The Effects of Group Members' Personality Traits and Influence on Individual Consensus

by

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(ABSTRACT)

This research investigated the relationships among four personality traits (affiliation, achievement, aggression, and dominance), actual influence, perceived influence, and individual consensus. My hypotheses consisted of a path model showing the relationships among these variables. The purpose of this research is to increase our understanding of group dynamics. By understanding group dynamics, managers can design meetings to optimize the commitment to and quality of the group's decision.

The methodology for my research was relational. In relational studies, variables aren't manipulated. To test my hypotheses, I measured several variables that weren't manipulated but were obtained in an experimental situation. Subjects (308) were randomly placed in 77 four-person groups. Each group consisted of three subjects and a confederate. The confederates weren't part of my study and I didn't collect data on them. All group members completed the Lost on the Moon exercise three times: an initial individual rank, a group rank, and a final individual rank. For each subject, I collected data on seven variables: affiliation, achievement, aggression, dominance, actual influence, perceived influence, and individual consensus.

I measured affiliation, achievement, aggression, and dominance with Jackson's Personality Research Form. Actual influence was measured by the absolute difference between the group member's individual ranking and the final group ranking. A low score indicated high influence. Perceived influence and individual consensus were measured with a questionnaire. Both scales were derived from a factor analytic study.

I found the following significant relationships:

- affiliation was negatively related to actual influence,
- affiliation was positively related to individual consensus,
- achievement was positively related to perceived influence,
- achievement was positively related to individual consensus,
- actual influence was positively related to perceived influence, and
- perceived influence was positively related to individual consensus.

The first five relationships were found to be significant at the .05 level. The relationship between perceived influence and individual consensus was found to be significant at the .01 level. In interpreting the results, this relationship is suspicious. Since both scales were derived from a factor analysis of the same questionnaire, this significant relationship may result partially from measurement bias. In my exploratory analysis, I found gender to affect group dynamics more than personality. Therefore, further studies which manipulate gender need to be performed before the relationships among gender, personality traits, and group dynamics are fully understood.

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INTRODUCTION

This introductory chapter will provide a description of my research, its purposes, and its limitations. This section begins with a general description of my problem, the relevance of my study, and the people who will use my research. Next, I list the research questions, operational research questions, delimitations, sub-problems, and outputs. I also describe my conceptual model and explain how it corresponds to an overall group decision making model. Finally, I give my hypotheses in a path model.

PROBLEM STATEMENT

This research aims to conceptualize, characterize, demonstrate (test), and generalize the effects of personality traits (affiliation, achievement, aggression, and dominance), perceived influence, and actual influence on a group member's individual consensus with the group's decision.

RELEVANCE OF STUDY

As industry shifts toward a more participative approach to management, research into group dynamics is increasingly important. Managers are facing a need to make consensus decisions with groups that have different viewpoints and emotional involvement in the problem being considered. Decision-making groups are often convened to gain consensus on the highest quality decision with the highest level of acceptance possible. In most participative task groups, the manager will bring

together people who have a stake in the problem and/or have needed expertise. Group dynamics can have a large impact on both decision quality and group members' satisfaction.

Group members' personalities and their influence on the decision can affect group dynamics. For example, dominant individuals tend to try to control their environment and to influence their group members (Jackson, 1989). They can help the group discussion by critically evaluating alternatives and providing suggestions (Callaway, Marriott, & Esser, 1985). However, they can hurt the group's interaction if they improperly try to influence other group members and push for their own ideas. The group's interaction and each group member's perceived influence can affect his or her level of individual consensus.

WHO WILL USE THIS RESEARCH?

This research was designed to help managers, convenors, and facilitators of consensus groups. Managers must work with task groups who gain consensus on group decisions. To ensure the successful implementation of the decision, managers want each group member to have high individual consensus with the group decision. Convenors and facilitators need to know how to run a meeting to ensure each group member adequately supports the final decision. The term "managers" will be used to include managers, convenors, and facilitators.

RESEARCH QUESTIONS

1) Do affiliation, achievement, aggression, and dominance predict perceived influence and actual influence?
2) Do perceived influence and actual influence predict individual consensus?
3) Does actual influence predict perceived influence?
4) Do affiliation, achievement, aggression, and dominance predict individual consensus?

OPERATIONAL RESEARCH QUESTIONS

Can managers predict the amount of a group member's individual consensus based on the group member's personality traits and his or her influence in the meeting?

RESEARCH PURPOSE

The primary reasons for consensus decision-making are to increase the acceptance and quality of the group's decision. Each group member's agreement with, acceptance of, and commitment to the decision is crucial since it will affect the success of the decision's implementation. Personality traits, actual influence, and perceived influence will affect each group member's individual consensus with the decision. Therefore, the purpose of this research was twofold:

1) To help managers understand the relationships between personality traits, influence, and individual consensus.

2) To help managers run consensus meetings while increasing each group member's individual consensus to the group's decision.

RESEARCH OBJECTIVES

The objective of this study was to determine if four personality traits affect actual influence, if four personality traits and actual influence affect perceived influence, and if the four personality traits, actual influence, and perceived influence affect individual consensus. I proposed a fully recursive causal model that considers individual trait differences, actual influence, and perceived influence to predict individual consensus. The objectives of this research were twofold:

1) To express the relationships between personality traits, influence, and individual consensus.
2) To develop guidelines to help managers increase each group member's individual consensus in meetings.

DELIMITATIONS

My research didn't consider the following areas:

1) I studied groups without a facilitator, a manager, or an assigned leader.
2) Although the situation affected group members' behaviors, I didn't manipulate or measure any situational variables.

3) Although each group member had many traits, I only looked at affiliation, achievement, aggression, dominance.
4) I looked at group members' personality traits, not their use of trait behaviors.
5) I only looked at small groups.

SUB-PROBLEMS

I separated my research into the following subsections:

1) Understand a set of personality traits and select a measure.
2) Understand influence and how to make it happen. Select a measure for strength of influence.
3) Understand individual consensus in context with other types of consensus.
4) Determine and measure the linkages among four personality traits, actual influence, perceived influence, and individual consensus.
5) Convert my lessons learned to guidelines for managers to facilitate high individual consensus in groups.

OUTPUTS

For each subproblem, I identified one or more outputs. My research provides the following products:

1) Operational definitions of actual and perceived influence.
2) An operational definition of individual consensus.

3) Reliability measures of four personality measures in the context of this experiment.

4) Measures of individual consensus and its reliability in the context of this experiment.

5) Measures of perceived influence and its reliability in the context of this experiment.

6) A predictive model for individual consensus.

7) A list of guidelines for managers.

CONCEPTUAL MODEL

A conceptual model illustrates the relevant constructs and their interrelationships. Figure 1 depicts the conceptual model for this study. This model illustrates the process involved in group decision making. In this model, the interaction consists of several group members with their individual personality traits. During the interaction, the group members exert varying levels of influence on each other. This interaction results in the group decision and a level of individual consensus for each group member.

Figure 2 is a model depicting Management Systems Laboratories' (MSL) conceptual model for decision-making groups. This model shows the process of group decision making. The *precipitator* is the person/information/event causing the convenor to call the meeting. The *purpose* is the goal of the group or the expected outcomes. The *problem* is what must be resolved by the group or the expected outputs. *Participation*

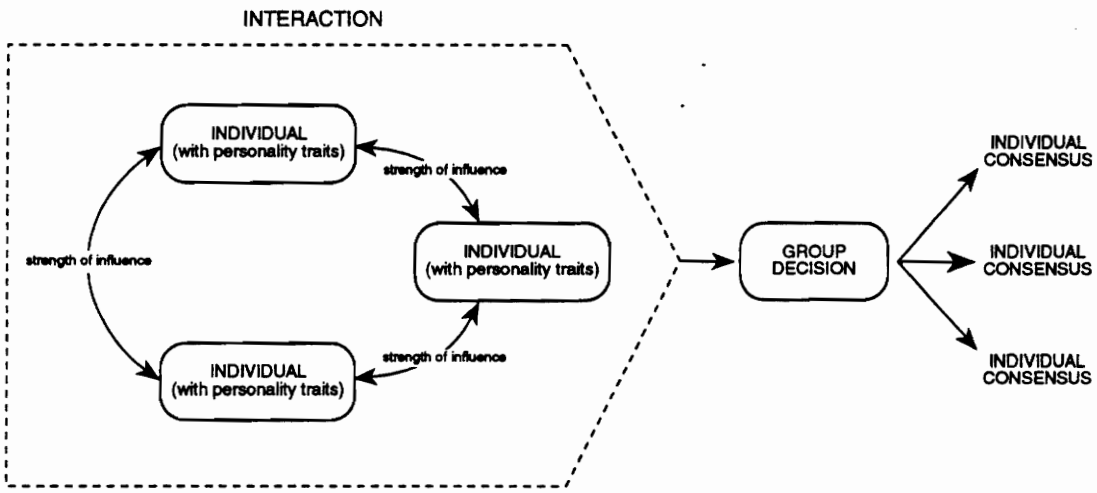


Figure 1: My Conceptual Model

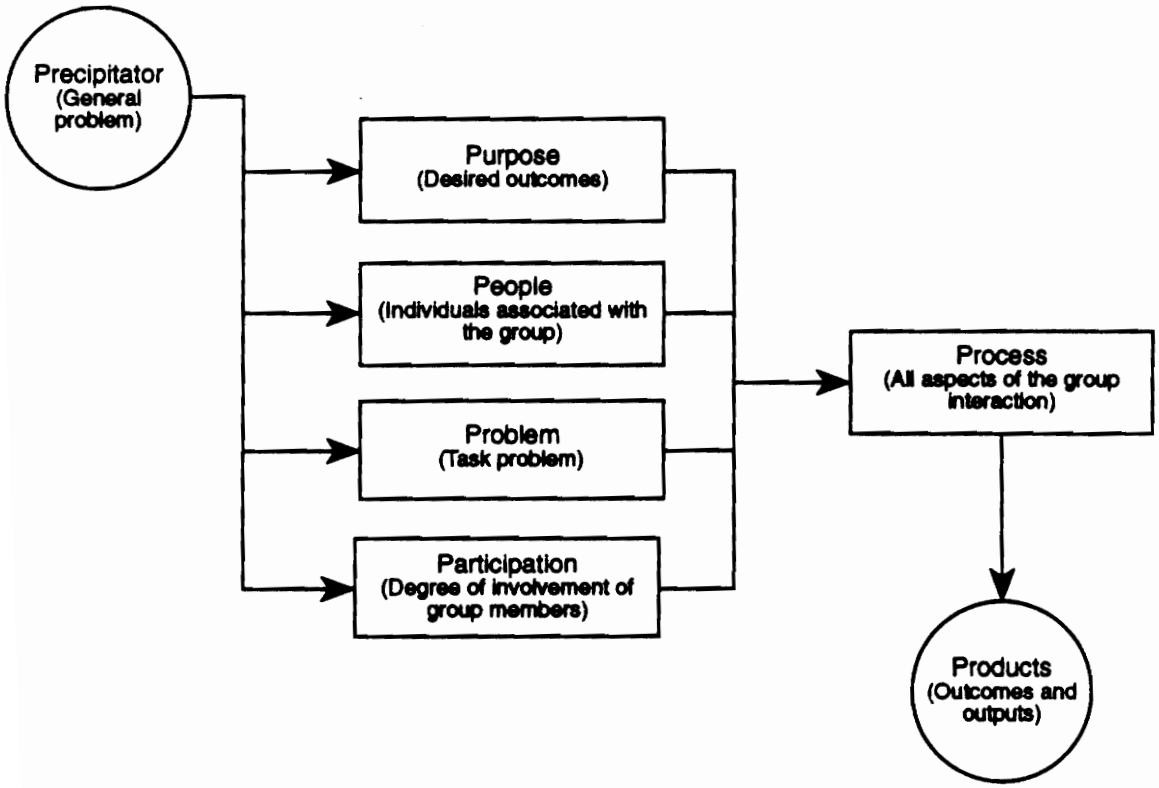


Figure 2: MSL's Group Decision-Making Conceptual Model

is the expected interaction for the group members. The *people* are the group members which might include a facilitator, experts, and various stakeholders. The *process* is the actual interaction during the meeting. This interaction results in *products*, which include both tangible outputs and intangible outcomes.

Figure 3 illustrates the relationship between my conceptual model and MSL's group decision-making conceptual model. My conceptual model explores several of the components of MSL's conceptual model. My research focuses on the people component, the process component, and the product component. My research investigates several characteristics of the people and the process which affect the outcome of individual consensus.

RESEARCH HYPOTHESES

I hypothesized that the path model in Figure 4 adequately demonstrated the relationships between four personality traits, actual influence, perceived influence, and individual consensus. In Figure 4, curved lines represent an assumed correlation, not a proposed effect. The straight lines represent hypothesized direct effects. Affiliation, achievement, aggression, and dominance are the exogenous variables. Actual influence, perceived influence, and individual consensus are the endogenous variables. The total model is a combination of the direct and indirect effects among the exogenous and endogenous variables.

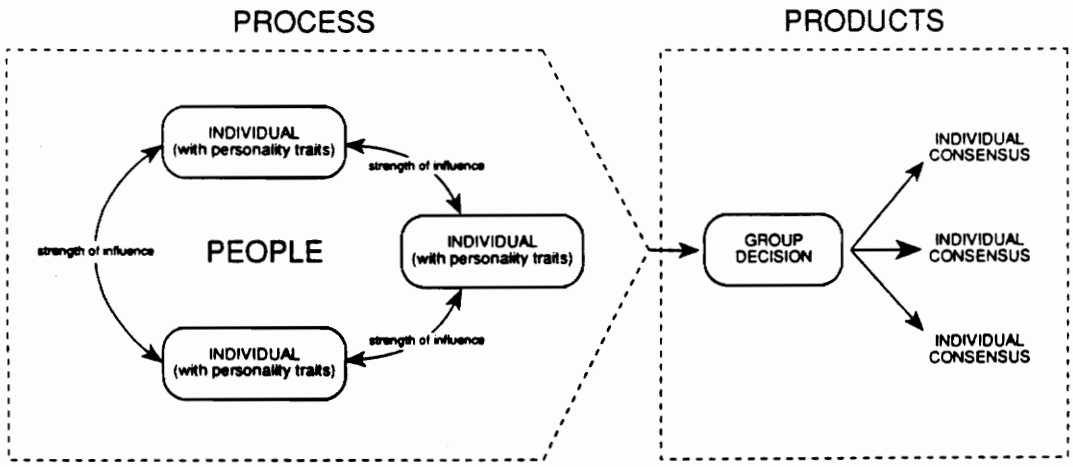


Figure 3: My Conceptual Model Combined with MSL's Model

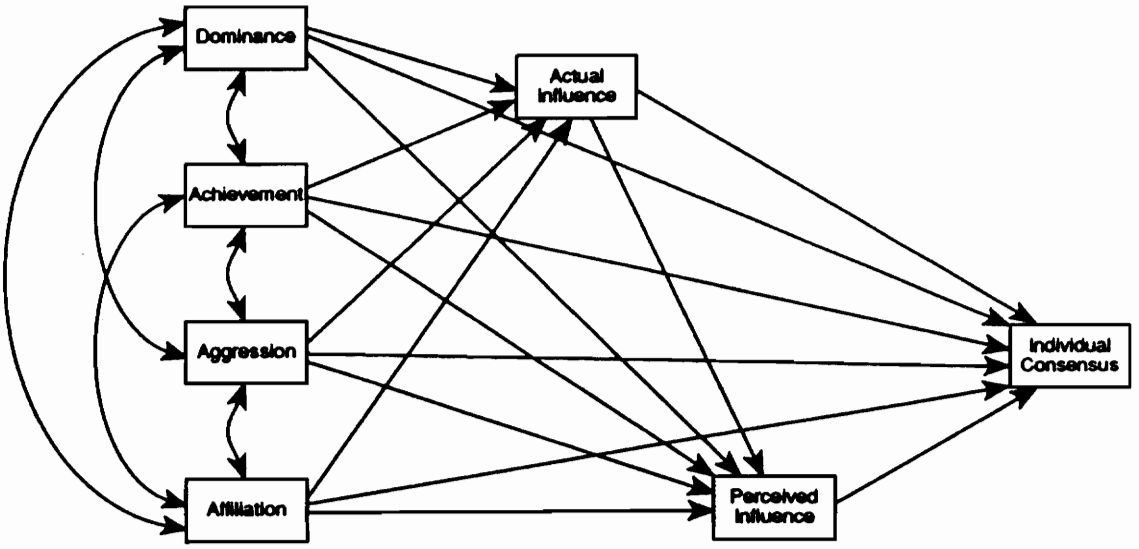


Figure 4: My Hypothesized Path Model

LITERATURE REVIEW

This section is organized by the constructs in the study: personality, affiliation, achievement, aggression, and dominance, influence, and consensus. These bodies of literature correspond to the variables in the path model, where affiliation, achievement, aggression, and dominance are sub-categories of personality.

PERSONALITY

This section describes personality theory and provides support for the use of traits in my research. It's divided into six sub-sections: defining personality and traits, criticisms of and rebuttals for trait research, description of socioanalytic theory, description of conditional trait theory, description of the five-factor model, and personality literature's relation to my research.

Defining personality and traits. Personality theory is a subdiscipline of psychology concerned with framing and evaluating models of human nature (Hogan, 1991). *Personality* refers to the "structures, dynamics, processes, and propensities inside a person that explain why he or she behaves in a characteristic way" (Hogan, 1991). The structures of a personality are called traits. *Traits* refer to recurring regularities or trends in a person's behavior (Hogan, 1991; Allport, 1937). Traits are purely descriptive and do not indicate why a person acts in a particular way. Although personality theories are controversial, I believe people can be characterized in terms of enduring dispositional qualities. Because of the controversy surrounding

personality theory, the next subsection will include Mischel's criticism of personality research and a rebuttal supporting personality research.

Criticisms of and rebuttals for trait research. Mischel's (1968) book Personality and Assessment critiques personality theory and assessment. Two of his major criticisms are:

1) Literature doesn't support the proposition that traits are stable over time and situations.
2) Because personality measures explain only nine percent of the variance in social behavior, situational variables must account for much of the remaining variance in social conduct (Mischel, 1968).

Mischel's first criticism is based on the correlations between single behavioral measures and personality measures. However, other researchers support trait explanations of human behavior. Epstein and O'Brien (1985) believe prototypical trait behaviors may not show up if only measured once in a particular situation. "A single item of behavior, like a single item in a test, has too narrow a range of generality and too great a degree of error of measurement to produce more than very modest correlations with other presumed measures of a trait" (Epstein & O'Brien, 1985, p. 516). They suggest measuring trait behaviors over several occasions and several situations to ensure a reliable trait measure. Monson, Hesley, and Chernick (1982) found single trait behavior measures were highly correlated with trait measures in neutral situations. Neutral situations have few situational constraints, and a wide range of behavior is appropriate. Neutral situations aren't

normatively scripted and don't have strict behavioral codes. For example, a picnic with close friends will allow people to act like themselves. Whereas, churches have strict behavioral codes. Monson, Hesley, and Chernick (1982) believe restrictive situations have reduced the correlations in many studies.

Mischel (1968) believed situational variables affect behavior more than traits. He stated that traits usually only account for nine percent of the variance in behavior. In response to Mischel's criticism, Hogan (1991) noted the correlations between well-constructed and self-validated personality measures and non-test behaviors often exceed .30. Also, since we perceive situations based on the environment and our personality, the situation is difficult to separate completely from personality. Wright and Mischel (1987) propose a conditional trait theory where a trait is the conditional probability of a certain behavior given a certain situation. This theory will be discussed in detail later.

Description of socioanalytic theory. Hogan, Jones, and Cheek (1984) believe personality research has had little progress in the last twenty-five years. They attribute this lack of progress to diverse and fragmented personality research. Hogan (1982) developed socioanalytic theory to provide a broad theoretical perspective to connect existing research and to lead future research. *Socioanalytic theory* states evolution by natural selection is the process that creates physiological, anatomical, and psychological mechanisms (Hogan, 1982). It identifies the psychological mechanisms and behavioral strategies that have evolved to help humans survive and reproduce. This theory uses Darwin's natural selection to explain the human's psychological mechanisms.

Hogan, Jones, and Cheek (1984) list three assumptions in socioanalytic theory:

1) Human evolution has created the capacity for people to live in social organizations.
2) People live in groups.
3) Groups are always organized according to status.

People live in groups to increase safety; however, this lifestyle requires people to have relationships. Each person must balance their need for acceptance and approval with their need for power and control.

Hogan, Jones, and Cheek (1984) believe personality has a stable core. These structures are both biological and social in origin. The biological structures include species-typical instincts for behavior and the individual's unique complement of temperament. The social structures involve a person's self-image, interaction strategies, and theories about the social world. These stable structures affect the influence of situational factors. Although behaviors change from situation to situation, the overall image remains the same. In the next section, I discuss the conditional trait approach which integrates the person's traits and the situation.

Description of conditional trait theory. Wright and Mischel (1987) proposed the conditional trait theory to explain the interaction between individuals and their environment. *Conditional trait theory* defines a trait as the conditional probability of a certain behavior given a certain situation. For example, a person who scores high

in need for achievement, will only strive to succeed in an achievement-oriented activity. The situation needs to make: 1) the individual feel responsible for the outcome, 2) the individual believe his or her performance is evaluated, and 3) the individual feel some degree of uncertainty as to success or failure (Sorrentino, 1973). Only in this type of situation will the individual show his or her achievement trait. By integrating traits and situations, researchers have begun to learn how people and situations interact. Research in this area has found:

1) Traits influence behavior only in relevant situations (Monson, Hesley, & Chernick, 1982).
2) A person's traits can change a situation (Kendrick & Funder, 1988).
3) People with different traits will choose different situations (Kendrick & Funder, 1988).
4) Traits can change with chronic exposure to certain situations (Kendrick & Funder, 1988).
5) Traits are more easily expressed in some situations than others (Kendrick & Funder, 1988; Monson, Hesley, & Chernick, 1982).
6) Certain people are more responsive to situation specification of behavioral appropriateness (Snyder, 1983).

Description of the five-factor model. Researchers have been attempting to organize a taxonomy of personality traits for sixty years (Barrick & Mount, 1991). Fiske (1949) was the first to propose a five-factor model. This model describes people with five overall dimensions instead of numerous traits. His model included neuroticism, extraversion, conscientiousness, agreeableness, and culture. In 1963, Norman (1963)

proposed a five-factor model consisting of extraversion, emotional stability, agreeableness, conscientiousness, and culture. McCrae and Costa (1985) proposed a model including extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. Hogan (1986) supports a six-factor model including sociability, ambition, adjustment, likability, prudence, and intellect. Barrick and Mount (1991) advocate a model consisting of extraversion, emotional stability, agreeableness, conscientiousness and intellect. Although these models have some differences, these models are slight variations on a common model. John (1990) compared several factor models to show their similarities. Below I show the similarities among the models I discussed (adapted from John, 1990).

Author	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Fiske (1949)	Extraversion	Social - Adaptability	Conformity	Emotional Control	Intellect
Norman (1963)	Surgency	Agreeable-ness	Conscientious-ness	Emotional Stability	Culture
McCrae & Costa (1985)	Extraversion	Agreeable-ness	Conscientious ness	Neuroticism	Openness to experience
Hogan (1986)	Sociability	Likability	Prudence	Adjustment	Intellect
Barrick & Mount (1991)	Extraversion	Agreeable-ness	Conscientious-ness	Emotional Stability	Intellect

For example neuroticism and emotional stability are different ends of the same contruct. *Neuroticism*, *adjustment*, or *emotional stability* are defined on one end of the continuum as nervous, self-doubting, and moody and on the other end as stable, confident, and effective (Hogan, 1991). *Extraversion* and *sociability* are characterized by terms such as gregarious and energetic to shy, unassertive, and withdrawn. The third factor, *conscientiousness* varies from planful, neat, and dependable to impulsive, careless, and irresponsible. The factor of *agreeableness* is characterized by terms from warm, tactful, and considerate to independent, cold, and rude. The fifth factor, *culture*, *openness to experience* or *intellect*, is the most difficult dimension to interpret. This factor is generally associated with the level of imagination, curiosity, originality, and intelligence.

McAdams (1992) believes the five-factor model has several limitations including: the inability to predict specific behavior, the failure to provide causal explanations for behavior, and the disregard of the conditional nature of human experience. He criticizes the factor-analytic method used to develop the model. He believes factor analysis allows a great deal of subjectivity into the choice of items, the choice of factor-analytic procedures and rotations, and the labeling of obtained factors. Because of this model's limitations, McAdams views the five-factor model as one important model in personality, not *the* integrative model of personality.

Personality literature's relation to my research. This section provides support for further trait research. Although personality research has been criticized, it's still an important area of psychology. My research investigated the effect of four personality traits on influence and individual consensus in a small task group discussion. My

research focused on four specific personality traits: affiliation, achievement, aggression, and dominance.

To account for the influence of situational variables, this experimental situation:

- wasn't normatively scripted (Pervin, 1985),
- used publicly observable behaviors (Pervin, 1985), and
- didn't have strict behavioral codes (Kendrick & Funder, 1988; Price & Bouffard, 1974).

By providing a neutral atmosphere, group members shouldn't have felt constrained and their personality traits should have been evident.

AFFILIATION

This section defines affiliation, provides an affiliation framework and typology, relates it to group decision making, and describes situational variables that affect affiliation behaviors.

Defining affiliation. *Affiliation* is a person's inclination to make friends and accept people. Affiliative individuals enjoy being with friends and people in general. They make efforts to win friendships and maintain associations with people (Jackson, 1989). Byrne, McDonald, and Mikawa (1963) propose experiences throughout life with other individuals lead to a generalized expectancy concerning people as a source of reward or punishment. If past experiences have lead to the belief that other

people are rewarding, the individual will seek companionship. However if the reverse is true, other people will be avoided and mistrusted. An individual with mixed experiences will have conflict about interpersonal relationships. The main social reinforcer for affiliation is the communication of liking being a positive social reinforcer and disliking being a negative reinforcer (Mehrabian & Ksiozky, 1974). These reinforcers are communicated through both verbal and nonverbal behaviors.

A framework for affiliation. This sub-section describes a framework developed by Mehrabian and Ksionzky (1974). This framework describes two dimensions of the affiliation trait and how they interact with situational variables to result in observable affiliative behaviors. Mehrabian's and Ksionzky's affiliation framework has three sets of variables: observable behaviors, the situation, and individual disposition. The observable behaviors might include smiling, touching, and conversing. Situation variables affecting affiliation behaviors include uncertainty, stress, and attractiveness of target. The third variable in this framework is the individual's disposition or the level of the individual's affiliation trait. They propose two dimensions of the affiliation trait. Within the two-dimensional framework, persons can be characterized by the extent to which they generally expect interaction with others to be positively reinforcing (R1) and negatively reinforcing (R2). Positive and negative reinforcement are viewed as partially independent dimensions of interpersonal relationships. Mehrabian and Ksionzky hypothesize affiliation is a multiplicative function of positive reinforcement, negative reinforcement, and the extent to which situational factors induce stress, uncertainty and other affiliative factors. Affiliative behavior depends on the amount of the individuals affiliation trait (R1 X R2) and the situation variables present.

Affiliation Behavior	=	Affiliative Trait (R1 X R2)	X	Situational Variables (e.g. stress or uncertainty)

A typology for affiliation. This sub-section provides a typology for affiliation. By dichotomizing the positive and negative reinforcement, Mehrabian and Ksionzky describe four kinds of affiliators. *Positive affiliators* believe interactions with others will be primarily positive. *Negative affiliators* expect interaction to be primarily negatively reinforcing. *Ambivalent affiliators* expect interactions with others to be both positively and negatively reinforcing. Finally, the *neutral affiliator* expects interaction to be only small degrees of either positive or negative reinforcing.

Hardy (1957) integrated Mehrabian's and Ksionzky's typology of affiliators with a one dimensional trait measure. Hardy integrated the typology of affiliators with the Thematic Apperception Test scores. Persons scoring high in need for affiliation (n-affiliation) are positively motivated toward affiliation. A person obtaining a moderate score on n-affiliation is conceived to be ambivalent and anxiously motivated toward affiliation, and the low-scoring person experiences a negligible arousal of affiliation motivation. My research won't be able to distinguish between the four types of affiliators. Like Hardy, I used a one-dimensional measure of affiliation. The Personality Research Form provides a measure of the strength of an individual's affiliation trait.

Affiliation and group decision making. Affiliative group members are important to group dynamics because they tend to help resolve conflict and maintain group cohesiveness. Bither (1971) believed affiliative group members positively influence

the ability of the group to work together and perform effectively. He found affiliation to be positively correlated with group performance (marginally significant).

The relationship between affiliation and influence is difficult to hypothesize because of conflicting research. Researchers have found mixed results for the relationship between conformity and affiliation. Several researchers have found a positive correlation between affiliation and conformity (Exline, 1962; Hardy, 1957; McGhee & Teevan, 1967; Sistrunk & McDavid, 1965). In addition, Sistrunk and McDavid (1965) found an interaction between achievement and affiliation. The effects of affiliative tendency on conformity were significant for those individuals who were low achievers but not for those who were high achievers. Kaplan (1961) and Samelson (1958) found no significant relationship between affiliation and conformity. If affiliation is positively correlated with conformity, affiliation would be negatively related to both actual and perceived influence.

Other research would seem to indicate that affiliative individuals would have increased influence. Sorrentino and Field (1986) found emergent leadership and affiliation were positively related. They found affiliation had a significant, positive relationship with a group member's perceived influence, competence, confidence, task leadership, and socio-emotional leadership. In group elections, the high-affiliative group members were chosen to be leaders significantly more than low-affiliative group members. The tendency for leaders to have the most influence in a group suggests that affiliative individuals would have more actual influence. In addition, affiliative individuals can increase their influence through their relationships with other group members. Schuler (1982) believes group members

can gain influence through "liking relations between the interacting persons." Decisions can be influenced through the social-emotional relations. Positive feelings enhance attention toward the group member, facilitate attributions of credibility, and reduce mechanisms of perceptual and attitudinal defence (Schuler, 1982).

Situational variables. This sub-section describes the effect of several situation variables on affiliative behaviors. Although these situational variables weren't part of my research, situational variables can affect the use of trait relevant behavior. Therefore, these situational variables were relevant to my experimental task situation.

Several researchers have found the desire to affiliate increases with uncertainty of the situation (Gerard & Rabbie, 1961; Rabbie, 1963; Gerard, 1963; Singer & Shockley, 1965; Goodenough & Karp, 1962; Rodloff, 1966). Individuals tend to have a greater desire to affiliate with others who hold more similar attitudes or have a more similar economic status (Byrne, 1971; Hakmiller, 1966; Schachter, 1959). Individuals tend to prefer to affiliate with others who could provide them with self-enhancement (Gordons, 1966).

Affiliation and my research. My research investigated the effect of affiliation on influence and individual consensus. The direction for the relationship among affiliation, influence, and individual consensus was difficult to hypothesize because of conflicting research results. My research showed affiliation was negatively related to actual influence.

