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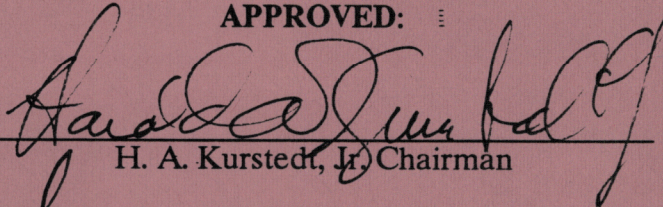
by

John F. Keeling III

Thesis submitted to the faculty of the Virginia Polytechnic and State University in partial fulfillment of the requirements for the degree of

Master of Science

in

Industrial and Systems Engineering

APPROVED:

H. A. Kurstedt, Jr., Chairman

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December, 1991

Blacksburg, Virginia

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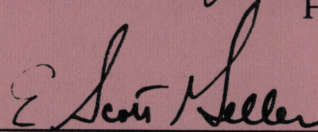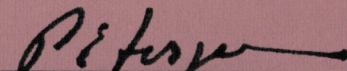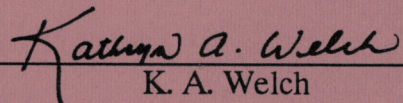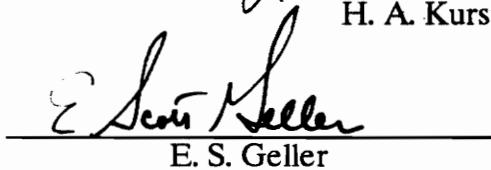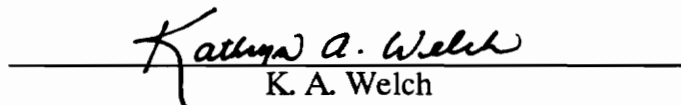
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(ABSTRACT)

I used a multiple-linear-regression model to test the effects of meeting group members' expectations on strength of consensus in a group decision-making situation. The combination of met expression-of-views expectations and met decision-quality expectations, along with their associated valences, had a significant effect on consensus ($p = .01$). Expression-of-views expectations are composed of expectations about opportunity to express views and the information sharing.

I proposed a new model consisting of two terms. The first term was the sum of the individual products of met expression-of-views expectations times their respective valences. The second term was the sum of the individual products of met decision-quality expectations times their respective valences. This new model was a much better predictor of strength of consensus than the original ($p = .001$). The two terms used in the new model had an equivalent influence on strength of consensus ($p = .05$). The results of this research suggest managers should elicit and try to meet group members' high-valence expectations (i.e., expectations group members feel are important to be met). Managers should also realize expression-of-views and decision-quality expectations are important to meet in a consensus-gaining process.

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ACKNOWLEDGEMENTS

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INTRODUCTION

Problem Statement

With this research, I aimed to conceptualize, characterize, and demonstrate (test) the effects of meeting group members' initial participation and outcome expectations on strength of consensus. By participation expectations I mean beliefs about the interaction of the group during the decision-making or consensus-gaining process. By outcome expectations I mean beliefs about outcomes (e.g., decision quality or group cohesiveness) resulting from the decision-making or consensus-gaining process. A consensus-gaining process is a group-decision-making process where consensus is a desired outcome. Using this knowledge, I aimed to prescribe process steps to help managers accomplish their purpose and strengthen the consensus of a decision-making or consensus-gaining group.

Relevance of the Study

Individuals participating in a group-decision-making process have varying initial expectations. Peoples' expectations affect their attitudes (Forsyth, 1983; Gero, 1985; Prothero & Beach, 1984) and their behaviors (Crawford, Thomas, & Fink, 1980; Eden, 1984; King, 1974; Rosenthal, 1966; Rosenthal & Jacobson, 1968). For example, meeting individuals' expectations can affect individuals' attitudes toward their job (Porter & Steers, 1973; Weitz, 1956) and their subsequent behaviors, such as turnover (Katzell, 1968; Porter & Steers, 1973).

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Group facilitators and managers need to know if and how much meeting group members' initial expectations affects group consensus. Group members' initial expectations, as opposed to expectations formed during the group discussion, are important because they may affect the group-decision-making or consensus-gaining process from the start. Also, initial expectations are easier for group facilitators and managers to identify. All references made to expectations throughout this document refer to group members' initial expectations.

Group facilitators and managers need to know what type of expectations to meet for the greatest positive effect on consensus. In this study, I studied two types of expectations: participation expectations and outcome expectations. I tested whether participation expectations or outcome expectations had a greater positive effect on consensus.

Group facilitators and managers need ways to more effectively manage group members' expectations to improve the group-decision-making or consensus-gaining process. Jablin (1980, p. 24) found "groups spend very little time prior to performing their tasks in discussing procedural, operational, or maintenance issues that may ultimately affect the group's process and performance." I believe process steps for illiciting and setting group members' expectations significantly affects the results of a group process where consensus is desired. The practical contribution of this study is providing process steps a manager or group facilitator can use to improve the consensus-gaining process and ways to best implement them.

Who Will Use this Research

Convenors, facilitators, and managers can use this research. Convenors bring together decision-making or consensus-gaining groups and need to know the importance of making their expectations understandable and achievable for the group. Facilitators and managers work with consensus-gaining groups to gain consensus on a group decision or some other type of group output. Facilitators and managers need to know what effect meeting group members' expectations will have on consensus and how they can better manage group members' expectations to improve the consensus-gaining process. From here on, I'll use the term managers to mean both group facilitators and managers, but not convenors.

Research Questions

Research questions are what the research results aim to answer. By answering the research questions, I can expand the academic body of knowledge. I had two research questions (and two research purposes and objectives) because the first addresses the experiment itself and the second addresses how I applied the results of the experiment. My research questions were:

1. How does meeting group members' varying expectations about participation and the outcome of a consensus-gaining process affect the strength of consensus? I addressed this question experimentally.

2.   How can managers work with group members' varying expectations to improve the consensus-gaining process? I provided process steps for managers based on the results of my experiment and a review of the literature.

Research Purposes

The research purpose answers the question, "Why?" In other words, why did I do this research? The research purpose is usually stated as a general, overriding reason. The purposes of this research were:

1.   To help managers understand how meeting group members' participation and outcome expectations affects the strength of consensus.
2.   To help managers work with group members' expectations to improve the consensus-gaining process.

Research Objectives

The research objectives answer the question, "What?" In other words, what were the results of my research, or, what can be learned from my research? My research objectives were:

1.   To express, as a relationship, the effects of degree of met participation expectations and degree of met outcome expectations on strength of consensus.
2.   To develop process steps to help managers work with group members' expectations to improve the consensus-gaining process.

Delimitations

1. I studied interactive groups, therefore my results do not apply to non-interactive groups.

2. I studied the effect of met expectations on attitudes, not the effect of expectations on behavior.

3. I only looked at group members' participation and outcome expectations. I didn't consider other expectations group members may have such as expectations about the output of the group (e.g., what the group will produce) or the roles group members will play. Specifically, my research addressed expectations about expression of views during the group-decision-making process and decision quality resulting from the process. Expression-of-views expectations consist of expectations about the opportunity to express views and the information sharing during the group discussion. My research didn't address other participation expectations (e.g., expectations about conflict) or other outcome expectations (e.g., expectations about group understanding and group cohesion).

4. Many decision-making groups have facilitators, however I studied groups without facilitators.

Conceptual Model

Figure 1 shows my conceptual model as it relates to Management Systems Laboratories' (MSL's)[1] conceptual model for the U.S. Department of Energy grant

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[1] MSL is a research arm of Virginia Polytechnic Institute and State University (VPI&SU).
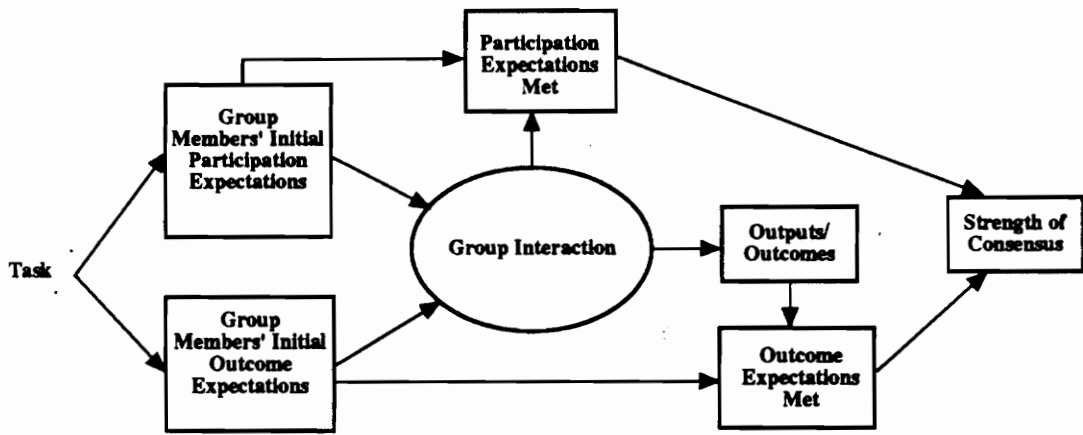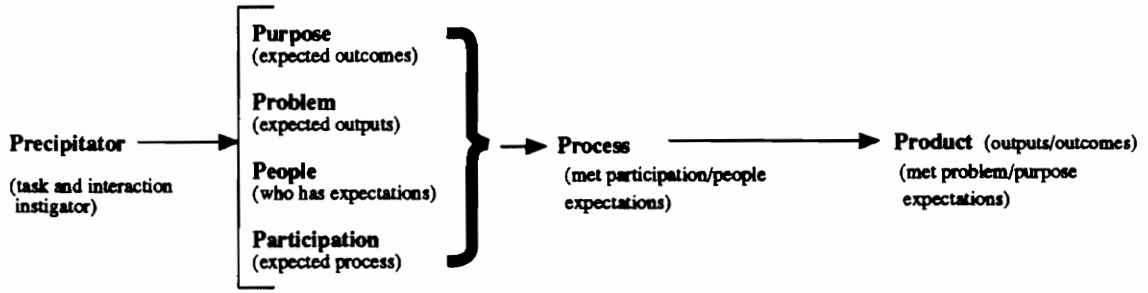
Figure 1: My Conceptual Model Related to MSL's Conceptual Model.

entitled *Research and Development of Methods and Tools for Achieving and Maintaining Consensus Processes in the Face of Change within and among Government Oversight Agencies.* This model addresses output #2 in the Outputs section.

MSL's consensus model describes a task-oriented, group process from the initial motivator to final results. The precipitator is the person/information/event causing the convenor to call the meeting. For example, the precipitator might be a need to determine where to store a particular buildup of nuclear waste. The meeting is called for a purpose. The purpose is the expected outcome(s) of the meeting. In the nuclear waste example, the purpose may be to come to consensus on a group decision on where to store the waste. The problem is what must be resolved by the group. In other words, it is the expected output(s) the group intends to develop. The expected output in the nuclear waste example is a group decision. People may include a facilitator, a moderator, an information supplier, an expert, and various stakeholders in the issue being discussed. These people may have initial expectations about the purpose, problem, participation, process, and/or product of the meeting. Participation is the expected interaction the group members must go through to arrive at the output(s) and outcome(s). The convenor may want equal participation or he or she may want more-knowledgeable members of the group to have the floor longer. For example, the convenor may want the group members to work together to resolve the problem or he or she may want the group to consult an expert (e.g., an expert on nuclear waste storage and/or nuclear waste transportation). The knowledge about the purpose, problem, people, and participation components of the meeting imply the process of the meeting. The process should be the best way for the people to work together to address the problem and achieve the purpose. The

product is the outputs and outcomes resulting from the group process. Outputs are tangible. For example, the nuclear waste group may decide they need to write up a group decision or perhaps a set of guidelines to act on. Outcomes are intangible. For example the nuclear waste group may not only desire group consensus on the decision they come up with, they may also desire a high quality decision, a sense of shared information, and group cohesion, when the meeting is completed.

My conceptual model relates to MSL's consensus model in the following way. Individuals in a consensus-gaining group may (or may not) have expectations about any one of the components discussed above. For example, they could have expectations about what the group's participation will be like, what type of roles the people in the group will take on, and what output and outcomes will result from the group's participation.

If group members have worked in consensus-gaining or decision-making groups before, they may already have definite expectations. Their expectations are based on past information about what occurred in previous groups. For example, if an experienced member had an equal opportunity to express his or her views in a previous group, he or she may expect to have equal opportunity to express his or her views with his or her present group. Even if group members aren't experienced, they still may have expectations about what the process steps will be and what the group will produce. Expectations can also be influenced by the convenor. For example, the memorandum the convenor sends asking people to attend the meeting may influence group members' expectations.

I focused on participation and outcome expectations (purpose) in my research. Participation expectations are beliefs about the interaction of the group. I studied a subset of participation expectations comprising expectations about the opportunity to express views and information sharing during the group discussion. I call these expectations expression-of-views expectations. A group member may expect everyone in the group to have an equal opportunity to express their views. Another group member may expect an individual (e.g., an expert on the issues being discussed) or individuals in the group to have more of an opportunity to express their views than others. A group member may also expect a large amount of information sharing during the group discussion. Another group member may wish to get right to the point without much information sharing. Outcome expectations are beliefs about what outcomes will result from the group process. I studied a subset of outcome expectations comprising expectations about decision quality. A group member may have much confidence in the group's decision-making ability and expect the group to produce a decision of higher quality. Another group member may not have as much confidence in the group's decision-making ability and may expect the decision quality to be somewhat low. In the literature review section describing the consensus-gaining process, I discuss participation expectations, focusing on expectations about opportunity to express views and information sharing. I also discuss outcome expectations, focusing on expectations about decision quality. My research determined the effects meeting expression-of-views and decision-quality expectations have on strength of consensus. I also determined if valence associated with expectations (or the group member's perceived importance for the expectations to be met) affects the relationship between met expectations and strength of consensus.

Sub-Problems

1. Operationally define consensus.

2. Determine and relate some of the relevant or important components of a consensus-gaining process. Determine how meeting group members' expectations may relate to the components of the consensus-gaining process.

3. Operationally define an expectation. Describe how expectations can influence both attitudes and behaviors of individuals in groups.

4. Characterize different types of expectations involved in a consensus-gaining process.

5. Determine the relationship between meeting individual expression-of-views expectations and strength of consensus.

6. Determine the relationship between meeting individual decision-quality expectations and strength of consensus.

7. Determine whether meeting individual expression-of-views expectations influences strength of consensus more than meeting individual decision-quality expectations.

8. Determine to what degree valence associated with expectations influences the relationship between meeting expectations and the strength of consensus.

9. Develop a process (using the knowledge from this research) for managers to work with group members' expectations to improve the consensus-gaining process.

Outputs

1. An operationalization of consensus; a measure for strength of consensus. I develop the first part of this output in the Consensus section (Literature Review chapter) and the second part in the Data Analysis section (Research Approach chapter).

2. A model showing consensus-gaining process components; a model tying this model to the process of meeting group members' expectations. I develop this output in the Conceptual Model section.

3. An operationalization of an expectation; a description of how expectations can influence both attitudes and behaviors of individuals in groups; a measure for expression-of-views expectations and decision-quality expectations. I develop the first two parts of this output in several areas in the Literature on Expectations section (Literature Review chapter) and the third part in the Data Analysis section (Research Approach chapter).

4. A taxonomy of different types of expectations involved in a consensus-gaining process. I develop this output in the Expectations Pertaining to the Consensus Gaining Process section (Literature Review chapter).

5. An assessment of the relationship between meeting individual expression-of-views expectations and individual strength of consensus. I develop the statistical relationship using the results from the data analysis and describe this relationship in the Hypotheses Testing for Consensus Using the Original Model section (Results chapter). I describe the relationship further in the Hypothesis Testing section (Discussion chapter).

6. An assessment of the relationship between meeting individual decision-quality expectations and individual strength of consensus. I develop the statistical relationship using the results from the data analysis and describe this relationship in the Hypotheses Testing for Consensus Using the Original Model section (Results chapter). I describe the relationship further in the Hypothesis Testing section (Discussion chapter).

7. An assessment of whether meeting individual expression-of-views expectations influences strength of consensus more than meeting individual decision-quality expectations. I develop the statistical relationship using the results from the data analysis and and describe this relationship in the Hypotheses Testing for Consensus Using the New Model section (Results chapter). I develop this output further in the Hypothesis Testing section (Discussion chapter).

8. A description of the interactive effect of valence on the relationship between met expectations and consensus. I develop the statistical relationship using the results from the data analysis and and describe this relationship in the Hypotheses Testing for Consensus Using the Original Model section (Results chapter). I develop this output further in the Hypothesis Testing section (Discussion chapter).

9. Process steps for managers to use to work better with group members' expectations with the aim of improving the consensus-gaining group process. I develop this output in the Process Steps for Managers of Consensus Gaining Groups section (Discussion chapter).

Research Hypotheses

1. Meeting group members' participation (expression-of-views) expectations will increase strength of consensus.

2. Meeting group members' outcome (decision-quality) expectations will increase strength of consensus.

3. The valence associated with expectations has a positive influence on the relationship between meeting expectations and its effect on strength of consensus.

LITERATURE REVIEW

Overview

The literature review is divided into two major sections: literature on expectations and literature on the consensus-gaining process. I begin the first section by defining expectations. I introduce Vroom's (1964) expectancy theory, comparing and contrasting Vroom's expectancy with what I mean by expectations. The literature on expectations shows manipulating expectations can influence attitudes and behaviors. Much of the literature related to expectations deals with motivation and improvement of performance. Research on the Pygmalion and Galatea effects demonstrates how setting expectations can improve one's own performance or the performance of others. Other literature focuses on the effects of meeting individual expectations on the individual's resulting attitudes. This literature focuses on employees' attitudes (e.g., job satisfaction) and subsequent behaviors (e.g., turnover). The research on distributive versus procedural justice helps distinguish between participation expectations and outcome expectations.

I begin the second section with a discussion of the consensus-gaining process as a system of inputs (group members, information, and previous decisions), transformation processes (participation), and outputs/outcomes (decisions/consensus). I describe expectations specific to the consensus-gaining process, focusing on participation and outcome expectations. I discuss participation expectations about information sharing and opportunity to express views and

outcome expectations about decision quality and consensus. I define consensus and discuss variables used in the literature to measure it. I discuss research showing that meeting expectations improves individuals' satisfaction with and commitment to the group decision.

Literature on Expectations

Defining Expectations

I define an expectation to be a belief about the probability of some future occurrence or outcome. This definition addresses the first part of output #3 in the Outputs section. My definition an expectation has three parts. First, an expectation is a belief. A belief is a mental act, condition, or habit of placing trust or confidence in a person or thing (*American Heritage Dictionary*, 1981). We can expect (believe, trust, have faith) it will rain tomorrow just as we can expect (believe, trust, have faith) everyone in the group having an equal opportunity to voice their opinions. Second, the belief is about some future occurrence or outcome. This belief implies a group member could have expectations about how members will behave in the group or what the group will produce. Third, an estimate of probability (strength) is associated with the belief. The dictionary (*American Heritage Dictionary*, 1981), uses terms such as probable, likely, certain, and obligatory in defining an expectation. All these terms imply a high probability (strength). However, someone can have an expectation that something is somewhat likely or unlikely (i.e., a low probability). Therefore, my definition of expectation uses the word probability (instead of probable, obligatory, or certain) because it doesn't assume high or low likelihood.

Expectations Predict Motivation: Vroom's Expectancy Theory

Victor Vroom's Expectancy Theory (1964) is the foundation for linking individual expectations to performance. Vroom's Expectancy Model consists of three constructs: expectancy, valence, and instrumentality. Expectancy is the perceived relationship between effort and performance (Muchinsky, 1987). Effort is an action, such as working hard, or studying diligently. Performance is an outcome, such as a job well done, or good grades.

Vroom says expectancy can be described in terms of its strength. "Maximal strength is indicated by subjective certainty that the act *will* be followed by the outcome while minimal (or zero) strength is indicated by subjective certainty that the act *will not* be followed by the outcome" (p. 17). If a person believes working hard will lead to a job well done, the person's expectancy would be high for the relationship between working hard (action) and a job well done (outcome). If a person believes studying diligently won't lead to good grades, the person's expectancy would be low for the relationship between studying diligently (action) and good grades (outcome).

Valence is "affective orientations toward particular outcomes" (Vroom, 1964, p. 1 in other words, how much value one places on those outcomes coming true. It is important to note, these outcomes are the second type of outcome Vroom refers to. In other words, there is effort followed by performance (outcome 1) followed by outcome 2 (e.g., good grades). Vroom's (1964) instrumentality is the belief that the outcome 2 will result from outcome 1. Vroom links expectancy, valence, and

instrumentality in a multiplicative fashion to explain why an individual is or isn't motivated to act in a particular situation.

Muchinsky (1987) gives an example of a person's motivation to study chemistry based on Vroom's model. The person desires certain outcomes (e.g., good grades in chemistry classes, a sense of accomplishment). Therefore, his valence for these outcomes is high. He realizes getting good grades in his chemistry classes is conditional on his performance in those classes. Therefore, his instrumentality is high. However, no matter how hard he tries, he can't alter his performance in his chemistry classes. Therefore, his expectancy is near zero, because his perceived positive relationship between the effort he puts into his classes and his performance in the classes is very low. Since the motivation to act is a multiplicative function of expectancy, valence, and instrumentality, and one component (expectancy) is very low, the person's motivation to act (study chemistry) will also be very low.

The difference between Vroom's expectancy and expectations is that expectancy is used in a multiplicative relationship with instrumentality and valence to predict an individual's motivation to act or put forth effort. Expectations are beliefs about what outcomes or occurrences will happen in the future. A link between Vroom's expectancy theory and my research is that expectancy and instrumentality are both expectations. Expectancy is the expectation that effort will lead to performance and instrumentality is the expectation that performance will lead to outcomes. However, my study doesn't focus on the effect of expectations on motivation. My study focuses on the effect of meeting an individual's expectations on his or her attitudes. Besides expectations, a common construct between Vroom's expectancy theory and my

research is outcomes. Vroom's theory looks at outcomes in the future. Since my research focused on perceptions of met expectations, individuals were required to refer to outcomes that had already occurred. I studied Vroom's concept of valence as an interaction variable between met expectations and strength of consensus. I didn't study the probability or strength associated with an expectation.

Expectations Affect Behaviors: Expectation-Intention-Action

Prothero and Beach (1984) showed expectations influence intentions which then influence behaviors. They studied the expectation-intention-action chain of events in the context of retirement decision making and found expectations predicted intentions 78% of the time and intentions predicted behaviors 76% of the time. Since expectations indirectly influence behaviors, this study also supports Vroom's Expectancy Theory. This section and the next five sections address the second part of output #3 in the Outputs section.

Setting Expectations Affects Behavior: Pygmalion and Galatea Effects

A number of researchers have shown how manipulating expectations can improve performance. Their research has been based on the self-fulfilling prophecy. The self-fulfilling prophecy says, "One prophesizes an event, and the expectation of the event then changes the behavior of the prophet in such a way as to make the prophesized event more likely" (Rosenthal, 1966, p. 129). The Pygmalion effect and the Galatea effect are two examples of the self-fulfilling prophecy. The term "Pygmalion", used by a number of researchers (Crawford, Thomas, & Fink, 1980;

Eden, 1984; Eden, 1988; Eden & Ravid, 1982; Rosenthal & Jacobson, 1968), comes from the Greek legend of Pygmalion. Pygmalion was a sculptor and king of Cyprus. He carved a statue of a woman and subsequently fell in love with it. He wanted his statue to be real so much that Aphrodite gave life to it (*New Standard Encyclopedia*, 1983). Galatea was the name Pygmalion gave to the lady after she came to life.

The Pygmalion effect is the "effect of one person's expectation for another person's behavior on that other person's behavior" (Rosenthal & Jacobsen, 1968, p. 166). The person, whose expectations about the potential of target individuals have been raised, expects higher performance from those target individuals. For example, a teacher who is told a particular student has a very high I.Q. expects the student to perform as well as or better than other students. These new expectations cause the teacher to change his or her behavior toward the target student. For example, the teacher may become more attentive to the student and ask them more questions. This changed behavior is unintentionally aimed at changing the behaviors of the individuals to meet his or her expectations (i.e., the self-fulfilling prophecy). In a sense, the individual is communicating his or her expectations to the target individuals through his or her behaviors. The Pygmalion effect has been shown to improve the academic performance of grade school students (Rosenthal, 1966; Rosenthal & Jacobsen, 1968). King (1974) showed the Pygmalion effect can cause a significant productivity gain in an industrial setting. Crawford, Thomas, and Fink (1980) showed the Pygmalion effect can make significant performance improvements among undermotivated problem sailors on a Navy ship.

The Galatea effect is "the effect of one person's expectations of his own behavior on that behavior" (Rosenthal & Jacobsen, 1968, p. 166). In a Galatea effect manipulation, experimenters raise the expectations of their subjects directly. Based on the self-fulfilling prophecy, subjects will change their behavior to meet their modified expectations. Eden and Ravid (1982) showed that directly manipulating the expectations of adult military trainees improved their performance in a seven-week clerical training course. The experimental trainees were told they "had a high potential for success" based on their performance on an initial training test. The control trainees were told they "had a regular potential for success" based on the same test. Subsequently, the experimental trainees performed significantly better than the control trainees on the follow-up test (as judged by instructor ratings and written examinations).

In summary, the Galatea effect demonstrates that changing one's expectations can change his or her behavior (performance). The Pygmalion effect demonstrates that changing one's expectations can change the behavior (performance) of others. These effects are consistent with Vroom's (1964) Expectancy Theory.

My study didn't focus on the influence of individuals' expectations on their motivation and performance. However, when looking at what group members do and what they perceive they've done, I believe it's important to understand expectations as they relate to motivation and performance. The Pygmalion and Galatea effects show expectations can change peoples' behavior. My study focused, instead, on the effect of meeting group members' expectations on their attitudes,

related to consensus. The following three sections relate how meeting expectations affects individuals' attitudes and behaviors.

Meeting Expectations Affects Attitudes and Behaviors: Job Satisfaction and Turnover

Porter and Steers (1973, p. 152) define the concept of "met expectations" in the workplace as "the discrepancy between what a person encounters on [the] job in the way of positive and negative experiences and what he expected to encounter." Researchers have shown that meeting employees' expectations decreases their rate of turnover. For example, Katzell (1968) showed that nurses who remained in a particular work environment believed their expectations had essentially been met on the job, while others who left the work environment believed their expectations hadn't been met. Porter and Steers performed a meta-analysis on research involving work environment factors and job content factors that influence individuals' attitudes toward their job and supervisors. For each of these factors, they concluded that meeting employees' expectations about the particular factor decreases turnover. Findings from Porter and Steers' meta-analysis relevant to my research are described in the next two sections.

Work Environment Factors

Researchers have demonstrated that meeting expectations about work environment factors (e.g., recognition, feedback, and relationship to coworkers) decreases turnover. Perception of met expectations about recognition and feedback was shown to be a significant factor in an employee's decision to stay with an organization (Ross & Zander, 1957). Meeting expectations in relation to one's coworkers has an impact

on turnover. In a study of aircraft engine production workers, Telly, French, and Scott (1971), showed workers were more inclined to stay with their jobs when their expectations in relation to their coworkers were met. The effects of met expectations in relation to coworkers can be described by equity theory (Adams, 1963). A worker expects to receive certain outputs and outcomes (e.g., pay, job status) for his or her inputs (e.g., skill, effort, intelligence) relative to his or her coworkers. If the worker's expectations aren't met, a perceived inequity exists between the worker and his or her coworkers. This inequity will influence the worker's attitudes (e.g., dissatisfaction) and subsequent behaviors (e.g., turnover).

Job Content Factors

Researchers have demonstrated that meeting expectations about job content factors (e.g., autonomy, job clarity) has a positive impact on job satisfaction and turnover. Ross and Zander (1957) studied individuals with similar expectations about the amount of job autonomy they would have. Those who left their job reported the amount of job autonomy they had was significantly less than they expected, while those who stayed reported their job autonomy met their expectations. Weitz (1956) demonstrated applicants with a clear understanding of their jobs prior to employment were more likely to remain with the organization. Porter and Steers suggested these workers adjusted their expectations to more realistic levels. Apparently, the adjusted expectations were more easily met by their work environment, resulting in reduced turnover. Lyons (1971) found perceived role (job) clarity to be negatively correlated with turnover, propensity to leave, and job tension, and positively correlated with work satisfaction. Porter and Steers suggested accurate role perceptions can help adjust one's expectations to more realistic levels.

"The resulting increased congruence between expectations and actual experience apparently can serve to increase satisfaction and continued participation" (p. 164). They go on to say job satisfaction is "the sum total of an individual's met expectations on the job. The more his expectations are met on the job, the greater his satisfaction" (p. 169).

To help reduce turnover on the job, Porter and Steers advise studying employees' expectations and the extent to which they are met or altered. Individuals may vary considerably in terms of their expectations. Therefore, to retain an employee, Porter and Steers say it's important to identify individual expectations and determine whether the individual's job can meet his or her expectations. The employer can increase the accuracy of an entering employee's expectations through communication about the nature of the job and the probable payoffs for effective performance. Communication about the nature of the job and the probable payoffs for effective performance may bring employees' expectations in closer alignment with available rewards. A practical way to increase the accuracy of an entering employee's expectations is to use Realistic Job Previews (RJPs) in the hiring process. RJPs set expectations about the job as well as what will be expected from the potential employee. In the long run, the employee may be more satisfied with the organization because his or her expectations were set properly and have a better chance of being met.

My research examined expression-of-views expectations and decision quality expectations and what effect meeting each has on consensus. There is a chance these expectations will not be part of a particular group member's expectation set.

However, I believe I chose expectations most individuals in decision-making groups will have. Therefore, I believe I was be able to properly analyze the effects of met expectations on strength of consensus. Porter and Steers say meeting an employee's expectations will improve the employee's satisfaction with his or her job. If meeting expectations increases satisfaction in general, meeting group members' expectations should strengthen consensus.[2]

Porter and Steers say employees place a fairly high valence on the attainment of their expectations in certain areas (e.g., pay, promotion, and peer group interactions). These expectations must be met if the individual is to stay with the organization. The fact someone stays with or leaves an organization is "a process of balancing received or potential rewards with desired expectations" (p. 171). Porter and Steers recommend studying the different values employees place on their expectations being met. I studied valence, or the value individuals place on their expectations being met, as an interaction variable between met expectations and strength of consensus.

Meeting Different Types of Expectations Affects Different Attitudes: Distributive Justice versus Procedural Justice

I discuss research on distributive justice versus procedural justice and draw a parallel to meeting outcome versus participation expectations. Distributive justice, as it relates to the workplace, is the perceived fairness of the amount of compensation employees receive. Procedural justice is the perceived fairness of the means to

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[2] I say this because satisfaction is similar to acceptance and acceptance is a component of consensus. (See Consensus section.)

determine those amounts. Folger and Knovsky (1989) studied the effects of distributive justice versus procedural justice in the context of pay raises. They found employees' perceptions of distributive justice (not perceptions of procedural justice) were associated with satisfaction with their pay. Likewise, other authors, such as Tyler, Rasinski, and McGraw (1985), have shown distributive justice influences employees' satisfaction with pay more than procedural justice.

While perceived distributive justice influences employees' satisfaction with their pay, perceived procedural justice influences employees' commitment, trust, and cohesiveness to their supervisor and organization. Folger and Knovsky found only procedural justice (not distributive justice) made a contribution to employees' commitment to their organization and trust in their supervisors. Folger and Knovsky note "as the issue moves from the level of personal satisfaction with present outcomes, [for example, pay], to higher-order issues regarding commitment to a system and trust in authorities, these procedural concerns begin to loom larger than distributive ones . . . " (p. 126). Lind and Tyler (1988, p. 179) agree by saying, ". . . attitudes toward the organization as a whole, including such things as organizational commitment, loyalty, and work group cohesiveness, are strongly affected by procedural justice judgments ." Finally, in a study of grievance systems, Fryxell and Gordon (1989, p. 862) concluded that "procedural justice was a significantly better predictor of satisfaction with a grievance system than distributive justice . . . Evaluations of grievance systems were more closely related to the manner in which complaints were resolved than to the actual resolutions produced."

I draw a parallel between distributive justice versus procedural justice and meeting outcome versus participation expectations in a consensus-gaining process. First, the working process is like the consensus-gaining process. In both cases, there is a task to accomplish, people work together to accomplish it, and the people's efforts result in outputs and outcomes. Distributive justice is parallel to the employee's perception of his or her output and outcome expectations being met. Employees expect to receive a certain salary for their work (an output resulting from inputs into the system). If they receive this salary or more (e.g., a bonus), their output expectation will be met. Another way to state this is with equity theory. Employees have a perception of the equity of their wage (an outcome) in relation to the wages of other employees. This perception of equity is derived from the amount of effort (inputs) they perceive they have put forth compared to the amounts of inputs they perceive their fellow employees have put forth in relation to the amount of pay each has received. If their wage is fair with respect to other employees' wages and with respect to the efforts they have put forth, their expectations will be met. If employees don't receive their expected wage or believe it's inequitable, their attitudes about their pay could be negatively influenced. Consensus-gaining group members expect a certain output (e.g., a decision) or outcome (e.g., decision quality) from the consensus-gaining process. If these expectations aren't met, one would also expect attitudes toward the output to be negatively influenced (i.e., a weaker consensus).

Procedural justice is the employee's perceived fairness of the process that determines wages. Procedural justice is similar to the employee's perception of his or her participation expectations being met, since participation is the procedure group members go through to arrive at the outputs and outcomes. If employees'

procedural expectations aren't met, their attitudes and commitment toward their organization and supervisor may be jeopardized. Similarly, group members' expectations about the way the group decision is formed (i.e., the participation) may not be met. For example, group members may not have the opportunity to express their views (even though they expected to) because certain other members of the group were constantly dominating the conversation. If group members' participation expectations aren't met, their attitudes and commitment to the group and the group's decision may be negatively influenced.

I've distinguished between two different types of expectations individuals may have: outcome expectations and participation expectations. I've described the literature showing how meeting these types of expectations can influence satisfaction and commitment. I've drawn a parallel from the work process to the consensus-gaining process and described why meeting group members' participation and outcome expectations would strengthen the satisfaction and commitment to the group decision.

Literature on the Consensus-Gaining Process

The Consensus-Gaining Process

Fisher (1974) describes a group process as a system. All systems possess three elements: structure, function, and evolution. Structure refers to the physical arrangement of a system's components at any given point in time. In a consensus-gaining process, the people (components) may be seated in a circular fashion, across

from each other, or perhaps facing a manager. The structure may undergo changes as time passes (e.g., certain group members may change locations within the group or leave the group). Function refers to the relationships among a system's components in time. Fisher (p. 20) says the "function of a system provides order and regulation of the system." The function of a consensus-gaining process is the group's participation. The participation determines the order and regulation of the system components (i.e., how the group members will interact to accomplish the group's purpose). Finally, the evolution of a system is its changes over time (i.e., its history). For example, a group may begin the consensus-gaining process by getting to know each other. Then the group may diverge into idea generation or perhaps conflict. If the group doesn't handle conflict well, it may regress and break apart; if it does handle conflict well, it may become more cohesive and productive. After diverging, the group may begin to converge on a group decision.

A system is a set of interrelated components that transform inputs into outputs and outcomes. Each of the components (e.g, people, purpose, participation) in a consensus-gaining process are interrelated. Zaleznik and Moment (1964) pointed out that a group functions under psychological interdependence. In other words, a group member's attitudes and behaviors are contingent upon what is happening among the other group members (i.e., contingent upon their attitudes and behavior). Furthermore, attitudes and behaviors are to some degree contingent upon other components of the consensus-gaining process (e.g., the purpose of the meeting or the type of participation within the group).

Inputs to a consensus-gaining process include the group members, information, and previous decisions. The group works together (participates) to transform these inputs into outputs and outcomes. My research focuses on expectations as inputs to the consensus-gaining process. I discuss different types of expectations pertaining to the consensus-gaining process and then focus on the expectations I'm studying.

Expectations Pertaining to the Consensus-Gaining Process

Group members can have different types of expectations pertaining to the consensus-gaining process and its outputs and outcomes, including role, participation, output, and outcome expectations. Figure 2 is a taxonomy I developed showing different types of expectations. The taxonomy addresses output #4 in the Outputs section. The taxonomy is by no means complete.

Role expectations are beliefs about the type of roles group members will play (Forsyth, 1983; Kabanoff, 1988; Schein, 1969). I discuss literature on role expectations and then give a practical example of how role expectations are used. Forsyth (1983) referenced Joseph Berger and his colleagues' work on status differences that develop among group members when the group works on an important task. Forsyth says because the group hopes it can successfully complete the task, group members intuitively take note of one another's status characteristics. Status characteristics are any personal qualities the group members think are indicative of ability or prestige. Because group members with greater ability or prestige are expected to influence the group more effectively, those who have numerous status characteristics are "permitted to perform more numerous and

Role Expectations

-Leader(s)

-Follower(s)

-Expert information provider(s)

-Devil's advocate(s)

-Tourist(s)

-Prisoner(s)

-Participant(s)

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Participation Expectations

-Opportunity to express views

-Information sharing

-Conflict

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Output Expectations

-Decision

-Set of recommendations

-Set of guidelines

-Plan

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Outcome Expectations

-Strength of consensus

-Level of decision quality

-Amount of group understanding

-Amount of group cohesion

-Amount of commitment to the group, or decision

-Amount of satisfaction with the group, process,
  or decision

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Figure 2: Taxonomy of Group Member Expectations

varied group actions, to provide greater input and guidance for the group, to influence others by evaluating their ideas, and to reject the influence attempts of others" (p. 120). Kabanoff (1988) defined role expectations as they relate to power relations, by saying role expectations are statements involving evaluative judgments about one's own or another's behavior against a criterion for judging a behavior's appropriateness to different kinds of power relations. Some examples are expectations about who will play the role of leader, expert information provider, and/or devil's advocate. One may expect a leader to lead the group through the process, perhaps setting direction and making key decisions. One may expect an expert to provide necessary and credible information to the group and/or make some critical decisions. One may expect a a devil's advocate to constantly challenge the group's proposals, helping to identify flaws in the proposals and key issues to be discussed.

A practical example of how role expectations are used follows. Dominic Monetta, former Director of the Office of New Production Reactors at the U.S. Department of Energy, identifies the roles of tourists, prisoners, and participants (R. Carlisle, Historian for Office of New Production Reactors, personal communication, August, 1991). Tourists are people in a meeting who don't know where they are or why they are there. Prisoners are people forced to be in the meeting. They often soak up the energy of the group. Participants are people in the meeting actively involved in helping to solve the problem. Monetta suggests getting rid of the tourists and prisoners (because they are not helpful to the group) and then getting down to business. Because there are so many types of role expectations group members

could have and because role expectations would be very difficult to measure or control, I didn't study role expectations.

Group members can have participation expectations, or beliefs about the type of interaction of the group. Participation expectations may be based on previous knowledge of participation in other groups and/or aspects of the present consensus-gaining situation. These aspects may include the task statement (problem), the perception of the group members, and the type of manager (if there is one). Gero (1985) showed that subjects in a consensus-gaining process expect more cooperation and friendliness, and less disagreement (conflict) than subjects in a majority-decision process. I studied one type of participation expectation: expression-of-views expectations. Expression-of-views expectations consist of expectations about the opportunity to express views and information sharing. I discuss opportunity to express views and information sharing in more detail in the next section. Group members may also have other participation expectations, such as expectations about the type of conflict that would occur during the discussion. I didn't study these other types of participation expectations. However, I discuss conflict in the next section.

Group members can have expectations about the outputs and outcomes resulting from a consensus-gaining process. Output expectations would be primarily based on the task statement (i.e., what the group is supposed to produce). For example, the group may expect to come up with a group decision on a particular issue or the group may expect to develop a set of guidelines, recommendations, or a plan to address the issue. Outcome expectations may be based on knowledge of participation in previous groups or perceptions of the present group (i.e., what the present group is

supposed to achieve). For example, if there is a lot of animosity within the group, group members may not expect strong group cohesion or satisfaction with the group when the group interaction is completed. If the problem is confusing or very difficult, group members may not expect a high degree of group understanding. Outcome expectations can also relate to the output (e.g., the expectation of decision quality or the expectation of a particular level of consensus on the group decision). I studied the outcomes of perceived decision quality and consensus in my research, examining the effect of met expectations of perceived decision quality on strength of consensus. I discuss perceived decision quality and consensus in more detail in the Outcomes section.

Group members can have outcome expectations about the amount of group understanding (about the problem) and/or the amount of group cohesion that will result from the consensus-gaining process. I did't study group members' understanding or group-cohesion expectations. Group members may have expectations about the satisfaction and/or commitment they'll have toward the group and/or the group decision as a result of the consensus-gaining process. I didn't study satisfaction and commitment expectations, however I studied how meeting expectations affects consensus, which is composed of agreement, acceptance, and commitment. (See Consensus section.) Group members may also have expectations about their satisfaction with the consensus-gaining process. I didn't study satisfaction expectations related to process, although, as mentioned, satisfaction is similar to acceptance and acceptance is a component of consensus. (See Consensus section.)

Participation

Participation is the interactive process group members go through to arrive at desired outputs and outcomes. There are two interdependent dimensions of group participation: task and social. The task dimension refers to the "relationship between group members and the work they are to perform" (Fisher, 1974, p. 29). The social dimension refers to the relationships group members have with each other.

Many decision-making groups leave participation totally unstructured. Unstructured groups have no steps, rules, or guidelines to follow. Other groups have used techniques to help encourage (or temper) the group's focus on either the task or the social dimension. For example, the Nominal Group Technique (NGT) is a structured technique allowing each group member to participate equally. NGT encourages focus on the task dimension using sequential steps to keep the group advancing toward its goal. However, the structure of NGT doesn't allow extensive group discussion or conflict. Therefore, NGT tempers the social dimension.

Conflict

Conflict is a necessary ingredient in a group-decision-making or consensus-gaining process if the group aims to obtain a high-quality decision (Hall, 1971; Schweiger, Sandberg, & Ragan, 1986; Wall, Galanes, & Love, 1987). However, only a certain level of conflict is functional (Wall, Galanes, & Love, 1987). Brown (1983) suggests an optimal range of conflict. He says too much conflict produces antagonistic attitudes, restricted and distorted information flows, and low-quality decisions. Too little conflict prevents sharing of controversial information and therefore promotes a

decision based on inadequate information. Often conflict related to the group's task is functional (Deutsch, 1973; Tjosvold & Field, 1984). It helps raise controversial issues and surface underlying assumptions and feelings. Conflict related to differences among group members (social conflict) is often dysfunctional (Wall & Nolan, 1986). It causes friction and hostility among group members and can reduce decision quality, group cohesion, and consensus. Conflict is necessary in the consensus-gaining process, but it needs to be managed properly to limit the number of conflict episodes and avoid digressing into social conflict. Devil's Advocacy and Dialectical Inquiry are two group techniques that help promote and manage task conflict in a structured way (Schweiger, Sandberg, & Ragan, 1986). I didn't study any type of conflict in my research. However, because conflict can have a large effect on the participation and outcomes of consensus-gaining groups, I included conflict in the literature review.

Consensus-Gaining Participation

Consensus-gaining participation is generally characterized by a thorough, open, and constructive discussion; group members have the opportunity to express their views and share information to reveal underlying assumptions and relevant facts (Hall, 1971; Schweiger, Sandberg, & Ragan, 1986; Tjosvold & Field, 1983). Hall (1971) developed guidelines to help group members come to consensus more effectively. After studying several hundred decision-making groups, Hall identified behaviors common to the most-effective groups and behaviors common to the least-effective groups. Effective groups tried to get everyone involved, and actively sought out points of disagreement. Ineffective groups tended to use simple decision methods such as averaging and bargaining and emphasized completing the task over coming

up with a decision they could all agree on. Hall summarized the behaviors for the most-effective groups into five guidelines for achieving consensus. A summarized version of Hall's Consensus Guidelines is listed below.

1. Avoid arguing for your own rankings.
2. Don't assume someone must lose when the discussion reaches a stalemate. Instead, look for the next-most-acceptable alternative for all parties.
3. Don't change your mind simply to avoid conflict and to reach agreement and harmony.
4. Avoid conflict-reducing techniques such as majority vote, averages, coin flips, and bargaining.
5. Seek out differences of opinion.

In my study, I didn't give groups Hall's consensus guidelines or any specific instructions on how to most effectively gain consensus. The reason I didn't want to promote consensus gaining is because I wanted to study the effect of different levels of met expectations on different levels (strengths) of consensus.

Information Sharing and Opportunity to Express Views

A number of authors have looked at information sharing and its effect on group-decision-making and/or consensus-gaining. I discuss the elements of information sharing and the phases of a sharing process. Then I discuss some issues related to the information sharing process, tying them to consensus-gaining.

Kurstedt, Middleman, and Jones (1989) list six elements of information sharing:

1. stakeholders,
2. motivators,

3. a need,

4. linkage mechanisms,

5. entities, and

6. environment.

Stakeholders are two or more people sharing the information (p. 399). Stakeholders must have motivation to share (e.g., because the extra information may increase their probability of achieving gains). A need to share is "a combination of the value, motivation, and intent influencing why stakeholders share" (p. 399). The linkage mechanisms "connect the stakeholders" (p. 399). Linkage mechanisms are what the stakeholders use to share information (e.g., computers, telephones). The entity is what is shared. Information is an entity, as are data and decisions. The environment "represents where . . . the sharing takes place" (p. 400). For my study, the stakeholders were the group members, the need was to come up with a group decision to solve the problem, the linkage mechanism was the group discussion, and the entities to be shared were the data, information, and decisions. Finally, the environment was a face-to-face atmosphere in a private area.

Kurstedt, Middleman, and Jones say the four phases of the sharing process are:

1. recognition,

2. formulation,

3. execution, and

4. evaluation.

First, stakeholders must recognize a need to share. They may ask themselves, "Will I gain more from sharing information than I lose?" If the stakeholders recognize the need to share, the next step is sharing it. Stakeholders share information by

formulating a plan. After a plan is formulated, the stakeholders execute the plan. The last phase is to evaluate the execution to determine how useful the sharing process was. The group members in my study recognized the need to share information (as judged by the interactive discussions). Group members didn't execute the decision, so they weren't be able to evaluate how useful the sharing process was.

Schermerhorn's (1977) work showed chief executive administrators of hospitals were more willing to share information (with other hospital administrators) when they felt comfortable about the way their organization was operating. Schermerhorn suggested administrators may share information to 1) gain information for organizational innovation (Knight, 1967), or 2) respond to a value expectation that such forms of cooperative behavior are intrinsically good (Reid, 1972). Relating Schermerhorn's findings to consensus-gaining groups, group members are more willing to share information if they are comfortable about the group, their role within it, and the process the group will go through. To make group members more comfortable about the process, the manager could, for example, remove time pressures. If the manager wishes for the group to share information cooperatively during the interaction, he or she could set this expectation for the group, explaining to them the value of sharing information.

Stasser and Titus (1987) say groups tend to focus on information known to all group members before the group discussion begins. This is especially true if there is a great deal of common information. Also, information sharing during discussion tends to support the predominant sentiment within the group. In other words, supporting

statements for the group decision become more frequent over time. When nearing consensus on a group decision, almost all statements are in favor of the group decision (Hoffman, 1979). Stasser and Titus (1987) say this consensus-confirming nature of group discussion is functional because it enhances the salience of information supporting the group decision (while decreasing decision-opposing information). This statement would seem to be at odds with the cooperative conflict ideas of Deutsch, (1973), Schweiger, Sandberg, and Ragan, (1986), and Tjosvold and Field, (1984). I believe you need cooperative conflict in the beginning of the consensus-gaining process to raise issues, underlying assumptions, and controversial information. For consensus to form, group members need to begin sharing common ideas and beliefs.

If the manager wants particular information or topics to be discussed and/or focused on during the consensus-gaining process, Stasser and Titus' findings tell us the manager should share this information with the group before the consensus-gaining process begins. The manager could set group members' expectations to discuss particular issues.

The process of information sharing affects consensus and decision quality. Hirokawa (1987) studied consensus-gaining groups with the same information before the consensus-gaining process began. He found groups produced higher quality decisions when they:

1. discussed the decision choices carefully and critically,

2. questioned choices already made and challenged questionable information,

3. properly processed the given information (i.e., interpreted it correctly), and

4. avoided engaging in unrealistic hypothetical scenarios or stories.

Group members may have expectations about what type of information will be shared, how it will be shared, and the group's attitude toward sharing. How it will be shared may involve the expected frequency or effectiveness of sharing.

The group's effectiveness in sharing information is contingent, in part, on group members' opportunity to express their views. An outspoken member of the group dominating the conversation (i.e., usurping other group members' opportunity to express their views) may produce two negative outcomes. First, if information is coming from only one source, the quality of the group's information may suffer. If the quality of the information used to make the decision is low, it's probable the group decision will be of low quality also. Second, if group members aren't allowed to express their views, they may not be as accepting of or committed to the group decision (Maier & Hoffman, 1960). My research examined the influence of met expression-of-views expectations on the strength of consensus. Expression-of-views expectations include expectations about information sharing and opportunity to express views.

Outcomes

Outcomes are the intangible results of the decision-making or consensus-gaining process. Outcomes may include consensus, decision quality, and/or interpersonal attitudes (Tjosvold & Field, 1984). Schweiger, Sandberg, and Ragan (1986) mention negative outcomes like suspicion and distrust, individuals' feelings being defeated

and demeaned, and breakdown of teamwork. I concentrated on two outcomes: perceived decision quality and strength of consensus.

Perceived Decision Quality

Often decision quality is one of the most important outcomes of a group-decision-making or consensus-gaining process. Often groups are brought together for the purpose of improving decision quality. Participative problem solving provides higher-quality solutions to non-routine problems (Hall, 1971; Shaw, 1981). Maier and Solem (1952) say group decision quality can be improved by giving minority opinions a chance to be heard. In other words, decision quality can be improved by allowing all group members the opportunity to express their views. Also, over-concern by a leader with a solution may cause poor quality through failure to fully explore the problem (Maier, 1958). In addition to allowing group members the opportunity to express their views, information must be shared to explore fully the problem.

The problem with decision quality, however, is it's exceedingly difficult to measure (Fisher, 1974). Fisher stated, "The solution to the group task . . . has no external means by which the correctness of the decision can be validated-unlike the mathematics problem, which is wholly determined by the technical laws of mathematics" (p. 41). Unless we are using a contrived group-decision-making task with a correct answer, such as Hall's (1971) *Lost on the Moon* exercise, decision quality can't be measured until after the decision is made. However, we can measure group members' perceptions of decision quality. Group members will have perceptions of how good or correct they believe the group decision is. These

perceptions may or may not be related to actual decision quality, depending upon
how accurate group members' predictions are. I believe group members'
perceptions of decision quality affect consensus more than actual decision quality.
Therefore, I measured group members' perceptions of decision quality in my study.

Consensus

Consensus is a state or outcome (DeStephen, 1983; Knutson, 1972) of the group-
decision-making or consensus-gaining process. Not only does the convenor of a
group want a high-quality decision, he or she usually wants consensus among the
group members, especially if the group members are stakeholders in the decision.
Unlike decision quality, consensus can be measured to some extent. Fisher (1974,
p. 41) goes so far as to say "the only means to validate the [group] decision is whether
it achieves consensus."

The dictionary (*American Heritage Dictionary*, 1981) defines consensus as "collective
opinion or accord; general agreement or accord." The definition of consensus isn't
clear. Kurstedt, Brubaker, Doss, and Koelling (1989) performed a literature search
on consensus and found definitions for consensus ranging from degree to which the
most influential people in the group agree (Kaprzyk & Fedrizzi, 1988) to perfect
unanimity among all group members (Hirokawa, 1985). MSL has been studying
consensus for the past three years. MSL defines consensus as: "A state where a
common judgment has been reached by most of those concerned. Consensus exists
when a group makes and supports a decision." This is how I define consensus for my
study.

Operationally, consensus means more than just agreement (Fisher, 1974). I operationally define consensus as a combination of three measures: agreement with the group decision, acceptance of the group decision, and commitment to the group decision. This operationalization of consensus addresses the first part of output #1 in the Output section. My measure for strength of consensus incorporates all three. (See Dependent Variable section, Research Approach chapter.)

Based on the literature I read, agreement, acceptance, and commitment were the most popular measures for consensus. Furthermore, all these measures are necessary for true consensus. Authors including DeStephen (1983), Fisher (1974), and Holder (1972) say group members must agree with the group decision for there to be consensus. However, as noted above, agreement isn't sufficient. Fisher (1974, p. 129) says ". . . group members who submit to external pressures or external authority might express agreement without really accepting the proposal itself." Fisher labels agreement masquerading as consensus false consensus. Other authors, including Gentry (1982), Miner (1979), Schweiger, Sandberg, and Ragan (1986), and Tjosvold and Field (1983), support acceptance as necessary for consensus. Finally, Zaleznik and Moment (1964, p. 142) say "consensus lies in the degree of personal commitment . . . toward the group decision after it is reached." This means, for example, even though some members might disagree with the decision on principle, they may still accept it and personally carry it out on their part. Other authors, including Miner (1979), Fisher (1974), Tjosvold and Field (1983, 1984), support commitment as necessary for consensus. Therefore, agreement, acceptance, and commitment are necessary for consensus; and, when measuring consensus, we must measure all three.

Strength of Consensus

The degree, or strength, of consensus is a characteristic of the state. A number of authors have measured the strength of consensus (Brubaker, 1991; DeStephen, 1983; Knutson & Holdridge, 1975; Kurstedt, Brubaker, Doss, & Koelling, 1989; Polk, 1991). For my research, I define the strength of individual consensus as the strength of agreement, acceptance, and commitment a group member has toward the group decision. I define perception of group consensus as a group member's perception of the amount of (strength of) agreement, acceptance, and commitment the other group members have toward the group decision.

Meeting Group Members' Expectations Improves Consensus

Castore and Murnighan (1978) examined factors affecting group members' support for the group's decision. They found (among other things) group members' ratings of satisfaction with the group's decision, anticipated commitment to the decision, and support of the decision were highest among group members whose pre-discussion decision was in the highest concordance with the group decision. Assuming pre-discussion decisions are group members' high-valence output expectations, Castore and Murnighan's findings suggest meeting group members' high-valence output expectations about the group decision improves group members' satisfaction with, commitment to, and support of the group decision.

RESEARCH APPROACH

Type of Research

This research was basic rather than applied. The goal was to formulate and validate a theory. The goal was not to seek the solution to a practical problem. However, the knowledge gained from this research can be applied directly by managers in real-world group-decision-making and consensus-gaining situations. This research was deductive rather than inductive. I started with an established theory, developed an extension of that theory, and collected data to test the validity of the extended theory. I didn't begin with observations and then explain what I observed by generalizing (Light, Singer, & Willet, 1990). Because I experimentally controlled a number of extraneous variables, the approach I took in this research was experimental. However, since I tested my hypotheses by measuring the relationship of one variable to another (Kerlinger, 1986), my research was relational.

Variables

I measured my variables through questionnaires; therefore, the data reflect perceptions and not necessarily reality (e.g., perceived met expectations and perceived strength of consensus). Throughout the remainder of this document, I won't qualify each variable as perceived. Expectations refer to group members' initial expectations (i.e., expectations they have before the group discussion begins). When dealing with expectations or expectancies one is always dealing with perceptions.

Dependent Variable

My dependent variable was strength of consensus. I believe consensus is a combination of individual consensus and group consensus. I define individual consensus as a group member's agreement with, acceptance of, and commitment to the group decision. I define group consensus as an individual's perception of the other group members' agreement with, acceptance of, and commitment to the group decision. My original research model, illustrated in Figure 3, interrelates my variables.

Predictor Variables

My two predictor variables were:
  1. Degree of met expectations about expression of views, and
  2. Degree of met expectations about decision quality.
I define expression-of-views expectations to be a composite of expectations about the opportunity to express views and information sharing. The reason I combined expectations about the opportunity to express views and information sharing into expression-of-views expectations is because my pilot study showed that met expectations about opportunity to express views and met expectations about information sharing were substantially overlapping constructs ($r = .720$). Also, the Chronbach's alpha value for met expression-of-views expectations was much higher than the alpha value for met opportunity-to-express-views expectations or met information-sharing expectations.

Predictor Variables

Degree of met expectations
about expression of views

Degree of met expectations
about decision quality

Dependent Variable

Strength of
Consensus:

Individual consensus

Group consensus

Interaction Variables

Valence associated with
expression-of-views
expectations

Valence associated with
decision-quality expectations
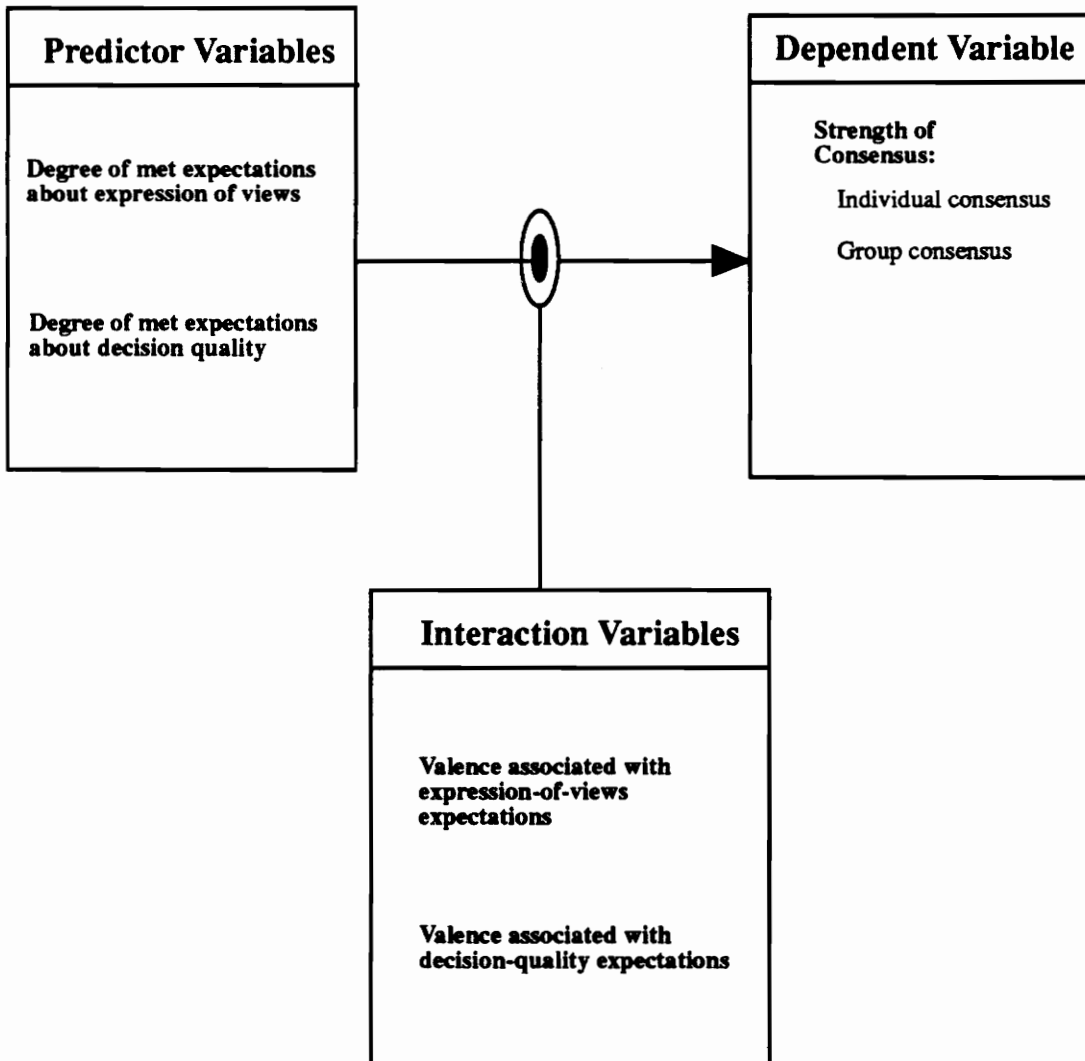
Figure 3: Original Research Model

In the beginning of a decision-making or consensus-gaining process, group members may have expectations about the opportunity they will have to express their views and the associated information sharing. I called these expectations expression-of-views expectations. Likewise, group members may have expectations about the decision quality resulting from the process. During the decision-making or consensus-gaining process, group members form perceptions of how much opportunity they're having to express their views and how much information they're sharing. After the process, when the group has arrived at a decision, group members form perceptions of the decision quality. I measured perceptions of met expectations after the decision-making process[3] was over. Group members were asked to compare their initial expectations to their perceptions of what occurred during and after the decision-making process. To determine the degree of met expectations about expression of views, group members were asked to compare their initial expectations of expression of views to the perception of their expression of views during the decision-making process (i.e., their perceptions of their opportunity to express views and the information sharing). To determine met expectations about decision quality, group members were asked to compare their initial expectations of decision quality to their perception of the quality of their group's decision.

Interaction Variables

An interaction variable can have a moderating effect on the relationship between an independent (or predictor) variable and a dependent variable.

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[3] I use the term decision-making process because my groups didn't have the specific objective of coming to consensus.

My interaction variables were,

1. Valence associated with expression-of-views expectations, and

2. Valence associated with decision-quality expectations.

I define valence associated with an expectation to be an individual's anticipated importance for the expectation to be met. My presumption was that meeting an individual's high-valence expectations would have a stronger effect on strength of consensus than meeting an individual's low-valence expectations.

Testable Hypotheses

1. Met expression-of-views and decision-quality expectations, along with their associated valences, will be a significant predictor of strength of consensus.

2. The higher the degree of met expectations about expression of views, the stronger the consensus.

3. The higher the degree of met expectations about decision quality, the stronger the consensus.

4. Meeting decision-quality expectations will have a stronger effect on strength of consensus than meeting expression-of-views expectations.

Research Assumptions

1. Group members have expectations about the expression of views and decision quality of a consensus-gaining process.

2. Certain expectations for a group member are more valent than other expectations.

3. Group members' expression-of-views and decision-quality expectations vary among group members.

4. Perceptions of the degree expectations are met vary among group members.

5. The strength (or probability) associated with group members' expectations doesn't significantly affect the degree to which group members perceive their expectations are met.

6. Eliciting group members' expectations at the beginning of the consensus-gaining process (via the Expectations/Valence Questionnaire) makes it easier for group members to know the degree their initial expectations were met at the end of the process.

Data Analysis

Figure 4 is a flow chart of the analysis I used to measure my variables and test my hypotheses. I used strength of consensus as my dependent variable instead of individual consensus or group consensus, because it had a higher reliability. (See Descriptive Statistics and Reliability Analysis for Original Research Model section, Results chapter.) I measured strength of consensus by summing responses to all questions on the Consensus Questionnaire (Appendix D) for each group member. This sum resulted in a strength of consensus measure (C) for each group member. This measure for strength of consensus addresses the second part of output #1 in the Outputs section. I also measured strength of individual and group consensus for exploratory purposes. I measured strength of individual consensus by summing responses pertaining to individual consensus on the Consensus Questionnaire (i.e., questions 1, 4, and 6, with the value for question 6 being inverted) and strength of
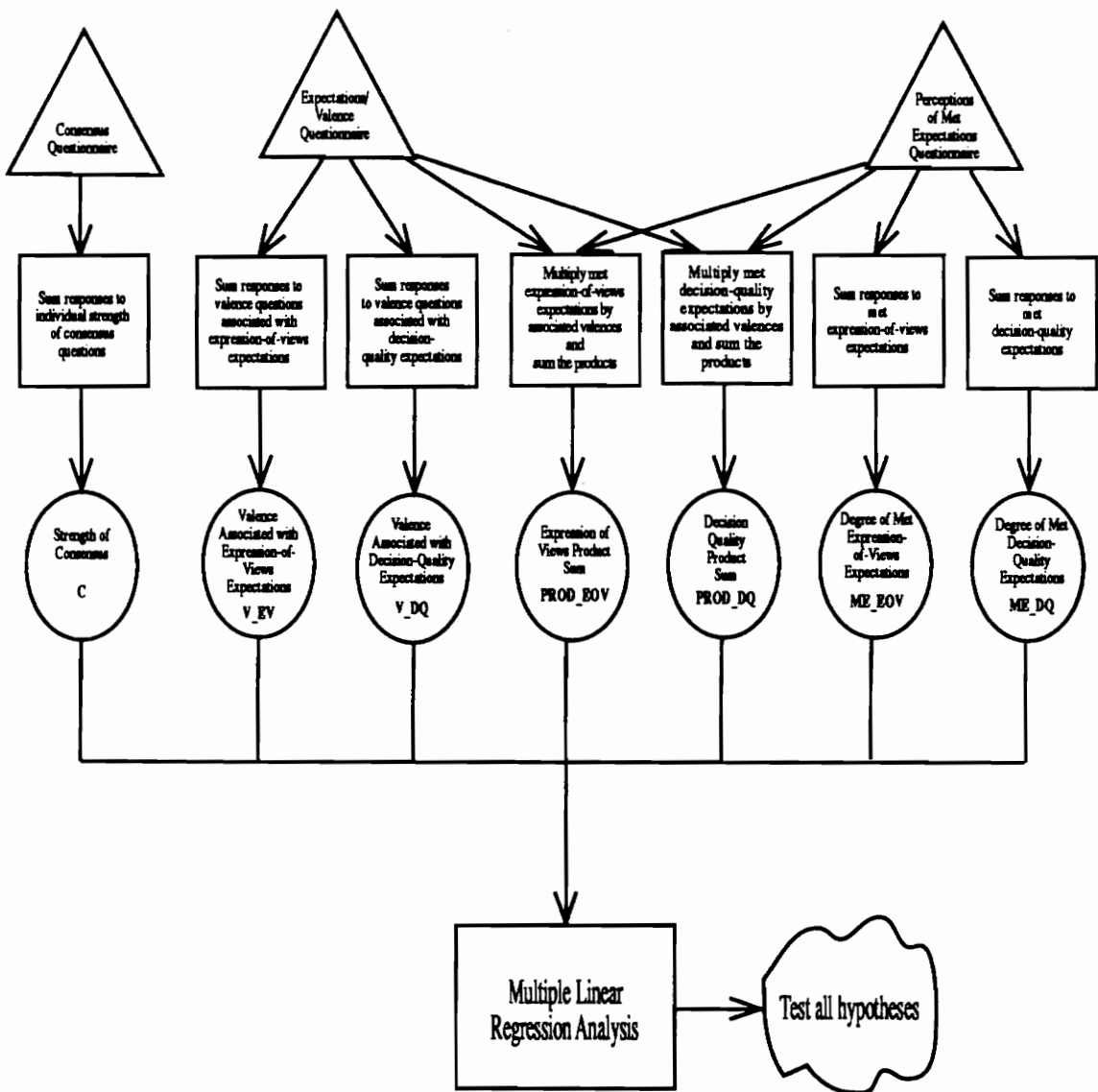
Figure 4: Data Analysis for Testing all Hypotheses

group consensus by summing responses pertaining to group consensus on the Consensus Questionnaire (i.e., questions 2, 3, and 5).

I measured the predictor variables using responses to the Perceptions-of-Met-Expectations Questionnaire (Appendix E). I measured degree of met expression-of-views expectations by summing responses for met expression-of-views expectations (i.e., questions 2, 4, 6, 8, 14, and 16) and degree of met decision-quality expectations by summing responses for met decision-quality expectations (i.e., questions 10 and 12). These measures address the third part of output #3 in the Outputs section.

I measured valences associated with expectations using the even-numbered questions on Expectations/Valence Questionnaire (Appendix C). I measured valence associated with expression-of-views expectations by summing responses to questions 2, 4, 6, 8, 12, and 14 and valence associated with decision-quality expectations by summing the responses to questions 10 and 16.

I computed the product sums associated with each type of expectation using responses to questions on both the Expectations/Valence Questionnaire and the Perceptions-of-Met-Expectations Questionnaire. The expression of views product sum was computed by summing the products of met expression-of-views expectations multiplied by their respective valences. The decision quality product sum was computed by summing the products of met decision quality expectations multiplied by their respective valences.

To test Hypothesis 1, I analyzed the effect met expectations and their associated valences had on strength of consensus using the following multiple linear regression model.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_1 X_3 + \beta_6 X_2 X_4 + e$$

where,

Y	=	Strength of consensus,
X_1	=	Met expectations about expression of views,
X_2	=	Met expectations about decision quality,
X_3	=	Valence associated with expression of views expectations,
X_4	=	Valence associated with decision quality expectations,
$X_1 X_3$	=	Expression of views product sum,
$X_2 X_4$	=	Decision quality product sum,
e	=	Error term, and
$\beta's$	=	Coefficients associated with variables.

This is my original research model. I call it the original research model because I propose a new research model in The New Research Model section (Results chapter). I tested all hypotheses first with the original research model and then with the new research model.

The expression-of-views interaction term was met expression-of-views expectations multiplied by the valence associated with expression-of-views expectations. The decision-quality interaction term was met decision-quality expectations multiplied by the valence associated with decision-quality expectations.

I tested Hypotheses 2 through 4 using the parameter estimates (from the regression model) associated with met expression-of-views and decision-quality expectations.

I did a three-part exploratory analysis. First, I replaced consensus with individual consensus and retested all hypotheses. Then I replaced consensus with group consensus and retested all hypotheses. Second, I did a correlational analysis between number of verbalizations and 1) strength of consensus, 2) met expression-of-views expectations, and 3) met decision-quality expectations. Third, I did a correlational analysis between time to decision and 1) strength of consensus, 2) met expression-of-views expectations, and 3) met decision-quality expectations.

Sample

I used 97 subjects (61 males and 36 females) randomly assigned to a total of 17 groups; 14 were six-person groups, one group had five subjects and two groups had four subjects. No group had less than one or more than three females. The subjects were mainly Industrial and Systems Engineering (ISE) students (51 junior and senior ISEs and 22 graduate ISEs). There were three senior statistics students and one graduate student majoring in public administration and planning. The other subjects were undergraduate and graduate college students of various engineering disciplines. Subjects ranged in age from 18 to 31.

Task

I had each group act as a task force to discuss and come to a group decision on a modified version of Maier, Solem, and Maier's (1975) Change of Work Procedures problem (Appendix B). Miner (1979) describes the Change of Work Procedures problem.

> "It deals with a subassembly situation involving three men and their foreman. Time-study data reveal that each man is most efficient at one of three positions. The men presently rotate equally between positions, but time-study data indicate that efficiency will improve if each man works only in his best position. However, the workers are opposed to such a change. They fear rate cuts, increased boredom,

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management intentions, and they question the ability of the time-study man. The problem thus raises issues based on fact and reality as well as on adverse feelings" (p. 84).

I chose this task for three reasons. First, it involves judgmental problem solving. Groups are usually brought together to solve this type of task . Therefore, the Change of Work Procedures problem is relevant to real-world situations. Second, it's been used before in the literature (though not in the form I used it). Miner (1979), and Maier and Hoffman (1960) used the problem to study decision quality and group member satisfaction with the decision. Third, it's an industrial engineering management problem involving issues of productivity, quality, and worker satisfaction and therefore relevant to my major.

The problem was originally designed as a role-playing activity. I redesigned the problem to exclude roles because my purpose was to measure group members' actual expectations as opposed to expectations given to them through roles. In coming up with a group decision on the problem, the groups were asked to consider the issues of productivity, quality, and employee satisfaction.

Instruments

I used three questionnaires to gather my data. The questions on the Consensus Questionnaire (Appendix D) were taken from the common questions used in consensus research by Brubaker (1991) and Polk (1991). Several of the questions used in the Expectations/Valence Questionnaire (Appendix C) and the Perceptions

of Met Expectations Questionnaire (Appendix E) were modified from Polk's (1991) research. These questions were rewritten to focus on expectations. I developed the other questions myself. I performed a reliability analysis on all questions in the pilot study (Appendix F). All Chronbach's alpha values except one were above the .70 level. The lowest value was .689. (See Appendix F.)

Procedure

Figure 5 is a Flow Chart for this procedure. I was the experimentor for all groups. The following procedure is for a single group of subjects.

1. Pre-Discussion Procedures

1.1 I set up numbered cards (1 to 6), one at each seat, and told the subjects to sit at their (randomly) assigned number. I handed each subject a Consent Form, briefly described it, and had each subject sign it. After all subjects in the group had signed their forms, I collected all Consent Forms. I read the following to the group.

> "I've brought you together to participate in research we're doing on group decision making. You'll work together to complete a group-decision-making task. You'll be asked to fill out three op-scan questionnaires. You'll enter your ID, or social security number, on the questionnaires before filling them out. This will help us match questionnaires for each individual. The entire experiment should take about an hour. The results of the experiment will help further the knowledge about group decision making."
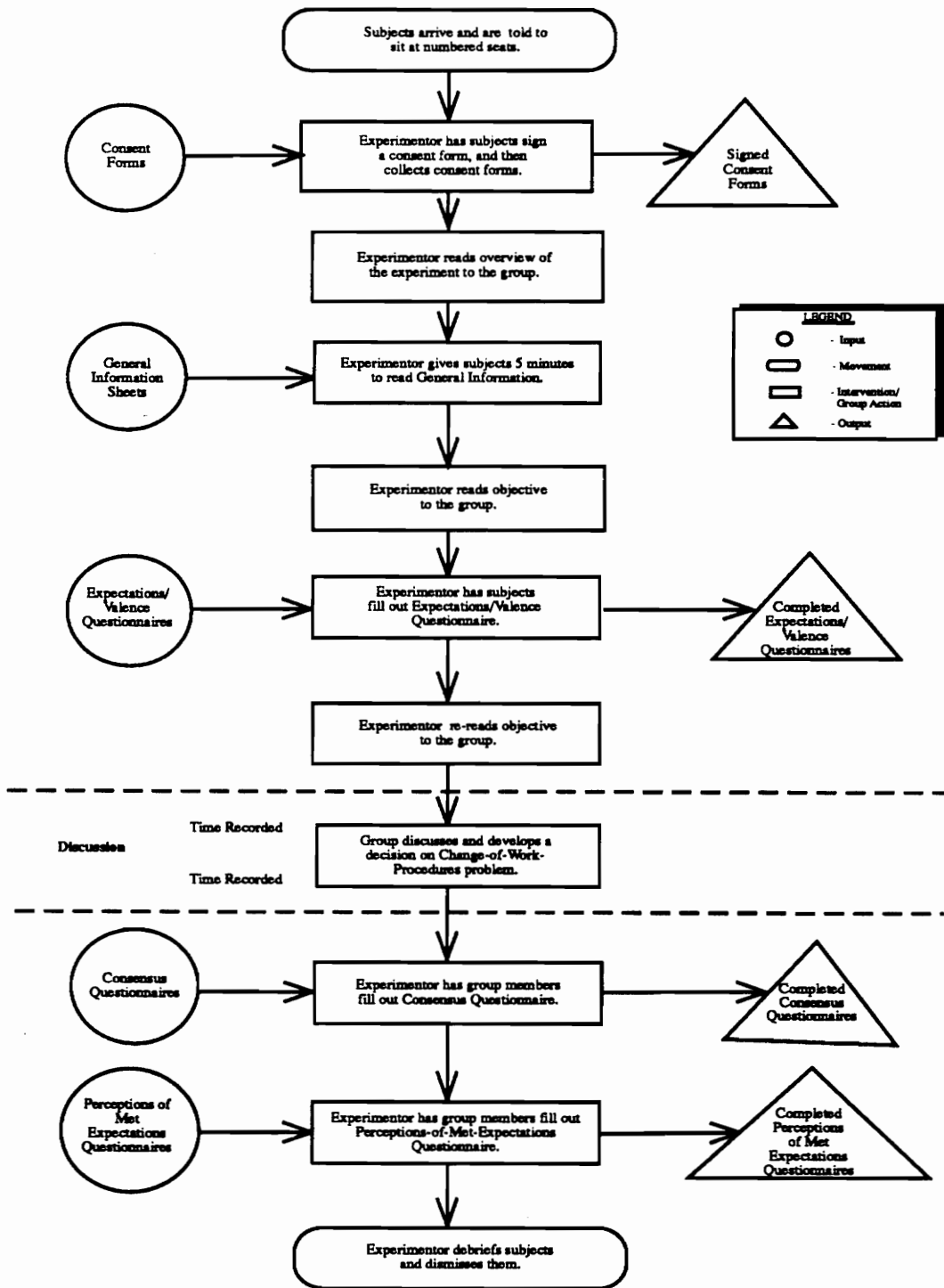
Figure 5: Procedure Flow Chart

1.5 I handed out the General Information (Appendix B) to each subject. I said, "Please read over this carefully. You have five minutes."

1.6 When everyone had finished reading the General Information (no subject used the full five minutes), I read the following objective to the group.

> "You are a task force brought together to address the problem described in the General Information you read. As a group, your objective is to come up with a management plan for production of the carburetors. There's no correct answer to this problem, but management wants your best efforts. You should focus your efforts on the issues of productivity, quality, and employee satisfaction. Please use the paper I provide you to describe your group decision on how management can best address the situation, considering the issues. You'll have 30 minutes to do this. Your decision will be presented to management."

After I mentioned the paper, I handed the group one sheet of blank paper.

1.7. Before letting the group start, I said, "Before you discuss the situation, I'd like you to fill out this questionnaire." I handed out an Expectations/Valence Questionnaire (Appendix C) to each subject. I said, "The questions on this questionnaire are grouped in pairs. The first question in each pair refers to what you believe will happen during the discussion. The second question in each pair refers to how important you believe it is that it occurs. Answer all questions, individually, carefully, and as best you can. Please read over the instructions on the questionnaire before beginning. Please fill in your ID number in the spaces provided first." After all subjects completed their questionnaires, I collected all Expectations/Valence Questionnaires.

2. Discussion

I said, "I'll read the objective once again so it's clear." I read the objective (above) again. I said, "I can't answer any questions. You may begin." I recorded the time the group began its discussion on the Verbalization Recording Sheet (Appendix G). During the group discussion, I recorded the number of verbalizations (i.e., the number of times each subject spoke) on the Verbalization Recording Sheet. If the group hadn't come up with a decision in 25 minutes, I said, "You have five minutes left to come up with your decision." If the group hadn't come up with a decision in 29 minutes, I said, "Please write down your decision within the next minute." When the group finished or 30 minutes had expired, I recorded the time the group ended its discussion on the Verbalization Recording Sheet.

3. Post-Discussion Procedures

3.1 I collected the group's decision and wrote the group number in the top right-hand corner.

3.2 I handed out a Consensus Questionnaire (Appendix D) to each subject. I said, "Answer all questions, individually, carefully, and as best you can. Please read over the instructions on the questionnaire before beginning. