discrepancies; a capacity for understanding underlying motives and dispositions; and an ability to anticipate or predict alternative stimuli actions and consequences. Thus, the higher proportion of abstract constructs provides the

complex individual with an ability to use multiple perspectives to form a more cogent understanding of environmental stimuli.

The ability to use abstract concepts also seems to involve a higher level of stimuli discernment or discrimination (Bieri et al, 1966). Given an unfamiliar object (or product), the cognitively complex individual will generate more internal information and perceive stimuli in more ways than will the less complex individual (Schroder, Driver and Streufert, 1967). Since the additional information is not inherent in the stimulus object itself, it is self-generated and reflects a high level of abstraction. It also represents a gain in information, e.g. a greater number of conceptual and finely perceived distinctions. Scott (1962) reports that this information expansion occurs across different kinds of stimuli and appears independent of stimuli knowledge. This finding also counters the view that cognitive complexity might only be related to domains which are familiar or salient to the individual (Bieri & Blacker, 1956; Scott, 1962; Zajonc, 1968).

Delia, Clark and Switzer (1974) have noted that the existence of abstract concepts improves the individual's communication efforts by increasing the understanding of other people and their viewpoints. In effect, abstract cognitions are flexible and can provide the individual with

representations of alternative opinions and perspectives. Abstract thinking thus complements the multidimensional characteristics and communications skills which are associated with cognitively complex individuals. The characteristics of abstract thinking, which involve a potential for a greater understanding of people and viewpoints, appear relevant to the interpersonal communications processes of opinion leaders and their ability to exchange opinions and product related information with other people.

Individuals who engage in active interpersonal communication, and who appear to value the views of others, also appear to have an ability to entertain alternative or opposing opinions. This facility, which reflects a high level of ambiguity tolerance, allows the individual to appreciate the opposing views and opinions of others during the process of interpersonal communication. The next section considers ambiguity tolerance which concerns the ability to assimilate conflicting information.

Ambiguity Tolerance

Ambiguity tolerance refers to the ability to cope with ambiguous or conflicting information. It is treated in psychology as a personality variable which pertains to how an individual reacts emotionally and perceptually to

ambiguous stimuli (Norton, 1975; Frenkel-Brunswik, 1949).

An individual's inability to tolerate ambiguity is viewed by Frenkel-Brunswik (1949, pp. 115) as

a tendency to resort to black-white solutions, to arrive at premature closure as to evaluative aspects, often at the neglect of reality, and to seek for unqualified and unambiguous overall acceptance and rejection of other people.

The ambiguity intolerant personality appears more prejudgmental or evaluative, and reflects a preference for concrete, unequivocal types of information (Norton, 1975).

Tripodi and Bieri (1966) report that cognitively complex individuals appear to have considerable ability to accept perceived ambiguity as well as a tendency to integrate heterogeneous or conflicting stimulus information. Cognitively complex subjects appear to form multivariate impressions of phenomena by combining or integrating both positive and negative stimulus attributes (Press, Crockett, & Rosencrantz, 1975; Delia, Clark, & Switzer, 1974). Such integrated impressions appear to be formed more quickly than impressions by less complex subjects (Delia, Clark & Switzer, 1974). Tripodi (1966) suggests that cognitively complex individuals may also have a structural preference for multidimensional information sources or topics. In comparison, Vannoy (1965) has noted that cognitively simple individuals appear to prefer highly ordered, unequivocal

environments where relatively simple hypotheses can be used to interpret stimuli behaviors and attributes.

Muneno and Dembo (1982) also suggest that cognitively simple people tend to reject ambiguous or discrepant information, while cognitively complex subjects evidence greater tolerance of stimuli inconsistencies. In addition, they note that less complex individuals make more ego-defensive attributions, while cognitively complex individuals characteristically form attributions of a more multidimensional and integrative nature. Since discrepant or contradictory information is not spontaneously rejected or discounted by the cognitively complex individual, new facts and viewpoints (e.g. new product information) may also be more easily assimilated by them.

Delia, Clark and Switzer (1974) have also proposed a developmental model of cognitive integration. The model they propose reflects the extent to which individuals recognize and can reconcile informational inconsistencies about stimuli. Accordingly, at level one, no ambivalence or variability is detected by the cognitively simple individual. Variability appears to be perceived at level two, and explicitly at level three. Levels four and five differ only in terms of the degree to which variability is considered and utilized as a basis of responsive behavior. Thus, at the higher levels of the model, the cognitively

complex individual displays a greater degree of ambiguity tolerance.

Parker (1972) notes that ambiguity tolerance relates to how the cognitively complex person views other people. A high level of ambiguity tolerance allows the cognitively complex person to consider and evaluate opposing arguments and viewpoints. Such views can be used as a basis to form persuasive, counter-arguments. By not rejecting discrepant opinions immediately, the ambiguity tolerant person appears less defensive and more willing to consider the efficacy of opposing views. Such activity may help to ingratiate the individual with others during group discussions.

The relationship of ambiguity tolerance to one's effectiveness in group discussions appears relevant to the role of the opinion leader. Since the opinion leader engages in interpersonal communication, the existence of ambiguity tolerance would assist the opinion leader in understanding and persuading those consumers who appear to be reluctant or non-adopters. With a high level of ambiguity tolerance, the opinion leader has a greater ability to consider the reasons for non-adoption which can then be the subject of continued conversation.

The opinion leader, in effect, attends to the other person's needs and reasons involving the adoption or nonadoption of products. This empathetic posture may reflect an inherent concern for the other individual which

enhances the communication process. Since empathy has been studied extensively in the areas of cognitive complexity and communication, its potential importance to opinion leadership is considered in the next section.

Empathy

The concept of empathy has been defined in the psychological literature either as the act of constructing another's mental state or viewpoint for oneself (Hogan, 1969), or the actual vicarious experience of another's feelings and emotions (Mehrabian & Epstein, 1972). Chlopan, McCain, Carbonell, and Hagen (1985) suggest that, despite a variety of formal definitions, both approaches essentially involve a sensitivity to the affective experiences of others and an element of sharing or gaining understanding by means of some exchange or intimate relationship. In recent years, there have been attempts to combine these conceptual approaches concerning empathy through the use of multidimensional instruments which assess both the perspective-taking and vicarious arousal aspects of the concept (Davis, 1983; Chlopan, McCain, Carbonell, & Hagen, 1985).

The concept of empathy suggests that some people have a greater sensitivity and ability to understand other people. This has been viewed by some as the capacity for "insight

into the temporary moods or underlying personality traits of others" (Chlopan, McCain, Carbonell, & Hagen, 1985, pp. 636). Hogan (1969, pp. 310) suggests that some individuals possess

the ability to respond intuitively and empathetically to others and to group situations. A person high on this variable would be described as insightful, perceptive, and discerning, as having the knack of "sizing up" social situations and of making sound and dependable evaluations of people. He will respond to nuances and subtleties of behavior which might escape the notice of others, and will possess a flair for interpreting his observations.

In viewing empathy as an interactive process, Hogan (1969) found that highly empathetic subjects communicated more effectively in social situations (e.g. conveyed ideas more completely). Highly empathetic people also appear to perceive their surroundings more accurately than do those with lower empathy levels (Hogan, 1969; Chlopan, McCain, Carbonell, & Hagen, 1985). Higher levels of empathy also appear related to higher levels of emotional arousal in social situations and to an interest in helping others (Mehrabian & Epstein, 1972).

The difference in empathy levels of cognitively complex and cognitively simple individuals has been characterized by Hale and Delia (1976) as a progression from egocentrism to perspectivism. Crockett, Mahood, and Press (1975) note that the orientation of cognitively complex individuals is towards a disposition to understand (e.g. a propensity to

make inferences about the underlying motivational and situational states of others), as opposed to being pre-judgmental or evaluatively disposed. In a related study, Press, Crockett and Rosencrantz (1975) report that cognitively complex individuals appear to make significantly greater use of motivational descriptions of stimuli when such information is made available to them. Based on an understanding of the listener's dispositions or motivations, the cognitively complex communicator is more effective in developing persuasive communication strategies (Delia & Clark, 1977; Hale, 1980).

Accordingly, the high level of empathy associated with cognitively complex individuals has been noted as a key element in effective interpersonal communications (Delia, Clark & Switzer, 1974; Delia & Clark, 1977; Hale & Delia, 1976; Kline & Burleson, 1979; Hale, 1980). As noted by Delia & Clark (1977) and Hale (1980), cognitively complex individuals adapt their communication strategies on the basis of empathy or social perspective-taking, e.g. the degree to which they base their communications on perceptions of listener needs and characteristics. Delia and Clark (1977, pp. 341) advise that "making communications-relevant inferences about listeners' characteristics is a prerequisite to formulating listener-adapted communications."

According to Zajonc (1960), this listener-adapted orientation relates to the speaker's anticipation of inducing change in the listener's cognitive structure. Zajonc (1960) notes that although speakers ordinarily reflect greater structural unity and organization, presumably in pursuit of their purpose, individuals who are frequent communicators also show a significantly higher level of differentiation (e.g. are cognitively complex) in comparison to individuals who tend to be listeners (and are cognitively simple). The communicator's high level of differentiation suggests the use of multiple dimensions and the capacity to consider the listener's perspectives.

As indicated above, the empathy literature (Hogan, 1969) and the cognitive complexity literature (Delia, Clark & Switzer, 1979) together suggest that empathy is an essential part of effective interpersonal communication. By reflecting an empathetic interest and concern for others, the cognitively complex individual may secure a persuasive or leadership role by virtue of gaining the listeners' confidence and trust.

The interpersonal skills of the empathetic individual appear to relate to the informal communication role of the opinion leader. High empathy levels seem likely to be related to the opinion leader's ability to exchange new product opinions and information in a listener-oriented, persuasive manner. Thus, the existence of empathy would be

theorized to be part of the personality configuration which is associated with opinion leadership.

The empathetic qualities of the communicator should also be enhanced by the overall communication manner exhibited by the speaker, including the types and range of expression and cues which are used. In order to establish rapport and understanding with others, the emotional communicator must be able to convey a range of emotion and concern. Since an ability to adapt communication styles has been associated with cognitive complexity (Alvy, 1971), the next section considers the variable of expressiveness, e.g. an individual's tendency to utilize different communication styles, and its importance to opinion leadership.

Expressiveness

The characteristics of cognitive complexity, abstract thinking, ambiguity tolerance and empathy appear manifest in the individual's ability to communicate in an adaptive and effective manner. Hale and Delia (1976), for example, have described the cognitively complex individual as an empathetic and effective communicator.

Within the communication literature, Sypher, Witt and Sypher (1986) have studied the communication ability of cognitively complex individuals by measuring the quantity and quality of persuasive arguments used in a written

communication task. Communication effectiveness has also been studied in other contexts in terms of self-disclosure or openness (Tittler, Anchor & Weitz, 1976), statement positiveness or negativeness (Floyd & Markman, 1984), and type of message (Lee, Zingle, Patterson, Ivey & Haase, 1976).

Alvy (1971) is an example of research concerning communication adaptation or effectiveness. The author found that cognitively complex subjects adapted their communications to their perceptions of the emotional and psychological characteristics of their listeners. Thus, the cognitively complex speakers tried to fit their transmissions to the perceived emotional and psychological characteristics of their audience. The subjects displayed competence in using a large range of expressive characteristics.

Friedman, Prince, Riggio, and DiMatteo (1980) have recently conceptualized a personality characteristic of affective communication or expressiveness based largely on nonverbal communication theory. The authors describe expressive people as being capable of using a range of verbal and nonverbal "cues to move, lead, inspire, or captivate others" (Friedman, Prince, Riggio, & DiMatteo, 1980, pp. 333). According to the authors, the ability to communicate a range of expression and emotion involves the

individual's ability to persuade others, and is thus an essential part of social interaction. The authors report finding positive associations between a self-administered, pencil-and-paper measure of expressiveness and lecturing behavior, political activity, theatrical experience, personal selling, and social influence and interaction. All of these activities reflect an ability to use a large repertoire of communication styles. It is reasonable to assume that opinion leaders, who are posited as active communicators, would reflect similarly high levels of expressive ability. This characteristic, therefore, may be a useful indicant of opinion leadership, as well as provide additional insight into the communication skills associated with this interpersonal role.

Moderating Variables

As indicated in the present discussion, a number of variables may moderate the hypothesized relationships among the personality variables indicated above and the communication behavior associated with opinion leadership. The marketing literature (Johnson & Russo, 1981, 1984) and the opinion leadership literature indicate that the two most important variables affecting opinion leadership status are product interest and product knowledge (Lazarsfeld, Berelson & Gaudet, 1955/1968; Katz & Lazarsfeld, 1955; Montgomery &

Silk, 1969; Myers & Robertson, 1972; Darden & Reynolds, 1972).

Researchers have found that opinion leaders often appear to be category specific and are, therefore, well-informed about related product classes (King & Summers, 1970; Silk, 1966). According to this view, opinion leaders for a product specific class would be more interested and knowledgeable about a specific product category than would nonleaders. This view of opinion leadership as a product specific phenomenon suggests that an individual would be unlikely to act as an opinion leader in a product related situation unless he appeared interested or knowledgeable about the product. Thus, the existence of a relationship between opinion leadership and a product category might depend on the individual's level of knowledge and interest in the product category. Accordingly, product interest and knowledge may be considered to moderate the opinion leadership-product category relationship.

Summary: A Conceptual Framework of Opinion Leadership

Based on the literature described above, a number of relationships have been suggested with respect to cognitive complexity, and a number of other constructs, including abstract thinking, ambiguity tolerance, empathy, and expressiveness. The conceptual linkages between this set of

constructs and opinion leadership will be briefly summarized below.

It has been suggested in this study that cognitive complexity could be viewed as a cardinal trait (Allport, 1937,1961) which affects an individual's pattern of interpersonal communication behavior (Hale & Delia, 1976; Hale, 1980). Research has consistently shown that a cognitively complex individual is a multidimensional information user who is predisposed towards dispersing information to others via word-of-mouth communications (Alvy, 1971; Delia & Clark, 1977; Slugoski, Marcia, & Koopman, 1984). In addition, cognitively complex individuals appear sensitive to the needs of others and, therefore, adapt their communications to their perceptions of their listeners (Alvy, 1971).

Opinion leaders have been similarly described, in the 1940 presidential voting study by Lazarsfeld, Berelson and Gaudet (1968), as knowledgeable and articulate individuals. This characterization suggests that such individuals are communications oriented. As Bellinger and Hirschman (1977) have noted, the act of the opinion leadership is an integral part of word-of-mouth communication with other group members. Since cognitively complex individuals are active communicators, it would be expected that opinion leaders would reflect a higher level of cognitive complexity than nonleaders.

Abstract thinking, which involves the use of self-generated knowledge to describe and understand external stimuli, has also been shown to enhance the individual's ability to communicate information to others (Delia, Clark & Switzer, 1974). By using abstract concepts, an individual has a greater conceptual breadth of subject matter and a greater potential to use information which may be relevant to one's listeners. Since opinion leadership is an interpersonal communications activity, which involves the transmission of product information to others, it would appear likely that opinion leaders would also enhance their communications by utilizing abstract product concepts, in comparison to nonleaders.

Ambiguity tolerance, which involves the ability to accept or utilize conflicting or ambiguous information (Tripodi & Bieri, 1966), has also been related to communication within group discussions (Parker, 1972). Communicators who are tolerant of ambiguity tend not to reject the opinions of others, and can thus attend to external information even if it appears discrepant with their own views. Consequently, the ambiguity tolerant communicator appears more accepting and amiable in their interpersonal relationships and communication behavior. Inasmuch as opinion leadership is primarily a communications activity, the ability to deal agreeably with the views and

arguments of others would seem helpful in facilitating the communications process.

Empathy reflects a sensitivity to the affective experiences of others (Chlopan, McCain, Carbonell, & Hagen, 1985). Many researchers have noted that individuals who possess high levels of empathy communicate more completely and understandably in social situations (Hogan, 1969; Mehrabian & Epstein, 1972). An empathetic individual is one who demonstrates an interest and concern for others and thus generates listener interest and attention (Chlopan, McCain, Carbonell, & Hagen, 1985). Accordingly, we would expect empathetic communicators to be more apt to be opinion leaders than non-empathetic individuals.

Expressiveness is defined as the ability to communicate by using a range of expression and emotion (Friedman et al, 1980), and as such is deemed to be an integral part of social interaction. Friedman, Prince, Riggio, and DiMatteo (1980) have demonstrated the existence of a relationship between expressiveness and communication behaviors in various contexts (political activity, lecturing behavior, personal selling, etc.). Since opinion leadership behavior is an interpersonal communication activity, it is anticipated that opinion leaders would be more expressive than nonleaders.

Although opinion leaders may possess a predisposition or ability to communicate with others about product related

matters, it appears clear that individuals can only become knowledgeable or interested in a finite number of products. Consequently, it would be expected that the opinion leader in a given product situation would evidence a higher amount of product interest and knowledge than a nonleader. Thus, the existence of the relationships described above and opinion leadership should also be moderated by the individual's product interest and knowledge.

In order to test the associations among the above constructs, a series of explicit hypotheses were developed. These hypotheses, and their rationale, are described below.

Hypotheses

In this section, the conceptual relationships among cognitive complexity, abstract thinking, ambiguity tolerance, empathy, and expressiveness are reiterated with respect to opinion leadership in the form of individual hypotheses. Five hypotheses are generated which specify the relationships presented in the conceptual framework described above. Based on these relationships, the hypotheses expound the anticipated differences between opinion leaders and other consumers.

Cognitive Complexity

As described in the literature review, the concept of cognitive complexity refers to the relationship and number of discrete, independent concepts in the individual's cognitive structure, and how the cognitive structure affects the individual's ability to perceive and interact with external phenomena (Bieri et al, 1966).

The theory pertaining to cognitive complexity suggests that differences in individual personalities and dispositions arise from differences in mental structures and information processing competencies. The cognitively simple person is viewed as having an elementary, less developed structure which restricts the individual to the use of a limited amount of information in limited ways. In contrast, the cognitively complex individual is viewed as having a more mature or developed cognitive structure, allowing for performance of more elaborate or intricate mental manipulations of larger amounts of information (Gardner & Schoen, 1962; Schroder, Driver & Streufert, 1967; Bartunek, Gordon & Weathersby, 1983).

The existence of complex mental structures appears applicable to two areas of opinion leadership: product knowledge and interest, and interpersonal communication. Since the use of a large number of constructs improves the individual's understanding of external phenomena, the

cognitively complex individual may comprehend more of the features and benefits of a new product than do other consumers. In addition, the cognitively complex individual would be likely to discover areas of personal relevance in new product information which presumably may be undetected by less complex individuals. On this basis, the cognitively complex person may obtain a greater understanding of the features and benefits of a new product than would cognitively simple individuals. As a result, the cognitively complex person may evidence a considerable degree of product interest and knowledge, factors which also have been shown to distinguish opinion leaders from nonleaders (Montgomery & Silk, 1969; Myers & Robertson, 1972).

A great deal of empirical research in the communications field has focused on the ability of cognitively complex individuals to engage in interpersonal communication (Delia & Clark, 1977; Delia, Kline & Burleson, 1979; Hale, 1979; Delia, Clark & Switzer, 1979). Delia, Clark and Switzer (1979), for example, suggest that cognitively complex communicators are "interpersonal behavior specialists" whose conversations reflect self-disclosure and interest in their immediate situations. In contrast, cognitively simple individuals appear to avoid such involvement. In describing cognitively complex people, the researchers note (pp. 280) that "it appears reasonable

to assume that interest in other people as an aspect of one's world leads to, and is developed in, interactions which may be characterized as 'participant centered.'" Thus, the authors suggest that cognitively complex individuals would have a propensity to engage in interpersonal communication. The propensity to gather and exchange product related information would also appear related to opinion leadership behavior.

The ability to utilize multiple dimensions suggests that the cognitively complex individual would also have an ability to call upon a broad base of information and messages in communicating with other consumers (Hale & Delia, 1976). Presumably, this characteristic is also reflected in the opinion leadership communication process.

Cognitive complexity, therefore, appears to be associated with a number of fundamental characteristics of opinion leadership. Accordingly, it is hypothesized that:

- H₁ Subjects with high levels of cognitive complexity will display greater levels of opinion leadership, as moderated by product knowledge and interest, than will subjects with low levels of cognitive complexity.

Abstract Thinking

The use of abstract concepts has been studied extensively in the cognitive complexity literature. Epting,

Wilkins, and Margulis (1972) have noted that abstract concepts are able to assume an extensive range of values which provide the individual with a high level of cognitive functioning and flexibility. In essence, the individual is able to consider multiple perspectives from which to view and comprehend external stimuli.

Scott (1962) notes that abstract concepts represent a gain or expansion in the amount of information which the individual has available. As Schroder, Driver and Streufert (1967) have indicated, since abstract information is often not inherent in a stimulus object itself, it is self-generated by the abstract thinker. Thus, the individual using abstract constructs generates more internal information and perceives stimuli in more ways than do individuals employing concrete dimensions as representations of external phenomena. Schroder, Driver and Streufert (1967) have noted that cognitively complex individuals may possess a greater potential to organize and use abstract concepts than cognitively simple individuals.

The distinction between the use of abstract versus concrete constructs can be illustrated as follows: an individual reflecting abstract thinking (person "A") appears likely to describe another individual (person "B") in abstract terms, e.g. as "conservative", while an individual with a concrete preference (person "C") alternatively describes "B" in more concrete terms, e.g., as

"tall" (Lindsay & Norman, 1977). While the concrete term only provides a picture of the physical attributes of the individual, the use of the abstract dimension provides a greater range of information, including some idea of the individual's motivations, political ideology, lifestyle, etc. (Peel, 1975; Lindsay & Norman, 1977).

Schroder, Driver and Streufert (1967) suggest that the cognitively complex individual has a potential to differ from the cognitively simple person not only in terms of the quantitative aspect of constructs, but also in terms of the qualitative nature of the constructs used. The cognitively complex individual not only uses a greater number of dimensions, but also has a potential to use more abstract ones as well.

The use of abstract dimensions appears relevant to opinion leadership in a number of ways. The ability to go beyond concrete observations, and to gain self-generated information, suggests that opinion leaders may benefit not only from the use of more constructs (e.g. cognitive complexity), but also from a greater scope or depth of understanding (abstractness). The opinion leader's level of knowledge and interest in a new product might be greater than the knowledge or interest of an individual who relies on more limited concrete or observable dimensions. As a result, opinion leaders may be able to perceive how a product or service is personally or socially meaningful

while others may miss areas of potential application.

The ability to understand stimuli in abstract dimensions may also extend to an understanding of people. The abstract thinker may also possess an aptitude for gaining insight into the behaviors and thinking patterns of other individuals. With access to a greater range of information (as illustrated in the example above), the abstract individual may have less difficulty in understanding the views of others, including contrary attitudes or opinions. It appears logical to assume that the ability to understand others' perspectives more fully (as abstract concepts) may also aid in the opinion leader's ability to present information which is of interest to the listeners.

The ability to understand and use product information, and to communicate more information via abstract terms, are thus consistent with the opinion leader's role in the diffusion process as defined in the current study. Accordingly, the following hypothesis is advanced:

- H₂ Subjects who use abstract concepts in thinking will display higher levels of opinion leadership, moderated by product knowledge and interest, than will subjects who use concrete concepts in thinking.

Ambiguity Tolerance

Ambiguity tolerance is a personality variable which affects the individual's perceptions and emotional reactions to external stimuli (Frenkel-Brunswik, 1949; Norton, 1975). More specifically, it describes the ability of a person to contend with ambiguous or discrepant information, and whether such contradictory data are accepted or integrated easily. Unfamiliar products, or new products, can present the consumer with information which can presumably conflict with existing or traditional product beliefs or behaviors. How the individual reacts to such information involves the capacity to tolerate ambiguity. The individual who tolerates new and discrepant information reflects an open-mindedness in which alternative possibilities and viewpoints can be considered (Frenkel-Brunswik, 1949). In contrast, the person who is intolerant of ambiguity is judgmental in nature and likely to prefer black-white or unequivocal information as a basis of purchase decisions (Vannoy, 1965; Norton, 1975).

Ambiguity tolerance appears applicable to opinion leadership in a number of ways. First, ambiguity tolerance would appear related to information acquisition, and to the ability of opinion leaders to integrate discrepant and new product information. In essence, the opinion leader would

be less likely to reject discrepant or new information than a more categorical or evaluative person.

Second, the willingness to consider alternative, or opposing viewpoints, suggests that the opinion leader would be able to adapt his own existing facts or opinions to new information. The understanding of contrary views presumably aids in communication (e.g. in choosing examples, arguments, etc.), and thus in the amount of persuasiveness and change which may be exerted on other viewpoint holders. In effect, the degree of ambiguity tolerance appears related to information acquisition and interpersonal communication behaviors associated with opinion leadership. Accordingly, the following hypothesis is advanced:

- H₃ Subjects with high levels of ambiguity tolerance will show a greater extent of opinion leadership, modified by product knowledge and interest, than will subjects displaying lower levels of ambiguity tolerance.

Empathy

As noted in the literature review, an empathetic person appears sensitive to the affective experiences of others. One school of research in this area maintains that the highly empathetic individual is able to form a deep cognitive understanding of another person's feelings, viewpoint and problems (Hogan, 1969). An alternative view suggests that the empathetic individual vicariously

experiences the actual emotions and feelings of the other person (Mehrabian and Epstein, 1972).

From both views, it is evident that one's level of empathy corresponds to the extent of one's understanding, insight and receptiveness to the feelings and needs of others. The empathetic tendency is considered particularly important in social situations where the individual is able to make inferences about the underlying motivations and personalities of other people (Hogan, 1969).

A number of researchers have suggested that high empathy levels are displayed by cognitively complex people (Delia, Clark & Switzer, 1974; Crockett, 1975; Press, Crockett & Rosencrantz, 1975; Hale & Delia, 1976; Delia & Clark, 1977; Kline & Burleson, 1979; Hale, 1980). This research suggests that cognitively complex individuals exhibit an empathetic disposition to understand the motivations and circumstances of other people.

Hale and Delia, (1976) argue that empathy is a prerequisite to effective interpersonal communication. Highly empathetic individuals appear able to adapt their communications to listener needs, an ability which also promotes trust and credibility as a response in others (Delia & Clark, 1977; Hale, 1980). Thus, empathy provides the speaker with an ability to establish rapport and create a favorable impression (Borman, 1979).

The ability of opinion leaders to engage in word-of-mouth communication provides a basis for suggesting that opinion leaders might display high levels of empathy. A tendency to adapt communication to listener needs suggests an ability to disseminate new product information in a meaningful manner.

The perception of high empathy levels by other consumers provides an additional reason why opinion leaders might be sought out for their opinions. In essence, empathetic opinion leaders would be likely to demonstrate an interest and desire to be helpful to others (Mehrabian & Epstein, 1970). This posture would, presumably, make them popular sources of information and advice. Overall, a view of the opinion leader as an empathetic communicator appears compatible with the functional role of the opinion leadership concept.

The following hypothesis summarizes the suggested relationship between empathy and opinion leadership:

- H₄ Subjects with a high degree of empathy will display higher levels of opinion leadership, moderated by product knowledge and interest, than will subjects with a low degree of empathy.

Expressiveness

Cognitive complexity research has consistently found that cognitively complex communicators can adapt their communications to listener needs (Hale & Delia, 1976). Alvy (1971) has observed that cognitively complex individuals attempt to match their transmissions to the emotional and psychological cues from others.

Friedman, Prince, Riggio, and DiMatteo (1980) have described emotional expressiveness as a personality characteristic involving an individual's ability to transmit a range of communicated emotion. The authors indicate that a high level of expressiveness adds considerable reinforcement and support to one's verbal message (Friedman, Prince, Riggio, & DiMatteo, 1980). Thus, they suggest that this characteristic is an important aspect of social interaction.

It appears likely, therefore, that the opinion leader may reflect a considerable range of expression which would facilitate their impact on the decisions of nonleaders.

The following hypothesis about the proposed relationship of expressiveness and opinion leadership is, therefore, suggested:

- H₅ Subjects with higher levels of expressiveness will display a greater degree of opinion leadership, moderated by product knowledge and interest, than subjects with lower levels of expressiveness.

Summary

This chapter reviewed the literature relating the constructs of cognitive complexity, abstract thinking, ambiguity tolerance, empathy, and expressiveness to opinion leadership. The chapter has provided a conceptual framework which suggests the existence of explicit linkages among these concepts and opinion leadership. The outcome of this exposition has been a testable set of hypotheses that is the focus of this research.

CHAPTER 3

METHODOLOGY

This chapter outlines the research methodology that is used in the dissertation. The chapter describes the research design, the variables, measurement of those variables, sampling, data collection, and analysis.

Research Design

The research design in the dissertation is a cross-sectional survey research design with a content analysis used to measure opinion leadership communication activity. Each respondent was given a preliminary questionnaire which includes the measures of the independent variables: cognitive complexity, abstract thinking, ambiguity tolerance, expressiveness, and empathy. A self-designated measure of the dependent variable, opinion leadership, is also contained in the questionnaire. About one month after the completion of the initial questionnaires, each respondent was given a list of ten sets of products with the instructions to choose one product or service from each group that they would be likely to buy. Individuals were then assigned to groups of four to five individuals for a group discussion session to occur immediately afterwards. This assignment was made so that

each group consisted of one high scoring cognitively complex subject; the remaining subjects were then assigned randomly to the groups irrespective of their levels of cognitive complexity. The discussion focused on the listing of ten sets of products which provided ample opportunity to engage in product conversations. Pilot studies of group discussions required approximately 25 minutes to complete. Each group was instructed to discuss the product choices, exchange opinions, and reach a consensus regarding the purchase of one product for each product grouping. The content analysis of these group discussions provided a process measure of opinion leadership. Based on the subjects' independent variable measures, their opinion leadership behavior was predicted and confirmed via the content analysis of communication activity within the group discussions.

Independent Variable Measurement

Cognitive Complexity

While Vannoy (1965) has indicated the possibility of at least 20 measures of cognitive complexity, there are three major approaches to its measurement. They are Bierli's (1955) Role Concept Repertory Test, Scott's (1962) sorting method, and Crockett's (1965) Eight Role Category Questionnaire.

A modified version of Bierer's Role Concept Repertory Test (Seaman and Koenig, 1974) was used in this study. Vannoy (1965), in his analysis of 20 measures of cognitive complexity, found that Bierer's measure was the most adequate overall measure. Schneier (1979) has reported statistically significant findings of test-retest reliability and convergent and discriminant validity for the Bierer method. As Seaman and Koenig (1974) point out, all of the other measures mentioned above are derived from Bierer and may introduce other factors which may not be pertinent to the construct, such as a problem with loquacity (Burleson, Applegate, & Neuwirth, 1981). In addition, Bierer is the most easily scored and operationalized measure which is currently used (Fransella & Bannister, 1977). The scale is shown in appendix A.

Abstract Thinking

There are a number of proposed measures of abstract thinking. Flesch (1950) and Gillie (1957) have proposed measures of abstraction in writing. Howard (1980) has developed a sorting process in which the categories' range provides for a measure of abstraction. Houldin (1980) has developed a nonlinguistic test using cartoon drawings. Peel (1975) has developed a self report instrument which measures the individual's tendency to use abstract verbal notions.

It is a 21 item scale, each item having four statements ranging from concrete to abstract. The respondents are requested to indicate the sentence they prefer for each of the 21 groupings. This scale was used here because it is the only self report scale of abstract thinking and positions the use of abstract concepts as a personality characteristic or predisposition. In addition, Peel has investigated the validity of the scale by extensive pretesting and has indicated it is a viable measure of abstract thinking preference. The scale is shown in Appendix B.

Ambiguity Tolerance

There are several measures of ambiguity tolerance. Fisher (1967) uses several ambiguous figures and asks the respondent to indicate what they see in the figures. Budner (1962), Martin and Westie (1959), Rydell and Rosen (1966), and MacDonald (1970) have also developed scales. As Norton (1975) indicates, these are flawed by low internal consistency. Norton (1975) has developed the strongest scale of ambiguity tolerance reporting an internal consistency of .88 and a test-retest reliability of .86. This 60 item scale was used in this dissertation and is shown in Appendix C.

Empathy

A review article by Chlopan, McCain, Carbonell, and Hagen (1985) indicates literally dozens of measures of empathy. The two major measures representing the alternative views of empathy are Mehrabian and Epstein's (1972) QMEE scale which measures emotional empathy and Hogan's (1969) empathy scale which measures the cognitive component of empathy. Davis (1979, 1983) argues for a multidimensional scale which combines the two approaches. Davis' 24 item self-administered scale was used in this research. It is contained in Appendix D.

Expressiveness

The only measure of expressiveness, as the concept has been defined, is Friedman, Prince, Riggio, and DiMatteo (1980). This scale, referred to as the affective communications test or ACT, contains 13 items and is shown in Appendix E. The authors report coefficient alpha internal consistencies of .77 and test-retest reliabilities of .90. The authors also report extensive validity tests of the construct.

Measurement of the Dependent Variable

Opinion Leadership

Opinion leadership research has placed strong reliance on the use of three methods of measuring or identifying opinion leaders. These include the self-designating, sociometric, and key-informant methods. In the first of these, the individual is asked whether he perceives himself to be an opinion leader or follower (whether he gives or seeks advice generally or with reference to a specific product area). In the sociometric method, individuals are asked to provide the names of those individuals to whom advice was either given or received. Interviews with those persons are also conducted in order to validate the information so that a sociogram or map of all contacts can be constructed to depict the diffusion of information within a particular social system. In the third method, an individual familiar with the members of a social system identifies the opinion leaders based on his or her own knowledge and information. Rogers (1983) has also noted a fourth, rarely used, method of observation, in which network conversations are observed and recorded as they actually occur. The procedural limitations of the above methods, such as the problems of self-designation, difficulty of comparing results from different measures, and the possible

lack of objectivity of key informants, has often been noted by several researchers of opinion leadership (Nicosia, 1964; Brooker & Houston, 1976). In most cases, however, the methods are viewed as being equally acceptable (Rogers, 1983).

The measure used here was observational. As defined previously in the literature review, opinion leaders engage actively in interpersonal communication. This study recorded the product conversations in the groups of subjects described above. A content analysis of those conversations was made, indicating the frequency and direction of comments, using the Bales, Strodtbeck, Mills, and Rosenborough (1951) Interaction Matrix technique. The utility of this method is that it assesses the rank order of group members according to originating and targeted comments (including comments directed to the group as a whole) as well as total comments. The number of comments which each person generates and receives is entered into the matrix. Thus the columns in the matrix reflect the person to whom the comments were directed, and the rows indicate from whom the comments originated. When the columns and rows are totaled, the aggregate numbers reflect the total comments initiated and received by each individual. These totals can then be rank ordered, thereby reflecting the relative amount of participation of each group member. According to Bales, Strodtbeck, Mills, and Rosenborough (1951, pp. 465), the top

ranked speaker "is acting as a kind of communications center, and in this sense is performing a leadership function."

A pretest of 15 groups was conducted using the Bales procedure. More comments, on average, were directed by other group members to the most active speaker than to any other member of the group. At the same time, the least number of comments appear directed by other group members to the least active speaker. Accordingly, the individual who initiated and received the greatest number of comments in each group was designated as the opinion leader; the individual with the least number of initiated and received comments was indicated as a non-leader.

A second measure of opinion leadership was done using the Childers (1986) 7-point modification of the bi-polar King and Summers (1970) self report measure. Notably, the King and Summers (1970) version is based on Rogers and Cartano's (1962) six-question elaboration of the two-item scale used by Katz and Lazarsfeld (1955) in the original political study which first identified opinion leadership. Appendix F provides the Childers (1986) update of the scale. The students were also asked to identify the group members who were most influential, least influential, and who acted as group leader. The answers to these constitute a sociometric indication of opinion leadership and are depicted in Appendix I.

Additional Measures

Additional measures included demographics of the respondents such as sex and age. In addition, measures using Likert type scales of product interest and product knowledge were included for the moderating variables. Appendix H, which shows the ten sets of products considered by the discussion groups, also provides the product interest and knowledge scales.

In order to ascertain whether the process measure of opinion leadership could distinguish an unrelated construct, the variable of dogmatism was also used in the present study. Defined as a belief system which resists change (Fruckter, Rokeach & Novak, 1958), this cognitively related personality dimension has been found to be negatively related to the acceptance of new products (Jacoby, 1971, Coney, 1972), and to cognitive complexity (Vannoy, 1965). As shown in Appendix G, Troidahl and Powell's (1965) Short Dogmatism Scale, which is a revision of Rokeach's (1960) measure, was employed in the dissertation.

Sampling

The respondents were full time undergraduate college students enrolled in marketing courses. The objective was

to have a sample population of approximately 250 students from a total sampling frame of 300.

The choice of using students as subjects has not been made lightly. Over the years, there has been considerable debate over the potential socio-psychological differences between student versus adult subjects, particularly in consumer studies (Khere & Benson, 1970; Enis, Cox & Stafford, 1972; Cunningham, Anderson & Murphy, 1974; Shuptrine, 1975; Calder, Phillips & Tybout, 1981, 1982, 1983; Lynch, 1982, 1983; McGrath & Brinberg, 1983; Mook, 1983). Calder, Phillips and Tybout (1981) have suggested that sampling procedures should be dictated by the goals or purpose of the research in question. They distinguish between two major research classifications: effects application, requiring correspondence or representative subjects, in which the goal is to generalize and predict behavior in a particular real-world setting; and theory application, where the objective is to test abstract and conceptual relationships among variables. In the latter approach, the authors suggest that a maximally homogenous sample provides a stronger test of theory and reduces extraneous sources of error, thereby providing added confidence in the confirmation or failure of a theoretical explanation.

Data Collection

The researcher arranged for several student assistants and colleagues to administer the measurement scales and monitor the groups' product conversations. The test sites were separate conference rooms located at each college in which the students were enrolled. Each research session lasted approximately 40 minutes. The subjects initially received a booklet containing the scales measuring the psychometric variables, cognitive complexity, abstract thinking, ambiguity tolerance, empathy, expressiveness and opinion leadership. One month after completion of these self-administered questionnaires, the subjects were given the listing of 10 product groups. Each subject was asked to select one product they preferred in each of the ten product groupings, and to indicate the reason for every preference. On the basis of cognitive complexity scores, students high in cognitive complexity were assigned to different discussion groups. The remaining students in the sample were then randomly assigned to discussion groups, so that each group had a total of 4 or 5 students. Each group was sequestered in a separate room where they discussed the 10 product groupings until a consensus of agreement was reached for each product grouping. These discussions were videotaped for subsequent scoring and analysis.

Analysis

Due to the need to rank order subject scores within each group, the general method of statistical analysis used was multivariate loglinear analysis (Goodman, 1978, 1984; Greenacre, 1984). This procedure provided a means of distinguishing opinion leaders and nonleaders based on the selected independent variables. It also provided a means for assessing the influence of the moderating variables. Both chi-square and Spearman rank order correlations showed the significance and level of association among the independent and dependent variables. In addition, the numbers of correct and incorrect classifications of opinion leaders and nonleaders were computed in order to assess the predictive accuracy of each of the independent variables.

Due to the fact that the literature reflected incomplete analyses of the construct validity for several scales used in this study, a rigorous analysis of construct validity and reliability was also undertaken. The techniques used included principal components analysis, confirmatory factor analysis, and coefficients alpha and beta.

CHAPTER 4

ANALYSIS AND INTERPRETATION OF DATA

This chapter reports the empirical findings of the hypotheses developed in the previous chapters. The discussion includes a profile of the subjects who participated in the survey. This profile is followed by an evaluation of the scales which are used to measure the variables employed in the study. The coding procedures and interrater reliability for the process measure of opinion leadership is then discussed. This is followed by an examination of the convergent, discriminant, and nomological validity of the process measure with two methodologically different opinion leadership measures. The chapter then addresses the specific hypothesis tests concerning opinion leadership and the constructs suggested by the conceptual framework, e.g. the association of opinion leadership with cognitive complexity, abstract thinking, ambiguity tolerance, empathy, and expressiveness as moderated by product knowledge and interest.

Profile of Subjects

A convenience sample consisting of 243 students enrolled in undergraduate marketing classes was used in this

Table 4-1

Analysis of Variance Tests of Selected Characteristics
Massachusetts vs. New York Subsamples^a

Variable	Source	df	SS	MS	F	P
Cognitive Complexity	Group	1	34.99	34.99	.14	.710
	Residual	239	60357.49	252.54		
Abstract Thinking	Group	1	16.56	16.56	.77	.380
	Residual	239	5136.68	21.42		
Ambiguity Tolerance	Group	1	2.84	2.84	.04	.849
	Residual	241	18877.86	78.32		
Empathy	Group	1	78.99	78.99	.92	.339
	Residual	239	20573.52	86.08		
Expressive-ness	Group	1	247.36	247.36	2.55	.112
	Residual	239	23180.89	96.99		
Opinion Lead. Scal.	Group	1	56.94	56.94	1.55	.215
	Residual	241	8881.12	36.85		
Dogmatism	Group	1	60.13	60.13	1.36	.245
	Residual	241	10675.53	44.30		
Product Knowledge	Group	1	102.60	102.60	2.50	.115
	Residual	241	9884.62	41.02		
Product Interest	Group	1	27.36	27.36	.45	.502
	Residual	241	14580.64	60.50		

^aSee Evaluation of Scales sect. p. 111 re: scale revisions
See Appendix S for results using original scales.

research (160 students at the University of Lowell, in Lowell, Massachusetts, and 83 at Long Island University, in Brookville, Long Island, New York). A total of 280 students originally participated in the study. Of these, 37 did not complete the entire exercise and could not be used for evaluation purposes. The remaining sample of 243 subjects consisted of 131 males and 112 females.

A student sample constitutes a relatively homogeneous group of subjects. As suggested by Calder, Phillips and Tybout (1981, 1982, 1983), such a sample eliminates potential sources of extraneous variation. This is particularly desirable in studies which involve theory construction, rather than applications to specific markets (Calder, Phillips & Tybout, 1981, 1982, 1983).

Table 4-1 summarizes the analyses of variance tests which were conducted for all of the variables in the study to ascertain if the Massachusetts and New York subgroups reflected any significant differences. As indicated in the table, there were no significant differences between the Massachusetts and New York subjects.

Sex Differences

Table 4-2 depicts the descriptive statistics for male and female subgroups, along with analysis of variance

Table 4-2
Analysis of Variance of Sex Differences^a

<u>Bieri</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>	<u>F</u>	<u>Prob</u>
M	130	69.90	13.49	18.93	.0001
F	111	78.50	17.18		
<u>Abstract Thinking</u>					
M	131	29.59	3.72	1.17	.2809
F	112	30.09	3.60		
<u>Total Comments</u>					
M	131	77.63	52.79	.01	.9205
F	112	76.97	49.56		
<u>Opinion Leadership Scale</u>					
M	131	20.80	6.35	43.68	.0001
F	112	16.04	4.57		
<u>Ambiguity Tolerance</u>					
M	131	48.19	9.02	2.34	.1271
F	112	46.46	8.55		
<u>Empathy</u>					
M	131	58.57	9.28	28.18	.0001
F	112	64.58	8.18		
<u>Empcog</u>					
M	131	31.59	6.29	3.65	.0571
F	112	33.07	5.63		
<u>Empemot</u>					
M	131	26.98	4.80	54.31	.0001
F	112	31.51	4.75		
<u>Expressiveness</u>					
M	131	42.12	10.25	.61	.4360
F	112	43.11	9.45		
<u>Dogmatism</u>					
M	131	47.81	6.69	1.74	.1886
F	112	48.94	6.59		
<u>Knowledge</u>					
M	131	35.43	7.27	.23	.6317
F	112	35.88	7.22		
<u>Interest</u>					
M	131	37.67	7.97	4.73	.0306
F	112	39.83	7.30		

^aSee Evaluation of Scales sect. p. 102 re: scale revisions.
See Appendix. Q for results using original scales.

results for each variable in the study. Significant sex differences are indicated for cognitive complexity (Bieri Repertory Grid), opinion leadership (Childers self-report scale), empathy including cognitive and emotional subscales (Davis empathy scale), and product interest (total score for 6 point self-report scales for 10 product groups).

Sex differences have been noted consistently in the cognitive complexity literature. Miller (1969), Hewitt (1972), Delia, Clark and Switzer (1974) and Soldow (1982) have all reported significantly higher cognitive complexity scores for females than for males (on the Crockett (1965) measure of cognitive complexity). Little (1969) found that females tended to score higher on measures involving verbal differentiation (e.g. Crockett's Eight Role Category Questionnaire), while males scored higher in cognitive complexity measures based on structural relations (e.g. Bieri Repertory Grid). He attributes the differences to verbal ability and degree of affective orientation. In the present study, males appear on average to be more cognitively complex according to the structural (Bieri) measure used.

A significant sex difference was also recorded for the Childers (1986) opinion leadership scale. The average degree of self-perceived opinion leadership appears greater for males than for females. The opinion leadership

literature indirectly addresses this difference by viewing opinion leadership as a product-specific phenomenon. For example, female subjects are often studied separately with respect to female fashion-opinion leadership (King, 1965; Summers, 1970; Darden & Reynolds, 1972; Brett, 1975; Lennon & Davis, 1987). Although Childers (1986) developed his version of the opinion leadership scale using a technological product (cable television), he did not consider any product related effects. Davis and Rubin (1983) found product related differences with respect to energy consciousness, with women scoring lower in energy consciousness opinion leadership than males. In the present study, the product used in conjunction with the Childers (1986) scale, compact disc players, is an electronic product category which may be more male oriented.

A similar explanation may be applicable to the higher product interest scores for males. Of the 10 product groupings considered by the discussion groups, 6 contained electronic items which might be of interest to males (stereos, televisions, cameras, ATM machines, telephone beepers, cassette/video courses). Other items (microwaves, headache remedies, soup flavors, and ice cream flavors) appear to appeal equally to men or women. Consequently, the product groupings may have been of more interest to the male subjects. The effects of product-related factors on the research design is discussed more fully as a methodological

concern at the end of this chapter.

Davis (1979) reported that women displayed significantly higher empathy scores than men on both the emotional and cognitive subscales of the empathy measure. Higher female empathy scores also appear consistent with previous findings in the literature (Mehrabian & Epstein, 1972). As anticipated, the female subjects in the present study also reflected higher empathy scores on both the entire measure and subscales.

Evaluation of Measurement Instruments

This section reports on the evaluation of the scales which are used in this study to measure the constructs in the conceptual framework described in Chapter 1. These include Bieri's (1955) Repertory Grid measure of cognitive complexity; Peel's (1975) scale of abstract thinking; Norton's (1975) scale measuring ambiguity tolerance; Davis' (1979, 1983) measure of empathy; Friedman, Prince, Riggio, and DiMatteo (1980) ACT measure of expressiveness; and Childers (1986) revision of King and Summers (1970) measure of opinion leadership. In addition, Troidahl and Powell's (1965) short form dogmatism scale is considered since it is used as an indicator of discriminant validity. In each case, the dimensionality of the scale is first considered using principal components factor analysis. Since none of

the scales appear to be unidimensional, a confirmatory factor analysis is performed for each scale, or scale modification, using a linear structure relations program (Lisrel VI) in order to evaluate the degree of discrimination and precision among relevant scale dimensions. For scales evidencing three or more factors, both 1st order (delineating the adequacy of individual dimensions) and 2nd order Lisrel estimates (providing for an evaluation of the completeness of given factor structures) are computed and analyzed.

Since Cronbach's coefficient alpha appears inappropriate for scales which are not unidimensional, John & Roedder's (1981) coefficient Beta, which specifically provides for the assessment of multi-factor scales, has been used as an indicator of scale reliability (Bentler, 1972; Jackson, 1977; John & Roedder, 1981; Goldsmith, 1983).

Opinion Leadership Scale

Since 1955, the most common method of identifying opinion leaders has been via self-designating scales, such as the one developed by King and Summers (1970). This scale appears to be a variant of the original set of two questions used in the presidential election study conducted by Katz and Lazarsfeld (1955). Rogers and Cartano (1962) added four additional questions to the scale concerning farming

Table 4-3
Factor Loadings of Opinion Leadership Scale

=====			
<u>Item #</u>	<u>Description</u>	<u>Factor 1</u>	<u>Factor 2</u>
1	Talk to neighbors re products	.84	
2	Give/receive product information	.89	
3	Told friends in last 6 months	.87	
4	Likely to be asked	.81	
5	Would Listen to/Convince others	.67	
6	Tell friends/Friends tell you	.81	
7	Source of advice/not source		.78

practices; King and Summers (1970) added one item and changed the subject matter to products; most recently, Childers (1986) has changed the dichotomous instrument to a 5-point scaled format. Childers (1986) reports coefficient alphas of .79 for a 7-item scale, with improvement to .83 by deletion of one item (question five which is the only question worded in the future tense). Although nomological validity of the scale has been investigated by means of correlations with related constructs, the dimensionality of the scale itself has not been explored by its developers.

Accordingly, the Childers (1986) modified scale was first factor analyzed in order to evaluate its underlying structure. Two factors were derived as indicated in Table 4-3. All but one item loaded on the first of two factors. The item on the second factor appears more general and vague than the 1st factor items, and thus does not reflect any other conceptual reason for the division or subset.

As a further means of evaluating the dimensional properties of the scale, a confirmatory factor analysis using Lisrel was also performed. Since only two factors were originally indicated, a first-order confirmatory factor analysis can only be evaluated. Lisrel provides a number of Goodness of Fit statistics, as listed in Table 4-4.

A number of approaches have been expressed in the literature concerning the interpretation and use of these

Table 4-4
 Confirmatory Factor Analysis
 of Two-Factor Childers (1986) Opinion Leadership Scale
 Lisrel Goodness of Fit Statistics
 (n=243)

	<u>1st Order</u>
Chi Square	23.11 (df=11)
Prob	.040
Chi. Square/df	1.78
Goodness of Fit Index	.973
Adjusted Goodness of Fit	.943
Root Mean Square Residuals	.030

statistics. The likelihood-ratio chi square is used to evaluate how well the sample data fits the given factor model. An insignificant chi-square suggests that the observed sample data are sufficiently close to predicted coefficients (Hayduk, 1987). Some researchers have noted that the chi square measure is particularly sensitive to large sample sizes (e.g. over 200 subjects), and that even minute fluctuations appear significant in such cases (Hayduk, 1987). To correct for the effect of sample size, the ratio of chi square to the degrees of freedom can be used (Joreskog, 1969; Carmines & McIver, 1981; Hoelter, 1983; Hayduk, 1987). A specific model would be rejected if the chi square/degrees of freedom ratio exceeds 3 (Carmines & McIver, 1981). Since the current sample size is 243, the applicable ratio of 1.78, as shown in Table 4-2, appears to provide an acceptable indication for the two-factor model which has been tested.

Recent versions of Lisrel also provide separate goodness of fit indices, as well as an indication of the size of residual error. In general, indices above .90 and residuals below .05 are desirable (Hayduk, 1987). The indices for the two factor opinion leadership scale also appear acceptable according to these guidelines.

As noted above, Childers' (1986) has reported a coefficient alpha of .83 for the revised 6-item King &

Summers (1970) scale. Although some researchers have suggested that alpha produces a conservative estimate of reliability in multifactor cases (Goldsmith, 1983), a comparison by John & Roedder (1981) of alpha coefficients for a variety of multifactor cases suggests that coefficient alpha often overestimates the reliabilities of multifactor scales. In such cases, alpha coefficients should be reported only for the individual factors, rather than for the entire scale. As computed in the present study (utilizing the reliability procedure in SPSS), coefficient alpha is .91 for the 1st five-item scale, and .27 for factor two.

According to the following formula, John and Roedder (1981) have developed coefficient beta as an indication of reliability for multifactor measurement scales:

$$\text{Beta} = \min (n + m) V_{ij} / V_t^2$$

The scale is first divided (e.g. factor analyzed) into two factors of n and m items in order to maximize within set covariance, so that V_{ij} = average between halves item covariance, and V_t^2 = variance of the total scale. As noted by John and Roedder (1981, pp. 356), beta can be used much as alpha, except that a "low value of beta indicates that the scale contains distinct subsets." Technically, the low beta reflects factors which share little in terms of common

variance, and thus are separate dimensions. Thus, a lower value of beta indicates more clearly specified or stable subsets. Revelle (1979) also suggests that a unidimensional scale should evidence a beta coefficient of at least fifty percent. In the present case, beta is computed to be .64 which indicates that somewhat more than 50 percent of total scale variance is accounted for by the general factor. Given this criterion and the dominance of one factor, the scale appears acceptable for the present research.

Bieri's Repertory Grid

Bieri's (1955) Role Concept Repertory Test (or RepTest) is probably the most frequently used measure of cognitive complexity. Previous researchers have compared the results of the grid measure with other measures of cognitive complexity, particularly Crockett's Eight Role Category Questionnaire (Crockett, 1965; O'Keefe & Sypher, 1981). Although factor analysis has been used in some Grid applications to compare the perceptual ratings of subjects (Fransella & Bannister, 1977; Chambers & Grice, 1987), the dimensionality of the grid approach has not been investigated previously. Vannoy (1965) came closest to a dimensional inquiry when he used factor analysis to assess the simultaneous loadings of 20 measures related to cognitive complexity (including Bieri's RepTest). However,

Table 4-5
Factor Loadings of 8x8 Bieri Repertory Grid

<u>Item #</u>	<u>Description</u>	<u>Sex</u>	<u>Factor 1</u>	<u>Factor 2</u>
1	Positive	Same	.35	
2	Negative	Opposite		.39
3	Positive	Same	.34	
4	Negative	Same		.31
5	Positive	Opposite	.39	
6	Negative	Same		.37
7	Positive	Opposite	.37	
8	Negative	Opposite		.26

he did not explicitly evaluate the dimensional adequacy of the grid approach itself.

Since the repertory grid reflects a subject's ability to differentiate among four positively and four negatively perceived individuals (or objects), an analysis of the dimensionality of the grid should reflect these perceptual distinctions among the rated persons or objects.

Accordingly, the grids for 241 individuals were first factor analyzed using a Varimax rotation. The results of this procedure, summarized in Table 4-5, indicate the predicted pattern of two clearly defined factors based on the positive and negative classifications of rated persons.

A first order confirmatory factor analysis was also conducted using Lisrel VI, and the relevant goodness of fit statistics are indicated in Table 4-6.

The goodness of fit statistics all reflect an excellent fit, indicating that the dimensions which the Grid approach purportedly measures appear to be very well defined. The computation of the beta coefficient for the two-factor Bieri measure also yields a value of .12 ($64 \times .04 / 20.99$) which is indicative of a well-delineated factor structure.

Abstract Thinking

Since Peel's (1975) 21-item self-report measure of

Table 4-6
 Confirmatory Factor Analysis of
 8x8 Bieri Repertory Grid 2 Factor Model
 Lisrel Goodness of Fit Statistics
 (n=241)

=====	
	<u>1st Order</u>
Chi Square	13.12 (df=19)
Probability	.832
Chi Square/df	.69
Goodness of Fit Index	.987
Adjusted Goodness of Fit	.975
Root Mean Square Residual	.035

abstract thinking is used in the present study, an evaluation of the scale's dimensional adequacy must also be made. Although the scale's author has investigated the association of the abstract thinking measure with other personality variables, the underlying structure of the scale does not appear to have been explored previously (Peel, 1975).

Accordingly, a principal components factor analysis of the scale was performed. A varimax rotation extracted 10 factors having eigenvalues of 1 or more. An examination of these factors reveals a number of dimensional problems. First, six of the scale elements failed to load on any primary factor. These include the following scale items, which require the subject to indicate a preference for either abstract or concrete definitions for indicated concepts: #1 (definition of city), 7 (adolescent), 13 (aggression), 14 (team), 15 (planet), and 21 (Frenchman). In general, these scale components appear less specific than a number of other subjects used in the scale.

Five factors contained only one scale item which did not appear conceptually relevant to other items appearing on the scale. The items which loaded separately included item 2 (definition of poem), item #3 (playing), item 17 (painting), item 18 (one day), and 20 (plumber). The remaining items of the scale, and their respective factor loadings, are indicated in Table 4-7.

Table 4-7
Factor Loadings of Revised Abstract Thinking Scale
(n=243)

=====						
		Structure	Geography	Equity	Location	Change
<u>Item</u>	<u>Subject</u>	<u>Fact1</u>	<u>Fact2</u>	<u>Fact3</u>	<u>Fact4</u>	<u>Fact5</u>
4	Highway				.62	
5	Justice			.67		
6	Samaritan			.74		
8	Backbone	.48				
9	Bermuda		.76			
10	Movement					.65
11	Antarctica		.54			
12	Geometry	.78				
13	Store				.81	
14	Growth					.72

The analysis of the scale's factor structure suggests that the dimensionality of the 21-item scale is not well defined, and that the clarity of the scale could be strengthened by deleting the eleven questionable (non-loading or single-loading) items.

A confirmatory factor analysis of a 5-factor, ten-item scale provides an indication of the efficacy of using a shortened version of the abstract thinking scale. The Lisrel goodness of fit statistics are summarized in Table 4-8. The 1st order confirmatory factor analysis indicates that the five dimensions of the scale are very well differentiated. The 2nd order statistics indicate that the scale dimensions converge to form a viable scale.

To investigate the implications of the scale revision further, beta coefficients can be compared for both the original and revised scales. The beta coefficient for the long abstract scale amounts to $.49 (400 \times .07) / 56.98$ while the beta coefficient for the shortened scale equals $.12 (25 \times .10) / 21.47$. The lower beta coefficient for the revised scale reflects a much clearer, or less ambiguous, multifactor scale. The beta analysis reiterates the results obtained from the confirmatory factor analysis. To compare results, this study has reported the findings using the revised scales directly within the text of the report

Table 4-8
 Confirmatory Factor Analysis of
 Five Factor 10-item Abstract Thinking Scale
 (n=243)

	<u>1st Order</u>	<u>2nd Order</u>
Chi Square	33.82 (df=25)	39.41 (df=30)
Probability	.112	.117
Chi Square/df	1.35	1.31
Goodness of Fit Index	.973	.968
Adjusted Fit	.940	.942
Root Mean Sq. Residual	.046	.048

itself; the findings using the original scales are listed in the Appendix.

Empathy

Davis (1979, 1983) provides a multi-factor scale for measuring both cognitive and emotional empathy. Table 4-9 summarizes the two cognitive factors (fantasy and perspective-taking subscales) and the two emotional factors (empathetic concern subscale and personal distress subscale) as reported by Davis (1979, pp. 57-58) for males (virtually identical subscale structures were reported separately for males and females).

A principal components factor analysis with varimax rotation of Davis' 28-item scale in the present administration produced 7 factors - 4 of which appear to reflect Davis' (1979) reported structure. Six of the scale items failed to load on any primary factor. These include item 1 (daydream), 3 (see others' views), 5 (identification with characters in a novel), 9 (Feeling protective), 17 (fear of emotional situations), and 20 (feeling touched by things). In general, these components appear more general and less oriented to specific events than other items in the scale. Only three components (item 10, helplessness in emotional situations; 15, see others' arguments; and 24,

Table 4-9
Factor Loadings Davis (1979)
Empathy Scale
(n=579)

=====

Cognitive Empathy Subscales:

<u>Fantasy Subscale</u>		<u>Perspective Taking</u>	
<u>Item #</u>	<u>Description</u>	<u>Item #</u>	<u>Description</u>
1	-.34* often dream and fantasize	3	-.56* See Other's views
5	-.60* identify w/characters	8	.58 Disagreements
7	.35 impact of movie/play	11	.47 Others perspect.
12	.45 impact of book/movie	15	-.45**Arguments
16	-.74 identify w/fictional characters	21	.65 Alternative views
23	-.76 involvement in novel	25	.51 Feeling anger
26	-.74 involvement w/movie characters	28	.48 Giving criticism

Emotional Empathy Subscales:

<u>Empathetic Concern Subscale</u>		<u>Personal Distress</u>	
<u>Item #</u>	<u>Description</u>	<u>Item #</u>	<u>Description</u>
2	-.66 Concern for helpless	6	.52 Apprehension
4	.34 Sorry for others	10	.26**Helplessness
9	-.41* Feeling Protective	13	-.35 Others' hurt
14	.60 Others' misfortunes	17	.47* Tense situations
18	.39 Pity for others	19	-.70 Emergencies
20	-.52* Feeling touched	24	.88**Lose control
22	-.53 Soft-hearted	27	.77 Distress

* Indicates item that failed to load in current study

** Indicates item that loaded on 5th or 6th factor in current study

lose control during emergencies) loaded on factors 6 and 7, and these also appear to be less well defined in comparison to other scale items.

The factor loadings for the four remaining subscales, as derived in the present study, are summarized in Table 4-10.

The coefficient alphas for the four factors are .78, .78, .73, and .69 respectively, and appear in line with Davis' (1979) reported alphas of .78, .75, .72 and .78. Notably, the failure of three positively correlated scale items to load on the fourth factor has reduced its reliability from .78 to .69.

Eliminating the questionable items from the scale improves the internal consistency of the subscales in question. The remaining 19-item, four factor scale can be evaluated by means of a confirmatory factor analysis using Lisrel. The results of this analysis appear in Table 4-11. Overall, the indices do not reflect a good fit.

Coefficient beta allows a comparison to be made with respect to the adequacy of the factor structures of the original scale and the shortened version. The computation of beta yields a coefficient of .54 for the long scale ($784 \times .1185 / 172.11$) and a coefficient of .47 for the revised scale ($361 \times .1246 / 94.7382$). The lower beta coefficient for

Table 4-10
Factor Loadings of 19-item Empathy Scale
(n=243)

=====					
		(Emotional Concern)	(Perspective Taking)	(Fantasy)	(Personal Distress)
<u>Feelings</u> <u>About:</u>	<u>Item</u>	<u>Fact1</u>	<u>Fact2</u>	<u>Fact3</u>	<u>Fact4</u>
less fortunate	2	.65			
others problems	4	.65			
emergencies	6				.74
movies/play	7			.77	
viewpoints	8		.75		
friends' views	11		.65		
book/movie	12			.21	
injury	13				.64
misfortune	14	.71			
movie char.	16			.79	
unfairness	18	.74			
emergency	19				.71
opinions	21		.80		
caring	22	.74			
movie char.	23			.80	
under- standing	25		.64		
fictional events	26			.73	
helping	27				.68
criticism	28		.69		

the revised version reflects a slight improvement in the degree of discrimination among segments of the scale. The size of the beta coefficient, however, is still indicative of dimensions which are not as clearly defined as they should be. Parenthetically, it should be noted that coefficient alphas can be reported in the current study for the long and short scales as .83 and .80 respectively. As indicated previously, such indices are largely inappropriate in multifactor situations and do not, in fact, reflect the dimensional problems which appear quite evident from the confirmatory factor and beta analyses.

The dimensional difficulties apparent in the empathy scale may reflect a problem of integrating the two separate emotional and cognitive conceptualizations of the construct. Separate confirmatory factor analyses of the applicable scales does show some marginal dimensional improvement as indicated in Table 4-12. Although the chi square/df ratio is under 3.0, the adjusted goodness of fit statistic of .886 and the rather high degree of residual error in both models evidences weaknesses in the subscales. Computation of beta coefficients of .34 ($100 \times .0348 / 28.12$) and .37 ($81 \times .1155 / 25.18$), for the respective cognitive and emotional empathy subscales, are also indicative of only slight dimensional improvement in the conceptually focused scales.

Overall, the Davis (1979, 1983) empathy scale could use considerable conceptual and operational improvement. Its

Table 4-11
 Confirmatory Factor Analysis of 4 Factor 19-item
 Empathy Scale
 Lisrel Goodness of Fit Indices
 (n=243)

	<u>1st Order</u>	<u>2nd Order</u>
Chi Square	489.57 (df=146)	497.69 (df=148)
Probability	.0000	.0000
Chi Square/df	3.35	3.36
Goodness of Fit Index	.829	.827
Adjusted Fit	.777	.778
Root Mean Sq. Residual	.109	.112

dimensional weaknesses represent a limitation in the present study. However, since any further refinement of the scale lies beyond the scope of this dissertation, the revised scale will be deemed acceptable for current purposes. For comparison purposes, dissertation results using both the original and revised scales will be reported.

Ambiguity Tolerance

In order to measure ambiguity tolerance, Norton's (1975) 60-item, Mat-60 scale, with reported internal consistency of .88 and test-retest reliability of .86, has been used. In the current study, the utility of this scale is somewhat encumbered by its length and time to administer, since it involves over 5 pages of text, and must be given as part of a battery of other personality tests. Two issues arise concerning the high reliability figures: do the reliability coefficients reflect a condition of unidimensionality; and, are the reliabilities merely artifacts which simply reflect the large pool of questions in the scale (Fay & Wallace, 1987).

In order to address these issues, an assessment of the dimensional characteristics of the scale was made by first examining a principal components factor analysis of the scale. The results of a varimax solution revealed 21

Table 4-12

Confirmatory Factor Analysis of

Two-Factor Cognitive and Emotional Empathy Subscales

	Cognitive Subscale	Emotional Subscale
	<u>1st Order</u>	<u>1st Order</u>
Chi Square	94.33 (df=34)	43.45 (df=26)
Probability	.0000	.0040
Chi square/df	2.77	1.90
Goodness of Fit	.930	.956
Adjusted Fit	.886	.924
Root Mean Sq. Resid	.071	.060

factors which had eigenvalues of 1 or more. A total of 19 scale items failed to load on any primary factor. In addition, eight factors evidenced a primary loading for only one scale item. Beyond the first five factors, none of the remaining eight factors contained primary factor loadings for more than 2 scale items. Altogether, there appear to be a total of 44 items loading on factors 6-21 which appear to be of questionable dimensional value.

The scale items correlating with factors 6-21 appear more abstract or hypothetical in nature than items loading on the first five factors, and somewhat less related to the avoidance of situational ambiguity. The questionable items involve the interpretation of ambiguous movies, poems, humor, symbolism, and mysticism; reactions to hypothetical situations (e.g. if I were a scientist, if I were a doctor); the interpretation of other people's ideas and speech (rather than one's own); obsessional counting behavior (knowing the number of friends one has, the number of miles one travels, election results); and normative behavior (specifying how groups should behave).

The existence of 21 factors reflects a scale which is not well defined. The deletion of non-loading scale items, as well as items appearing to be questionable on factors 6-21, would improve the dimensional structure of the scale. As indicated in Table 4-13, the remaining five factors

Table 4-13
Factor Loadings of 5-factor 16-item
Revised Ambiguity Tolerance Scale
(n=243)

<u>Item</u>	<u>Fact1</u>	<u>Fact2</u>	<u>Fact3</u>	<u>Fact4</u>	<u>Fact5</u>
(Social Uncertainty)					
14 what others laughing at			.71		
15 Unknown Impact on others			.69		
16 How strangers react to me			.73		
(Need for work direction)					
17 No communication on job					.69
18 Need clear criteria					.65
19 Uncertain of responsibilities					.68
(Need for Solutions)					
25 Dislike problems without solutions	.56				
26 Need to be assured of success	.76				
27 Need information for decisions	.68				
28 Dislike ambiguous problems	.72				
(Interpersonal Control)					
35 First impressions				.68	
36 Need purpose when going out				.45	
37 People I don't understand				.76	
38 Uncomfortable with strangers				.59	
(Punctuality)					
43 Need to know what day it is		.78			
45 Like to know what time it is		.84			

appear to reflect definable conceptual groupings of scale statements. These factors appear to delineate dimensions relating to an individual's need for perceptual control, work guidance, problem solutions, interpersonal control, and the need for punctuality. Although the alpha coefficients for these five factors, .69, .74, .68, .66, and .60, do not appear to reflect particularly reliable subscales, the few items per factor reiterate the sensitivity of the alpha coefficients to the number of scale items used.

The dimensional properties associated with the remaining 5-factor, 16-item scale can be further examined by means of a confirmatory factor analysis using Lisrel. The goodness of fit statistics for the revised scale are summarized in Table 4-14. Overall, the indices do not reflect a good fit.

Use of the beta coefficient permits a comparison to be made of the factor structures of the original 60-item and revised 16-item scales. For the 60-item scale, the beta coefficient is computed at $.47 (3600 \times .067 / 530.7154)$, while the beta coefficient for the revised 16-item scale amounts to $.47 (225 \times .14 / 68.48)$. Virtually identical, the relatively sizable beta coefficients evidence scales in which sub-dimensions are rather poorly defined. Indeed, the inclusion of scale items which have loaded on factors 6-21 in the original scale evidently contribute little to the

Table 4-14

Confirmatory Factor Analysis of
 Revised 5-Factor 16-item Ambiguity Tolerance Scale
 Lisrel Goodness of Fit Statistics
 (n=243)

	<u>1st Order</u>	<u>2nd Order</u>
Chi Square	325.74 (df=94)	349.76 (df=99)
Probability	.0000	.0000
Chi Square/df	3.47	3.53
Goodness of Fit Index	.865	.856
Adjusted Fit	.804	.802
Root Mean Sq. Residual	.094	.102

dimensional clarity of the scale. An alpha coefficient of .83 for the original scale (comparing favorably with Norton's (1975) reported data) again reflects the insensitivity of the alpha coefficient to multifactor problems.

Despite the difference in scale size, data obtained from both scales should be quite similar. For comparison purposes, results of using both scales will be reported in this dissertation. Of course, it is noted that the inadequacy of the operational measure of ambiguity tolerance constitutes a notable limitation within the present study.

Expressiveness

The 13-item Affective Communications Test developed by Friedman, Prince, Riggio, and DiMatteo (1980) is the only measure of this construct. The developers have published considerable data regarding its nomological validity, and have also reported coefficient alphas of .77 and test-retest reliabilities for the scale of .90 (Friedman et al, 1980). In contrast to these figures, an alpha coefficient of only .69 was obtained in the present study. There do not appear to be any reported studies which have considered the scale's dimensional structure.

A factor analysis of the scale in the present study

Table 4-15
Factor Loadings of 3 Factor 8-item
Affective Communications Test
(n=243)

	Exhibitionism	Touching	Expressing Emotion
<u>Item</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
3 - Express emotion over telephone			.56
4 - Touch friends while talking		.81	
5 - Being watched by others	.70		
8 - Being noticed in a crowd	.79		
9 - Dealing with strangers	.78		
10 - Give seductive glance			.59
11 - Ability to pantomime			.66
13 - Hugging and touching		.75	

yielded 4 factors with eigenvalues of 1 or more. The fourth factor contained only one item (statement #2, type of laughter) which did not fit into the theoretical dimensions suggested by the other three factors. Items 1 (reaction to dance music), 6 (usual facial expression), 7 (would make good actor), and 12 (am life of party), did not load on any primary factor. The remaining 8 items are summarized in Table 4-15.

A confirmatory factor analysis of the 3-factor, 8-item scale was conducted, and the goodness of fit indices are reported in Table 4-16. The chi square/df ratio, goodness of fit indices, and relatively low amount of residual error indicate an acceptable fit.

The beta coefficient for the original 13-item scale amounts to .47 ($169 \times .55 / 199.37$) while the beta coefficient for the revised 8-item scale is .34 ($64 \times .52 / 97.63$). The reduction in the beta coefficient indicates that the resulting scale has more clearly defined segments (John and Roedder 1981).

Dogmatism

Dogmatism has been included in the dissertation for the purposes of assessing the discriminant validity of opinion leadership and cognitive complexity measures. Dogmatism, is

Table 4-16
Confirmatory Factor Analysis of 3-Factor 8-Item
Affective Communication Test
Lisrel Goodness of fit Indices
(n=243)

	<u>1st Order</u>	<u>2nd Order</u>
Chi Square	27.33 (df=17)	27.39 (df=16)
Probability	.053	.037
Chi Square/df	1.61	1.71
Goodness of Fit Index	.973	.973
Adjusted Fit	.948	.951
Root Mean Square Residual	.040	.039

defined as a "system of beliefs resisting change," and therefore constitutes a cognitively based personality dimension (Fruchter, Rokeach & Novak, 1958). The closed mind of the dogmatic individual functions as a protective mechanism against perceived areas of threat or anxiety (Jacoby, 1971). Previous studies have found that dogmatism is negatively related to the acceptance of new ideas and products (Jacoby, 1971; Coney, 1972), and also negatively related to cognitive complexity (Vannoy, 1965). Since a relationship between opinion leadership and innovativeness has been well recognized (Engel, Kegerreis, & Balckwell, 1969), it seems likely that opinion leadership would also reflect a negative relationship with dogmatism.

Rokeach (1960)'s dogmatism scales are, perhaps, the most widely used operationalizations of the construct (several versions have been published). According to Rokeach (1960), statements in the dogmatism scale can be summarized under four major factor headings: intransigence of belief system (perception of irrelevant arguments, coexistence of contradictions); achievement of self-aggrandizement and righteousness through identification with a cause (as a defense against man's isolation and helplessness, fears of future, feelings of urgency, self-adequacy vs. inadequacy, paranoid outlook, etc.); having a closed belief system (degree of authoritarianism, others

intolerance towards disbelievers, use of force to advance one's ideals); and time perspective (attitude toward past, present and future, acceptance of traditions, belief that others don't know what's going on, etc.). Rokeach and his colleagues also factor analyzed correlations of 43-item and 36-item versions of the dogmatism scale and other related constructs (Rokeach & Fruchter, 1956; Fruchter, Rokeach & Novak, 1958).

Troldahl and Powell (1965) analyzed the Rokeach (1960) 40-item scale by considering the correlations of individual scale items to the total scale, and by using the alpha coefficient as an indicant of the homogeneity of the remaining items. With the goal of devising a shorter scale (for ease of administration), the researchers compared results for 10, 15 and 20 item scales. They concluded that a 20-item scale, evidencing an alpha coefficient of .79 (compared with an alpha of .84 for the original scale), would appear to be acceptable as a shortened form of the dogmatism instrument. Notably, the researchers did not explicitly address the adequacy of the underlying dimensional components of the scale.

A principal components factor analysis with varimax rotation of Troldahl and Powell's (1965) Short Dogmatism scale was conducted in the present study in order to assess the dimensional characteristics of the scale. This analysis

Table 4-17

Factor Loadings of 4-Factor 12-item Dogmatism Scale

=====				
	(Negative View of Man	(Adherence to Cause)	(Opinionated)	(Need for Leader Control)
<u>Item</u>	<u>Factor1</u>	<u>Factor2</u>	<u>Factor3</u>	<u>Factor4</u>
1 Rely on Leaders				.76
4 People are ignorant	.57			
5 Only 1 Philosophy	.63			
6 Govt by a few				.66
8 Need a problem solver				.63
9 Most ideas are wrong			.51	
10 Man is helpless	.71			
11 Be devoted to one's ideal		.69		
13 Compromise is dangerous			.59	
16 USA vs. Russia			.67	
17 Need to repeat message				.56
20 Better dead hero		.62		

yielded 7 factors having eigenvalues of 1 or more. Five scale items did not load on any primary factors. These include item 3 (people are either for or against truth), 7 (need to do something important), 15 (the future is what counts), 18 (want to be great), and 19 (need to restrict freedom of speech). Factors 5-7 each contained only one scale item, consisting of item 2 (blood boils when others don't admit wrong), item 12 (people don't care about others) and 14 (need to reserve judgement until others explain). Since the dogmatic person would appear to accept a negative view of others, items which suggest a desire to change people, anger concerning others, a need to be recognized by others, and tolerance of others may be of low theoretical importance for this construct. The remaining factors (encompassing 12 scale items) appear similar to the four conceptual dimensions described by Rokeach (1960). Table 4-17 reports the results of this analysis.

A confirmatory factor analysis using Lisrel has been used to assess the dimensional adequacy of a 4 factor, 12-item scale. The goodness of fit indices are summarized in Table 4-18. Although 1st order iterations did not converge, the second order indices indicate an excellent fit.

A computation of the beta coefficient was performed in order to compare Troldahl & Powell's (1965) 20-item Short Dogmatism scale and the 4 Factor, 12-item scale. The beta coefficient for the 20-item scale amounts to .56

Table 4-18
Confirmatory Factor Analysis of 4 Factor 12-item
Short Dogmatism Scale
Lisrel Goodness of Fit Indices
(n=243)

	<u>2nd Order</u>
Chi Square	58.70 (df=49)
Probability	.162
Chi square/df	1.20
Goodness of Fit index	.961
Adjusted Fit	.938
Root Mean Sq. Residual	.048

($400 \times .14 / 101.30$) compared to a beta of .34 ($121 \times .11 / 39.75$) for the four factor, 12-item version. A substantial reduction in the size of the beta coefficient again reflects a more tightly defined factor structure for the shorter scale. Alpha coefficients of .70 for the longer scale (compared to .79 reported by Trohdahl & Powell, 1965), and .58 for the shorter scale are again insensitive to the multi-factor structure. Overall, the 4-factor, 12-item scale appears to be an adequate measure for the present study. Results will be reported both for the 12-item and 20-item versions of the dogmatism scale.

Coding of Process Measure And Analysis of Data

This section considers the coding and adequacy of the process measure of opinion leadership. It should be recalled that the process measure consists of the total number of comments initiated and received by individuals within their discussion groups. The frequency and direction of comments are determined by a content analysis of the videotaped group discussions. The interrater reliability of the measure is considered below. Following an examination of the ranking procedures for the process measure, a comparison is made of the process measure, Childer's (1986) self-designating scale, and a sociometric designation of opinion leaders within each group. This comparison entails

Table 4-19
Comparison of Subjects' Total Comments Scores
And Group Rankings For Two Groups

Group "A"		Group "R"	
<u># Comments</u>	<u>Rank Order</u>	<u># Comments</u>	<u>Rank Order</u>
63	1	156	1
53	2	120	2
19	3	83	3
10	4	74	4
<u>5</u>	5	<u>63</u>	5
91		281	

an analysis of the convergent, discriminant and nomological validity of the three opinion leadership measures.

Rank Order Procedures

The identification of opinion leaders by total comments in their respective groups necessitates a rank ordering of individuals in order to compare the subjects across groups (Bales, Strodtbeck, Mills, & Rosenborough, 1951; Bales, 1970; Green, Carmone & Wachspress, 1977; DeSarbo & Hildebrand, 1980; Blattberg & Dolan, 1981; Brillhart, 1988). In effect, a rank ordering is analogous to standardizing differently scaled measures so that comparisons may be made across groups (Dillon, Madden & Firtle, 1987). To illustrate, Table 4-19 lists subject rankings for two Massachusetts groups in the study.

According to the rank order of comments, the subject with 63 comments in group A is the opinion leader, while the subject with 63 comments in group R is an opinion follower. A comparison of the absolute number of total comments would be meaningless. The use of a group design similarly affects comparisons of other variables as well, necessitating the use of rank order techniques for group comparison and data analysis.

One of the factors contributing to the differences in the total number of comments in the groups is the size, or

Table 4-20
Analysis of Variance Tests of Group Size Differences
For Selected Characteristics

Variable	Source	df	SS	MS	F	P
Total Comments	GrpSz Residual	4 580804.46	54169.21 2440.35	13542.30 2440.35	5.55	.0003
Cognitive Complexity	GrpSz Residual	4 236	1621.88 60392.48	406.72 249.01	1.63	.1666
Abstract Thinking	Group Residual	4 238	44.35 3217.04	11.09 13.52	0.82	.5133
Ambiguity Tolerance	Group Residual	4 241	368.38 18509.49	92.09 77.77	1.18	.3184
Empathy	Group Residual	4 239	143.38 20671.27	35.84 86.85	0.41	.7994
Expressive- ness	Group Residual	4 238	474.50 23256.59	118.63 97.72	1.21	.3055
Opinion Lead. Scal.	Group Residual	4 241	110.84 8827.23	27.71 37.09	0.75	.5608
Dogmatism	Group Residual	4 241	301.35 10434.31	75.34 43.84	1.72	.1470
Product Knowledge	Group Residual	4 241	380.27 9606.95	95.07 40.37	2.36	.0550
Product Interest	Group Residual	4 241	741.90 13866.11	185.47 60.26	3.183	.0140

number of members, in each group. Table 4-20 summarizes the analyses of variance tests which were conducted for all of the variables in the study to ascertain if any significant differences could be attributed to different sized groups in the study.

As expected, the total number of group comments, which constitutes the process measure of opinion leadership in this study, differs significantly according to group size. For product interest, the absence of a theoretical rationale for the finding of a significant group size variation suggests that it may be a random occurrence.

Duncan's multiple range test of group mean differences, summarized in Table 4-21, shows the total comment differences according to group size categories, the mean number of individual comments by group size, and the areas of significant difference.

The rank order of a subject's variable scores were determined by the ranking of scores within the individual's discussion group. These rankings were used to compute Spearman rank order correlations for the variables studied, and to identify the individual ranked highest or lowest on each variable for each of the 52 discussion groups. For loglinear analysis, the rankings were recoded into 1=high, 2=medium, and 3=low categories. This ranking procedure was needed in order to conform to the cell-size limitations of

Table 4-21
Duncan's Multiple Range Tests of Group Size Differences
For Total Comments Measure of Opinion Leadership
(p<.05)

<u>Duncan Grouping</u>		<u>Mean</u>	<u>Subjects N</u>	<u># Groups</u>	<u>Group Size</u>
	A	111.26	23	4	6
B	A	100.11	18	6	3
B					
B	C	80.78	60	15	4
	C				
	C	69.66	121	24	5
	C				
	C	54.95	<u>21</u>	<u>3</u>	7
			243	52	

Table 4-22
Rank Order Coding of Variables By Group Size
& By High, Medium & Low Categories

Group Size	3	4	5	6	7
Subjects:	*1 >Hi	1 >Hi**	1 >Hi	1 >Hi	1 >Hi
	2 >Med	2	2	2	2
	3 >Lo	3>Med	3 >Med	3 >Med	3 >Med
		4>Lo	4	4	4
			5>Lo	5 >Lo	5 >
				6	6 >Lo
					>
					7

* Rankings in Group
** Loglinear Rankings

loglinear analysis, and to standardize for group size differences across all variables. The coding procedures were based on an examination of variable scores aimed at grouping similar scores into high, medium or low categories. The ranking procedures are reflected in Table 4-22.

Interrater Reliability

In order to determine the total number of comments initiated and received (e.g. frequency and direction of comments) for each subject, a colleague at Long Island University, and the researcher, independently coded the videotaped group discussions. The use of a 6-foot projection television screen facilitated the coders' ability to track the direction and number of comments among the group members.

To establish reliability, a random sample of 10 discussion groups were chosen for comparison. The selection procedure involved taking every 5th group for comparison. Since the number of comments attributed to each subject constituted ratio data, Pearson product-moment correlations were used to compute reliability. The correlations for the number of comments initiated by each subject is .87 ($p < .0002$); for the number of comments received .86 ($p < .0003$); and for total comments (initiated plus received) .90 ($p < .0000$).

Inasmuch as ranked data would be used in the data analysis, the number of comments were also ranked within each group. Spearman rank-order correlations were then computed to compare the rankings of data for each coder. The correlation of the ranking of the subjects' initiated comments score is .98 ($p < .0000$); for the ranking of the subjects' received comments score .98 ($p < .0000$); and for the ranking of the subjects' total comments score (initiated plus received comments) 1.00 ($p < .0000$).

Convergent Validity

As noted in Chapter 1, one aim of the dissertation is to assess the construct validity of a process measure of opinion leadership. To satisfy this form of validity, the measure must assess the properties attributed to the construct in question. In this case, construct validity can be determined by the convergence of the process approach with other measures of opinion leadership. As specified by Campbell & Fiske (1959), different measures of the same concept must demonstrate the existence of a relationship among themselves. The strength of validation also depends on the use of methodologically dissimilar measures. In the current study, three methods were used to assess the opinion leadership levels of each subject: the Childers (1986) self-

Table 4-23
Spearman Rank Order Correlations of Opinion
Leadership Measures & Dogmatism

Childers (1986) <u>Opin. Lead Scale</u>		# Comments <u>Total</u>	#Comments <u>Initiated</u>	#Comments <u>Received</u>
<u>Childers</u>	x			
<u>Scale</u>				
# Comments	.11			
<u>Total</u>	(243)	x		
	.0800			
# Comments	.14	.88		
<u>Initiated</u>	(243)	(243)	x	
	.0239	.0001		
# Comments	.13	.86	.70	
<u>Received</u>	(243)	(243)	(243)	x
	.0506	.0001	.0001	
<u>Dogmatism</u>	.03	-.11	-.06	.09
	(243)	(243)	(243)	(243)
	n.s.	.0751	n.s.	n.s.

report opinion leadership scale by which the subject assessed his/her own level of opinion leadership; a process measure, e.g. total comments (initiated and received comments), determined by a content analysis of group discussions; and, a sociometric approach, subjects' ratings of other group members (as to group leader, most influential and least influential group member).

The correlations in Table 4-23 present a comparison of the rankings of the self-report scores and process scores for the subjects in the study.

The correlations among the process measures of opinion leadership and the self-designating scale provide only slight evidence of convergent validity. The self-designating scale appears significantly correlated with one process component (# comments initiated) within the .05 level of significance. The correlations of the scale with other process elements (total comments and # comments received) are significant at below a .10 level.

Table 4-24 shows the extent of agreement for the self-designating and process measures with subjects' sociometric opinion leadership ratings of the other group members within their respective discussion groups. This data was elicited at the conclusion of each group discussion.

Table 4-24

Classifications of Opinion Leaders and Nonleaders:

Number of Ties Among Subject Ratings,

Total Comments Scores & Self-Designating Scale

=====				
	Process Measure:		Self-Designating Scale:	
	Subject with Highest <u># Comments</u>	Subject with Lowest <u>#Comments</u>	Subject with Highest <u>Score</u>	Subject with Lowest <u>Score</u>
<u>Subject Ratings</u> <u>of Other Group</u> <u>Members:</u>				
Subject who acted as group leader	119	14	67	57
Subject who influenced me most	91	10	48	50
Subject who influenced me least	11	81	25	63

As shown by Table 4-24, for 243 subject ratings of other members' performance within the groups, 119 subjects who were designated as the group leaders by their peers corresponded to the individuals with the highest ranked total comment scores in the groups. Only 14 individuals designated as group leaders by their peers had the lowest ranked total comments scores. In comparison, only 67 individuals identified as group leaders by other group members reflected the highest ranked self-designated opinion leadership scores. In addition, 57 individuals cited as group leaders by other members reflected the lowest ranked scores on the self-designating Childers (1986) scale.

With respect to the subjects ratings of other group members' influence, a total of 91 individuals who were named as most influential also reflected the highest ranked total comments scores. Only 10 individuals identified as most influential reflected the lowest ranked total scores. In contrast, about an equal number of individuals with the highest and lowest ranked self-designating opinion leadership scores were identified as most influential by group members. In terms of subject ratings of individuals who influenced them the least, the agreement between the lowest ranked total scores and the least influential subjects again exceeds the level of agreement achieved by the self-designating opinion leadership scores.

Overall, the process measure of opinion leadership exhibits a substantially greater amount of agreement with subject ratings than does the self-designating measure. The two approaches apparently measure different aspects of the construct. As Zaltman and Stiff (1973) have suggested, the self-designating scale may be tapping elements concerned more with social status and position, whereas the process measure focuses primarily on interpersonal communication activity. In psychometric terms, it appears that convergent validity is more evident for the process measure of opinion leadership (total number of comments) than for the self-designating scale.

Discriminant Validity

Construct validity also requires a demonstration of the discriminant validity of the measures, e.g. that the measures in question are unrelated to scales which assess dissimilar constructs. With respect to discriminant validity, the measures of opinion leadership show a greater correspondence with each other than with the revised or original measure of dogmatism (Table 4-23 and Appendix J).

A further test of discriminant validity would involve a comparison of the correlations between the opinion leadership measures and measures of similar, yet distinct, constructs (Campbell & Fiske, 1959; Churchill, 1979; Peter,

1981). However, the small correlation between the opinion leadership measures (varying from .11 to .14), compared to the correlations with other traits as depicted in table 4-25 below (ranging from .14 to .23), would seem to preclude a more precise indication of discrimination.

Nomological Validity

Nomological validity is concerned with the theoretical linkages among a set of constructs which allows for the prediction and direction of other relationships (Cronback & Meehl, 1955; Campbell, 1960). The set of five socio-psychological constructs associated with cognitive complexity provides the theoretical basis for predicting the identity of opinion leaders within the small group setting. Spearman rank order correlations of the revised and original scales are in Table 4-25 and Appendix K respectively.

The nomological validity of the opinion leadership measures appears evident for three of the variables - cognitive complexity, abstract thinking and affective communication - for which the correlations are all positive and significant. In general, the nomological validity of the process measures appears greater, in both magnitude and significance, than for the self-designating opinion leadership scale. For empathy, none of the correlations appear significant. For ambiguity tolerance, the results

Table 4-25
Spearman Rank Order Correlations of Opinion Leadership
Measures with Selected Personality Constructs
(Revised Scales)

	<u>Opinion Leadership Scale</u>	<u>Total # Comments</u>	<u># Comments Initiated</u>	<u>#Comments Received</u>
Cognitive Complexity	.14 (241) .0357	.18 (241) .0042	.17 (241) .0086	.21 (241) .0010
Abstract Thinking	.11 (243) .0785	.17 (243) .0092	.18 (243) .0053	.23 (243) .0002
Ambiguity Tolerance	.18 (243) .0052	.06 (243) n.s.	.007 (243) n.s.	.18 (243) .0058
Empathy	.02 (243) n.s.	.03 (243) n.s.	.03 (243) n.s.	-.001 (243) n.s.
Affective Communication	.16 (243) .0120	.29 (243) .0001	.31 (243) .0001	.18 (243) .0054
Product Interest	-.05 (243) n.s.	-.03 (243) n.s.	-.03 (243) n.s.	-.03 (243) n.s.
Product Knowledge	.04 (243) n.s.	.03 (243) n.s.	.09 (243) n.s.	-.01 (243) n.s.

are mixed, with significance appearing only for the self-designating measure of opinion leadership and for total number of comments received. Notably, the evaluation of the scales for empathy and ambiguity tolerance revealed scales which did not appear well defined. The results must be considered in light of these operational inadequacies.

The implications of these correlations will also be discussed in conjunction with each of the formal hypotheses as set forth in the next section of the chapter.

Results: Analysis and Interpretation of Data

The hypotheses postulate a positive relationship between each of the personality variables, as depicted in the conceptual framework in Chapter 1, and opinion leadership. The 5 hypotheses in the study were first tested by means of multivariate loglinear analyses which provide chi square indices of observed versus expected (e.g. chance) frequencies. The use of loglinear models is necessitated by the research design used in this dissertation (Goodman, 1978, 1984; Greenacre, 1984). The use of multivariate loglinear models also permits an evaluation of interest and knowledge as possible moderating variables. All of the models reported in this section were analyzed using the CATMOD procedure in the Statistical Analysis System (SAS)

software package.

In addition to the use of log linear models, the hypotheses will also be evaluated by examining the number of correct classifications ("hit rates") of opinion leaders predicted by each personality variable (e.g. cognitive complexity, abstract thinking, ambiguity tolerance, empathy, expressiveness, and dogmatism). The degree of significance of correct versus incorrect classifications will be computed in accordance with the binomial distribution (Mason, 1974). As noted above, the Spearman rank order correlations in Table 4-25, as they relate to the hypotheses, are also examined.

Hypothesis 1: Opinion Leadership & Cognitive Complexity

The first hypothesis concerns the proposed relationship of cognitive complexity to opinion leadership:

- H₁ Subjects with high levels of cognitive complexity will display greater levels of opinion leadership, moderated by product knowledge and interest, than will subjects with low levels of cognitive complexity.

Use of loglinear models represents one method of detecting if there are significant differences between opinion leaders and non-leaders with respect to cognitive complexity. The loglinear models in Table 4-26 show the relationship of the each individual's group ranked scores on

the Bieri measure of cognitive complexity (R_{Bieri}) and the individual's ranked score of total number of interpersonal comments (e.g. the number of comments initiated and received by an individual) which represents the process measure of opinion leadership, as used in this dissertation (R_{total}). The effects, if any, of the moderating variables, knowledge and interest, are shown as effects introduced in subsequent equations. The initial statistics in Table 4-26 indicate the chi-square significance for each of the loglinear models tested. Although all of the models of cognitive complexity and opinion leadership (total comments) appear significant, it appears that knowledge or interest moderate the relationship between opinion leadership and cognitive complexity to a minimal degree.

The significant response frequencies obtained for each of the models are also listed in the Table. The pattern of frequencies in the first model ($R_{\text{total}} * R_{\text{Bieri}}$) indicates that subjects high in cognitive complexity also reflect either high or moderate levels of opinion leadership. In addition, the cell reflecting cognitively simple/moderately high opinion leaders is significantly lower than what was expected by chance, and thus agrees with the predicted relationship.

When the effects of product knowledge are added to the model, all of the significant cells again reflect an association between cognitive complexity and opinion

Table 4-26

Log Linear Models of Opinion Leadership and
Cognitive Complexity, Product Knowledge, and Product
Interest

(n=243)

<u>Loglinear Models</u>	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Rbieri	8	23.48	.0028
Rtotal*Rbieri*Rknow	26	44.97	.0119
Rtotal*Rbieri*Rinterest	26	45.93	.0093
Rtotal*Rbieri*Rknow*Rinterest	63	83.97	.0399

Response Frequencies:^a

<u>Obs</u>	<u>Rtotal</u>	<u>Rbieri</u>	<u>Rknow</u>	<u>Rinterest</u>	<u>Chi Square</u>	<u>Prob.</u>
<u>(Rtotal*Rbieri)</u>						
43	1	1			12.05	.0005
37	2	1			5.41	.0200
16	2	3			4.09	.0432
<u>(Rtotal*Rbieri*Rknow)</u>						
19	1	1	2		13.58	.0002
15	1	2	1		5.72	.0167
14	2	1	1		4.24	.0395
17	2	1	2		9.29	.0023
<u>(Rtotal*Rbieri*Rinterest)</u>						
16	1	1		1	7.87	.0050
17	1	1		2	9.81	.0017
15	1	2		2	6.13	.0133
16	2	1		1	7.87	.0050
14	2	2		1	4.58	.0324
2	2	3		1	4.03	.0448
<u>(Rtotal*Rbieri*Rknow*Rinterest)</u>						
8	1	1	1	1	7.63	.0058
7	1	1	2	3	5.02	.0250
8	1	1	3	3	7.63	.0058
7	1	2	1	1	5.02	.0250
7	1	2	1	2	5.02	.0250
7	1	3	1	1	5.02	.0250
12	2	1	1	1	22.17	.0001
7	2	1	2	2	5.02	.0250
9	2	2	1	1	10.68	.0011
8	3	1	1	1	7.63	.0058

^a1 = high, 2 = moderate, 3 = low

leadership in the expected direction. This pattern is also reflected in the third model where the effects of product interest are included. In this case, the cell of cognitively simple/moderately high opinion leaders also reflects fewer individuals than would be expected by chance.

In the fully saturated model (including effects of both product knowledge and product interest), the pattern of predicted findings are largely reiterated (for 8 of 10 significant cells). In two cells, subjects appear high in cognitive complexity and opinion leadership despite low levels of product knowledge and product interest. These cells are consistent with other studies which have found that individuals display behaviors associated with cognitive complexity even when the amount of external information is limited or controlled (Bieri & Blacker, 1956; Richmond, 1977). In two cells, the results are contrary to predictions. In one cell, for example, cognitively simple individuals appear high in opinion leadership, product knowledge and product interest. A possible interpretation of this finding is that product interest and product knowledge may allow the cognitively simple individual to overcome interpersonal limitations and thus assume the opinion leadership role. Thus, product interest and product knowledge may moderate the behavior of cognitively simple individuals more so than for cognitively complex ones.

The lack of association of product interest and

knowledge with cognitively complex opinion leaders can be explained by the existing cognitive complexity literature. Cognitively complex individuals have been shown to generate information which is often independent of external stimuli (Scott, 1962; Bieri et al, 1966). In effect, cognitively complex individuals appear to understand phenomena, even if they lack information. Consequently, their opinion leadership behavior should not be limited to situations of product familiarity or salience (Bieri & Blacker, 1956; Scott, 1962; Zajonc, 1968). Such individuals, therefore, should have a propensity to engage in product related conversation regardless of the amount of product knowledge or product interest which they might have about a particular product category.

The non-leaders in the last significant cell in the model evidence high levels of cognitive complexity, interest and knowledge. Thus, this group acted contrary to the predictions based on the cognitive complexity personality dimension. In explanation, it would appear that personality is one of several factors which contribute to opinion leadership behavior. Although not considered in the research design, it would seem plausible that the individual's reactions to situational factors, such as the group's composition, cohesion, and the nature of interactions, may also affect the individual's decision or ability to act as an opinion leader.

For each of the groups of subjects engaged in product related discussions, it was predicted that the individual with the highest level of cognitive complexity would also be the subject who acted as opinion leader within the group. According to the process measure of opinion leadership, this individual would be recognized as having initiated and received the greatest number of comments during the group discussion. Thus, the number of group opinion leaders correctly classified by cognitive complexity represents an additional test of the hypothesis, providing the number of correct classifications exceeds the number of classifications which might occur by chance.

For the purposes of this analysis, individuals correctly classified as opinion leaders would include only those individuals with the highest ranked opinion leadership (R_{total}) score and the highest ranked cognitive complexity (R_{bieri}) score in their group. Misclassified opinion leaders refer to cognitively simple opinion leaders, e.g. individuals having the highest ranked opinion leadership (R_{total}) score and the lowest ranked cognitive complexity (R_{bieri}) score.

Subjects correctly classified as non-leaders would also reflect the lowest ranked opinion leadership (R_{total}) score and lowest ranked cognitive complexity (R_{bieri}) score. Such individuals show that subjects who are clearly ranked as non-leaders also reflect the greatest degree of cognitive

simplicity. Individuals misclassified as non-leaders would reflect the lowest ranked opinion leadership (R_{total}) score and the highest ranked cognitive complexity (R_{bieri}) score.

Figure 4-1 summarizes the classifications of opinion leaders for the 52 discussion groups by each of the variables used in this dissertation. The same coding or classification procedure has been used for each of the personality variables depicted in the Figure. With respect to cognitive complexity, Figure 4-1 indicates the number of correct classifications of opinion leaders (those opinion leaders who were cognitively complex); the number of correct non-leaders (those non-leaders who were cognitively simple); the number of incorrect leaders (those opinion leaders who were cognitively simple); and incorrect non-leaders (those non-leaders who were cognitively complex).

Eighteen individuals were correctly identified as opinion leaders on the basis of being ranked highest among the members of their respective groups on the Bieri measure of cognitive complexity. As shown in Table 4-27, the probability that the 18 correct classifications could have occurred by chance is negligible ($p < .0000$).

Only 7 opinion leaders appeared to be cognitively simple (lowest R_{bieri}). An examination of their Bieri scores, however, indicates that 4 of the 7 actually had mid-range scores (average Bieri score = 77.60), and that only 3 opinion leaders were actually cognitively simple (average

Chart 4-1
Classification of Opinion Leaders
 By Selected Personality Variables

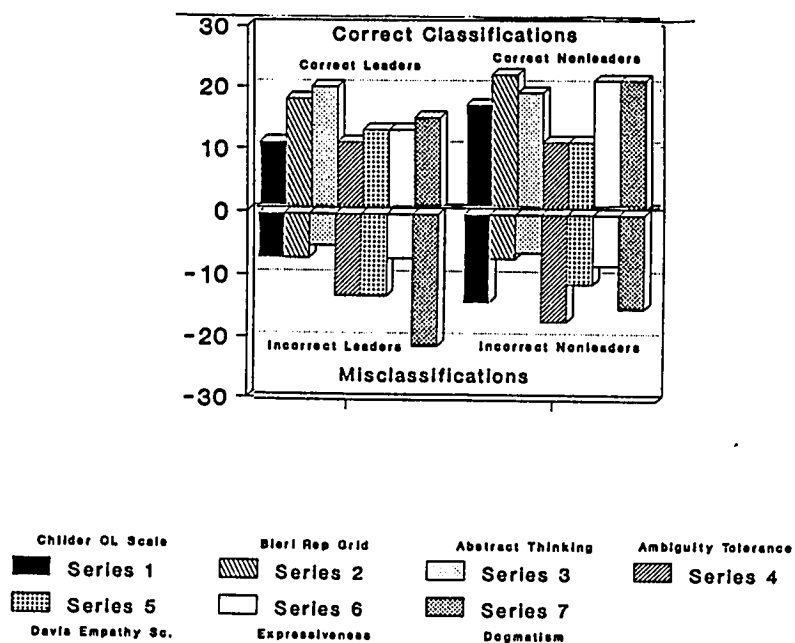


Table 4-27
Binomial Probability Distribution
Correct Classifications of Opinion Leadership by
Cognitive Complexity

$$P(r) = \frac{n!}{r!(n-r)!} (p)^r (q)^{n-r}$$

$P(r)$ = probability of chance of r correct classifications

p = probability of correct classifications in group of i persons ($1/i$)

q = probability of a misclassification ($1-p$)

n = total number of groups of i persons

r = total number of correct classifications

$n-r$ = total number of misclassifications

<u>Group Size</u>	<u>#groups</u>	<u>Subjects</u>	<u>p</u>	<u>q</u>	<u>r</u>	<u>P(r)</u>
3	6	18	.34	.66	3	$P(3)=.06$
4	15	60	.25	.75	6	$P(4)=.52$
5	24	120	.20	.80	7	$P(7)=.05$
6	4	24	.17	.83	0	$P(0)=.09$
7	<u>3</u>	<u>21</u>	.14	.86	<u>2</u>	$P(2)=.24$
	52	243			18	

$$P_{(18)} = .06 \times .52 \times .05 \times .09 \times .24 = .0000$$

Bieri score = 94.75). Thus, in only 3 of the 52 groups did cognitively simple individuals act as opinion leaders.

The number of correct non-leaders (those ranked lowest on the Bieri measure) totals 21. Thus, in 21 of the 52 groups, the individual ranked lowest in opinion leadership also was ranked lowest in cognitive complexity. For correctly classified opinion leaders, and correctly classified non-leaders, the average Bieri scores, of 59.61 and 96.50 respectively, reflects a significant difference ($t = -10.3146$ $p < .001$). Of the non-leaders, only 6 represent misclassifications reflecting high levels of cognitive complexity (high R_{Bieri}). In considering the behaviors of such individuals, it appears likely that other factors, particularly group related, situational dimensions, could have a direct impact on whether they acted as opinion leaders within a specific group.

The Spearman rank order correlations for cognitive complexity and the opinion leadership measures are also significant and positive, and therefore, supportive of the first hypothesis.

Hypothesis Two - Opinion Leadership & Abstract Thinking

The second hypothesis suggests that opinion leaders and non-leaders also differ with respect to abstract thinking.

- H₂ Subjects who use abstract concepts in thinking will display higher levels of opinion leadership, moderated by product knowledge and product interest, than will subjects who use concrete concepts in thinking.

The discussion will first consider the results of the loglinear analysis using the revised abstract thinking scale, followed by the results using the original abstract thinking scale. Table 4-28 lists the results of the loglinear models of abstract thinking (revised scale) and opinion leadership. The individual model testing the effects of product interest is not significant at the .05 level. The significant frequencies for each of the remaining models are shown in the table.

The pattern of responses in the first model ($R_{total} * R_{abstract}$) is as predicted. The number of opinion leaders who exhibit either high or moderate levels of abstract thinking is significantly greater than those expected by chance. In addition, opinion leaders who reflect concrete thinking are also fewer in number than would be expected as a random occurrence.

Similar findings are also characteristic of the second model which includes the subjects' self-ratings of product knowledge. In this model, the association of opinion leadership with either high or moderate levels of abstract thinking is evident. The number of opinion leaders who appear to be concrete thinkers is significantly fewer in

Table 4-28

Log Linear Models of Opinion Leadership and
Abstract Thinking^a, Product Knowledge, and Product Interest
(n=243)

Loglinear Models	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Rabstract	8	25.55	.0013
Rtotal*Rabstract*Rknow	26	48.29	.0050
Rtotal*Rabstract*Rinterest	26	38.41	.0554
Rtotal*Rabs*Rknow*Rinterest	66	90.76	.0234

Response Frequencies:^b

<u>Obs</u>	<u>Rtotal</u>	<u>Rabstract</u>	<u>Rknow</u>	<u>Rinterest</u>	<u>Chi Square</u>	<u>Prob.</u>
(Rtotal*Rabstract)						
41	*1	1			9.44	.0021
42	1	2			10.03	.0011
16	1	3			4.15	.0417
(Rtotal*Rabstract*Rknow)						
15	1	1	2		6.02	.0141
19	1	2	1		14.05	.0002
14	1	2	2		4.49	.0341
2	1	3	3		4.06	.0439
15	2	3	1		6.02	.0141
(Rtotal*Rabstract*Rknow*Rinterest)						
8	1	1	1	1	8.14	.0043
7	1	1	3	3	5.41	.0200
10	1	2	1	1	14.92	.0001
9	2	1	1	1	11.32	.0008
7	2	1	2	2	5.41	.0200
8	2	2	2	2	8.14	.0043
10	2	3	1	1	14.92	.0001
9	3	1	1	1	11.32	.0008

^aRevised Abstract Thinking scale

^b1 = high, 2 = moderate, 3 = low

number than would be expected by chance. The last significant cell of the model depicts individuals who appear moderate in opinion leadership, low in abstract thinking, and high in product knowledge. Thus, it would appear that product knowledge may moderate the ability of the concrete thinker to act as an opinion leader.

In the full model, individuals who are either high or moderate in opinion leadership are also characterized by abstract thinking, as well as by high or moderate levels of product interest or product knowledge. In one cell, however, individuals who appear high in both opinion leadership and abstract thinking evidence low levels of product interest and product knowledge. On the basis of these indications, it appears evident that product knowledge and interest may exert a limited or minimal influence on the behaviors of the cognitively abstract opinion leaders within this sample.

An additional cell reflects an unexpected incidence of subjects characterized as cognitively concrete, moderately high opinion leaders. Notably, these individuals have high self-rated levels of product interest and knowledge. Quite possibly, product interest and product knowledge equip cognitively concrete individuals with the motivation or ability to serve as opinion leaders. This explanation suggests the possibility that the moderating variables may have a greater impact on the potential opinion leadership

activities of concrete individuals than on abstract ones.

The final significant cell in the model depicts individuals who did not act as opinion leaders, despite having high levels of abstract thinking, product knowledge and product interest. Similar to the results obtained for cognitive complexity, this finding suggests that personality may not be the sole determinant of opinion leadership behavior. Evidently, cognitively abstract individuals may be dissuaded from acting as opinion leaders when confronted by certain group situations, configuration, interpersonal reactions, etc.

Appendix L summarizes the loglinear findings using the original abstract thinking scale. For the main effects and saturated models, the loglinear results of the revised and original scales correspond in 12 of 16 significant cells (75%). Most of the remaining differences appear to be minor and involve mid-range levels of abstract thinking and opinion leadership.

As shown in Appendix L, the cell of significantly fewer concrete opinion leaders in the main effects model is not observed for the original abstract thinking scale. In the model depicting the moderating effects of product knowledge, three cells appear different from the loglinear findings of the revised abstract thinking scale. A significant cell is now observed for subjects ranked high in opinion leadership, abstract thinking, and product knowledge. In addition, a

cell of moderately ranked opinion leaders also appear high in abstract thinking and moderate in product knowledge. As predicted, the third significant group of the model reflects a lower number of concrete subjects ranked moderately high in opinion leadership and low in product knowledge than would be expected by chance. Overall, the relationship of the second hypothesis is further demonstrated by these additional significant findings.

As shown in Appendix L, the model depicting the moderating effects of product interest is also significant when the original abstract thinking scale is used. In this model, subjects ranked high in opinion leadership (high R_{total}) are again ranked high in abstract thinking (high $R_{abstract}$), regardless of the level of product interest. As suggested above, product interest appears to have little effect on the relationship of abstract thinking and opinion leadership. The third cell of this model also suggests that there are fewer concrete opinion leaders than would be expected by chance. Thus, this model also reiterates the pattern of relationships suggested by the second hypothesis.

In the saturated model, three cells of subjects ranked high in opinion leadership (high R_{total}) now appear significant: those with high levels of abstract thinking, moderate levels of product knowledge and low levels of product interest; those with moderate levels of abstract thinking and interest and high levels of product knowledge;

and those with moderate levels of abstract thinking, product knowledge and product interest. In general, these findings again reflect opinion leaders who are either high in abstract thinking (regardless of levels of product interest and knowledge), or moderate in abstract thinking (and therefore compensated by a high level of either product knowledge or product interest). In the last cell, subjects ranked mid-range in both opinion leadership and in abstract/concrete thinking reflect high levels of product knowledge and product interest. The possibility exists that either high or moderate levels of the moderating variables would again provide these individuals with an ability to act more adequately as opinion leaders within their groups.

As indicated by the second hypothesis, individuals who acted as opinion leaders in each of the 52 groups would also be expected to evidence higher levels of abstract thinking than would non-opinion leaders. Figure 4-1 includes the summary of classifications of opinion leaders by abstract thinking for the 52 discussion groups. Opinion leaders would be either correctly classified if ranked highest in abstract thinking, or misclassified if ranked lowest in abstract thinking. Non-leaders would be correctly classified if ranked lowest in abstract thinking, and misclassified if ranked highest in abstract thinking. The "hit" rates or classifications of group members are the same for both the revised and original abstract thinking scales.

For the 52 groups of subjects engaged in product related discussions, the number of individuals correctly identified as opinion leaders according to abstract thinking numbered 20 ($p < .0000$). These subjects, therefore, evidenced the highest ranked opinion leadership (R_{total}) scores and highest ranked abstract thinking ($R_{abstract}$) scores. Only six individuals constitute incorrectly classified leaders (highest ranked R_{total} and lowest ranked $R_{abstract}$ scores). Thus, in only six groups did cognitively concrete individuals act as the identified opinion leader.

A total of 19 individuals were correctly identified as nonleaders (lowest ranked R_{total} and $R_{abstract}$ scores). Thus, in 19 groups, individuals ranked lowest in opinion leadership were correspondingly ranked lowest in abstract thinking as well. The average abstract thinking scores of correct opinion leaders and correct non-leaders on the revised scales is 32.90 and 20.32 respectively, a significant difference ($t = 7.78$, $p < .001$). For the long scales, the averages are 66.10 and 52.05 for correct opinion leaders and non-leaders respectively (which are also significantly different with $t = 6.80$, $p < .001$). Of the nonleaders (lowest R_{total}), only five were ranked as abstract thinkers (high $R_{abstract}$).

In Table 4-25, the Spearman rank order correlations for abstract thinking and opinion leadership are all positive and significant, thus indicating support of the second

hypothesis.

Hypothesis 3 - Opinion Leadership & Ambiguity Tolerance

The third hypothesis proposes that ambiguity tolerance is associated with opinion leadership. An ability to integrate conflicting or discrepant information, consisting of both new product information and the opinions of others, would provide opinion leaders with an ability to explain how new products might be congruent with nonleaders' existing practices and opinions. Thus, the hypothesis suggests that

- H₃ Subjects with high levels of ambiguity tolerance will show a greater extent of opinion leadership, modified by product knowledge and product influence, than will subjects displaying lower levels of ambiguity tolerance.

The analysis of this hypothesis first considers the loglinear models using the revised ambiguity tolerance scale, as shown in Table 4-29, and then the loglinear models which are based on the original ambiguity tolerance scale, as shown in Appendix M. A significant relationship is indicated between opinion leadership and ambiguity tolerance (revised scale), as shown by the main effects model in Table 4-29. The addition of product knowledge, as a moderating variable, does not appear to influence the main effects to any appreciable extent. In addition, all of the models

Table 4-29
 Log Linear Models of Opinion Leadership and
 Ambiguity Tolerance^a, Product Knowledge, and Product
 Interest
 (n=243)

=====			
<u>Loglinear Models</u>	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Rambig	8	17.01	.0300
Rtotal*Rambig*Rknow	26	41.07	.0306
Rtotal*Rambig*Rinterest	26	28.09	.0620
Rtotal*Rambig*Rknow*Rinterest	63	77.77	.0977

Response Frequencies:^b

<u>obs</u>	<u>Rtotal</u>	<u>Rambig</u>	<u>Rknow</u>	<u>Chi Sq.</u>	<u>Prob.</u>
(Rtotal*Rambig)					
43	1	1		11.10	.0009
17	3	2		3.66	.0558
(Rtotal*Rambig*Rknow)					
20	1	1	2	16.89	.0001
15	1	3	1	6.30	.0121
14	2	2	2	4.73	.0296
1	2	3	3	4.53	.0334
2	3	2	2	3.95	.0470

^aRevised Ambiguity Tolerance Scale

^b1 = high, 2 = moderate, 3 = low

which include product interest appear to be insignificant at the .05 level.

In the first model ($R_{total} * R_{ambig}$), the average expected cell size is 27. Thus, the first significant cell shown in the table reflects a greater number of high ambiguity tolerant opinion leaders than would be expected by chance under conditions of independence. Non-leaders who display moderate levels of ambiguity tolerance also appear to be fewer in number than by chance expectation.

A significantly high number of ambiguity tolerant opinion leaders again appears evident in the second loglinear model. In addition, there are significantly fewer opinion leaders reflecting low levels of ambiguity tolerance and product knowledge than would be expected by chance. Similarly, the number of non-leaders exhibiting moderate ambiguity tolerance levels is also significantly fewer than would be expected by chance.

Notably, one cell consists of opinion leaders whose low levels of ambiguity tolerance appears to be offset by high product knowledge. These subjects suggest that product knowledge may moderate the behavior of individuals low in ambiguity tolerance rather than those who are ranked high on this construct.

Although the patterns of relationships depicted by the loglinear models for the revised and original ambiguity

tolerance scales appear similar, a few differences exist in the findings. Within the main effects model, as shown in Appendix M, a significant group of opinion leaders (high R_{total}) evidence a moderate level of ambiguity tolerance (original scale). With the inclusion of the moderating effects of product knowledge, two cells of significantly fewer ambiguity intolerant opinion leaders are now observable. Although all three levels of ambiguity tolerance appear with opinion leadership (high R_{total}), the high level of product knowledge for the ambiguity intolerant subjects again appears to offset the low levels of ambiguity tolerance in those subjects who appear to act as opinion leaders.

As shown in Appendix M, the saturated loglinear model, which appears significant for the original ambiguity tolerance scale, reveals a number of patterns which are consistent with predictions. The association between opinion leadership (high or moderate R_{total}) and ambiguity tolerance (high or moderate R_{ambig}), which is significant in 7 of the 10 cells of the model, also appears independent of the levels of product interest or product knowledge. In two cells of the model, high levels of product interest and knowledge occur for opinion leaders (high and moderate R_{total}) who appear to be low in ambiguity tolerance (low R_{ambig}). These cells suggest that the moderating variables may affect the opinion leadership activity of individuals

who reflect low levels of ambiguity tolerance. The one cell of nonleaders (low R_{total}), who appear high in ambiguity tolerance, product knowledge and product interest, suggest that other factors (e.g. group design, characteristics of other participants, etc.) may be involved in the ability of an individual to assume the role as opinion leader within a specific group.

The "hit rates" or classifications of opinion leaders for the 52 discussion groups, by ambiguity tolerance, is summarized in Figure 4-1. Similar to the treatment of other personality variables, the number of correctly classified opinion leaders constitutes subjects who were ranked highest in their respective groups in both opinion leadership (R_{total}) and ambiguity tolerance (R_{ambig}). Misclassified leaders represent subjects ranked highest in opinion leadership (R_{total}) and lowest in ambiguity tolerance (R_{ambig}). Correctly classified non-leaders reflect their lowest respective group rankings in terms of both opinion leadership (R_{total}) and ambiguity tolerance (R_{ambig}). Misclassified non-leaders have the lowest opinion leadership (R_{total}) rankings and highest ambiguity tolerance (R_{ambig}) rankings for their individual discussion groups. The classifications, or "hit" rates, are the same for both the revised and original ambiguity tolerance scales.

The opinion leaders for 11 of the 52 groups appeared to be correctly classified as high in ambiguity tolerance

($p < .0000$). However, 17 group opinion leaders reflected low levels of ambiguity tolerance, which was contrary to expectations. As shown by the loglinear analysis, product knowledge may be one factor contributing to the unexpected opinion leadership behavior of these subjects. Eleven non-leaders were correctly identified as having the lowest opinion leadership and lowest ambiguity tolerance rankings in their particular groups. The mean ambiguity tolerance scores on the revised scales are 51.82 and 35.91 respectively for the correct opinion leaders and correct non-leaders, thus reflecting a significant difference ($t = 6.47$, $p < .001$). This compares to mean scores of 194.91 and 154.55 on the original scales (where $t = 5.46$, $p > .001$). Thirteen high ambiguity tolerant subjects were also classified as nonleaders, which is contrary to expectations. Overall, the analysis of "hit" ratios for the 52 groups, as indicated in Figure 4-1, reveals that ambiguity tolerance does identify a significant number of opinion leaders. However, the number of misclassifications reported above suggests that the measured construct is evidently not a reliable indicator by itself and, therefore, should be used in conjunction with other factors, such as product knowledge.

The inability of ambiguity tolerance to discriminate accurately is also reflected by the Spearman rank order correlations in Table 4-25. In general, there is a lack of

association with the process measures, e.g. total comments and number of comments initiated. Although significance is indicated for the self-administered Childer's (1986) scale and number of comments received, the mixed results suggest that the relationship of ambiguity tolerance to opinion leadership is unclear.

It should be recalled that an examination of the dimensionality of Norton's (1975) measure of ambiguity tolerance revealed a 60-item, 21 factor scale which was poorly defined. Even with improvement, the revised instrument exhibited poor goodness of fit statistics and beta coefficients. It appears likely that such operational inadequacies affect the ability to discern relationships between ambiguity tolerance and opinion leadership.

Hypothesis 4 - Empathy

This dissertation views empathy as an interpersonal process which provides opinion leaders with a basis for understanding others and for engaging in effective interpersonal communications. The following hypothesis summarizes the suggested relationship:

- H₄ Subjects with a high degree of empathy will display higher levels of opinion leadership, as moderated by product knowledge and product interest, than will subjects with a low degree of empathy.

The loglinear results for the revised empathy scale are first discussed, and then compared to the loglinear findings for the original empathy scale. As shown in Table 4-30, all of the loglinear models specifying a relationship between empathy (revised scale) and opinion leadership appear significant. Since all of the models appear meaningful, the significant response frequencies of each model have been summarized in the table.

The first cell of all three models shows a concentration of individuals who appear high both in opinion leadership and in empathy. No other cells appear significant in the first model.

Three of the four cells in the second model reflect patterns which are in accord with predictions: a group of subjects with high levels of opinion leadership, empathy and product knowledge; another group, ranked mid-range in opinion leadership, and high in both empathy and product knowledge; and a third group, a cell of predictably fewer individuals, exhibiting low levels of empathy and product knowledge, and moderate levels of opinion leadership. Contrary to expectations, one cell in the model appears to be comprised of opinion leaders (high r_{total}) who reflected low empathy and moderate knowledge rankings.

In most of the cells in the third model, opinion leadership appears coincident with high or moderate rankings of empathy and product interest. Results in two cells,

Table 4-30
Log Linear Models of Opinion Leadership and
Empathy^a, Product Knowledge, and Product Interest
(n=243)

=====						
<u>Loglinear Models</u>				<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Remp				8	19.46	.0166
Rtotal*Remp*Rknow				26	43.43	.0174
Rtotal*Remp*Rinterest				26	56.30	.0005
Rtotal*Remp*Rknow*Rinterest				63	96.47	.0043

<u>Response Frequencies:</u> ^b						
<u>Obs</u>	<u>Rtotal</u>	<u>Remp</u>	<u>Rknow</u>	<u>Rinterest</u>	<u>Chi Square</u>	<u>Prob.</u>
(Rtotal*Remp)						
42	1	1			19.46	.0126
(Rtotal*Remp*Rknow)						
21	1	1	1		18.57	.0001
10	1	3	2		4.27	.0388
14	2	1	1		4.27	.0388
2	2	3	3		4.15	.0417
(Rtotal*Remp*Rinterest)						
19	1	1		1	26.24	.0001
15	1	1		2	6.82	.0090
15	1	2		2	6.82	.0090
15	1	3		3	6.82	.0090
16	2	1		2	8.66	.0033
16	3	1		1	8.66	.0033
1	3	3		2	4.41	.0358
(Rtotal*Remp*Rknow*Rinterest)						
13	1	1	1	1	26.24	.0001
7	1	1	1	2	4.86	.0275
7	1	3	2	3	4.86	.0275
10	2	1	1	1	13.83	.0002
9	2	1	2	2	10.42	.0012
7	2	2	1	1	4.86	.0275
12	3	1	1	1	21.77	.0001

^aRevised empathy scale

^b1 = high, 2 = moderate, 3 = low

however, appear contrary to expectations. In one, opinion leaders exhibit low levels of empathy and product interest. In the other, non-leaders reflect high levels of empathy and interest. These findings suggest that empathy alone may not perform as a reliable indicator, and that other factors, such as group composition, group harmony, etc., should also be considered. However, these situational factors were not investigated and, therefore, represent a limitation in the present study.

The fourth model, which interjects the effects of both product interest and product knowledge, shows the predicted pattern of relationship between opinion leadership and empathy in 5 of the 7 significant cells. Contrary to predictions, one cell of opinion leaders (high R_{total}) appear low in empathy (low R_{emp}), low in product interest (low $R_{interest}$) and moderate in product knowledge (R_{know}). In addition, a group of high empathy - and high product knowledge, high product interest - nonleaders again suggests that empathy alone in such cases may not be a reliable indicant of opinion leadership, and that the moderating influences of other factors (including group configuration, integration, etc.) may also be involved.

Appendix N presents the results of the loglinear analysis using the original empathy scale. Fourteen of the nineteen significant cells, or 74 percent, reflect the same findings for both the revised and original empathy scales.

Overall, the results of the CATMOD procedures for both empathy versions yielded similar results. In both cases, the four loglinear models were all significant.

As indicated in Appendix N, the significant cell in the main effects model again shows a relationship between opinion leadership (high R_{total}) and empathy (high R_{emp}).

The second model, which includes the effects of product knowledge, again reiterates the findings of the loglinear model for the revised scale. In this case, the second cell of subjects ranked high in opinion leadership (high R_{total}), and moderate in both empathy and product knowledge, appears significant for the original empathy scale. Similar to the findings of the revised empathy scale, one cell appears contrary to predictions, and reflects opinion leaders (high R_{total}) who are low in empathy (low R_{emp}) and moderate in product knowledge (R_{know}).

The findings of the third model, which includes the effects of product interest, essentially duplicates the findings noted above for the revised scale. Thus, the predicted relationship between opinion leadership and empathy appears in all but two of the significant cells. In one, opinion leaders (high R_{total}) appear low in both empathy and in product interest. In the other, non-leaders (low R_{total}) are high in empathy and product interest. In view of these findings, empathy does not appear to be a reliable indicator of opinion leadership.

As indicated in Appendix N, most of the cells of the fourth model reflects the predicted relationship between opinion leadership and empathy. Unlike the saturated loglinear model of the revised scale, the cell of non-empathic opinion leaders was not significant for the original empathy scale. As discussed above for the revised scale, however, one cell again comprises non-leaders (low R_{total}) who appear high in empathy (high R_{emp}), high in product knowledge (high R_{know}), and high in product interest (high $R_{interest}$). This cell again suggests that other factors, such as group configuration, initial feelings, etc. may determine the role individuals may choose within the group.

The ability of empathy to discriminate between opinion leaders and non-leaders can be further determined by the classifications of opinion leaders for the 52 discussion groups. In this case, correctly classified opinion leaders are deemed to be individuals ranked highest in opinion leadership (R_{total}), and highest in ranked empathy (R_{emp}) scores in their groups. Incorrect opinion leaders (highest ranked R_{total}) denote individuals with the lowest ranked empathy (R_{emp}) scores. Correct non-leaders reflect the lowest ranked opinion leadership (R_{total}) scores as well as the lowest empathy (R_{emp}) scores. Individuals with the lowest ranked opinion leadership (R_{total}) scores and highest ranked empathy (R_{emp}) scores constitute incorrectly

classified non-leaders. The classifications, or "hit" rates, for the 52 discussion groups are the same for the revised and original empathy scales.

In 13 of the groups, the opinion leaders (highest ranked R_{total} scores) were correctly classified by the highest ranked empathy (R_{emp}) scores ($p < .0000$). In 10 other groups, however, the opinion leaders reflected the lowest ranked empathy scores, contrary to expectations.

Eleven non-leaders were correctly identified by the lowest ranked empathy scores in their respective groups. For the correctly classified opinion leaders and non-leaders, the mean scores on the revised empathy scales are 74.62 and 55.64 respectively, indicative of a significant difference ($t = 7.48$, $p < .001$). For the original empathy scale, the average scores are 102.62 and 78.82 respectively, which are also significantly different ($t = 7.33$, $p < .001$). Contrary to expectations, thirteen non-leaders (lowest ranked R_{total}) exhibited the highest ranked empathy scores within their respective groups.

An analysis of the classifications by the subscales in the Davis (1979) empathy measure also provides a comparison of opinion leadership predictions associated with emotional empathy versus cognitive empathy. For the emotional empathy subscale, the total numbers of correct opinion leaders and misclassified leaders are 15 and 14 respectively, compared with 15 and 10 for the cognitive subscale. The numbers of

correctly classified non-leaders and misclassified non-leaders are 11 and 14 for the emotional subscale versus 17 and 8 for the cognitive subscale. Thus, the cognitive empathy subscale appeared to perform somewhat better in terms of recording a smaller number of misclassifications.

Overall, a significant number of opinion leaders were predicted by the empathy classifications. However, relatively large numbers of misclassifications would seem to indicate that the construct is not dependable as a single indicator and must, therefore, be used in conjunction with other factors, including situational and group influences, product knowledge, etc.

As indicated in Table 4-25, the Spearman rank order correlations between the empathy and opinion leadership measures are all non-significant. It should be recalled that an examination of the adequacy of the Davis (1979) scale revealed serious dimensional weaknesses which could not be corrected fully by the elimination of questionable scale items. Consequently, the operational problems associated with the scale may have contributed to the poor results concerning the hypothesized relationship between empathy and opinion leadership.

Hypothesis Five - Opinion Leadership and Expressiveness

One of the propositions of the current study is that

expressiveness, which encompasses the ability to draw upon a range of communication styles, would be associated with the opinion leader's role of conveying product information in a convincing and persuasive manner. Friedman, Prince, Riggio, and DiMatteo (1980), suggest that flexibility enhances the speaker's proficiency in transmitting emotion which they view as "an essential part of effective communication." Accordingly, the fifth hypothesis has proposed the following relationship:

- H₅ Subjects with higher levels of expressiveness will display a greater degree of opinion leadership, moderated by product knowledge and product interest, than will subjects with lower levels of expressiveness.

The loglinear models for the revised expressiveness scale will be considered first, followed by a comparison of loglinear models developed from the original expressiveness scale. As shown in Table 4-31, all of the loglinear models specifying a relationship between expressiveness (revised scale) and opinion leadership appear significant. Since all of the models appear meaningful, the significant response frequencies of each model have been summarized in the table.

In the first model, the cell of expressive opinion leaders is significantly higher than that expected by chance, while the cells of expressive nonleaders, and non-expressive leaders, are significantly lower than chance

Table 4-31

Log Linear Models of Opinion Leadership and
Expressiveness^a, Product Knowledge, and Product Interest
(n=243)

<u>Loglinear Models</u>	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Ract	8	29.84	.0002
Rtotal*Ract*Rknow	26	53.07	.0013
Rtotal*Ract*Rinterest	26	47.72	.0058
Rtotal*Ract*Rknow*Rinterest	67	104.97	.0021

Response Frequencies:^b

<u>Obs</u>	<u>Rtotal</u>	<u>Remp</u>	<u>Rknow</u>	<u>Rint.</u>	<u>Chi Square</u>	<u>Prob.</u>
<u>(Rtotal*Ract)</u>						
49	1	1			19.46	.0126
16	1	3			4.40	.0446
16	3	1			4.40	.0446
<u>(Rtotal*Ract*Rknow)</u>						
21	1	1	1		19.38	.0001
14	1	1	2		4.61	.0318
14	1	1	3		4.61	.0318
15	1	2	2		6.16	.0131
15	2	1	1		6.16	.0131
15	2	2	2		6.16	.0131
<u>(Rtotal*Ract*Rinterest)</u>						
22	1	1		1	21.62	.0001
14	1	1		2	4.40	.0359
14	2	1		1	4.40	.0359
14	2	2		2	4.40	.0359
2	3	1		2	4.10	.0430
<u>(Rtotal*Ract*Rknow*Rinterest)</u>						
15	1	1	1	1	39.54	.0001
8	1	1	3	3	8.64	.0034
7	1	2	2	2	5.80	.0160
10	2	1	1	1	15.67	.0001
9	2	3	1	1	11.94	.0005
7	3	1	1	1	5.80	.0160
7	3	3	1	1	5.80	.0160

^aRevised ACT scale

^b1 = high, 2 = moderate, 3 = low

expectancies. These cells support the direction of the hypothesized association.

All of the cells in the 2nd model are significantly higher than expected for random events. However, there appears to be no clear pattern of moderating effects for product knowledge. All three levels of product knowledge occur with expressive opinion leaders. In one cell, a low level of product knowledge appears coincident with a high level of opinion leadership (R_{total}) and high level of expressiveness (R_{act}), thus suggestive of little influence as a moderating variable.

In the third model, the opinion leadership, expressiveness relationship is reiterated. In line with predictions, one cell of expressive nonleaders is significantly smaller than expected by chance. In addition, there does not seem to be any consistent moderating effect for product interest.

In the fourth, fully saturated model, expressiveness appears associated with the occurrence of opinion leadership. In the one cell of moderate opinion leadership, a low degree of expressiveness appears to be counteracted by high levels of product knowledge and product interest. In contrast, expressive opinion leaders, evidencing low levels of product knowledge and product interest, suggest a lack of moderating influence for these variables for highly expressive individuals. In effect, the moderating influence

of product knowledge and product interest may be greater for non-expressive individuals.

One cell of the model reflects non-leaders who appear high in levels of expressiveness, product knowledge and product interest, contrary to predictions. In view of the coincidence of opinion leadership and expressiveness in other cells, this finding suggests that other factors, quite possibly situational or group related, may also be determinative of the subjects' likelihood to act in a specific setting. The last significant cell in the model, composed of non-expressive, non-leaders, exceeds the random expectation for the cell, and thus supports the direction of predictions.

The loglinear results of the original ACT scale, shown in Appendix O, largely reiterate the loglinear findings of the revised ACT scale, and the hypothesized relationship advanced in hypothesis five.

For both versions of the scale, 16 of 22 significant cells are the same (73%). The remaining differences appear minor. In the main effects model for the original scale, a cell of moderately expressive opinion leaders (high R_{total}) now appears significant. The same pattern also occurs in the product knowledge and product interest models, as well as in the saturated model, and appears complemented by either a high or moderate amounts of product knowledge or product interest. As anticipated, a cell of expressive

(high Ract) non-opinion leaders, exhibiting a low amount of product interest, appears significantly smaller in size (in the product interest model) than would be predicted by chance.

In order to ascertain if there were any significant differences in expressiveness for opinion leaders versus non-leaders, subjects with the highest and lowest ranked opinion leadership (Rtotal) scores, and highest and lowest ranked expressiveness (Ract) scores were compared for each of the 52 discussion groups. Correctly classified opinion leaders (highest ranked Rtotal scores) would reflect the highest ranked (Ract) expressiveness scores in their group. Incorrect opinion leaders (lowest ranked Rtotal scores) would reflect the lowest ranked (Ract) expressiveness scores. In each group, the correct non-leader (lowest Rtotal scores) would also be the individual with the lowest ranked (Ract) expressiveness score. The incorrect non-leader (highest ranked Rtotal) would be the individual with the highest ranked (Ract) expressiveness score in the group. The classifications, or "hit" rates, in the 52 discussion groups is the same for the revised and original versions of the expressiveness scale.

A total of 13 opinion leaders (highest ranked Rtotal scores) were correctly classified, and thus displayed the highest ranked (Ract) expressiveness scores in their respective groups ($p < .0000$). Eight opinion leaders (highest

ranked R_{total} scores) had the lowest ranked (Ract) expressiveness scores, contrary to predictions.

Twenty-one non-leaders (lowest ranked R_{total} scores) were correctly classified as the lowest ranked (Ract) expressiveness scores. Thus, for 21 groups, the subjects with the lowest number of total comments were also the lowest in terms of expressiveness. The means of the expressive opinion leaders and (non-expressive) low Ract non-leaders were 54.15 and 30.62 respectively, which reflected a significant difference ($t=9.37$, $p<.001$). Of the non-leaders (lowest ranked R_{total} scores), only nine individuals were ranked highest in (Ract) expressiveness. As noted above, other factors, including group and situational influences, may affect the potential opinion leadership behavior of expressive subjects.

Overall, a significant number of opinion leaders were predicted by the expressiveness classifications, and the numbers of misclassifications were relatively small. Additional support for the hypothesis is also indicated by the positive correlations between the scores on the ACT scale and the measures of opinion leadership.

Methodological Concerns

Aside from some concern about the adequacy of measurement scales for empathy and ambiguity tolerance, the

above discussion has not considered a number of methodological issues related to the design used in the study.

It will be recalled that group discussions concerned 10 product assortments, and that the groups were instructed to discuss each product grouping in order to reach a consensus of opinion. The purpose of the exercise was to generate product related conversations, and to see which individuals emerged as opinion leader. The latter individual was operationally defined by the process measure as the group leader. One limitation of this design is that the individual who emerged as opinion leader for the initial set of products often continued to act in the role of opinion leader for the balance of the discussions. This problem obscures the differences between product categories and introduces a bias towards a general opinion leader (as opposed to a product specific opinion leader). An alternative design would be to change group memberships for each product decision, and then observe if the same individual emerged as group leader for various product categories. Since a subject's cognitive complexity ranking within the group served as the basis of prediction of opinion leadership, this change would necessitate a careful monitoring of group rankings in order to maintain an individual's relative position within each new group.

Another problem concerns the mix of males and females

within each group. In viewing some of the taped group discussions, the coders noted that in a few male dominated groups, comments by female members appeared to be ignored by the male group members. It would seem likely that opinion leaders might have more recognition with members of their own sex. Thus, it may be desirable to form separate female groups and male groups in order to control for this possibility.

In addition, the sex of the subjects was not considered in the assignment of subjects to discussion groups. Although assignments were random, males outnumbered females in 24 of the discussion groups, and females outnumbered males in 18 of the groups. In total, 33 males (25% of total males) and 19 females (17% of total females) were ranked highest in total comments and were, therefore, identified as the opinion leaders in their respective groups.

The higher average male scores on the structural (Bieri) measure of cognitive complexity may also have introduced a male bias in the design of the groups. The number of individuals assigned to the groups on the basis of high cognitive complexity levels (e.g the predicted opinion leaders) included 34 male subjects (26% of males) and 18 female subjects (16% of females). Thus, the groups appeared somewhat skewed towards selection of male subjects rather than female ones. Consequently, it would appear advisable for groups to be either stratified by sex, or formed as

separate male and female groups, in order to control for sex related differences. Separate male and female groups would also control for product related preferences associated with gender.

An additional problem concerns the use of unequal sized discussion groups. In spite of a research design which called for equal sized groups, subjects often missed their scheduled group sessions, appearing later to join other groups. The latter practice was permitted in order to ensure an adequate sample size. However, the result was the creation of groups of unequal size, as well as a change in the distribution of cognitive complexity scores within some groups. A uniform group size would obviate the use of arbitrary coding procedures for each group size category. In retrospect, it would appear advisable to maintain the use of a uniform group size throughout the study.

The use of a 16-page questionnaire, necessitated by the size of the original scales, may also have created a problem of subject fatigue and boredom. The length of the questionnaire prohibits the use of multiple measures which would permit an examination of more sophisticated causal (Lisrel and Mllsa) models. One remedy is to administer the questionnaire in segments, over a longer span of time. Another is to establish the validity and reliability of the shortened scales with a holdout group of subjects, and then to test the hypotheses with the remaining sample.

Summary

This chapter has examined the relationship of opinion leadership to cognitive complexity and four related personality variables. Opinion leadership has been assessed by a process measure consisting of the total comments initiated and received by an individual during a product-related group discussion. The construct validity of the process measure has been demonstrated by convergent, discriminant and nomological validity. Three of the personality variables, e.g. cognitive complexity, abstract thinking, and expressiveness, were highly discriminating in terms of predicting the identity of opinion leaders and nonleaders.

The first hypothesis, which proposed that opinion leaders would be more cognitively complex than nonleaders, was supported. A significant number of cognitively complex subjects acted as opinion leaders, regardless of their levels of product knowledge and interest. In contrast, product knowledge and product interest appeared to influence the behavior of those cognitively simple subjects who were able to act as opinion leaders.

The second hypothesis, which suggested a positive association between opinion leadership and abstract thinking, was also supported. Product knowledge and product interest had little impact on cognitively abstract

individuals. However, the communication activities of cognitively concrete subjects, who acted as opinion leaders, appeared coincident with high levels of product knowledge and interest.

Although a significant number of opinion leaders were identified by loglinear analysis and group classifications, a large number of misclassifications were also recorded for ambiguity tolerance, and empathy (with respect to the third and fourth hypotheses respectively). To some extent, it would appear that the lack of dimensional precision for the operational measures of ambiguity tolerance and empathy may have contributed to these inconsistent results.

The relationship of opinion leadership and expressiveness, as set forth in the fifth hypothesis, appears to be supported by the Spearman rank order correlations, group classifications, and loglinear analysis. Product knowledge and product interest also appear to moderate the behavior of non-expressive subjects, apparently allowing them to act as opinion leaders when they perceive themselves to be highly interested or well-informed about the products being discussed.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This chapter will begin with a summary of the major findings discussed in Chapter Four. Following this summary a number of conclusions will be developed, both from the perspective of the theory developed and practical marketing application. Finally a number of possible research directions will be suggested, for future theory development and testing, as well as to assist in marketing practice.

Summary

This dissertation has attempted to explain a part of the communication process of opinion leadership by utilizing a framework of personal construct psychology.

The major goal of this dissertation was to develop and test a theory of opinion leadership in product related conversations which would provide both explanation and prediction of that communications process. Marketing scholars have always recognized that certain individuals like to communicate their consumption experiences to other consumers. Much of the research in marketing has attempted to identify the individual characteristics which predispose

an individual consumer towards engaging in the exchange of product information.

It is interesting to note that Allport (1937) has argued that certain characteristics, which he terms cardinal traits, govern human personality and behavior. He argues that among the most important of these cardinal traits is the individual's cognitive structure.

Cognitive complexity is one indicator of cognitive structure that has long been associated with differences in communication behavior. Following the work of Kelly (1955) and Bierl (1955), it is important to understand that cognitive complexity reflects a personality dimension which involves the pattern of perceiving and interacting with other individuals within the external environment.

Since cognitive complexity has been associated with communication behavior and the ability to adapt transmissions on the basis of listener needs, a number of other personality variables should also relate to communication behavior of opinion leaders. These include abstract thinking, empathy, ambiguity tolerance, and expressiveness.

Accordingly, five hypotheses were developed to test these five constructs as they relate to opinion leadership communication activity. In addition, it was thought that

two moderating variables, product interest and product knowledge, would moderate the above relationships.

Summary of Methodology and Design

The research design that was developed here involves a content analysis of product related conversations to develop a process measure of the dependent variable. Each discussion group of student subjects included one individual who was cognitively complex (low Bieri grid score). The remaining students were randomly assigned to the groups. It was predicted that the cognitively complex individuals would emerge as opinion leaders by initiating and receiving the most comments in the group.

The balance of the variables were measured via self-report scales collected one month prior to the group discussion sessions. Following the product discussions, sociometric measures of opinion leadership were obtained from the subjects.

Summary of Scale Analysis

All of the measures were rigorously analyzed using principal components factor analysis, confirmatory factor analysis, coefficient alpha analysis and coefficient beta analysis. While some of the scales are fairly recent

(Davis, 1979; Childers, 1986; Friedman, Prince, Riggio, & DiMatteo, 1980), only one of them (e.g. Davis' Empathy scale) had been partially examined previously with respect to their underlying dimensionality.

Most of the scales have been constructed on the basis of acceptable values of internal consistency as measured by Cronbach's coefficient alpha. Inasmuch as most of the instruments are multifactor scales, coefficient alpha has limited meaning. Consequently, John and Roedder's (1981) coefficient beta was used along with confirmatory factor analysis in order to assess dimensional stability.

As revealed by these efforts, the scales for empathy and ambiguity tolerance had weaknesses which affected the analysis undertaken to test the theory. This must be construed as a limitation of this study.

Since a new measure of opinion leadership was developed for this study, tests of construct validity were undertaken. The process measure was compared to two methodologically dissimilar measures of opinion leadership, Childers (1986) self-report scale and a sociometric measure, by means of convergent, discriminant, and nomological validity. The results indicate that the process measure is preferred to the self-report measure. It appears evident that the existing measures may be addressing different aspects of opinion leadership.

Summary of Hypotheses Testing

Cognitive complexity was found to be related to opinion leadership communication behavior. It appears to discriminate very well between opinion leaders and non-leaders. Product knowledge and product interest had little impact on the cognitively complex individuals who acted as opinion leaders. In contrast, the moderating variables appeared to influence the cognitively simple leaders.

In contrast to the findings in this study, it should be noted that a number of previous empirical studies have reported finding a relationship between opinion leadership and product knowledge and/or interest (Montgomery & Silk, 1969, 1971; Myers & Robertson, 1972; Jacoby & Hoyer, 1979). In each case, these studies only examined the degree of correlation among these dimensions. Thus, they did not investigate the existence of differences between the amount of product knowledge and product interest for opinion leaders versus non-leaders. Notably, Jacoby & Hoyer (1979) reported a significant correlation for opinion leadership and product knowledge, but not for opinion leadership and product interest.

The finding in this dissertation is consistent with Richmond's (1977) investigation of the differences in the amounts of information processed by opinion leaders versus

non-leaders; and with Bieri & Blacker's (1956) study of the differences in information generated about unfamiliar objects by cognitively complex individuals versus cognitively simple individuals. Within marketing, it is also consistent with Tan's (1979) study which indicated an insignificant correlation between cognitive complexity, product awareness, product use, and product knowledge; and with Durand's (1979) study in which cognitively complex subjects appeared better able to distinguish between brands regardless of their level of affect. In these cases, it has been demonstrated that opinion leaders and cognitively complex subjects need not have more information than other individuals. Rather, they obtain more knowledge since they are able to process information more fully than others.

Nevertheless, it is possible that the methodology used in this study may also have affected the detection of a relationship between opinion leadership, product knowledge and product interest. The operationalization of the latter two measures consisted of summated scores across ten product areas. These aggregated measures may have obscured correlations at the individual product level.

Abstract thinking, the second independent variable in the study, was also found to be a reliable discriminator among opinion leaders and non-leaders. Similar to the above finding, no moderating effects were apparent for abstract opinion leaders. Instead, concrete opinion leaders appeared

able to assume an opinion leadership role when they had high levels of product knowledge and interest.

The findings for ambiguity tolerance appeared inconsistent, possibly because of measurement difficulties with the 60 item scale for this construct. Despite the fact that the variable did identify a number of opinion leaders, a large number of misclassifications, and a lack of correlation, revealed that this characteristic was unreliable. Nevertheless, we again observed the impact of the moderating variables on the low ambiguity tolerant subjects.

The findings for empathy are essentially similar to that of ambiguity tolerance. The apparent problem of measurement with empathy presumably involves an inability to integrate the two divergent (cognitive and emotional) conceptualizations of the construct. No general pattern emerged with respect to the moderating variables.

The conceptualization of expressiveness, by Freidman, Prince, Riggio, and DiMatteo (1980), which encompassed the ability to transmit a range of communications, was an excellent predictor of opinion leadership. The moderating variables affected the opinion leadership role of less expressive subjects.

In summary, hypotheses 1 (cognitive complexity), 2 (abstract thinking) and 5 (expressiveness) were supported. Hypotheses 3 (ambiguity tolerance) and 4 (empathy) were not

supported and produced inconsistent results, possibly emanating from a poor operationalization of the constructs, or incorrect theoretical conceptualization.

Caveats and Limitations

Every study has limitations. These have been addressed throughout this presentation. In general, the limitations stem from either faulty conceptualization, the methodology employed, i.e. the group design, or the measures used. As always, in the interest of parsimony, only a limited number of hypotheses could be tested from a broad conceptual base. The researcher is aware of inadvertent model misspecifications involving variables which have not been included or tested, but which may affect the processes studied. Although a conceptual framework has been developed, a full test could not be conducted due to sample size, e.g. cell size limitations. The group design necessitated the use of non parametric procedures, including loglinear analysis, which utilize ordinal rather than interval data.

Conclusions and Implications

A number of conclusions and implications for both further theory development and practice are apparent from

this study. These determinations will be outlined in the appropriate sections below.

Practitioner Conclusions and Implications

On the basis of this research a number of points of practical import are apparent. One of the objectives of this dissertation was to reiterate the importance of personality in marketing research provided one has a good theoretical base. Marketing researchers in particular can achieve a better understanding of the consumer if they obtain an understanding of the consumers' predispositions and personality dimensions. It has been shown that cognitive complexity can act as a cardinal trait which impacts on a variety of consumer behaviors, including communications. Thus, cognitive complexity may help us understand the consumer's comprehension and acceptance of advertising messages and information, integration of new product information, and acceptance of personal selling messages. For example, by employing well-known spokesmen, advertising directed at cognitively simple people might be more effective, since these individuals appear more receptive to the views of respected, significant others.

One specific area of application for marketing practitioners is the area of focus group study. To a certain extent, the discussion groups utilized in this study

could be construed to be non-moderated focus groups. By having a knowledge of the cognitive complexity and other personality scores of the individuals within the focus group, the moderator has an enhanced ability to understand and control the reactions and behaviors of the focus group members. For example, if the psychological characteristics of focus group members are known beforehand, the moderator may be able to identify those individuals who are most likely to act as opinion leaders. With this knowledge, the moderator may be able to facilitate group discussion by accelerating the determination of initial social roles within the group. In addition, the moderator may wish to attend to individuals who appear least likely to participate, and thus obtain information which might otherwise be missed or ignored because of the behavior of more dominant group members. Since an open-mindedness about new ideas and products appears related to cognitively complex thinking, the moderator may also be able to anticipate the degree of acceptance or rejection of innovative topics. A moderator may anticipate more rejection of new products in a focus group composed largely of cognitively simple individuals. The ability to predict differences in such reactions are essential in obtaining an accurate indication of consumer reactions.

Theoretical Conclusions and Implications

The theoretical development of opinion leadership in this dissertation suggests extensions into three basic theoretical areas. The first of these is to examine further the relationship of cognitive structure as it relates to opinion leadership. The current research has only dealt with cognitive complexity which is one component of cognitive structure. Additional research should focus on the linkages among constructs, or cognitive integration, which may also serve to differentiate opinion leaders from non-leaders. In addition, the amount of cognitive discrimination, or how well an individual perceives object differences, may also impact on opinion leadership behavior.

A second related research thrust would be to examine other cardinal personality traits as defined by Allport (1937) for their possible relationship with opinion leadership predispositions. Although Allport has suggested over 10 possible traits, little attention has been paid to the effect of cardinal traits within the marketing literature. The present study constitutes what is believed to be an initial attempt in this regard.

The third theoretical area of interest is the relationship between opinion leadership communication behavior and the impact of that behavior on other consumers. While sales levels represent some indication of opinion

leadership impact (Mancuso, 1969), at a higher level of abstraction one must concentrate on changes in attitude and intentions directly attributable to the interactions of opinion leaders and non-leaders. There is a growing literature on persuasive communication that needs to be integrated into communication studies of opinion leadership (Cialdini, 1984, 1985). Such studies would constitute what Katz (1958) has termed, "impact research."

For example, Cialdini (1984, 1985) has categorized and defined several basic communication strategies which individuals may use to obtain compliance from others (e.g. reciprocity, authority, scarcity, social validation, and consistency). None of these strategies appear to have been investigated previously with respect to the differences in communication behaviors of opinion leaders and non-leaders.

Shelby (1986) has also surveyed a number of theoretical explanations of persuasion which appear pertinent to the communication differences of opinion leaders versus non-leaders. Using Shelby's framework, the opinion leaders' communication can be investigated to determine whether there is a greater use of benefits to motivate the non-leaders (motive-goal theory); whether the opinion leader's communication reflects a response-change or response-reinforcement design (conditioning theory); or whether the opinion leader's communications elicit concessions to requests which appear tangential to the main issues at hand

(social exchange theory), etc. Although none of these approaches to persuasion appears to have been studied previously within the context of opinion leadership, each would appear to provide fertile ground for future opinion leadership study.

Recommendations for Future Research

There are a number of research streams that have been suggested in previous sections of this dissertation. It is evident that one important area that must be addressed is measurement. The existing self-report measures of opinion leadership do not appear to reflect adequate levels of construct validity. Although there are other methods of identifying opinion leaders, the self-report measure is the most frequently used. One of the problems inherent in the self-report measure is that it does not appear to distinguish between communication, social status and influence. Despite the overlap among these concepts, it is important to develop a measure that can differentiate among them for purposes of conceptual clarity.

The process measure of opinion leadership, as developed in this dissertation, would appear to offer substantial advantages in that it can be an unobtrusive measure which may be desirable in some research contexts. Additional

refinements, and additional exploration of this measure, need to be undertaken.

Other measures used in this study need substantial attention, both conceptually and operationally. These include empathy, and ambiguity tolerance. The reliance on inadequate measures places a severe encumbrance on the development and testing of behavioral theory in marketing contexts.

As noted previously, there are a number of theoretical directions for future research. At least three separate areas of research can be developed which include the relationship of opinion leadership with other dimensions of cognitive structure, with other cardinal personality traits, and with influence and communications.

The focus of this research on interpersonal communications would also seem applicable to a number of areas extending from opinion leadership. Cognitive complexity may be a personality trait which could be associated with effective salespeople. Cognitive complexity might also be a desirable characteristic to look for in advertising copy writers and direct marketing practitioners who may need to adapt communication approaches to different target markets. This research could also be directed to communication effects within an organizational buying environment. Cognitive complexity may also be important in terms of understanding how consumers perceive or evaluate

intangible service attributes and benefits. Another area where cognitive complexity could be applicable would be in the marketing of political candidates. The above suggestions may also be applicable to the other significant variables in the study, e.g. abstract thinking and expressiveness.

There are many other potential avenues involving cognitive complexity that could be explored, e.g. segmentation (whether segment memberships are cognitively complex or cognitively simple, and whether they can be meaningfully profiled by this construct); positioning (whether cognitive structures affect reactions to different selling propositions and advertising messages); and psychometrics (whether answers to self-report scales also reflect differences in cognitive structure).

It is hoped that this dissertation will encourage others to examine cognitive personality theory more thoroughly, both in opinion leadership and in other areas of consumer behavior as well, in order to develop further theoretical frameworks which may predict and explain consumer communication behavior, purchasing, and consumption phenomena.

Appendix A (Bieri Repertory Grid)

Think of eight different people you know who fit the following descriptions.
(Please note their names or initials for future reference)

<u>Description</u>	<u>Name/Initials</u>
(1) Closest friend of the same sex as yourself	_____
(2) Person of the opposite sex you find hard to like	_____
(3) A friend you admire of the same sex as yourself	_____
(4) Person of the same sex as yourself with whom you feel most uncomfortable	_____
(5) Closest friend of the opposite sex	_____
(6) Person of the same sex as yourself whom you find hard to like	_____
(7) A friend you admire of the opposite sex	_____
(8) Person of the opposite sex with whom you feel most uncomfortable	_____

Please rate each of these 8 persons on the characteristics listed below. Under the person's number, simply indicate the scale rating for each characteristic. For example, you might rate person 1 (closest friend of same sex) on the first characteristic (Outgoing Shy) as "2", e.g. rather shy. On the second characteristic, person 1 might also be rated as fairly well adjusted or "5" for that characteristic. You would rate each of the 8 persons on all of the characteristics using the scale (.) for each characteristic.

<u>Characteristic</u>	<u>Person</u>							
	1	2	3	4	5	6	7	8
Outgoing Shy								
Well Adjusted Mal Adjusted								
Decisive Indecisive								
Friendly Unfriendly								
Interested in others Uninterested in others								
Cheerful Ill-humored								
Dominant Submissive								
Considerate Inconsiderate								

Appendix B
(Peel 1975 Abstract Thinking Scale)

Each of the following groups consists of four sentences. In each group, the four sentences are concerned with the single term which is printed in **Bold** letters. All of the sentences are factually correct. Read through each group of sentences and check the one out of the four you prefer as having the most significance for you.

1. ____ The **city** is an administrative concept going back to Roman times.
 ____ Buffalo is a **city**.
 ____ A **city** is a difficult place for parking cars.
 ____ A **city** is a unit of local government.
2. ____ We study and sometimes write a **poem** in our English lessons.
 ____ A **poem**, is an essay and a story are examples of creative writing.
 ____ A Shakespearean sonnet is a **poem**.
 ____ The **poem** is a literary form.
3. ____ **Playing** is a universal activity among higher animals.
 ____ **Playing** is frequently discussed in studies of children.
 ____ **Playing** is tennis and football.
 ____ **Playing** is popular with young people.
4. ____ The **highway** commends itself to many as an idea for improving auto travel.
 ____ The **highway** is a civil engineering construction.
 ____ The **highway** system including the Major Deegan and the Long Island Expressway.
 ____ There is a **highway** near.
5. ____ **Justice** was done when the train robbers were convicted.
 ____ **Justice** is the basic principle underlying the continued existence of society.
 ____ **Justice** is the punishment of a criminal.
 ____ **Justice** is a human practice making it possible for people to live together more securely.

6. _____ The idea of a **helper** is a human ideal which at least as old as human written records.
_____ The Good Samaritan was a **helper** of an injured traveller.
_____ A **helper** is an honest man and a kindly individual.
_____ A **helper** is needed for caring for the needs of old people.
7. _____ **Adolescent** is a term used in discussion about the needs and capabilities of young people.
_____ An **Adolescent** is a growing person.
_____ A teenage girl is an **adolescent**.
_____ The **adolescent** is often said to be an emotionally sensitive person.
8. _____ A **creature without a backbone** is a living organism.
_____ Many a **creature without a backbone** lives in water.
_____ A snail is a **creature without a backbone**.
_____ The **creature without a backbone** is thought of as a main zoological grouping.
9. _____ Bermuda is an **island**.
_____ An **island** is a feature of the earth's surface.
_____ An **island** is often rocky.
_____ The **island** is a geographical notion.
10. _____ A **bicycle** is an **object moving under the pull of gravity**.
_____ An **object moving under the pull of gravity** is something acted upon by a force.
_____ An **object moving under the pull of gravity** is an idea in physics.
_____ A ball rolling down a hill is an **object moving under the pull of gravity**.
11. _____ Antarctica is a **polar region**.
_____ The **polar region** is a geographical definition.
_____ A **polar region** is part of the earth's surface.
_____ The **polar region** is a home of seals.
12. _____ A **plane surface** is a common spatial feature of many modern buildings.
_____ A billiard table is a **plane surface**.
_____ The **plane surface** is an important geometric concept used in studying solid shapes.
_____ The **plane surface** is a horizontal area.

13. ___ Aggression is an unpleasant activity carried out
by people against each other.
 ___ Bullying at school is an aggression.
 ___ Aggression is making someone do something.
 ___ Aggression is a physiological concept.
14. ___ A team of eleven players is a group of people.
 ___ A team of eleven players is a group idea.
 ___ A team of eleven players wins the game.
 ___ The New York Giants are a team of eleven players.
15. ___ Mars is a planet.
 ___ A planet is greatly interesting to an astronomer.
 ___ The planet is an astronomical class.
 ___ A planet is a heavily body.
16. ___ The shop is next to the bank.
 ___ The grocery store is a shop.
 ___ A shop is a place where things and materials are
bought and sold.
 ___ A shop is a trading notion.
17. ___ Together with the sculptor, the painter forms a
class of creative worker.
 ___ A painter is an artistic person.
 ___ A painter is a person like Picasso.
 ___ A painter is somebody who likes color.
18. ___ One day and the next day is an example of the
concept of order.
 ___ One day and the next day is something occurring
every day.
 ___ Tuesday and Wednesday in any one week are one day
and the next day.
 ___ One day and the next day is an example of an event
followed by another.
19. ___ A savings account is a banking notion.
 ___ A savings account is a way of economy for a
person.
 ___ A savings account is a means of getting good
interest on your money.
 ___ My union deposit account is a savings account.
20. ___ A plumber is like the man who mended our burst
water pipe.
 ___ A plumber is a member of the Building Worker's
union.
 ___ A plumber is a skilled craftsman.
 ___ Plumber is one of the employment categories.

21. _____ General De Gaulle was a **Frenchman**.
_____ **Frenchman** is a national description.
_____ A **Frenchman** is a neighbor of the Belgians.
_____ A **Frenchman** is a European.

Appendix C
(Norton 1975 Ambiguity Tolerance Scale)

For each statement listed below, please note a circle on the scale that best describes the extent of your agreement or disagreement with the statement. For example, you might agree very strongly and would therefore circle a 1 next to the statement. On the other hand, if you disagreed very strongly with the statement, you would circle a 6 next to it. Of course, you would circle any scale item in between depending on how you felt about the statement.

	Very Strongly Agree				Very Strongly Disagree	
Almost every problem has a solution.	1	2	3	4	5	6
I like to fool around with new ideas, even if they are a total waste of time.	1	2	3	4	5	6
Nothing gets accomplished in this world unless you stick to some basic rules.	1	2	3	4	5	6
I do NOT believe that in the final analysis there is a distinct difference between right and wrong.	1	2	3	4	5	6
Usually, the more clearly defined rules a society has, the better off it is.	1	2	3	4	5	6
Personally, I tend to think that there is a right way and wrong way to do most of everything.	1	2	3	4	5	6
I prefer the certainty of always being in control of myself.	1	2	3	4	5	6
I tend to be very frank with people.	1	2	3	4	5	6
It irks me to have people avoid the answer to my questions by asking another question.	1	2	3	4	5	6

	Very Strongly Agree				Very Strongly Disagree	
I really dislike it when a person does not give straight answers about himself.	1	2	3	4	5	6
It really disturbs me when I am unable to follow another person's train of thought.	1	2	3	4	5	6
I prefer telling people what I think of them even if it hurts them, rather than keeping it to myself.	1	2	3	4	5	6
It would bother me if different close friends of mine had conflicting opinions of me.	1	2	3	4	5	6
I always want to know what people are laughing at.	1	2	3	4	5	6
It intensely disturbs me when I am uncertain of how my actions affect others.	1	2	3	4	5	6
It bothers me when I don't know how strangers react to me.	1	2	3	4	5	6
I function very poorly whenever there is a serious lack of communication in a job situation.	1	2	3	4	5	6
In a situation in which other people evaluate me, I feel a great need for clear and explicit evaluation.	1	2	3	4	5	6
If I am uncertain about the responsibilities of a job, I get very anxious.	1	2	3	4	5	6
If I were a scientist, I might become frustrated because my work would never be completed (science will always make new discoveries).	1	2	3	4	5	6

	Very Strongly Agree				Very Strongly Disagree	
If I were a doctor, I would prefer the uncertainties of a psychiatrist to the clear and definite work of someone like a surgeon or x-ray specialist.	1	2	3	4	5	6
Once I start a task, I don't like to start another until I finish the first one.	1	2	3	4	5	6
Before any important job I must know how long it will take.	1	2	3	4	5	6
In a problem-solving group it is always best to systematically attack the problem.	1	2	3	4	5	6
A problem has little attraction for me if I don't think it has a solution.	1	2	3	4	5	6
I do not like to get started in group projects unless I feel assured that the project will be successful.	1	2	3	4	5	6
In a decision-making situation in which there is not enough information to process the problem, I feel very uncomfortable.	1	2	3	4	5	6
I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer.	1	2	3	4	5	6
Complex problems appeal to me only if I have a clear idea of the total scope of the problem.	1	2	3	4	5	6

	Very Strongly Agree				Very Strongly Disagree	
A group meeting functions best with a definite agenda.	1	2	3	4	5	6
I seem to enjoy parties the most when I know most of the people there.	1	2	3	4	5	6
Before going to a party, I always want to know what kind of party it is.	1	2	3	4	5	6
I get pretty anxious when I'm in a social situation involving me which I have little control of.	1	2	3	4	5	6
Whenever I am in a new group, I usually take the initiative in introducing myself.	1	2	3	4	5	6
First impressions tend to be important to me.	1	2	3	4	5	6
Whenever I go out to have fun, I like to have at least a vague purpose in mind.	1	2	3	4	5	6
I am just a little uncomfortable with people unless I can understand their behavior.	1	2	3	4	5	6
I don't feel comfortable with people unless I can find out something about them.	1	2	3	4	5	6
I have a good idea exactly how many friends I could really count on.	1	2	3	4	5	6
I like to know ahead of time what will be for dinner.	1	2	3	4	5	6

	Very Strongly Agree					Very Strongly Disagree
Whenever I go on a long trip, I like to keep track of the miles to go.	1	2	3	4	5	6
I will not consider buying an item unless the price is clearly marked on it.	1	2	3	4	5	6
It matters to me to know what day it is.	1	2	3	4	5	6
I get very anxious waiting to hear the election results.	1	2	3	4	5	6
I usually like to know what time it is.	1	2	3	4	5	6
I want to know what a salesman is selling before I'll listen to him.	1	2	3	4	5	6
It really bothers me when a person shows up late for an appointment without an explanation.	1	2	3	4	5	6
If I don't get the punch line of a joke, I don't feel right until I understand it.	1	2	3	4	5	6
I enjoy carefully rehashing my conversations in my mind afterwards.	1	2	3	4	5	6
Before going out, I always check my appearance to make sure I look right.	1	2	3	4	5	6
I am tolerant of ambiguous situations.	1	2	3	4	5	6
The best part of working a jigsaw puzzle is putting in that last piece.	1	2	3	4	5	6

	Very Strongly Agree			Very Strongly Disagree		
I tend to like obscure or hidden symbolism. Mysticism is too abstract and undefined for me to take seriously.	1	2	3	4	5	6
If I miss the beginning of a good movie, I like to stay to see the start of it.	1	2	3	4	5	6
Vague and impressionistic pictures appeal to me more than realistic ones.	1	2	3	4	5	6
I tend to prefer pictures with perfect balance in the composition.	1	2	3	4	5	6
I like movies or stories with definite endings.	1	2	3	4	5	6
Generally, the more meaning a poem has, the better I like it.	1	2	3	4	5	6
A poem should never contain contradictions.	1	2	3	4	5	6
In the final analysis, the correct interpretation of a poem or story is the author's interpretation.	1	2	3	4	5	6

Appendix D
(Davis' 1979 Empathy Scale)

For each of the statements listed below, please circle the number on the scale that best describes the extent to which the statement either describes or does not describes you. For example, you might feel that a statement describes you very well, and you would therefore circle a 5 next to the statement. On the other hand, if the statement did not describe you, you would circle a 1 next to it. Of course, you would circle any number in between depending on how you feel about the statement.

	Does NOT Describe Me Well		Describes Me Fairly Well		Describes Me Very Well
I daydream and fantasize, with some regularity about things that might happen to me.	1	2	3	4	5
I often have tender, concerned feelings for people less fortunate than me.	1	2	3	4	5
I sometimes find it difficult to see things from the "other guys" point of view.	1	2	3	4	5
Sometimes I don't feel very sorry for other people when they are having problems.	1	2	3	4	5
I really get involved with the feelings of the characters in a novel.	1	2	3	4	5
In emergency situations, I feel apprehensive and ill-at-ease.	1	2	3	4	5

	Does NOT Describe Me Well		Describes Me Fairly Well		Describes Me Very Well
I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.	1	2	3	4	5
I try to look at everybody's side of a disagreement before I make a decision.	1	2	3	4	5
When I see someone being taken advantage of, I feel kind of protective towards them.	1	2	3	4	5
I sometimes feel helpless when I am in the middle of a very emotional situation.	1	2	3	4	5
I sometimes try to understand my friends better by imagining how things look from their perspective.	1	2	3	4	5
Becoming extremely involved in a good book or a movie is somewhat rare for me.	1	2	3	4	5
When I see someone get hurt, I tend to remain calm.	1	2	3	4	5
Other peoples mis- fortunes do not usually disturb me a great deal.	1	2	3	4	5
If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.	1	2	3	4	5

	Does NOT Describe Me Well		Describes Me Fairly Well		Describes Me Very Well
After seeing a play or movie, I have felt as though I were one of the characters.	1	2	3	4	5
Being in a tense emotional situation scares me.	1	2	3	4	5
When I see someone being treated unfairly, I sometimes don't feel very much pity for them.	1	2	3	4	5
I am usually pretty effective in dealing with emergencies.	1	2	3	4	5
I am often quite touched by things that I see happen.	1	2	3	4	5
I believe that there are two sides to every question and try to look at them both.	1	2	3	4	5
I would describe myself as a pretty soft-hearted person.	1	2	3	4	5
When I watch a good movie, I can very easily put myself in the place of a leading character.	1	2	3	4	5
I tend to lose control during arguments.	1	2	3	4	5
When I am upset at someone, I usually try to "put myself in his shoes" for a while.	1	2	3	4	5

	Does NOT Describe Me Well	Describes Me Fairly Well			Describes Me Very Well
	1	2	3	4	5
When I am reading an interesting story or novel, <u>I</u> imagine how I would feel if the events in the story were happening to me.					
When I see someone who badly needs help in an emergency, I go to pieces.					
Before criticizing somebody, I try to imagine how <u>I</u> would feel if I were in their place.					

Appendix E

(Affective Communication Test)

(Friedman, Prince, Riggio, & DiMatteo, 1980)

For each statement listed below, please circle the number next to the statement to indicate how well it describes you. For example, if the statement is very true of you, you would circle a 9; if the statement were not true at all true of you, then you would circle 1. Of course, you would circle any number in between depending on how you felt about the statement.

	Not At All True Of Me					Very True Of Me				
When I hear good dance music, I can hardly stand still.	1	2	3	4	5	6	7	8	9	
My laugh is soft and subdued.	1	2	3	4	5	6	7	8	9	
I can easily express emotion over the telephone.	1	2	3	4	5	6	7	8	9	
I often touch friends during conversations.	1	2	3	4	5	6	7	8	9	
I dislike being watched by a large group of people.	1	2	3	4	5	6	7	8	9	
I usually have a neutral facial expression.	1	2	3	4	5	6	7	8	9	
People tell me that I would make a good actor or actress.	1	2	3	4	5	6	7	8	9	
I like to remain unnoticed in a crowd.	1	2	3	4	5	6	7	8	9	
I am shy among strangers.	1	2	3	4	5	6	7	8	9	

	Not At All True Of Me					Very True Of Me				
I am able to give a seductive glance if I want to.	1	2	3	4	5	6	7	8	9	
I am terrible at pantomime as in games like charades.	1	2	3	4	5	6	7	8	9	
At small parties I am the center of attraction.	1	2	3	4	5	6	7	8	9	
I show that I like someone by hugging or touching that person.	1	2	3	4	5	6	7	8	9	

Appendix F

(Childers 1986 Opinion Leadership Scale)

For each statement listed below, please circle the number on the scale that best describes your own actions in the situations described. For example, you might talk with your friends very often about an item indicated, and you would therefore circle 5 under that statement. On the other hand, if you never talk about the item, you would circle a 1 for that statement. Of course, you would circle any number in between depending on how you felt about the statement.

1. In general, do you talk to your friends and neighbors about compact disc players (cd's):

Very Often

Never

5 4 3 2 1

2. When you talk to your friends and neighbors about compact disc players, do you

Give a great deal
information

Give very little
information

5 4 3 2 1

3. During the past six months, how many people have you told about compact disc players?

Told a number
of people

Told
no one

5 4 3 2 1

4. Compared with your circle of friends, how likely are you to be asked about compact disc players?

Very likely
to be asked

Not at all likely
to be asked

5 4 3 2 1

5. In a discussion of compact disc players, would you most likely to

Listen to your
friend's ideas

Convince your
friends of your
ideas

5 4 3 2 1

6. In discussions of compact disc players, which of the following happens most often?

You tell your
friends about cd's

Your friends
tell you about
cd's

5 4 3 2 1

7. Overall in all your discussions with your friends and neighbors are you:

Often used as a
source of advice

Not used as a
source of advice

5 4 3 2 1

Appendix G

(Troidahl & Powell 1965 Short Form Dogmatism Scale)

The following are some statements people have made as to their opinion on several topics. You may find yourself agreeing strongly with some of the statements or disagreeing just as strongly with others, and perhaps uncertain about others. Whether you agree or disagree with any statement, you can be sure that many other people feel as you do.

We want your personal opinion on each statement. Thus, for each statement, please indicate whether, in general, you agree or disagree with it. Simply circle the number before each statement that indicates how strongly you agree or disagree with it.

- 1...Agree Very Much
- 2...Agree on the Whole
- 3...Agree A Little
- 4...Disagree A Little
- 5...Disagree on the Whole
- 6...Disagree Very Much

- | | |
|-------------|--|
| 1•2•3•4•5•6 | In this complicated world of ours, the only way we can know what's going on is to rely on leaders or experts who can be trusted. |
| 1•2•3•4•5•6 | My blood boils whenever a person stubbornly refuses to admit he's wrong. |
| 1•2•3•4•5•6 | There are two kinds of people in this world: those who are for the truth and those who are against the truth. |
| 1•2•3•4•5•6 | Most people just don't know what's good for them. |
| 1•2•3•4•5•6 | Of all the different philosophies which exist in this world, there is probably only one which is correct. |
| 1•2•3•4•5•6 | The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent. |
| 1•2•3•4•5•6 | The main thing in life is for a person to want to do something important. |

- 1...Agree Very Much
- 2...Agree on the Whole
- 3...Agree A Little
- 4...Disagree A Little
- 5...Disagree on the Whole
- 6...Disagree Very Much

- 1*2*3*4*5*6 I'd like it if I could find some someone who would tell me how to solve my personal problems.
- 1*2*3*4*5*6 It is only when a person devotes himself to an ideal or cause that life becomes meaningful.
- 1*2*3*4*5*6 Most people just don't give a "damn" for others.
- 1*2*3*4*5*6 To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.
- 1*2*3*4*5*6 It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.
- 1*2*3*4*5*6 The world is all too often full of unhappiness. It is only the future that counts.
- 1*2*3*4*5*6 The United States and Russia have just about nothing in common.
- 1*2*3*4*5*6 In a discussion, I often find it necessary to repeat myself several times to make sure I am being understood.
- 1*2*3*4*5*6 While I don't like to admit this even to myself, my secret ambition is to become a great person, like Einstein, or Beethoven, or Shakespeare.
- 1*2*3*4*5*6 Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.

- 1...Agree Very Much
- 2...Agree on the Whole
- 3...Agree A Little
- 4...Disagree A Little
- 5...Disagree on the Whole
- 6...Disagree Very Much

1·2·3·4·5·6

It is better to be a dead hero than to be a live coward.

1·2·3·4·5·6

Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

1·2·3·4·5·6

Man on his own is a helpless and miserable creature.

Appendix H
(Products For Group Discussion)

Please read the following instructions:

For each of the product/service groupings listed below, please choose the product or service which you would most likely buy if given the chance. Under "your choice," you can place an "x" next to the item you select. In the blank space provided following each product/service grouping, please note your personal reason for the choice you made. For each product grouping, please indicate how interested you feel you are in that product area as well as the amount of knowledge you feel you have about the products.

Product Group #1

Your
Choice

Reason for choice:

☐ LP Record/stereo	☐
☐ Cassette tape/stereo	☐
☐ Compact disk/stereo	☐

Concerning this product grouping,
 I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group #2

Your
Choice

Reason for Choice:

☐ Hand-held 2" color TV	☐
☐ Portable 13" color TV	☐
☐ 19" TV console	☐

Concerning this product grouping,
 I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group

#3

YourChoiceReason for Choice:☐ 8mm camera☐ VHS camcorder☐ 16mm camera

Concerning this product grouping,
I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group

#4

YourChoiceReason for Choice:☐ Banking via ATM☐ Banking via mail☐ Banking via branch

Concerning this product grouping,
I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group

#5

YourChoiceReason for Choice:

_____ Chicken noodle soup _____
 _____ Cream of broccoli soup _____
 _____ Tomato soup _____

Concerning this product grouping,
 I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group

#6

YourChoiceReason for Choice:

_____ Nuprin _____
 _____ Tylenol _____
 _____ Bayer _____

Concerning this product grouping,
 I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group#7

Your

Choice

Reason for Choice:

- ☐ Telephone call "beeper" service
☐ Telephone call forwarding service
☐ Telephone call answering service

☐
☐
☐

Concerning this product grouping,
I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group #8

Your

Choice

Reason for Choice:

- ☐ Cassette tape language course
☐ LP record language course
☐ Video tape language course

☐
☐
☐

Concerning this product grouping,
I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group
#9

Your
Choice

Reason for Choice:

_____ Frozen ice cream bar _____
 _____ Frozen fruit juice bar _____
 _____ Frozen yogert bar _____

Concerning this product grouping,
I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Group
#10

Your
Choice

Reason for Choice:

_____ Convection oven _____
 _____ Gas oven _____
 _____ Microwave oven _____

Concerning this product grouping,
I would describe myself as follows:

Interested 6.5.4.3.2.1 Uninterested

Knowledgeable 6.5.4.3.2.1 Unknowledgeable

Appendix I
(Sociometric Measure of Opinion Leadership)

Thank you for taking part in the group discussion. We would appreciate it if you would take a few moments to answer the following questions about the other members of your group. Please note that your answers are completely confidential and will not be revealed to any one in your group. Thank you again.

1) Who in your group acted as the *group leader*?

2) Who in your group *influenced you the least*?

3) Who in your group *influenced you the most*?

Appendix J
Spearman Rank Order Correlations of Opinion
Leadership Measures And
Original Dogmatism Scale^a

Childers (1986) <u>Opin. Lead Scale</u>		# Comments <u>Total</u>	#Comments <u>Initiated</u>	#Comments <u>Received</u> -
<u>Childers</u> <u>Scale</u>	x			
# Comments <u>Total</u>	.11 (243) .0800	x		
# Comments <u>Initiated</u>	.14 (243) .0239	.88 (243) .0001	x	
# Comments <u>Received</u>	.13 (243) .0506	.86 (243) .0001	.70 (243) .0001	x
<u>Dogmatism</u>	.07 (243) n.s.	-.08 (243) n.s.	-.05 (243) n.s.	-.07 (243) n.s.

^aSee Table 4-23 for correlations of revised Dogmatism Scale.

Appendix K
Spearman Rank Order Correlations of Opinion Leadership
Measures with Selected Personality Constructs
(Original Scales)^a

	<u>Opinion Leadership Scale</u>	<u>Total # Comments</u>	<u># Comments Initiated</u>	<u>#Comments Received</u>
Cognitive Complexity	.13 (241) .0442	.18 (241) .0042	.17 (241) .0086	.21 (241) .0010
Abstract Thinking	.20 (243) .0017	.24 (243) .0002	.26 (243) .0001	.27 (243) .0001
Ambiguity Tolerance	.11 (243) .0814	.07 (243) n.s.	.02 (243) n.s.	.13 (243) .0491
Empathy	-.06 (243) n.s.	.07 (243) n.s.	.07 (243) n.s.	.02 (243) n.s.
Affective Communication	.13 (243) .0442	.34 (243) .0001	.32 (243) .0001	.21 (243) .0009

^aSee Table 4-25 for Correlations of revised Abstract Thinking, Ambiguity Tolerance, Empathy, and Expressiveness (ACT) scales.

Appendix L

Log Linear Models of Opinion Leadership and
Abstract Thinking, Product Knowledge, and Product Interest
Original Scales
(n=243)

<u>Loglinear Models</u>	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Rabs	8	30.78	.0002
Rtotal*Rabs*Rknow	26	47.50	.0062
Rtotal*Rabs*Rinterest	26	44.48	.0172
Rtotal*Rabs*Rknow*Rinterest	67	103.78	.0043

Response Frequencies:^a

<u>Obs</u>	<u>Rtotal</u>	<u>Rabs</u>	<u>Rknow</u>	<u>Rint.</u>	<u>Chi Square</u>	<u>Prob.</u>
<u>(Rtotal*Rabs)</u>						
46	1	1			16.65	.0001
14	1	3			5.77	.0163
<u>(Rtotal*Rabs*Rknow)</u>						
18	1	1	1		11.78	.0006
15	1	1	2		6.03	.0141
15	1	2	1		6.03	.0141
15	1	2	2		6.03	.0141
2	1	3	3		4.06	.0440
15	2	1	2		6.03	.0141
<u>(Rtotal*Rabs*Rinterest)</u>						
18	1	1		1	11.61	.0172
16	1	1		3	9.53	.0020
2	1	3		3	4.09	.0431
<u>(Rtotal*Rabs*Rknow*Rinterest)</u>						
12	1	1	1	1	25.79	.0001
6	1	1	2	3	3.91	.0480
8	1	1	3	3	9.34	.0021
7	1	2	1	1	6.41	.0113
7	1	2	1	2	6.41	.0113
8	1	2	2	2	9.34	.0021
6	2	1	1	1	3.91	.0480
9	2	1	2	2	12.92	.0003
7	2	2	1	1	6.41	.0113
10	2	3	1	1	16.83	.0001
7	3	1	1	1	6.41	.0113

^a1 = high, 2 = moderate, 3 = low

Appendix M

Log Linear Models of Opinion Leadership and
Ambiguity Tolerance, Product Knowledge,
and Product Interest
Original Scales
(n=243)

<u>Loglinear Models</u>	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>
Rtotal*Rambig	8	16.67	.0337
Rtotal*Rambig*Rknow	26	47.74	.0058
Rtotal*Rambig*Rinterest	26	38.49	.0545
Rtotal*Rambig*Rknow*Rinterest	63	91.89	.0127

Response Frequencies:^a

<u>obs</u>	<u>Rtotal</u>	<u>Rambig</u>	<u>Rknow</u>	<u>Rinterest</u>	<u>Chi Sq.</u>	<u>Prob.</u>
(Rtotal*Rambig)						
35	1	1			3.24	.0719
40	1	2			7.65	.0057
(Rtotal*Rambig*Rknow)						
16	1	1	2		8.43	.0037
18	1	2	2		12.61	.0004
17	1	3	1		10.43	.0012
2	1	3	2		3.85	.0498
14	2	1	1		5.00	.0253
15	2	2	2		6.62	.0101
1	2	3	3		4.45	.0349
(Rtotal*Rambig*Rknow*Rinterest)						
8	1	1	2	3	8.03	.0046
7	1	1	3	3	5.34	.0209
8	1	2	1	1	8.03	.0049
9	1	2	2	2	11.18	.0008
9	1	3	1	1	11.18	.0008
11	2	1	1	1	18.69	.0001
7	2	1	3	3	5.34	.0209
7	2	2	2	2	5.34	.0209
8	2	3	1	1	8.03	.0046
8	3	1	1	1	8.03	.0046

^a1 = high, 2 = moderate, 3 = low

Appendix N

Log Linear Models of Opinion Leadership and
Empathy, Product Knowledge, and Product Interest
Original Scales
(n=243)

=====						
<u>Loglinear Models</u>	<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>			
Rtotal*Remp	8	16.29	.0385			
Rtotal*Remp*Rknow	26	42.97	.0194			
Rtotal*Remp*Rinterest	26	43.09	.0189			
Rtotal*Remp*Rknow*Rinterest	63	91.91	.0127			

<u>Response Frequencies:^a</u>						
<u>Obs</u>	<u>Rtotal</u>	<u>Remp</u>	<u>Rknow</u>	<u>Rinterest</u>	<u>Chi Square</u>	<u>Prob.</u>
(Rtotal*Remp)						
37	1	1			4.86	.0274
(Rtotal*Remp*Rknow)						
18	1	1	1		11.52	.0007
16	1	2	2		7.56	.0060
15	1	3	2		5.85	.0155
2	2	3	3		4.11	.0425
(Rtotal*Remp*Rinterest)						
16	1	1		1	7.61	.0058
14	1	1		2	4.39	.0361
14	1	2		2	4.39	.0361
15	1	3		3	5.90	.0151
14	2	2		2	4.39	.0361
14	3	1		1	4.39	.0361
2	3	1		3	4.10	.0429
(Rtotal*Remp*Rknow*Rinterest)						
11	1	1	1	1	18.28	.0001
7	1	1	1	2	5.15	.0233
10	1	2	1	1	14.39	.0001
10	2	1	1	1	14.39	.0001
7	2	2	1	1	5.15	.0233
7	2	2	2	2	5.15	.0233
10	3	1	1	1	14.39	.0001

^a1 = high, 2 = moderate, 3 = low

Appendix O

Log Linear Models of Opinion Leadership and
Expressiveness, Product Knowledge, and Product Interest
Original Scales
(n=243)

=====						
<u>Loglinear Models</u>		<u>Df</u>	<u>Chi Square</u>	<u>Prob</u>		
Rtotal*Ract		8	28.84	.0003		
Rtotal*Ract*Rknow		26	56.72	.0005		
Rtotal*Ract*Rinterest		26	48.56	.0046		
Rtotal*Ract*Rknow*Rinterest		66	106.98	.0011		

<u>Response Frequencies:^a</u>						
<u>Obs</u>	<u>Rtotal</u>	<u>Ract</u>	<u>Rknow</u>	<u>Rinterest</u>	<u>Chi Square</u>	<u>Prob.</u>
<u>(Rtotal*Ract)</u>						
44	1	1			13.63	.0002
40	1	2			8.64	.0033
15	1	3			4.86	.0275
15	3	1			4.86	.0275
<u>(Rtotal*Ract*Rknow)</u>						
16	1	1	1		8.01	.0002
15	1	1	2		6.24	.0125
18	1	2	1		12.11	.0005
16	1	2	2		8.01	.0446
17	2	1	1		9.97	.0016
<u>(Rtotal*Ract*Rinterest)</u>						
20	1	1		1	16.81	.0001
17	1	2		2	9.91	.0016
14	2	1		1	4.65	.0311
2	3	1		2	3.99	.0456
2	3	1		3	3.99	.0456
<u>(Rtotal*Ract*Rknow*Rinterest)</u>						
12	1	1	1	1	27.76	.0001
7	1	1	3	3	5.61	.0179
9	1	2	1	1	11.63	.0006
9	1	2	2	2	11.63	.0006
11	2	1	1	1	19.35	.0001
9	2	2	2	2	11.63	.0006
9	2	3	1	1	11.63	.0006
7	3	1	1	1	5.61	.0179

^a1 = high, 2 = moderate, 3 = low

Appendix P

Analysis of Variance Tests of Selected Characteristics

Massachusetts vs. New York Subsamples

(Original Scales)^a

Variable	Source	df	SS	MS	F	P

Abstract Thinking	Group	1	47.43	47.43	.86	.355
	Residual	241	13312.86	55.24		
Ambiguity Tolerance	Group	1	327.31	327.31	.62	.433
	Residual	241	128113.07	531.59		
Empathy	Group	1	262.95	262.95	1.53	.217
	Residual	241	41387.12	171.73		
Expressive-ness	Group	1	173.03	173.03	.87	.353
	Residual	239	48073.47	199.48		
Dogmatism	Group	1	363.55	363.55	3.63	.058
	Residual	241	24150.41	100.21		

^aSee Table 4-1 for revised scales

Appendix Q
 Analysis of Variance of Sex Differences
 And Descriptive Statistics by Sex
 (Original Scales)^a

<u>Sex</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>	<u>F</u>	<u>Prob</u>
<u>Abstract Thinking</u>					
M	131	56.24	7.67	.232	.631
F	112	56.71	7.16		
<u>Ambiguity Tolerance</u>					
M	131	176.32	23.91	.025	.873
F	112	176.80	22.08		
<u>Empathy</u>					
M	131	86.74	12.65	35.20	.000
F	112	96.12	11.83		
<u>Empcog</u>					
M	131	44.31	8.04	7.33	.007
F	112	47.03	7.48		
<u>Empemot</u>					
M	131	42.43	6.99	56.79	.000
F	112	49.09	6.72		
<u>Expressiveness</u>					
M	131	69.18	14.81	.867	.353
F	112	71.06	13.26		
<u>Dogmatism</u>					
M	131	73.93	10.15	4.18	.0420
F	112	76.56	9.82		

^aSee Table 4-2 for Revised Scales

Appendix R
Analysis of Variance Tests of Group Size Differences
For Selected Characteristics
(Original Scales)^a

Variable	Source	df	SS	MS	F	P

Abstract Thinking	Group	4	329.48	82.37	1.50	.202
	Residual	238	13030.82	54.75		
Ambiguity Tolerance	Group	4	1816.81	454.20	0.85	.493
	Residual	238	126623.57	532.03		
Empathy	Group	4	168.33	42.08	0.24	.915
	Residual	239	41481.74	174.29		
Expressive-ness	Group	4	899.74	224.93	1.13	.343
	Residual	238	47346.77	198.94		
Dogmatism	Group	4	808.58	202.15	2.03	.091
	Residual	238	23705.37	99.60		

^aSee Table 4-20 for revised scales

Appendix S

A Program for the Personal Computer to
Score, Categorize, Sort & Graph Bieri Repertory Grids

```

5   KEY OFF
10  CLS
20  REM *** @1987 By Joel N. Greene & Donald Fowler ***
30  GOSUB 6000 : REM Show directions
90  DIM SUBJECT(8,8),DIVTOTAL(20), TOTALS(1000,3)
100 OPEN "A:SUBJECTS.IN" FOR INPUT AS #1
110 PRINT #1, CHR$(12)
120 INPUT "Enter number of described persons ";CMAX
130 INPUT "Enter number of characteristics";RMAX
140 FOR T = 1 TO RMAX-1:TEMP = TEMP + T:NEXT T
150 MAXTOTAL = CMAX*TEMP
160 INPUT "Enter number of graph divisions (max 20)";DIV
170 IF (DIV >20) THEN 160
180 DELTADIV = MAXTOTAL / DIV
190 OPEN "SCRN:" FOR OUTPUT AS #2
200 GOSUB 1000 : REM Print header to screen
210 PRINT #2,"":PRINT #2,"Subject","Total
    Matches",,"Division":PRINT #2,""
240 INPUT #1, MARKER$
250 IF (MARKER$ = "*") THEN 440
260 FOR R=1 TO RMAX
270 FOR C=1 TO CMAX
280 INPUT #1, SUBJECT(R,C)
290 NEXT C, R
300 CNT = CNT + 1
310 TOTAL = 0
320 FOR RA = 1 TO RMAX-1
330 FOR RB = RA+1 TO RMAX
340 FOR C= 1 TO CMAX
350 IF (SUBJECT(RA,C) = SUBJECT(RB,C)) THEN TOTAL = TOTAL +
    1
360 NEXT C, RB, RA
370 PRINT #2,CNT;TAB(19);TOTAL;
380 FOR T = 1 TO DIV
390 IF (TOTAL <= T*DELTADIV) THEN PRINT #2,TAB(46);T:
    DIVTOTAL(T)=DIVTOTAL(T) + 1 : GOTO 410
400 NEXT T
410 IF (INT(CNT/5)=CNT/5) THEN FOR X=1 TO 48:PRINT
    #2,"-";:NEXT X:PRINT #2,""
420 TOTALS(CNT,1)=CNT : TOTALS(CNT,2)=TOTAL :
    TOTALS(CNT,3)=T
430 GOTO 240
440 GOSUB 2000:REM Graph to screen
450 CLOSE #1, #2

```

```

460 OPEN "RESULTS.OUT" FOR OUTPUT AS #2
465 PRINT "Output going to 'RESULTS.OUT'"
470 GOSUB 1000:REM Header for file
475 PRINT #2,"":PRINT #2,"Subject","Total
Matches",,"Division":PRINT #2,""
480 FOR T = 1 TO CNT
490 PRINT #2,TOTALS(T,1), TAB(19); TOTALS(T,2), TAB(46);
TOTALS(T,3)
500 NEXT T
510 GOSUB 2000 : REM Graph to file
520 CLOSE #2
521 PRINT TAB(27);"Stike a key to continue."
523 T$=INKEY$ : IF (T$ = "") THEN 523
525 CLS
530 INPUT "Output to printer? (Y/N)",CHOICES$
540 IF (LEFT$(CHOICES$,1) = "Y") OR (LEFT$(CHOICES$,1) = "y")
THEN I$ = "RESULTS.OUT" : O$ = "LPT1:" : GOSUB 4000 : REM
Copy to printer
550 PRINT : INPUT "Do you want data sorted by total
matches? (Y/N)",CHOICES$
560 IF (LEFT$(CHOICES$,1) = "Y") OR (LEFT$(CHOICES$,1) = "y")
THEN GOSUB 3000 : REM Sorting routine
999 STOP
1000 REM File header
1010 PRINT #2,"":PRINT #2, "Division";TAB(28);"Range"
1020 FOR T = 1 TO DIV
1030 PRINT #2,T,INT((T-1)*DELTADIV);TAB(20);" < Total
Matches <= ";INT(T*DELTADIV)
1040 NEXT T
1060 RETURN
2000 REM Graphing Subroutine
2010 PRINT #2,""
2020 PRINT #2, CHR$(12)
2030 DELTAY = INT(14/DIV)
2040 FOR T = DIV TO 1 STEP -1
2050 FOR ROW = 1 TO DELTAY:PRINT #2,"":NEXT ROW
2060 PRINT #2,T; TAB(8);
2070 XG = 70*DIVTOTAL(T)/MAXTOTAL
2080 FOR COL= 1 TO XG:PRINT #2,"*";:NEXT COL
2090 PRINT #2,DIVTOTAL(T)
2100 NEXT T
2110 PRINT #2,"Division":PRINT #2,"Number"
2120 PRINT #2,TAB(8);
2130 FOR T=0 TO 70:IF (INT(T/5)=T/5) THEN PRINT #2,"|"; ELSE
PRINT #2," ";
2140 NEXT T
2150 PRINT #
*2,TAB(8);"0";TAB(21);INT(MAXTOTAL/4);TAB(38);
INT(MAXTOTAL/2); TAB(56);INT(3*MAXTOTAL/4);
TAB(75);MAXTOTAL
2160 PRINT #2,TAB(34);"Sum of matches"
2170 RETURN

```

```

3000 REM Sort Routine
3005 PRINT "Output going to 'SORT.OUT'" : PRINT
3010 FOR I = 1 TO CNT-1
3020 FOR J = I+1 TO CNT
3030 IF (TOTALS(I,2) < TOTALS(J,2)) THEN SWAP
      TOTALS(I,1),TOTALS(J,1) : SWAP TOTALS(I,2),TOTALS(J,2)
: SWAP TOTALS(I,3),TOTALS(J,3)
3040 NEXT J,I
3050 OPEN "SORT.OUT" FOR OUTPUT AS #2
3055 PRINT #2,CHR$(12)
3060 GOSUB 1000 : REM Print header
3065 GROUP = 6
3067 PRINT #2,"":PRINT #2,TAB(11);"TOTAL
      MATCHES";TAB(30);"SUBJECT"
3070 FOR T = 1 TO CNT
3080 IF (GROUP > TOTALS(T,3)) THEN GROUP = TOTALS(T,3) :
PRINT #2,"": PRINT #2,"Group ";TOTALS(T,3);
3090 PRINT #2,TAB(15);TOTALS(T,2);TAB(32);TOTALS(T,1)
3100 NEXT T
3105 CLOSE #2
3107 I$ = "SORT.OUT" : O$ = "SCRN:" : GOSUB 4000
3108 LOCATE 23,1
3110 INPUT "Output to printer? (Y/N)",CHOICES$
3120 IF (LEFT$(CHOICES$,1) = "Y") OR (LEFT$(CHOICES$,1) = "y")
THEN I$ = "SORT.OUT" : O$ = "LPT1:" : GOSUB 4000
3130 RETURN
4000 REM Routine to copy file from I$ to O$
4020 OPEN I$ FOR INPUT AS #2
4030 OPEN O$ FOR OUTPUT AS #3
4035 IF EOF(2) THEN RETURN
4040 LINE INPUT #2,X$
4050 PRINT #3,X$
4055 GOTO 4035
4060 RETURN
6000 REM This subroutine prints the descriptions and
      instructions
6010 CLS
6020 PRINT "This program performs the Bieri method of
      cognitive complexity"
6030 PRINT : PRINT "The input file 'SUBJECTS.IN' must have
      already been created using"
6040 PRINT "the following format."
6050 PRINT : PRINT "+          <-- This shows whether not
      there is more data. If it is
6060 PRINT "1,2,3,4,5,6,7,8 <-- a * then the program ends,
      anything else and the next
6070 PRINT "1,2,3,4,5,6,7,8      | subject is read in."
6080 PRINT "1,2,3,4,5,6,7,8      |"
6090 PRINT "1,2,3,4,5,6,7,8      |"
6100 PRINT "1,2,3,4,5,6,7,8      "The matrix goes on the
      following line."

```

```

6110 PRINT "1,2,3,4,5,6,7,8 | The number of columns
                        (descripted persons) "
6120 PRINT "1,2,3,4,5,6,7,8 | and the number of rows
                        (characteristics) are"
6130 PRINT "1,2,3,4,5,6,7,8 <-- entered during the program
                        run."
6140 PRINT : PRINT "The data is initially sorted by subject
                        and stored on the file "
6150 PRINT "'RESULTS.OUT'. A graph of total matches vs.
                        group is then generated."
6160 PRINT "The user then has the choice of having the data
                        sorted by matches per subject."
6170 PRINT "This would go into the file 'SORT.OUT'. After
                        both files the choice"
6180 PRINT "of having the data go to the printer is
                        offered."
6190 PRINT : PRINT : PRINT TAB(27);"Strike a key to
                        continue"
6200 T$ = INKEY$ : IF (T$ = "") THEN 6200
6210 RETURN
9999 END

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