ACHIEVEMENT

Defining achievement. Henry Murray introduced the concept of achievement as the desire to excel and strive to accomplish difficult things, to do things as rapidly as possible, and to surpass others. Individuals with high achievement tend to aspire to accomplish difficult tasks and maintain high standards (Jackson, 1984). They respond positively to competition and are willing to work toward distant goals. *Achievement motivation* is a person's learned need or drive to achieve success in competition with some standard of excellence (McClelland, Atkinson, Clark, & Lowell, 1953). This goal may be evidenced by competition with a standard of excellence, some unique accomplishments, or long-term involvement with an activity performed well (Potkay, 1986).

Schneider and Delaney (1972) found support for the view that achievement is a latent disposition. In this view, a person who had a high level of achievement motivation would only manifest prototypical achievement behaviors in achievement-oriented activities. An *achievement-oriented activity* has three criteria: the individual must feel responsible for the outcome, he or she must know performance is evaluated; and he or she must feel some degree of uncertainty as to success or failure (Sorrentino, 1973).

Spence (1983) operationalized the construct of achievement motivation as a cluster of interacting factors rather than as a unitary dimension. Her definition of

achievement includes two types of behaviors. She includes both the traditional behaviors of achievement at work and school; however, she also includes extracurricular activities. She developed the Work and Family Orientation Questionnaire (WOFO), which comprises three independent achievement factors: mastery, work, and competitiveness. *Mastery* is the preference for challenging tasks and for meeting internal standards of performance. *Work* is the desire to work hard and to do a good job. *Competitiveness* is the enjoyment of interpersonal competition and the desire to do better than others. Her research has demonstrated that the structure of achievement motivation is similar for both genders.

Expectancy-value theory. Atkinson (1957) proposed a theory which specifies that the strength of an individual's achievement motive is determined by the sum of two tendencies: the tendency to approach success and the tendency to avoid failure. The strength of these opposing tendencies is determined by three components: motive, expectancy, and incentive. *Motive* is composed of the two dispositional tendencies to avoid failure and to approach success. *Expectancy* is the probability that an achievement-oriented behavior will result in either success or failure. *Incentive* is the attractiveness of the success or the price of the failure.

Achievement and group decision making. High achievers are important to group decision making because they can help keep the group focused on the task. They tend to use different and more successful strategies than people who are driven solely by extrinsic rewards (Spence, 1983). High achievers tend to emerge as leaders (Bither, 1971; Sorrentino & Field, 1986). French (1955) found groups composed of high achievers were more efficient than low achievement groups. Contrary to their

original hypothesis, Schneider and Delaney (1971) found groups with high achievers solved complex tasks faster than low achiever groups. High achievers are intrinsically motivated to perform well.

Achievement and my research. Sorrentino and Field (1986) found achievement to be significantly, positively related to the group member's perceived influence, competence, confidence, and motivation. My research focused on the relationship among achievement, influence, and individual consensus. My research showed achievement was positively related to perceived influence and individual consensus.

AGGRESSION

The literature on aggression can be classified into two major categories. My research focused on the aggression trait and socially acceptable aggressive behavior (e.g. yelling). The other category is physical aggression. In this subsection, I'll define the aggression trait, differentiate between dominance and aggression, and explain some situational variables that affect aggression.

Defining aggression. Jackson (1984) defines dispositional aggression as a person's inclination to combat and argue. Aggressive individuals enjoy argument and are sometimes willing to hurt people to get their own way (Jackson, 1984). They tend to anger easily and are often hostile or argumentative (Jackson, 1984). Hollandsworth (1984) defines *aggressive behavior* as the use of threats, punishment, rejection, ridicule, or other types of coercive power to meet one's needs.

Difference between aggressive and dominant behavior. Dominant behavior includes both assertive and authoritarian behavior. When a group member uses dominant behaviors, he or she attempts to influence by either stating an opinion or directing others. In describing dominance, Jackson lists adjectives which include: commanding, controlling, directing, and influential. Hollandsworth (1984) differentiates between dominance and aggression by stating that aggressive behaviors rely on coercive power. *Coercive power* (French & Raven, 1959) stems from the ability of the influencer to punish the target. However, Jackson's definition of aggression also includes behaviors which intimidate other group members. In describing the aggression trait, Jackson lists adjectives that include: argumentative, attacking, threatening, hot-tempered, and hostile. Therefore, my definition of aggressive behaviors includes behaviors which uses threats, fear, and intimidation to influence.

Aggression and group decision making. This sub-section explains how an aggressive individual can influence a group's interaction. Brenner and Tomkiewicz (1980) investigated the relationship between aggression and managerial effectiveness. Using the aggression scale from the Personality Research Form, they found aggression was positively correlated with group task accomplishment and overall managerial effectiveness; however, it wasn't significantly correlated with the ability to lead or motivate subordinates.

I'll discuss Ridgeway's and Diekema's (1989) study in this section because they define dominant behaviors as "behaviors directed toward the control of another through threat." I'll use the word "aggression" instead of "dominance" to interpret their

results. They constructed aggressive conditions by training confederates. The confederates used the following behaviors to create the aggressive conditions: interrupting; dismissing other suggestions in a contemptuous way; maintaining a tense, forward-leaning posture; pointing; speaking with a raised or commanding voice; and asking interrogating questions. Ridgeway and Diekema believe aggressive behavior used legitimately to enforce group norms is more acceptable and effective than aggressive behavior used illegitimately to claim status. In their study, they found bystanders would intervene against a group member (a confederate) who claimed status by aggressive behavior. Moreover, the aggressive confederate was disliked and no more influential than a neutral confederate.

Hollandsworth and Cooley (1978) found subjects complied less readily to aggressive behavior than to assertive behavior. In addition, aggressive behavior increases the chance of a counterattack (Hollandsworth & Cooley, 1978). In Hull's and Schroeder's (1979) study, they found that aggression elicits responses of anger, hurt, and humiliation; however, aggression does allow group members to reach their goal. Although aggressive individuals can influence the group, they can decrease decision quality and group consensus.

Situational sources of aggression. This sub-section provides background information on situational variables that affect aggression. Although these variables weren't manipulated or measured in this study, situational variables could have affected my research through their influence on trait relevant behavior.

Many researchers have investigated the effects of several situational variables on aggression. Baron (1977) found anger is positively related to aggression. In fact, people don't tend to use aggressive behaviors unless someone or something has made them upset or angry. Aggression and anger are often inappropriately considered synonyms. Anger is a negative feeling toward someone or something that hurts, opposes, offends, or annoys. It is a motivation for aggression and usually a prerequisite for any aggressive behaviors.

Aggression leads to further aggression. In a field experiment, Ebbesen, Duncan, and Konecni (1975) found individuals, who were given the opportunity to be verbally aggressive against a person, were more prone to show further aggression. Geen, Stonner, and Shope (1975) found the same results in a laboratory experiment. Observing aggressive behavior leads to an increase in aggression (Baron & Byrne, 1982; Leyens, Camino, Parke, and Berkowitz, 1975; Bandura, Ross, & Ross, 1963). Dollard, Doob, Miller, Mowrer, and Sears (1939) postulated aggression was caused by frustration. However, many researchers believe aggression is only one of several possible responses to frustration (Miller, 1941; Baron & Byrne, 1982).

In addition, erotic stimuli, moderately high temperatures, and loud noises increase the likelihood of aggressive behavior (Baron, 1977; Baron & Bell, 1976). As heat and the unpleasantness of the surroundings increases, the level of aggression increases up to a point. However, in extremely high temperature or unpleasant situations, people only attempt to escape not become aggressive. Baron (1977) found loud noise creates high aggression when the person is already annoyed or angry.

Certain situational characteristics can also decrease aggression. The presence of a non-aggressive model, non-sarcastic humor, and empathy can all reduce aggressive behavior (Baron, 1977).

DOMINANCE

I've divided this section into four sub-sections: defining dominance, dominance and group decision making, measuring dominance, and dominance and my research.

Defining dominance. Dominance is the inclination of individuals to try to control their environment and to influence others (Jackson, 1989). Dominance has both positive and negative connotations. Ray (1987) classifies assertion as nonaggressive dominance and authoritarian behavior as aggressive dominance. *Assertion* is the expression of one's feelings, needs, preferences, or opinions in a non-threatening, non-punitive manner (Hollandsworth, 1977). *Authoritarian* behavior is the use of commands to attempt to get absolute obedience from others. Buss and Craik (1980) developed a list of prototypical and nonprototypical dominant acts with both high and low social desirability.

	Low prototypicality	**High prototypicality**
Low Social desirability	He (she) flattered her in order to get his (her) way.	He (she) forbade her to leave the room.
	He (she) deliberately arrived late for the meeting.	He (she) monopolized the conversation.
High social desirability	He (she) asked someone out on a date.	He (she) took the lead in livening up a dull party.
	He (she) was highly involved in a political campaign.	He (she) took command of the situation after the accident.

Dominance and group decision making. Dominant individuals are important in group decision making because they are less likely to yield to normative pressure. They can critically evaluate alternatives without conforming to the group's opinion (Callaway, Marriott, & Esser, 1985). Research has shown dominant individuals generally: emerge as leaders, use more negative social-emotional remarks, participate in group activities, promote group cohesiveness, influence group decisions, and are popular (Shaw, 1976; Cattell, 1960; Haythorn, 1953).

The effect on group dynamics depends on the dominant group member. Hoskins (1986) found a curvilinear relationship between dominance and successful interpersonal relations. This relationship may apply to group situations. Therefore, dominant individuals can help the group interaction by explaining their opinions, but they can hurt the interaction by trying to influence too much. Hollandsworth and Cooley (1978) found assertive statements elicited greater influence and provoked less anger than aggressive statements. Therefore, through the use of assertive behaviors, dominant individuals can help the task accomplishment without undue negative effects on the group interaction.

Measurement of the dominance construct. In recent years, dominance has been a popular area for research. In this sub-section, I summarize the ways various researchers have measured dominance. This sub-section contains primarily background information.

Dominance has been measured primarily in three ways: personality tests, special dominance measures, and behavioral measures. David & Gilbert (1989) used

Gough's California Personality Inventory (CPI) to measure dispositional dominance. This measure was used to recruit low or high dominant subjects. The CPI scores were separated into subscales (e.g. <25 = low dominance and >32 = high dominance). Davis and Gilbert (1989) found prior task interactions diminished status differences between male and female partners, allowing high dominant woman paired with low dominant men to become leader 71% of the time.

Hoskins (1986) developed a dominance-accommodation scale for interpersonal relations. It reflected the concepts of open communication, consideration of partner's views, and resolution of differences. Buss and Craik (1980) investigated if multi-acts criteria based on prototypical dominant acts are predicted by personality scales with significantly greater success than are multiple-act criteria based on more peripheral acts within the dominance domain. Their study consisted of three sections: generating a list of dominant acts, having experts rate the prototypicality of the act, and correlated personality scales with subjects self-report of performing these acts. In the last part of their study, they changed each act into the first person and constructed the Act Report. The Act Report (100 acts derived earlier in their study) asked participants to check "yes" or "no" according to whether they had ever performed the act. If the answer was "yes," they were requested to indicated the frequency with which they performed the act on a three-point scale including: "rarely," "sometimes," or "often." They found subjects' responses to the Act Report were significantly correlated to the Personality Research Form dominance scale and California Personality Inventory dominance scale.

Typically, researchers use behavioral measures when they are looking at dominance as an dependent variable. Dovidio, Keating, Heltman, Brown, and Ellyson (1988) analyzed the relationship of social power to visual displays of dominance between men and women. His study showed expert and reward power increases visual signs of dominance. Behavioral measures for dominance include: ratio of looking while speaking to looking while listening (Dovidio, 1988), time spent talking, number of interruptions, number of successful influence attempts, style of interaction, and who was voted to be leader (Davis, 1989).

Dominance and my research. I've defined the dominance trait as the inclination in individuals to lead or control situations. This trait affects a group's interaction through various observable behaviors, such as: commanding others, talking loudly, and expressing opinions. Many researchers have found dominant individuals influence the group's interaction. My research investigated the effect of dominance on influence and individual consensus in a small task group.

INFLUENCE

I've divided this section into four sub-sections: defining influence, the influence process, types of influence, and influence and group decision making.

Defining influence. Influence is any act or potential act which affects the behavior of another person (Cohen, 1984). *Influence* is the attitudinal and behavioral effects of one person on another (Hopkins, 1964). In a small group discussion, *influence* is "the

effect an action has on the members viewed collectively, in particular the effect it has on the content and relative salience of shared norms" (Hopkins, 1964).

I differentiate between actual and perceived influence. *Actual influence* is a group member's effect on other group members' opinions and on the final group decision. *Perceived influence* is how much a group member thinks he or she affected the decision. Silk and Kalwani (1982) found people aren't good judges of the amount of influence they had in a decision. Corfman (1991) proposed a model illustrating the sources of error between perceived and actual influence. Figure 5 illustrates this model. In her model, four factors are responsible for errors in perceived influence: the joint choice process, memory, inferential ability, and perceptual bias. The *joint choice process* includes group discussion, mutual influence, and the determination of the final decision. Group members don't always have a strong preference before the meeting. Their opinions may evolve as more information is made available. Therefore, a group member might not be able to accurately judge their actual influence. *Memory* is the process where people recall experiences. The recency of the group process, the importance of the decision, and how good the group member's memory is in general can affect how well the group process is recalled. Since memory isn't infallible, group members may not be able to accurately recall their influence. *Inferential ability* is the capacity for a person to accurately judge their influence. People with greater insight into the intergroup relationships may be more sensitive to who has influence. *Perceptual bias* is an inclination for people to perceive themselves to be similar to their self-image. For example, people who consider themselves to be an expert might overestimate their influence to support their self-image.

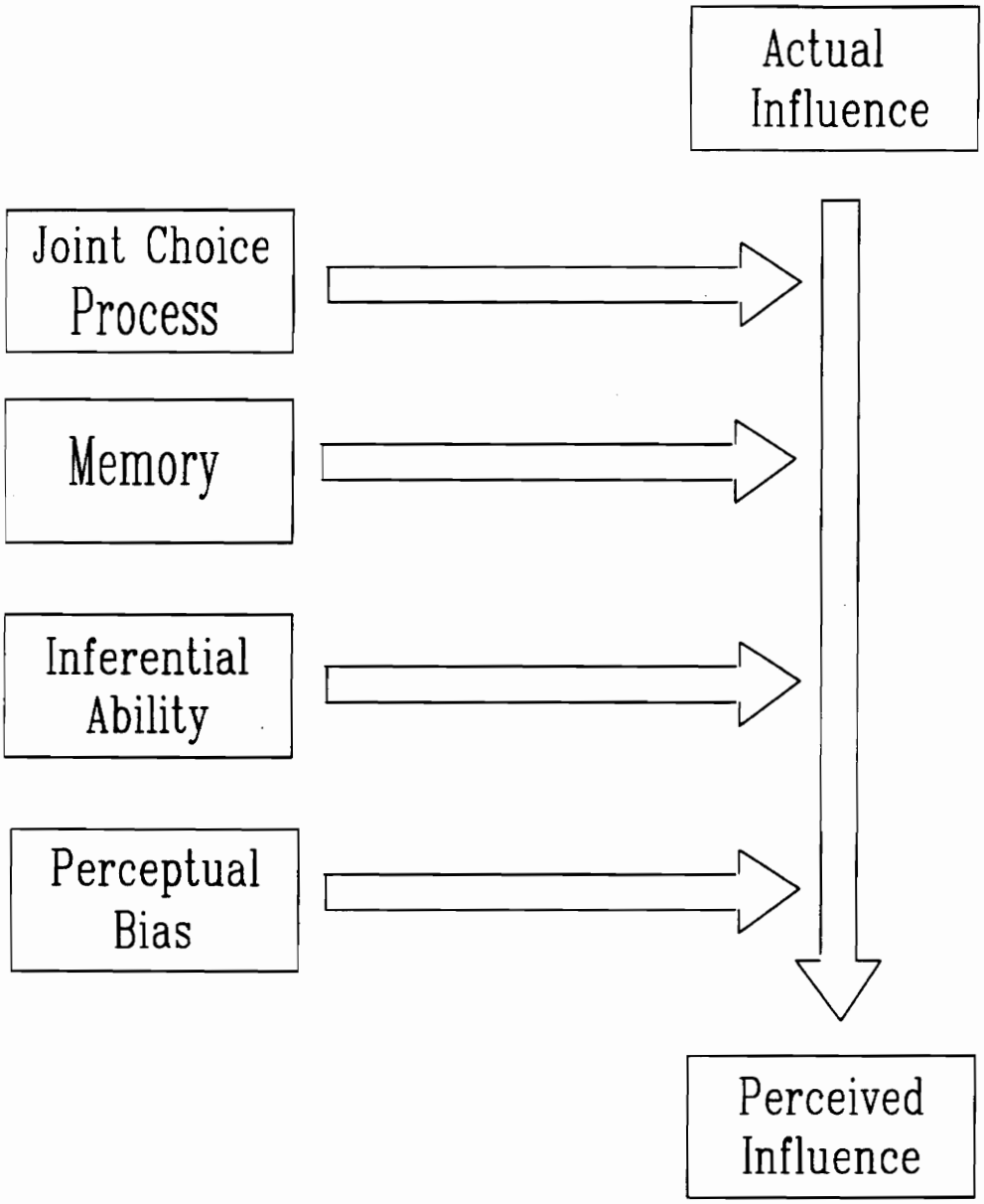


Figure 5: Model Illustrating the Relationship between Actual and Perceived Influence (Adapted from Corfman, 1991)

Influence processes. Hollander (1958) believes group members gain influence through idiosyncrasy credits. *Idiosyncrasy credits* are the accumulation of positive impressions residing in the perceptions of other group members. Conformity to group norms and good task performance gives a group member idiosyncrasy credits and therefore increases the member's status and influence. Poor task performance and deviation from group norms takes away credits from the total. Once the group member has accumulated enough credits, these credits allow him or her to deviate from the group norms. In an experimental study, Hollander (1960) found the longer a group member had conformed to the group norms, the more influence he or she could exert. This theory explains the paradox that leaders conform to group norms, yet may alter them.

Moscovici, Lage, and Naffrechoux (1969) believe that minority and majority influence involve different underlying processes. *Minority influence* is a type of influence where a small deviant group changes the opinion of the majority. Moscovici and Lage (1976) found minorities' influence caused both behavioral changes and opinion changes. *Majority influence* occurs when the larger group changes the opinion of the minority. Majorities only exert influence on behavior, not opinions (Moscovici & Lage, 1976).

Minority influence requires the majority to consciously consider the minorities' opinion and decide the opinion is better. Because considering the other option is more difficult than conforming to the majority, minorities can only exert influence in some situations. The majority will often discredit the minorities' opinion if the minority isn't consistent, it consists of only one person, or the minority is a double

minority (Maass & Clark, 1984, Moscovici & Lage, 1976). A majority can perceive an inconsistent minority as incompetent and dismiss their opinion. A single dissenter's arguments can be dismissed as a personal idiosyncrasies or bias. A *double minority* differs from both the group's opinion and their social categorization. For example, two women in an all male meeting arguing for childcare at their office could be discredited. A double minority's opinion can be dismissed because of their bias.

Asch (1952) studied the extent a majority can influence a minority to respond in a way they ordinarily wouldn't. In his experiment, each group consisted of one subject and several confederates. In a simple visual task, the confederates would periodically all choose the wrong alternative. Asch measured the number of times a subject would answer the same as the confederates. The larger the unanimous majority facing the lone individual, the greater the rate of conformity (Asch, 1952). Majority influence causes conformity, not acceptance.

Latane (1981) introduced a theory combining minority and majority influence into one theory. *Social impact theory* states the amount of influence produced by either a minority or a majority is the multiplicative function of strength, immediacy, and the number of group members of the influence source. The *influence source* is the group or individual who is attempting to change the opinion. The *strength* of the influence source is related to the members' status, power, and knowledge. The *immediacy* of the influence source is related to its proximity in time and space. The number of group members of the influence source affects the amount of influence non-linearly. In this theory, each additional member has relatively less impact than the previous

member. For example, the first person to join the influence source has more impact than the second.

Tanford and Penrod (1984) propose a more sophisticated model of social influence. Tanford and Penrod believe initially each additional influence source will increase relatively to the previous source until it reaches an inflection point. Around three influence sources, the amount of influence for each new influence source will decrease. Their social influence model (SIM) places a ceiling on the amount of influence possible. SIM assumes social influence is primarily a function of the minorities' and the majorities' size and that both the minority and majority influence operate with a single process. In addition, SIM includes two other parameters, the probability that a group member will choose the deviant minority opinion in the absence of influence and the individual differences in susceptibility to persuasion (Tanford & Penrod, 1984).

Types of influence. Shifts in group members' opinions usually involve either informational or normative influence processes (Deutsch & Gerard, 1955). *Informational influence* refers to influence based on the sharing of facts or persuasive arguments about the issue. *Normative influence* refers to conformity to implicit decision norms and others' preferences (Kaplan, 1987). Hall and Watson (1972) found that untrained groups had two dysfunctional norms: the tendency to converge on a decision without considering alternatives and the tendency to be intolerant of opinion differences. Informational influence leads group members to change their opinion on the belief that another alternative is a better solution. Therefore, informational influence leads to both public and private decision support. Normative

influence involves group members conforming to others' ideas leading to only public decision support.

Kipnis, Schmidt, and Wilkinson (1980) investigated how members of an organization attempt to influence both subordinates and superiors. They concluded that workers use eight distinct types of influence: assertiveness, ingratiation, rationality, sanctions, exchange of benefits, upward appeals, blocking, and coalitions. Since these methods of influence were developed for organizational settings, they don't all apply to group decision making. Assertiveness, ingratiation, rationality, and coalitions are all applicable to group decision making and my research.

Yukl and Tracy (1991) investigated nine influence tactics: rational persuasion, inspirational appeal, consultation, ingratiation, exchange, personal appeal, coalition, legitimating, and pressure. In *rational persuasion*, a group member uses logical arguments and factual evidence to persuade a person that a proposal is viable and likely to result in the attainment of task objectives. *Inspirational appeal* arouses enthusiasm by appealing to a group member's values, ideals, and aspirations. In *consultation*, a group member seeks participation in planning an activity for which support and assistance are desired. The *pressure tactic* uses threats, demands, or persistent reminders to influence a group member. In *coalition*, a group member seeks the aid of others to persuade. In the *legitimating tactic*, a group member seeks to establish the legitimacy of a request by claiming the authority or right to do it or by verifying that it is consistent with traditions. Rational persuasion, inspirational appeal, and consultation were the most effective influence tactics while pressure, coalition, and legitimating were the least effective. Kipnis and Schmidt (1988) found

managers who used rational persuasion more than other influence tactics had the highest performance ratings.

Influence and group decision making. Influence is an important variable in group decision making because mutual social influence processes allow groups to reach consensus (Paulus, 1989). The type of influence can affect the quality of the decision and each group member's individual consensus with the decision (Jackson, 1975). When group members change their opinion, they may have genuinely reconsidered their opinion or they may just be saying what the group wants to hear. Forsyth (1983) lists the four types of social responses: conversion, compliance, counterconformity, and independence. These social responses are illustrated below.

	Private Position	
Public Position	Agree	Disagree
Agree	Conversion	Compliance
Disagree	Counterconformity	Independence

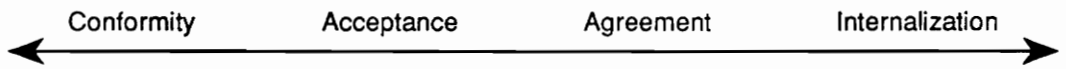
Groups with dysfunctional interactions will rely on conversion and are likely to produce a low-quality decision with low acceptance. Without group members' private acceptance, the decision is less likely to be successfully implemented.

Bottger (1984) investigated the relationship among quality of verbal contributions, quantity of verbal contributions, and a group member's influence. He found the quantity of a group member's contributions increased the other group member's

attributions of his or her influence. However, he found expertise to be a better predictor of the actual influence on the group decision. A group member's perception of his or her own influence has a positive relationship with his or her acceptance of a decision (Effmeyer & Lane, 1984; Hoffman & Maire, 1961).

CONSENSUS

Defining consensus. Consensus can be defined as either a state or a process. I considered consensus as a state in my research. Consensus is a state existing when most of the people concerned have reached a common judgment for which they are willing to show some level of support. Individual consensus refers to a group member's acceptance of, agreement with, and commitment to the group's decision. The level of individual consensus can vary from conformity, where the individual only agrees publicly, to internalization, where the individual has a strong belief in the group decision. Each level represents some level of support for the group decision. The interpersonal group dynamics can affect the level of consensus. This continuum is illustrated below (adapted from Brubaker, 1991):



Individual Consensus

Consensus as a process. In the consensus-as-a-process view, Wood (1984) defined consensus as a decision technique where the group decision reflects the views of all

the members and has at least acquiescence from them. With the increase of participative management in industry, consensus meetings have become popular. However, the effectiveness of a consensus meeting depends on several assumptions about the group goals, group process, and group members. The individual group member's goals need to be similar to the group goal (even if they disagree on how to accomplish the goal). The group process needs to be friendly and have balanced contributions from all members. The individuals need to be open-minded (e.g., willing to consider other alternatives) and have a strong team orientation (Wood, 1974). Consensus meetings aren't always appropriate. They shouldn't be considered if time is critical (Wood, 1984).

Consensus meetings affect both the group's decision and group members' satisfaction. Effmeyer and Lane (1984) compared the quality and the acceptance of group decisions across four decision-making formats (interacting, consensus, the nominal group technique, and the Delphi technique). They found consensus groups had the highest levels of acceptance while still maintaining a high decision quality. In addition, consensus fosters commitment to implementation of decisions. However, because the group negotiates to reach an agreement, decisions tend to be moderate, or not extreme. Moderate decisions guard against bias; however, the decisions can become simply the common denominator among group members (Wood, 1984).

Typology of consensus. Scheff provides a typology of different consensus states. *Monolithic* consensus occurs when the majority agrees and understand there is agreement. *Pluralistic ignorance* occurs when the majority agrees, but they think they disagree. When the majority doesn't agree, and they think they disagree; there is

dissensus. There is *false consensus* when the majority doesn't agree and they think they do (Scheff, 1984).

In addition, consensus can be divided into public and private consensus. *Public consensus* is conformity to group norms without personal internal belief. *Private consensus* occurs when a group member personally agrees, accepts, and is committed to the group decision. The use of normative influence in a group's interaction will reduce group consensus since it's based on conformity. Moscovici (1976) contends that majorities produce public compliance and minority influence results in private acceptance. Research has shown perceived decision quality and perceived influence in the decision increases an individual's private strength of consensus (Hoffman, 1959; Polk, 1991).

METHODOLOGY

I collected my data in conjunction with John Polk. By working with John Polk, I was able to obtain a large sample size. I participated in planning the original experimental situation and I collected my own data. To provide the context of my experiment, I provide a short description of John Polk's research.

His research investigated the effects of an expert on strength of consensus when the expert is a member of a consensus group. His experimental manipulation consisted of placing a confederate into each group. One week prior to the experiment, each confederate received either no training, subject training, or task training. Therefore, each group contained either a subject expert, a task expert, or an untrained confederate. Since the expert manipulation may have impact my results, the training of the experts will be described in the procedure section. In the "Discussion" section, I discuss the possible impact of John's manipulation on my results.

TYPE OF RESEARCH

My research can be classified by its goal, logic, and methodology. The goal of my research is to formulate and evaluate a theory. Although my research may be useful for real world problems; it is basic, not applied research (Ary, Jacobs, & Razavieh, 1972). My research will primarily use deductive logic. I'll start with a hypothesis and collect data to test its accuracy (Leedy, 1989). However, I'll need to use inductive logic to formulate recommendations from my research. The methodology used in my

research is relational. In relational studies, variables aren't manipulated. To test my hypotheses, I measured several variables that weren't been manipulated but were obtained in an experimental situation. I attempted to determine the interrelationships among the variables based on these measurements.

RESEARCH PLAN

Subjects

I used 308 undergraduate students randomly placed into 77 four-person groups. Each group consisted of three members and one expert. I recruited 231 subjects from an introductory psychology class. The confederates were recruited from the sociology pool. The psychology students received three points toward their final class grade for participation; sociology student received $20. Performance in the task had no bearing on either reward. I used college students to control for age, intelligence, and experience. I won't analyze the data for the experts since this wasn't part of my experiment.

Task

Subjects completed the Lost on the Moon exercise. Hall (1971) developed this exercise to study consensus groups. This exercise has the subjects imagine they are stranded on the moon. They are asked to individually rank order fifteen items according to their importance for survival. Each subject completed this exercise three times: initial individual ranking, group ranking, and final individual ranking. NASA experts have determined the "correct" answer to this exercise. This exercise is appropriate since it provides the group with a task to reach consensus on.

Measures

I collected the following data:

Dominance, Aggression, Affiliation, and Achievement. Traits are generally measured in three ways: personality tests, specific trait measures, and behavioral measures. These exogenous variables were measured by Jackson's Personality Research Form, Form E (PRF-E). A personality test was chosen over a specialized trait measure or behavioral measures since measures of four personality traits were necessary.

I chose Jackson's Personality Research Form because it's been extensively validated and had scales for all four personality traits (Jackson, 1989). In the Mental Measurements Yearbook, Hogan (1989) describes the scales of the PRF as having high internal consistency, minimal overlap, good test-retest reliability, and minimal item ambiguity. In addition, this test is relatively free from social desirability response bias (Conoley & Kramer, 1989). To check the validity of the PRF-E, several studies have compared PRF-E's results with peer evaluations and other personality tests especially with college samples (Conoley & Kramer, 1989; Jackson, 1989). Conoley and Kramer (1989) found substantial data supporting the PRF's validity.

To save time, each subject received a shortened version of Form E. Instead of measuring all 22 traits, the shortened questionnaire only measured the complete scales for dominance, aggression, affiliation, aggression, social desirability, and infrequency. Both social desirability and infrequency are test checks. I used the

infrequency measure to identify person's whose scores should be excluded from the study. This scale was designed to identify subjects who didn't read the questionnaire, didn't answer the questionnaire seriously, or are emotionally unstable. I randomly ordered the resulting 96 questions. These questionnaire data weren't used for Polk's study.

Perceived influence. Hopkins (1964) believes both post-interaction questionnaires and observers' ratings are valid measures of influence. Pre-interaction measures or interaction rates measure status or centrality (Hopkins, 1964). To allow for a large sample, I measured this endogenous variable with a post-interaction questionnaire. In my study, I used three scales from Polk's questionnaire (1991). I used his consensus, perceptions of opportunity to express views, and perceptions of decision quality scales (Polk, 1991). I derived my influence scale after I had already run the experiment using the abridged questionnaire. To derive the influence scale, I hypothesized that nine items from the abridged questionnaire would measure the construct of influence (primarily from the perception of opportunity to express views scale). Through a factor-analytic study using least squares and maximum likelihood estimation and varimax and promax rotations, I derived a 4-item questionnaire. The Cronbach alpha for the perceived influence factor was .884. A list of the questions is included in the appendix.

Actual Influence. I measured this endogenous variable with an absolute difference score between the group member's individual ranking and the final group ranking (Bottger, 1984). A low score indicates high influence. This measure wasn't used for Polk's study.

Individual consensus. I measured this endogenous variable with a 10-item scale. I derived this questionnaire from the factor analytic study cited above. This scale contains both the items from Polk's consensus scale and his perceptions of decision quality scale. Polk's research (1991) demonstrated that perceived decision quality and strength of consensus are highly correlated. The Cronbach alpha for my individual consensus factor was .894. A list of the questions is included in the appendix.

Procedure

Approximately one week prior to the experimental session, the sociology students received one of three types of training. In the subject expert condition, sociology students were tested on their knowledge of the moon, given a lecture on the moon, and then retested on their knowledge. In the task expert condition, sociology students were led through two survival exercises similar to the NASA moon survival exercise and given tips for solving these types of exercises. In the control condition, sociology students were given no training. In all three conditions, they were told the other members of their group were psychology students who wouldn't have participated in a pre-experimental session.

The specific procedure used during the experimental session is described below.

1. The experimenter explained the task instructions and told the subjects their goal was to reach the best decision possible. Participants signed a consent

form and were given ten minutes to perform the individual-ranking step. Subjects were asked to work silently prior to the group-discussion step.

2. The experimenter formed groups so each experimental group had one expert (trained or untrained). Except for ensuring only one expert, placement was random. All subjects received a subject number that denoted an individual number and his or her group number. A proctor led each group to a separate room.
3. Before performing the task, group members introduced themselves by giving their name, major, and any classes or hobbies they believe would help them solve the problem.
4. The proctor collected the individual ranking and explained the task to group.
5. Groups were allowed 30 minutes to interact and rank items. All groups reached consensus within 30 minutes. Each group member had a ranking sheet to record the group ranking. The proctor collected the group rankings.
6. Subjects were given ten minutes to perform a final individual ranking.
7. Subjects filled out post-questionnaires.
8. Subjects filled out personality test.
9. The proctor asked the subjects not to discuss the exercise with anyone.

Since the experiment was completed over four days, the true purpose of the experiment and the solution to the NASA exercise weren't given to the subjects that day. The experimenter provided a memo with this information to the psychology class the following week.

RESULTS

This section summarizes the results of my data analysis. I've included two subsections: descriptive statistics and reliability analysis, and the path analysis. I've included statistical interpretations in this section. I'll include broader interpretations in the next section, "Discussion."

DESCRIPTIVE STATISTICS AND RELIABILITY ANALYSIS

I assessed the reliability using Cronbach's alpha, a measure of internal consistency. Alphas above .70 are considered acceptable. The reliabilities ranged from .72 to .89. Table 1 contains the number of subjects, means, standard deviations, and measures of reliability for the seven variables in my study.

The means for perceived influence and individual consensus scales appeared to be located toward the upper bound. The mean for perceived influence was a 5.71 on a 7 point scale. The mean for individual consensus was a 5.34 on a 7 point scale. Using t-tests, I found these means were significantly different from their centerpoints at the .05 level.

Table 1: The Mean, Standard Deviations, and Cronbach's Alpha for each Scale in my Study

Variable	N	Mean	Std Deviation	Reliability
Affiliation	230	10.8304	3.3982	.7912
Achievement	230	10.1043	3.4839	.7760
Aggression	230	9.1087	3.2348	.7173
Dominance	230	9.9348	4.065	.8407
Actual Influence	231	43.1229	13.9503	N/A
Perceived Influence	231	5.7056	0.7394	.8844
Individual Consensus	229	5.3401	0.8299	.8947

PATH MODEL ANALYSIS

Using univariate analysis, I tested all my variables for deviations from normality. Since none of my variables deviated significantly, I used Pearson product-moment correlations. The correlations between the variables in my study are listed in Table 2. Since the actual influence score was inversely related to the amount of influence, any correlation or effect with actual influence will be opposite of its true direction. For example, although I found a positive correlation between affiliation and actual influence, I would interpret this to mean a high score on affiliation is associated with a low score on actual influence.

By using path model analysis, I was be able to assess the direct, indirect, and total effects of each variable on consensus. Figure 6 illustrates my hypothesized path model with its direct effects. Table 3 lists the direct, indirect, and total effects. I found six significant total effects. Since all the variables in the first four effects are all positive, they can be interpreted as they are written below.

- achievement is positively related to perceived influence
- affiliation is positively related to individual consensus
- achievement is positively related to individual consensus
- perceived influence is positively related to individual consensus

I separated the last two effects from the others because actual influence was inversely scored. These two effects are interpreted in the following way.

- affiliation is negatively related to actual influence,
- actual influence is positively related to perceived influence.

Table 2: The Pearson Product-Moment Bivariate Correlation Matrix for the Variables in the Path Model

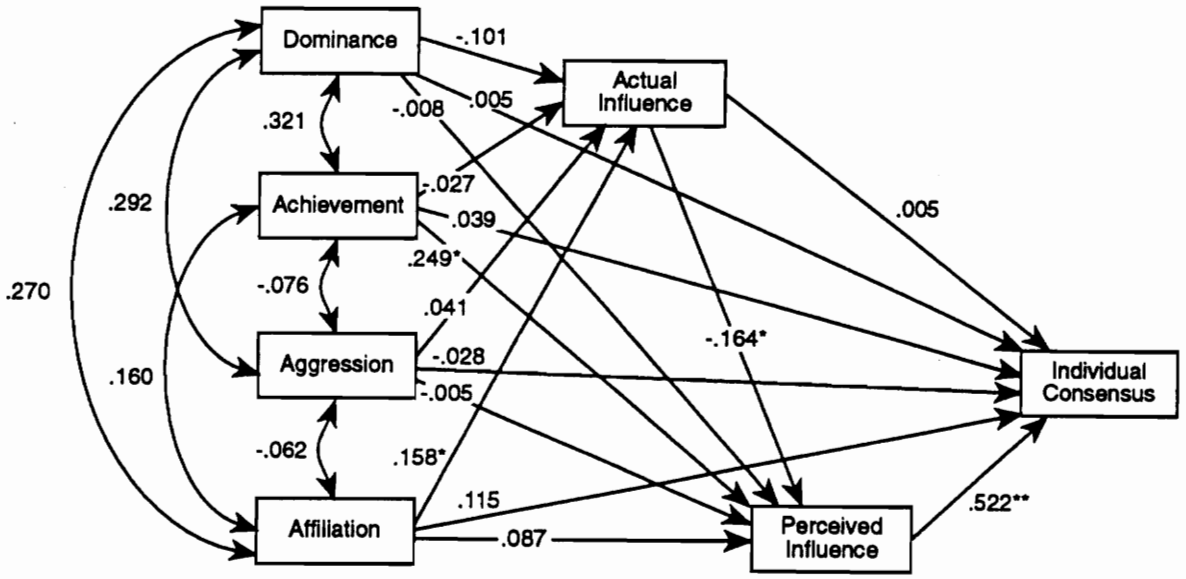
	Affiliation Score	Achievement Score	Aggression Score	Dominance Score	Actual Influence	Perceived Influence
AF	1.0000					
AC	.1597	1.0000				
AG	-.0623	-.0762	1.0000			
DO	.2704 **	.3212 **	.2925 **	1.0000		
AI_a	$.1423_a$	$-.0370_a$	$.0036_a$	$-.0555_a$	1.0000_a	
PI	.1055	.2670 **	-.03165	.1031	$-.1625_a$	1.0000
IC	-.1803	.2002 **	-.0531	.0941	$-.0667_a$	.5450 **

Key:

AI - actual influence
PI - perceived influence
IC - individual consensus
AF - affiliation score
AC - achievement score
AG - aggression score
DO - dominance score

** - p-value < .01

a - Lower scores on actual influence correspond to greater influence, higher scores correspond to less influence.



$R^2 = .124$

Figure 6: Hypothesized Path Model with its Direct Effects

* - p-value < .05
** - p-value < .01

Note - Lower scores on actual influence correspond to greater influence, higher scores correspond to less influence.

The effect between perceived influence and individual consensus was found to be significant at the .01 level. The other five effects were found to be significant at the .05 level. To evaluate the model, I used the R^2, the amount of variance accounted for in the dependent variable by the independent variables. The R^2 for this model is .124. Models with personality traits often have low R^2s. The chi-square goodness-of-fit test is another common check for path models. However, it isn't appropriate for this research since I used a fully recursive model.

Table 3: The Direct, Indirect, and Total Effects for all the Variables in the Path Model

Variables	Direct Effects	Indirect Effects	Total Effects
Individual consensus			
DO	.005	.004	.009
AC	.039	.132 *	.171 *
AG	-.028	-.006	-.033
AF	.115	.033	.148 *
AI	$.005_a$	$-.086_a$	$-.081_a$
PI	.522 **	n/a	.522 **
Perceived influence			
DO	-.008	.017	.008
AC	.249 *	.004	.254 *
AG	-.005	-.007	-.011
AF	.087	-.026	.061
AI	$-.164_a$*	n/a	$-.164_a$*
Actual influence			
DO	$-.101_a$	n/a	$-.101_a$
AC	$-.027_a$	n/a	$-.027_a$
AG	$.041_a$	n/a	$.041_a$
AF	$.158_a$*	n/a	$.158_a$*

Key:
AI - actual influence
PI - perceived influence
IC - individual consensus
AF - affiliation score
AC - achievement score
AG - aggression score
DO - dominance score

* - p-value < .05
** - p-value < .01

a - The actual influence score was inversely related to the amount of influence.

DISCUSSION

This section takes the results discussed in the previous section and extends them. First, I'll discuss my results. Second, I describe the possible impact of the expert manipulation on my results. Third, I give recommendations for managers of consensus groups from both my research and my review of the literature. Forth, I give ideas for future research areas.

DISCUSSION OF MY RESULTS

I found affiliation was negatively related to actual influence and positively related to individual consensus. My research supports the research of Exline (1962), McGhee and Teevan (1967), and Sistrunk and McDavid (1965). They found a positive correlation between affiliation and conformity. If affiliative group members conform to other members' opinions, they'd have less influence on the decision. However, since affiliative group members are primarily concerned with winning friendships and maintaining associations with people, their level of individual consensus was still high.

I found achievement was positively related to both perceived influence and individual consensus. Sorrentino and Field (1986) also found achievement positively correlated to perceived influence. Since high achievers perceive they are influencing the decision, they have a high level of individual consensus. Achievers naturally like decisions similar to theirs.

Actual influence was positively related to perceived influence. The significant relationship between actual and perceived influence illustrates that actual and perceived influence are related constructs. Although they are related, other results seem to show they are different. Results emphasizing the difference between actual and perceived influence are:

- Affiliation was negatively related to actual influence and not significantly related to perceived influence.
- Achievement was positively related to perceived influence and not significantly related to actual influence.
- Actual influence was not significantly related to individual consensus while perceived influence was positively related to individual consensus.

To explain the conflicting results related to influence, I believe actual and perceived influence are both measuring an aspect of influence. However, other variables are interfering. Silk and Kalwani (1982) found people aren't good judges of the amount of influence they had in a decision. Corfman (1991) proposed a model illustrating the sources of error between perceived and actual influence. This model is presented in more detail in the "Literature Review" section. In her model, four factors are responsible for errors in perceived influence: the joint choice process, memory, inferential ability, and perceptual bias. Perceptual bias is an inclination for people to perceive themselves similar to their self-image. For example, people who consider themselves achievers might overestimate their influence to support their self-image.

I found perceived influence was positively related to individual consensus. Effmeyer and Lane (1984) also found a positive correlation between perceived influence and individual consensus. Perceived influence increases individual consensus for two reasons. First, if a group member influenced the decision, the decision will be closer to what he or she wanted. Second, group members like to have influence, therefore they will be happier with a decision if they think they helped to determine it. In interpreting the results, the relationship between perceived influence and individual consensus ($p \leq .01$) is suspicious. Since both scales were derived from a factor analysis of the same questionnaire, this significant relationship may result partially from measurement bias.

My recursive model only accounts for 12.4% of the variance in individual consensus. However, using simple regression, the model accounts for 31.5% of the variance in individual consensus. Most of the accounted variance results from the influence measures, not the personality measures. The four personality traits only account for 2.6% of actual influence. The four personality traits and actual influence account for 10.2% of perceived influence. Perceived influence accounts for most of the variance in individual consensus. *Based on these results, managers shouldn't worry significantly about personality, but should focus more on allowing each group member to participate in meetings.*

IMPACT OF EXPERT MANIPULATION ON MY RESULTS

By inserting a confederate into each group, the expert manipulation may have affected the group dynamics. Since two-thirds of the confederates received training,

they may have believed they were more knowledgeable and, therefore, monopolized the group's discussion. The confederates could reduce the amount of achievement, aggression, and dominance shown by the other group members.

RECOMMENDATIONS FOR MANAGING CONSENSUS GROUPS

This section provides recommendations for managers, convenors, and facilitators (referred to as managers) by combining my research results with information I found in the literature. Since my research was exploratory, more research is necessary before specific guidelines will be available.

Although personality measures only accounted for a small percent of the variance in group members' behavior, how group members behave in meetings will affect group dynamics. Therefore, I don't advocate using personality to select group participants. Group members should be selected for their knowledge, not their personality. I also don't advocate the use of personality measures. Instead, managers should observe groups and look for trait-related behavior. In this section, I'll briefly discuss the behaviors associated with the four personality traits in my study and make suggestions for dealing with these behaviors. I'll describe the behaviors associated with dominance, aggression, affiliation, and achievement and provide guidelines for managers. At the end of this section, I'll provide guidelines for designing a formal meeting to reduce the problems caused by trait-related behaviors.

Affiliation and group decision making. *Affiliation* is a person's inclination to make friends and accept people. Three affiliative behaviors are relevant for meetings.

Affiliative group members are prone to chatting, resolving conflicts (Mehrabian & Ksionzky, 1974), and conforming to the majorities' opinion (McGhee & Teevan, 1967; Sistrunk & McDavid, 1965). Managers should discourage affiliative members from excessive irrelevant chatting. Managers should encourage affiliative members to help resolve interpersonal conflicts; however, task conflict should not be rushed through. Affiliative members may conform to popular opinion to avoid conflict. Managers should ask members for the reasons behind their agreement or disagreement with the decision.

Achievement and group decision making. *Achievement* is a person's inclination to excel and accomplish difficult things. High achievers tend to demonstrate behaviors keeping the group on relevant topics and to compete with other members (Schneider & Delaney, 1972). Managers should encourage high achievers to help keep the group on relevant topics. However, if a member shows competitive behavior, the manager should remind him or her the group needs to work together to reach the best solution.

Dominance and group decision making. *Dominance* is the inclination of individuals to try to control their environment and to influence others (Jackson, 1989). Three dominant behaviors are relevant for group decision making: expressing opinions, using commands (Buss & Craik, 1980), and interrupting (Davis & Gilbert, 1989; Aries, Gold, & Weigel, 1983). Through the use of assertive behaviors, dominant individuals can help the task accomplishment without undue negative effects on the group interaction (Ray, 1981). While facilitating the meeting, managers should encourage group members to express their opinions. However, they should

discourage group members from monopolizing the discussion, interrupting others, and giving authoritarian commands. If one member is monopolizing the discussion, the managers should ask the member to quickly list his or her points and then open the floor to other group members.

Aggression and group decision making. *Aggression* is a person's inclination to combat and argue (Jackson, 1984). Managers should watch for aggressive behaviors including yelling, ridiculing, and using verbal threats (Hollandsworth, 1977). Managers shouldn't allow aggressive behavior in group meetings. Aggression leads to further aggression (Baron, 1977). Managers should understand that aggressive behavior is usually caused by anger and frustration (Baron, 1977). By preparing carefully, managers can avoid frustrating situations which could lead to aggression. For example, managers can have the necessary supplies, begin the meeting on time, and have procedures to deal with conflict. Once group members are using aggressive behaviors, the manager can either try to dispel aggression by calmly telling the group member to refrain from aggressive behaviors or by using empathy and non-sarcastic humor (Baron, 1977). The manager should ask the group members to explain his or her problem with the task so the conflict can be dealt with calmly and openly.

Formal meetings. To reduce the effects of group members' personalities, managers can run formal meetings using explicit norms and structured techniques. Formal situations allow for few behavioral variations and therefore decrease dispositional characteristics (Monson, Hesley, & Chernick, 1982). The meeting needs a strong facilitator to lead discussion. The facilitator should ensure all group members have a chance to express their views, conflict is resolved, and the discussion remains on

relevant topics. The facilitator could make a list of explicit norms for the meeting. At the beginning of the meeting, the facilitator explains the norms. These norms might include: meeting begins on time, one group member speaks at a time, the facilitator will lead the discussion, and group member can't use any personal attacks.

A group's composition can be too similar or too different. To combat these problems, the facilitator could use a group technique. Homogeneous groups tend to have lower decision quality than heterogeneous groups (Hoffman & Maier, 1961). If group members are too similar, the group may also fall prey to groupthink. *Groupthink* occurs in highly cohesive groups that are more concerned with harmony than decision quality. Groupthink results from a strong desire for consensus. Group members do not question assumptions and avoid conflict. Groupthink can lead to poor decision quality. If the facilitator suspects the group is too cohesive, he or she can use a group decision-making technique such as Devil's Advocacy (Cosier & Schwenk, 1990). In this technique, the manager assigns someone the role of presenting the opposing view.

If group members are too different, group members may not be able to interact effectively. The facilitator might want to use a structured technique if they fear too much conflict or misunderstanding. *Social judgment analysis* is a group decision-making technique designed to help group members understand each other. It can reduce unnecessary group conflict and facilitate consensus by making areas of disagreement explicit.

The manager must also consider each individual group member. Each group member's agreement with, acceptance of, and commitment to the decision is important since he or she may affect the success of the decision's implementation. My research showed that a group member's perceived influence can increase their individual consensus. Therefore, all group members should have the opportunity to participate if they choose. The manager should control dominant members from monopolizing the meeting and encourage shy group members to participate. Managers could use a group decision making technique such as the nominal group technique (NGT). It uses a structured meeting process to ensure everyone has an opportunity to give their input (Delbecq, Van de Ven, & Gustafson, 1986).

FUTURE RESEARCH

This section provides some examples of future research efforts to expand on my research. First, some research efforts are taken directly from my delimitations. Second, I list some research efforts I wanted to explore but couldn't due to time limitations.

From my delimitations

Research groups with a facilitator. The use of a facilitator might allow all group members an equal chance at participation. This might reduce the effect of personality traits. Further research could investigate the affect of a facilitator on group dynamics.

Measure situational variables. Since situation factors can affect behavior, further research could explore the effect of varying situational factors on either the amount of influence each group member had or his or her level of individual consensus.

Measure other traits. Since each group member is composed of many traits, further research could consider other traits. Current researchers have begun to form a consensus on five robust factors of personality. These dimensions are extraversion, emotional stability, agreeableness, conscientiousness, and intellect (Barrick and Mount, 1991). Future research could investigate how these factors affect group decision making.

Measure the use of trait behaviors. In my experiment, I assumed that the presence and the use of the trait were synonymous. However, situational variables could reduce the presence of trait behaviors. Therefore, further research could explore the use of trait behaviors and their effect on influence and individual consensus.

Use large groups. In my experiment, I only considered groups with four members. Future research could expand my research to include larger groups.

Additional research areas

Consider the affect of traits on each group member's perceived influence accuracy. Corfman (1991) investigated the effect empathy and desire to win on how accurately a person can evaluate their influence. In the next section, I describe some exploratory research in this area. Further research could investigate the effect of other traits on the accuracy of influence perceptions.

Investigate the interaction between affiliation and achievement. Sistrunk and McDavid (1965) found an interaction between affiliation and achievement. They found that high affiliator-low achiever tended to conform; however high affiliator-high achievers did not tend to conform. Further research could use my data to investigate this relationship.

Analyze the interaction of varying personality types. Further research could investigate the effect of certain combinations of individuals. What happens if two dominance group members are in a group with one affiliative member?

Analyze the differences between genders. Further research could investigate the difference in how different genders are perceived. Are affiliative women and men treated the same? How does being a women in a group with mostly males differ from being a male in a group with mostly females? In the next section, I describe some exploratory research in this area.

Verify the results with a field experiment. In this experiment, group members had little commitment to the decision. A field experiment could check my results.

EXPLORATORY ANALYSIS

This section describes the results of some exploratory research. Although I didn't state any hypotheses about these areas, I investigated the personality variables affecting the relationship between actual and perceived influence, and the differences between males and females in my research. As I had originally conceptualized my research, I thought actual and perceived influence were measuring the same construct. In my "Discussion" section, I discussed some conflicting results; therefore, I decided to investigate if personality traits affected the accuracy of perceived influence relative to actual influence. The second part in this section describes my investigation into how gender interacted with the variables in my study. Originally, I planned to simply compare the mean scores of men and women. Since I found significant differences between genders, I pursued this investigation using regression and path analysis.

ANALYSIS OF THE RELATIONSHIP BETWEEN PERCEIVED AND ACTUAL INFLUENCE

To investigate the relationship between actual and perceived influence, I converted both the perceived and actual influence measures to z-scores so they would be in comparable units. By subtracting the actual influence z-score from the perceived influence z-score, I determined how accurately each subject perceived his or her influence. A negative score represents an under-estimation of perceived influence relative to actual influence. A score of zero represents an accurate estimation of

perceived influence relative to actual influence. A positive score represents an over-estimation of perceived influence relative to actual influence. Using regression, I found achievement and affiliation were positively related to estimation of perceived influence. For example, people who have high scores on achievement and affiliation tend to over-estimate their perceived influence relative to actual influence while people who have low scores on achievement and affiliation tend to under-estimate their influence. On average, people who have mid-level scores on achievement and affiliation tend to correctly estimate their perceived influence. Table 4 lists the results from this regression analysis.

ANALYSES OF DIFFERENCES BETWEEN MEN AND WOMEN

Descriptive statistics

The mean for women's affiliation was 11.54 on a 16-point scale while the mean for men's affiliation was only 9.77 on a 16-point scale. Using a t-test, I found the women's mean affiliation score was significantly higher than the men's at a .01 level of significance. The mean for women's actual influence was 46.67 while the mean for men's actual influence was 38.67. Using a t-test, I found the women's mean actual influence score was significantly higher than the men's mean at a .01 level of significance. In this scale, lower scores reflect higher influence; therefore, men had more actual influence. I found the women's mean score for estimation of perceived influence to be .2663 while the men's mean score was -.3451. For the estimation of perceived influence measure, a negative score represents an under-estimation of influence while a positive score represents an over-estimation of influence. Using a

t-test, I found the women's mean score was significantly higher than the men's mean score.

Table 4: Regression of Estimation of Perceived Influence on Affiliation, Achievement, Dominance, and Aggression

Source	b	Standard b	t	p
Intercept	-1.2066	.0000	-2.768	.0061**
Affiliation	0.0650	.1711	2.512	.0127*
Achievement	0.0649	.1753	2.516	.0126*
Dominance	-0.0232	-.0730	-.970	.0730
Aggression	0.0095	.0237	.341	.7335

R^2 = .0583 Adjusted R^2 = .0416

* - p-value < .05
** - p-value < .01

Table 5 contains the number of subjects, means, and standard deviations for the variables in the study. Since I found significant differences between men and women, I used regression to investigate these differences further.

Regression analysis

I regressed the estimation of perceived influence on the personality variables, gender, and the interaction of gender by affiliation. Since the interaction term was significant at $p < .05$, I hypothesized six new models. In the first two models, I regressed individual consensus on affiliation, achievement, dominance, aggression, actual influence and perceived influence. For men, perceived influence was positively related to individual consensus. For women, perceived influence and achievement were positively related to individual consensus. The R^2 for the men's model is .4726. The R^2 for the women's model is .2867. Table 6 lists the results of the regression analysis.

Second, I regressed perceived influence on affiliation, achievement, dominance, aggression, and actual influence. For men, none of the variables were significantly related to perceived influence. For women, both actual influence and achievement were significantly related to perceived influence. The R^2 for the men's model is .1191. The R^2 for the women's model is .1539. Table 7 lists the results of the regression analysis.

In the third regression model, I analyzed the effect of affiliation, achievement, aggression, and dominance on actual influence. For men, affiliation was negatively related to the amount of actual influence they had in the decision. None of the

Table 5: The Number of Subjects, Mean, and Standard Deviations for the Variables Separated by Gender

Variable	Men			Women		
	n	x	sd	n	x	sd
Affiliation	93	9.77	3.56	133	11.54	3.13
Achievement	93	9.84	3.21	133	10.24	3.68
Dominance	93	10.34	3.63	133	9.71	4.37
Aggression	93	9.29	3.23	133	9.03	3.26
Perceived Influence	93	5.68	.82	133	5.74	.69
Actual Influence	93	38.78[a]	13.48	133	46.25[a]	13.67
Estimation of Perceived Influence	93	-.35	1.37	133	.26	1.18
Individual Consensus	91	5.22	.80	133	5.43	.85

a - The actual influence score was inversely related to the amount of influence.

Table 6: Regression of Individual Consensus on Affiliation, Achievement, Dominance, Aggression, Perceived Influence, and Actual Influence

Source	b	Standard b	t	p
Men R^2 **= .4726**		**Adjusted R^2 = .4350**		
Intercept	1.0455	.0000	1.868	.0653
Affiliation	-0.0234	-.1032	-1.188	.2381
Achievement	0.0438	.1780	1.985	.0504
Dominance	-0.0149	-.0683	-.734	.4649
Aggression	0.0179	.0727	.877	.3827
Actual Influence	0.0094_a	$.1596_a$	1.924_a	.0578
Perceived Influence	0.6324	.6516	7.703	.0001**
Women R^2 **= .2867**		**Adjusted R^2 = .2527**		
Intercept	2.0827	.0000	2.952	.0038**
Affiliation	0.0526	.1937	2.359	.0198*
Achievement	-0.0031	-.0134	-.159	.8742
Dominance	0.0091	.0467	.505	.6147
Aggression	-0.0212	-.0812	-.970	.3339
Actual Influence	$-.0054_a$	$-.0860_a$	-1.107_a	.2703
Perceived Influence	0.5447	.4381	5.356	.0001**

* - p-value < .05
** - p-value < .01

a - The actual influence score was inversely related to the amount of influence.

Table 7: Regression of Perceived Influence on Affiliation, Achievement, Dominance, Aggression, and Actual Influence

Source		b	Standard b	t	p
Men	**R^2 = .1191**		**Adjusted R^2 = .0685**		
Intercept		5.1926	.0000	11.156	.0001**
Affiliation		0.0034	.0152	.137	.8915
Achievement		0.0444	.1745	1.561	.1222
Dominance		0.0449	.1992	1.708	.0913
Aggression		-0.0227	-.0897	-.856	.3943
Actual Influence		-0.0061_a	$-.1001_a$	$-.951_a$	.3443
Women	**R^2 = .1539**		**Adjusted R^2 = .1206**		
Intercept		5.4531	.0000	14.321	.0001**
Affiliation		0.0255	.1166	1.319	.1895
Achievement		0.0589	.3158	-3.617	.0004**
Dominance		-0.0272	-.1731	-1.746	.0832
Aggression		0.0175	.0833	.921	.3590
Actual Influence		$-.0110_a$	$-.2193_a$	-2.675_a	.0085*

* - p-value < .05
** - p-value < .01

a - The actual influence score was inversely related to the amount of influence.

variables were significantly related to actual influence for women. The R^2 for the men's model is .0878. The R^2 for the women's model is .0085. Table 8 lists the results of the regression analysis.

When I analyzed my data for men and women separately, I felt the models were significantly different for each gender. Since these regression models indicated the variables interacted with gender, I used path analysis to investigate these relationships further.

Path analysis

To further investigate the relationships among gender and the other variables in my study, I analyzed four path models. I analyzed my hypothesized path model for men and women. I also analyzed path models with the estimation of perceived influence, instead of actual and perceived influence. By analyzing each gender separately, I reduced my sample size significantly. Since the sample size is small for path analysis, the results in this section are questionable. Since these results are only exploratory, I will include all the results with at least a .1 level of significance.

Using path model analysis, I was able to assess the direct, indirect, and total effects of each variable. For men, the R^2 for the model is .238. For women, the R^2 for the model is .170. Figure 7 illustrates the path models with their direct effects for men and women.

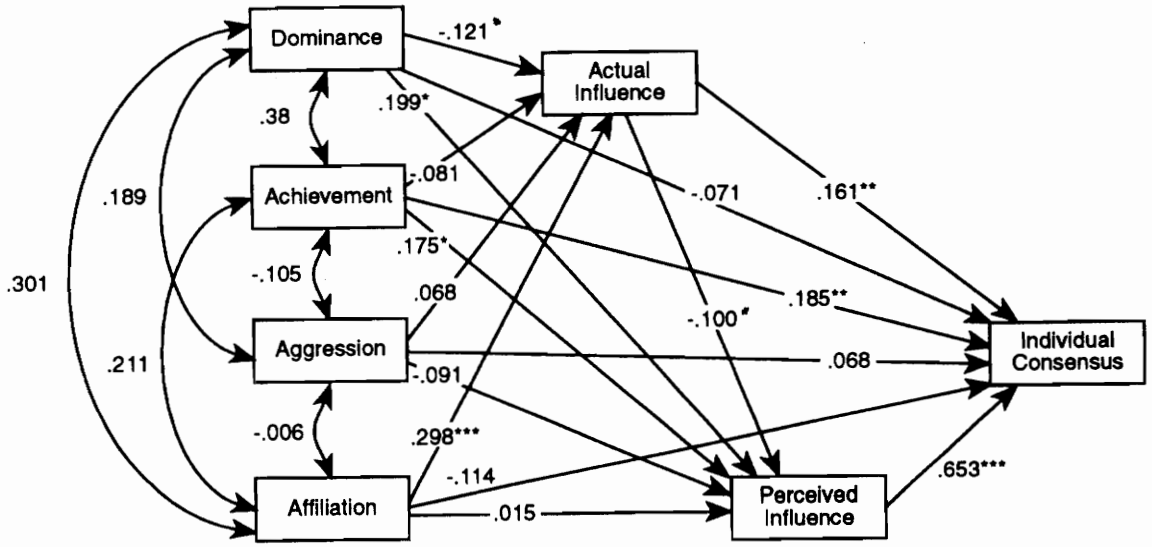
Table 8: Regression of Actual Influence on Affiliation, Achievement, Dominance, and Aggression

Source		b	Standard b	t	p
Men	**R^2 = .0878**		**Adjusted R^2 = .0463**		
Intercept		33.0162[a]	.0000[a]	4.771[a]	.0001
Affiliation		1.1274[a]	.2975[a]	2.767[a]	.0069**
Achievement		-.3398[a]	-.0810[a]	-.718[a]	.4748
Dominance		-0.4509[a]	-.1213[a]	-1.033[a]	.3042
Aggression		0.2852[a]	.0684[a]	.646[a]	.5198
Women	**R^2 = .0085**		**Adjusted R^2 = -.0225**		
Intercept		52.4985[a]	.0000[a]	7.7782[a]	.0001
Affiliation		-0.3703[a]	-.0849[a]	-.893[a]	.3734
Achievement		-0.1359[a]	-.0366[a]	-.388[a]	.6983
Dominance		0.0371[a]	.0119[a]	.111[a]	.9117
Aggression		-0.1046[a]	-.0249[a]	-.256[a]	.7987

* - p-value < .05
** - p-value < .01

a - The actual influence score was inversely related to the amount of influence.

Men's model - $R^2 = .238$



Women's model - $R^2 = .170$

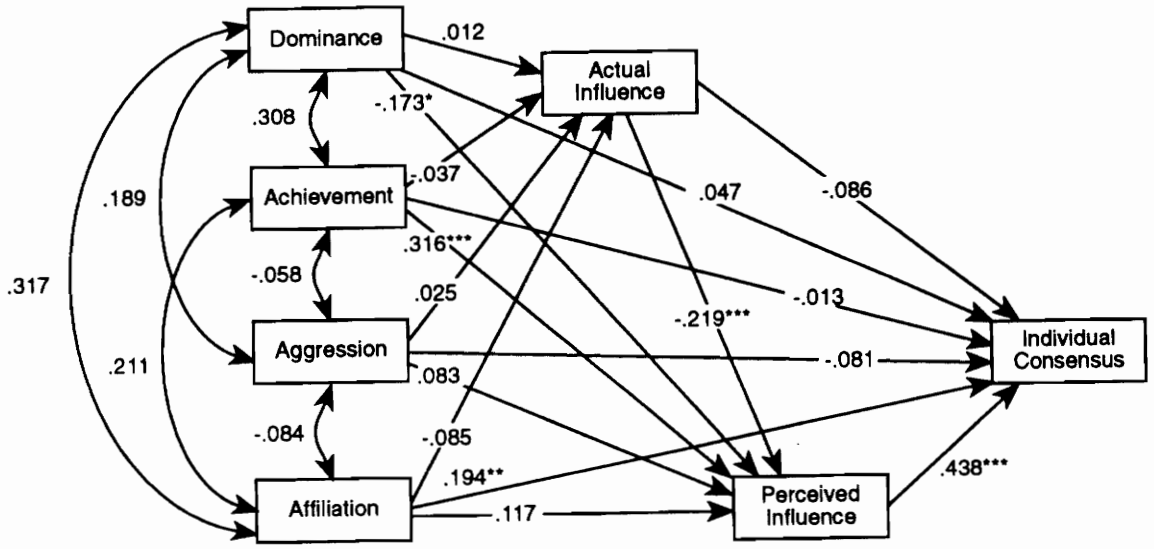


Figure 7: Path Model for Men and Women with Direct Effects

* - p-value < .1
** - p-value < .05
*** - p-value < .01

For the men's model, I found seven significant total effects. Actual influence was inversely scored. The total effects for men can be interpreted as written below.

- Affiliation is negatively related to actual influence.
- Dominance is positively related to actual influence.
- Achievement is positively related to perceived influence.
- Dominance is positively related to perceived influence.
- Actual influence is positively related to perceived influence.
- Achievement is positively related to individual consensus.
- Perceived influence is positively related to individual consensus.

For the women's model, the total effects can be interpreted as written below.

- Dominance is positively related to perceived influence.
- Achievement is positively related to perceived influence.
- Actual influence is positively related to perceived influence.
- Affiliation is positively related to individual consensus.
- Actual influence is positively related to individual consensus.
- Perceived influence is positively related to individual consensus.

Table 9 and 10 list the direct, indirect, and total effects for men and women.

I also analyzed alternate path models with the estimation of perceived influence, instead of actual and perceived influence. For men, the R^2 for the model is .174. For women, the R^2 for the model is .127. Figure 8 illustrates the path models with their direct effects for men and women. For men, I found two significant total effects. The total effects can be interpreted as written below.

Table 9: Men's Direct, Indirect, and Total Effects for all the Variables in the Path Model

Variables	Direct Effects	Indirect Effects	Total Effects
Individual consensus			
DO	-.071	.118	.048
AC	.185**	.106	.291***
AG	.068	-.052	.016
AF	-.114	.038	-.076
AI	$.161_a$**	$-.065_a$	$.096_a$
PI	.653***	n/a	.653***
Perceived influence			
DO	.199*	.012	.211**
AC	.175*	.008	.183*
AG	-.091	-.007	-.098
AF	.015	-.030	-.015
AI	$-.100_a$*	n/a	$-.100_a$*
Actual influence			
DO	$-.121_a$*	n/a	$-.121_a$*
AC	$-.081_a$	n/a	$-.081_a$
AG	$.068_a$	n/a	$.068_a$
AF	$.298_a$***	n/a	$.298_a$***

Key:
AI - actual influence
PI - perceived influence
IC - individual consensus
AF - affiliation score
AC - achievement score
AG - aggression score
DO - dominance score

* - p-value < .1
** - p-value < .05
*** - p-value < .01

a - The actual influence score was inversely related to the amount of influence.

Table 10: Women's Direct, Indirect, and Total Effects for all the Variables in the Path Model

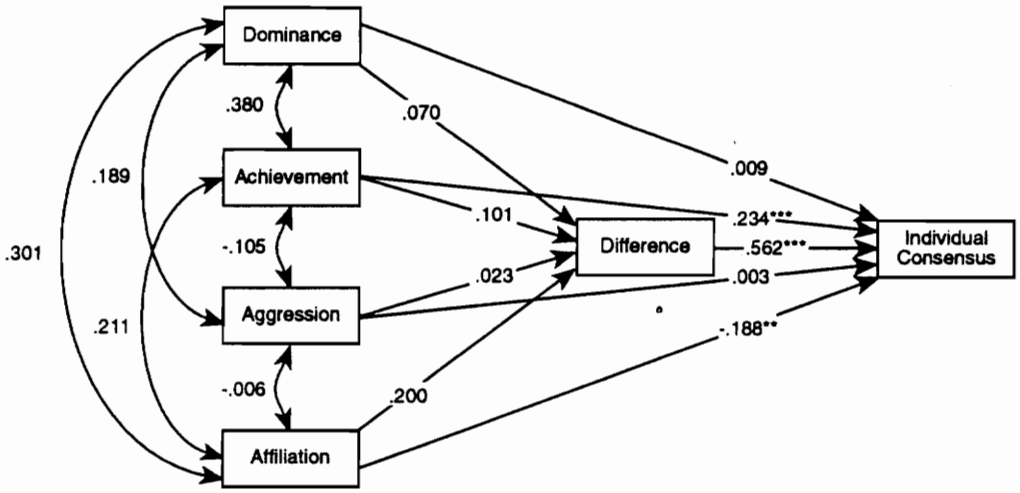
Variables	Direct Effects	Indirect Effects	Total Effects
Individual consensus			
DO	.047	-.078	-.031
AC	-.013	.145**	.132
AG	-.081	.041	-.040
AF	.194**	.067	.260***
AI	$-.086_a$**	$-.096_a$**	$-.182_a$**
PI	.438*	n/a	.438***
Perceived influence			
DO	-.173*	-.003	-.176*
AC	.316***	.008	.327***
AG	.083	.005	.089
AF	.117	.019	.135
AI	$-.219_a$***	n/a	$-.219_a$***
Actual influence			
DO	$.012_a$	n/a	$.012_a$
AC	$-.037_a$	n/a	$-.037_a$
AG	$-.025_a$	n/a	$-.025_a$
AF	$-.085_a$*	n/a	$-.085_a$

Key:
AI - actual influence
PI - perceived influence
IC - individual consensus
AF - affiliation score
AC - achievement score
AG - aggression score
DO - dominance score

* - p-value < .1
** - p-value < .05
*** - p-value < .01

a - The actual influence score was inversely related to the amount of influence.

Men's model - $R^2 = .174$



Women's model - $R^2 = .127$

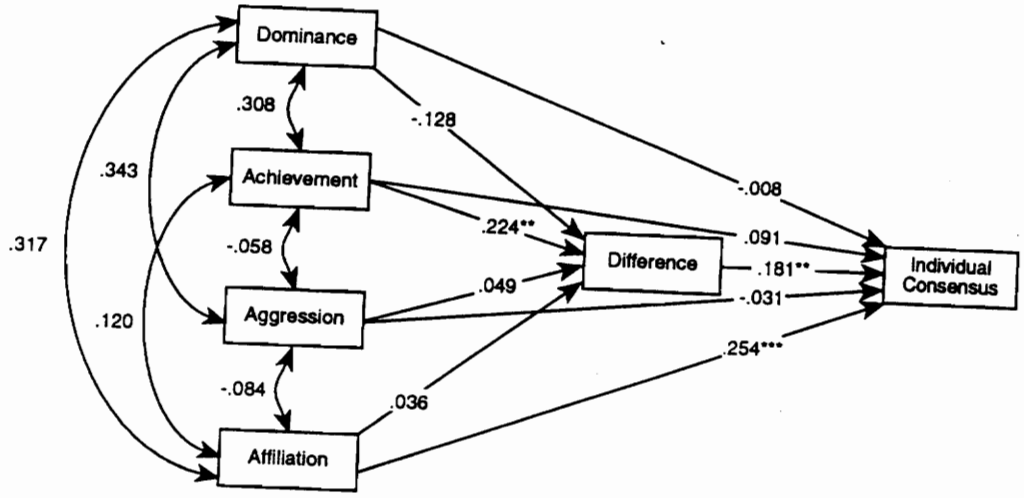


Figure 8: Alternate Path Model for Men and Women with Direct Effects

* - p-value < .1
** - p-value < .05
*** - p-value < .01

- Achievement is positively related to individual consensus.
- Estimation of perceived influence is positively related to individual consensus.

In the second result, men who over-estimate their perceived influence relative to actual influence tend to have a higher level of individual consensus while men who under-estimate their perceived influence tend to have a lower level of individual consensus.

For women, I found three significant total effects. The total effects can be interpreted as written below.

- Achievement is positively related to the estimation of perceived influence.
- The estimation of perceived influence is positively related to individual consensus.
- Affiliation is positively related to individual consensus.

Table 11 and 12 list the direct, indirect, and total effects for men and women.

Table 11: Men's Direct, Indirect, and Total Effects for all the Variables in the Alternate Path Model

Variables	Direct Effects	Indirect Effects	Total Effects
Individual consensus			
DO	.009	.039	.048
AC	.234***	.057	.291***
AG	.003	.013	.048
AF	-.188**	.112*	-.076
DIF	n/a	n/a	.653***
Estimation of Perceived influence			
DO	.070	n/a	.070
AC	.101	n/a	.101
AG	.023	n/a	.023
AF	.200	n/a	.200

Key:
AI - actual influence
AG - aggression score
AF - affiliation score
IC - individual consensus
AC - achievement score
DO - dominance score
DIF - estimation of perceived influence

* - p-value < .1
** - p-value < .05
*** - p-value < .01

Table 12: Women's Direct, Indirect, and Total Effects for all the Variables in the Alternate Path Model

Variables	Direct Effects	Indirect Effects	Total Effects
Individual consensus			
DO	-.008	-.023	-.031
AC	.091	.041	.132
AG	-.031	.009	-.040
AF	.254**	.006	.260***
DIF	.181**	n/a	.181**
Estimation of Perceived influence			
DO	-.128	n/a	-.128
AC	.224**	n/a	.224**
AG	.049	n/a	.049
AF	.036	n/a	.036

Key:

AI - actual influence
PI - perceived influence
DO - dominance score
IC - individual consensus
AC - achievement score
AG - aggression score
AF - affiliation score
DIF - estimation of perceived influence

* - p-value < .1
** - p-value < .05
*** - p-value < .01

CONCLUSIONS

This section provides broad conclusions based on my research and literature review. I believe people have a stable core to personality. Each group members' personality will affect how they interact with others. However, gender appears to affect group dynamics more than personality traits. Although I didn't have hypotheses, my exploratory analyses seem to indicate:

- women tend to be more affiliative than men,
- men tend to have more actual influence than women,
- personality variables are more predictive in men than women,
- in men, affiliation is negatively related to actual influence,
- in men, dominance is positively related to actual influence,
- in men, achievement is positively related to individual consensus,
- in women, affiliation is positively related to individual consensus,
- in women, actual influence is positively related to individual consensus,
- in women, achievement is positively related to estimation in perceived influence,
- in men and women, achievement is positively related to perceived influence,
- in men and women, dominance is positively related to perceived influence,
- in men and women, actual influence is positively related to perceived influence,
- in men and women, estimation in perceived influence is positively related to individual consensus, and

- in men and women, perceived influence is positively related to individual consensus.

Although I found several significant effects in my hypothesized path model, I think my largest contribution is in my exploratory analyses. Only five of my results affected men and women the same. In conclusion, more research is necessary before a manager will have any clear guidelines.

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APPENDICES

Appendix A: Definition of terms

Appendix B: Questionnaires

Appendix C: Task

Appendix D: Instructions for proctors

Appendix E: Cronbach's alphas

Appendix F: Descriptive statistics

Appendix G: Correlation table

Appendix H: T-tests

APPENDIX A: DEFINITION OF TERMS

Actual influence - is the attitudinal or behavioral effects of a group member on the group's interaction. The impact the group member has on the final group decision.

Aggressive behavior - includes any behavior which is performed with the intention of harming another living being who is motivated to avoid harm.

Consensus - is a state where a common judgement has been reached by most of those concerned. Consensus exists when a group makes and supports a decision.

Dispositional achievement - is a person's inclination to accomplish difficult tasks. High achievers tend to maintain high standards are willing to work for distant goals.

Dispositional affiliation - is a person's inclination to make friends and accept people. An affiliative person tends to enjoy being with friends and makes efforts to win and maintain friendships.

Dispositional aggression - is a person's inclination to argue and combat. A highly aggressive person is easily annoyed and is sometimes willing to hurt people to get their own way.

Dispositional dominance - is a person's inclination to rule or control environment. High dominant individuals tend to assume leadership positions and attempt to exert

more influence. Typical attributes include behaviors, such as: influence attempts, interruptions, and controlling the discussion.

Endogenous variables - are variables in a model that serve as dependent variables. These variables may or may not also serve in the role of independent variables.

Exogenous variables - are variables in a model that serve only in the role of independent variables.

Individual consensus - is a group member's acceptance of, agreement with, and commitment to the group decision.

Influence - is the attitudinal and behavioral effects of one person upon another. The effect an action has on the members viewed collectively, the effect is has on the content and relative salience of shared norms and opinions.

Informational influence - is a type of influence based on the sharing of facts or persuasive arguments about the issue.

Normative influence - is a type of influence based on conformity to implicit decision norms and others' preferences.

Perceived influence - is the amount a group member thinks he or she affected the final group decision.

Personality - refers to the structures, dynamics, processes and propensities inside a person that explain why he or she behaves in a characteristic way (Hogan, 1991).

APPENDIX B: QUESTIONNAIRES

Abridged Personality Research Form (Jackson, 1984)

Directions: Read each statement and decide whether or not it describes you. If you agree with a statement or decide that it does describe you, answer TRUE. If you disagree with a statement or feel that it is not descriptive of you, answer FALSE. Answer every statement either true or false, even if you are not completely sure of your answer. For the questions 1 - 96, please use the following scale:

1 = TRUE
2 = FALSE

Remember to use a #2 pencil and fill in circle completely. Please match the question number with the number on the opscan.

1. My friendships are many.
2. I avoid positions of power over other people.
3. I have never brushed or cleaned my teeth.
4. I think that certain people deserve to be "put in their places."
5. I try to get at least some sleep every night.
6. People should be more involved with their work.
7. I did many bad things as a child.
8. I don't like to have the responsibility for directing the work of others.
9. I try to work just hard enough to get by.
10. I choose hobbies that I can share with other people.
11. As a child I worked a long time for some of the things I earned.
12. I seldom put out extra effort to make friends.
13. I could easily count from one to twenty-five.
14. I believe people tell lies any time it is to their advantage.
15. I go out of my way to prevent anyone from getting the best of me.

16. It doesn't really matter to me whether or not I become one of the best in my field.

17. If someone gave me too much change, I would point it out.

18. I try to be in the company of friends as much as possible.

19. I can run a mile in less than four minutes.

20. My life is full of interesting activities.

21. I am not really very certain what I want to do or how to go about doing it.

22. I try to control others rather than permit them to control me.

23. I spend a lot of time visiting friends.

24. If someone hurts me, I just try to forget about it.

25. I trust my friends completely.

26. Sometimes I see cars near my home.

27. Many things make me feel uneasy.

28. I would make a poor military leader.

29. I do not let my work get in the way of what I really want to do.

30. I seldom feel like hitting anyone.

31. I don't really have fun at large parties.

32. I would like to play a part in making laws.

33. I am careful to plan for distant goals.

34. I would not be very good at a job which required me to meet people all day long.

35. I feel confident when directing the activities of others.

36. I usually wear something warm when I go outside on a very cold day.

37. I truly enjoy myself at social functions.

38. I would like to be a judge.

39. I have never talked to anyone by telephone.

40. When I see someone I know from a distance, I don't go out of my way to say hello.

41. I rarely get angry either at myself or at other people.

42. I find it very difficult to concentrate.

43. I will not be satisfied until I am the best in my field of work.

44. When I am irritated I let it be known.

45. I would work just as hard whether or not I had to earn a living.

46. Sometimes I have to make a real effort to be sociable.

47. My daily life includes many activities I dislike.

48. I have never bought anything in a store.

49. I am not very insistent in an argument.

50. I have rarely done extra studying in connection with my work.

51. Stupidity makes me angry.

52. I am quite able to make correct decisions on difficult questions.

53. I would not like to have a job enforcing the law.

54. People consider me to be quite friendly.

55. I rarely swear.

56. The ability to be a leader is very important to me.

57. I have traveled away from my home town.

58. I enjoy difficult work.

59. When I bump into a piece of furniture, I don't usually get angry.

60. I feel uneasy when I have to tell people what to do.

61. I go out of my way to meet people.

62. Most community leaders do a better job than I could possibly do.

63. I avoid criticizing others under any circumstances.

64. I get along with people at parties quite well.

65. In my work I seldom do more than is necessary.

66. Things with sugar in them usually taste sweet to me.

67. I have little interest in leading others.

68. I often question whether life is worthwhile.

69. I have never had any hair on my head.

70. I have been known to fly into a rage if things didn't go as I had planned.

71. I am always prepared to do what is expected of me.

72. In an argument, I usually win others over to my side.

73. I seldom set standards that are difficult for me to reach.

74. I would never start a fight with someone.

75. I am quite effective in getting others to agree with me.

76. I am one of the lucky people who could talk with my parents about my problems.

77. I don't mind working while others are having fun.

78. I don't spend much of my time talking with people I see every day.

79. I have never felt sad.

80. Sometimes I feel like smashing things.

81. I have attended school at some time during my life.

82. I would be willing to do something a little unfair to get something that was important to me.

83. Sometimes I feel hungry or thirsty.

84. If someone does something I don't like, I seldom say anything.

85. My goal is to do at least a little bit more than anyone else has done before.

86. I often make people angry by teasing them.

87. I am glad I grew up the way I did.

88. Often I would rather be alone than with a group of friends.

89. I am quite independent of the people I know.

90. I will not be satisfied until I am the best in my field of work.

91. I have never ridden in an automobile.

92. People seldom think of me as a hard worker.

93. I would like to be an executive with power over others.

94. I am never able to do things as well as I should.

95. I get a kick out of seeing someone I dislike appear foolish in front of others.

96. I make all my own clothes and shoes.

97. I am 1) male 2) female

Perceived Influence Questionnaire (Cronbach alpha = .884)

Scale (strongly disagree, disagree, moderately disagree, neither agree nor disagree, moderately agree, agree, strongly agree)

1. My group members accepted what I had to say.
2. My views were given full consideration by my group members.
3. My group members understood my opinions.
4. Group members seemed to understand the information I provided.

Individual Consensus Questionnaire (Cronbach alpha = .894)

Scale (strongly disagree, disagree, moderately disagree, neither agree nor disagree, moderately agree, agree, strongly agree)

1. I don't think my group arrived at a good decision (Reverse score).
2. I am willing to accept the group's solution as my own.
3. I disagree with the group's decision (Reverse score).

4. I am satisfied with the way my group interacted to reach this decision.
5. The final group ranking was the best decision we could make.
6. The final ranking my group derived adequately reflects my concerns.
7. My group's ranking is correct.
8. I am satisfied with the decision my group reached.
9. The final group ranking represents the preferences of everyone in my group.

APPENDIX C: TASK

WRECKED ON THE MOON

Your spaceship has just crash-landed on the lighted surface of the moon. You were scheduled to rendezvous with a mother ship 200 miles away. The rough landing has ruined your ship and destroyed all the equipment on board, except for the 15 items listed below.

Your crew's survival depends on reaching the mother ship, so you must choose the most critical items available for the 200-mile trip. Your task is to rank the 15 items in terms of their importance for survival and their necessity to your crew in reaching the rendezvous point. Place the number 1 by the most crucial item, the number 2 by the second most crucial, and so on through number 15, the least important.

____ Box of matches

____ Food concentrate

____ Fifty feet of nylon rope

____ Parachute silk

____ Solar-powered portable heating unit

____ Two .45-caliber pistols

____ One case of dehydrated Pet milk

____ Two 100-pound tanks of oxygen

____ Stellar map (of the moon's constellations)

____ Self-inflating life raft

____ Magnetic compass

____ Five gallons of water

____ Signal flares

____ First-aid kit, including injection needles

____ Solar-powered FM receiver transmitter

WRECKED ON THE MOON--ANSWER KEY

1 **Two 100-pound tanks of oxygen**. Most pressing survival need.

2 **Five gallons of water**. Replenishes loss by sweating.

3 **Stellar map**. Primary means of navigation.

4 **Food concentrate**. Efficient means of supplying energy requirements.

5 **Solar-powered FM receiver-transmitter**. For communication with mother ship, but FM requires line-of-sight transmission and short ranges.

6 **Fifty feet of nylon rope**. Useful in scaling cliffs, tying injured together.

7 **First-aid kit**. Needles for vitamins, medicines, etc., will fit special aperture in NASA space suits.

8 **Parachute silk**. Protection from sun's rays.

9 **Self-inflating life raft**. CO_2 bottle may be used for propulsion.

10 **Signal flares**. Distress signal when mother ship is sighted.

12 **One case dehydrated Pet milk**. Bulkier duplication of food concentrate.

13 **Solar-powered portable heating unit**. Not needed unless on dark side.

11 **Two .45-caliber pistols**. Possible means of self-propulsion.

14 **Magnetic compass**. Magnetic field on moon is not polarized, worthless for navigation.

15 **Box of matches**. No oxygen on moon to sustain flame.

APPENDIX D: INSTRUCTIONS FOR PROCTORS

Notes on proctor instructions:

A. You should read all bold text (in quotes) to your group exactly as written.
B. All handouts are in italics.
C *If* a group member asks a question which you can't answer, please say:

> **"I can't answer that questions because it might affect the experiment."**

1. Introduce yourself and escort your group to the room written above.

   > **"Hello, my name is _____. Would you all please follow me to our room (give building and room #)."**

2. Collect an *Initial Individual Ranking* sheet (of the NASA Moon-Survival exercise) from each group member. Have group members sit in a circle in numerical order.

   > **"Please arrange yourselves in a circle in numerical order from my left to my right. You'll complete the NASA Moon-Survival exercise as a group. Discuss the items among yourselves until you reach a group decision. Your goal is to reach the highest quality decision that all members can accept."**

3. Before performing the task, have group members introduce themselves in numerical order.

   > **"Before you begin, you should all introduce yourselves. Give your name, major, and any classes or experiences that might be useful for completing the exercise."**

4. Hand out a *Group Ranking* sheet (of the NASA Moon-Survival exercise) to each group member. Make sure the subject number on the sheet matches each subjects name tag. Have your *Verbalization Recording Sheet* ready.

   > **"Here are your group ranking sheets. Make sure you have the correct subject number on your sheets. Since you're coming to a group decision, your group ranking sheets should all have the same ranking when you're finished. You'll have 45 minutes to complete the exercise. You may begin."**

5. Follow all directions on the *Verbalization Recording Sheet.* Make sure the group number on the sheet matches the group number on the folder.

6. If the group hasn't already checked their list to make sure all group members have the same rank, have one member read the group's ranking out loud and the rest check their group ranking sheets.

   "Why don't you [point at a group member] **read your final list out loud while the rest of you check to make sure you all have the same final list."**

7. Collect the a *Group Ranking* sheet (of the NASA Moon-Survival exercise) from each group member.

8. Hand out a *Final Individual Ranking* sheet (of the NASA Moon-Survival exercise) to each group member. Make sure the subject number on the sheet matches each subjects name tag.

   "Now, do the same exercise one last time on your own. This ranking should be what *you* individually believe is the best answer. You'll have 10 minutes to finish. You do not have to follow the group's answer. Make sure your subject number is on the top right-hand corner."

9. Collect the *Final Individual Ranking* sheets (of the NASA Moon-Survival exercise).

10. Hand out a *Post-Task Questionnaire* (green opscan) to each group member. Make sure the subject number on the sheet matches each subjects name tag. Allow 10 minutes for subjects to finish questionnaire.

    "Please fill out the following questionnaire silently. Make sure you have the correct subject number on your sheets. Make sure you fill out both sides of the questionnaire."

11. Collect questionnaires.

    "Thank you. Please, don't discuss this experiment with other students. We can't give you NASA's solution because we'll be running this experiment for several days. Dr. Geller will have a solution key near the end of the semester. Now you all need to go to Randolph 129 to take one final questionnaire and to be debriefed. After the questionnaire, you can get your extra credit signature and fill out the orange, credit opscans. Thanks again."

[Make sure group member #4 can leave the group quietly and go to Randolph 216.]

12. Bring all materials back to Randolph 129.

APPENDIX E: CRONBACH'S ALPHAS

This appendix gives the Cronbach's alphas for the eight scales measured. Cronbach's alpha is a measure of the reliability of the scales.

Scales	Cronbach's Alpha
Affiliation	.7912
Achievement	.7760
Aggression	.7172
Dominance	.8407
Perceived Influence	.8844
Individual Consensus	.8947

APPENDIX F: DESCRIPTIVE STATISTICS

This appendix gives the basic descriptive statistics for the variables in my study.

Variable	N	Mean	Std Deviation	Reliability
Affiliation	230	10.8304	3.3982	.7912
Achievement	230	10.1043	3.4839	.7760
Aggression	230	9.1087	3.2348	.7173
Dominance	230	9.9348	4.065	.8407
Act. Influence	231	43.1229	13.9503	N/A
Per. Influence	231	5.7056	0.7394	.8844
Ind. Consensus	229	5.3401	0.8299	.8947

APPENDIX G: CORRELATION TABLE

This appendix gives correlations between the variables in my study. Level of significance is noted with asterisks.

	Affiliation Score	Achievement Score	Aggression Score	Dominance Score	Actual Influence	Perceived Influence
AF	1.0000					
AC	.1597	1.0000				
AG	-.0623	-.0762	1.0000			
DO	.2704 **	.3212 **	.2925 **	1.0000		
AI_a	$.1423_a$	$-.0370_a$	$.0036_a$	$-.0555_a$	1.0000_a	
PI	.1055	.2670 **	-.03165	.1031	$-.1625_a$	1.0000
IC	-.1803	.2002 **	-.0531	.0941	$-.0667_a$	.5450 **

Key:
AI - actual influence
PI - perceived influence
IC - individual consensus
AF - affiliation score
AC - achievement score
AG - aggression score
DO - dominance score

* - significant at the .05 level
** - significant at the .01 level

a - Lower scores on actual influence correspond to greater influence, higher scores correspond to less influence.

APPENDIX H: T-TESTS

In this section, I report the results of t-tests used in exploratory section. I used t-tests the female mean scores to male means scores.

$$t = \frac{X_1(\text{mean}) - X_2(\text{mean})}{\text{Sqrt}(S_p^2(1/n_1 + 1/n_2))}$$

$$\text{where } S_p^2 = \frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}$$

Variable	T-value
Affiliation	3.94**
Achievement	0.90
Dominance	1.13
Aggression	0.59
Perceived Influence	0.59
Actual Influence	4.06**
Individual Consensus	1.80

VITA

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EDUCATION

M.S. Industrial and Systems Engineering (Management Systems Engineering Option)
Virginia Polytechnic Institute and State University, Blacksburg, VA
GPA: 3.84/4.00

B.S. Industrial and Systems Engineering
Virginia Polytechnic Institute and State University, Blacksburg, VA
GPA: Major 3.4/4.0 Overall 3.1/4.0

RELATED EXPERIENCE

Graduate Research Assistant, July 1991 - Present
Management Systems Laboratories, Blacksburg, VA
- Contributed experimental research to a $10 million grant for Department of Energy (DOE) to study group decision-making.
- Researched and wrote technical documents on group decision-making for DOE.
- Researched and wrote papers for technical conferences.
- Reviewed consensus decision-making literature.

Industrial Engineering Intern, Summer 1989
United Parcel Service, Burtonsville, MD
- Designed a sorting method based on zip-code destination to optimize material handling.
- Proposed a plan to ease transition into a new building addition.

Senior Design Team Member. August 1989 - May 1990
Southwest Virginia Enterprise, Wytheville, VA
- Investigated the feasibility of expanding pre-press operations to include color printing capabilities.
- Performed a market survey and a cost analysis.
- Provided a facility layout incorporating the color printing equipment.

OTHER EXPERIENCE

Information Technician, January 1991 - July 1991
Management Systems Laboratories, Blacksburg, VA
- Maintained consensus literature database.
- Researched and wrote papers for technical conferences.
- Acted as liaison between MSL and literature consultants.

COMPUTER SKILLS

Hardware: IBM PC, Macintosh, IBM Mainframe
Languages: BASIC, FORTRAN, Pascal
Software: Minitab, Lotus 1-2-3, Quattro Pro, Word 5.0, Volkswriter, Insight, Storm, Lindo, AB-QM, Persuasion, Freehand, SAS

PAPERS PUBLISHED & PRESENTED

- "Guidelines for consultative and participative groups," presented at the Southeastern Chapter of the Institute of Management Sciences conference (October 1991) and published in the proceedings.

- "How to design, develop, and implement a successful performance measurement system," presented at the Southeastern Chapter of the Institute of Management Sciences conference for the student paper competition (October 1992) and published in the proceedings.

- "The effects of personality traits and influence on individual consensus." presented at the Southeastern Chapter of the Institute of Management Sciences conference (October 1992) and published in the proceedings.

ACTIVITIES & HONORS

First Prize, Student Paper Competition, SETIMS, 1992
Educational Vice President, Toastmasters, 1993
Vice President of Membership, Toastmasters, 1992
Member, Alpha Pi Mu Honor Society, 1990 - Present
Vice President, Institute of Industrial Engineers, 1990
Social Chair, IIE, 1989
Member, Student Engineers Council, 1989-90
Volunteer, Montgomery County Humane Society, 1993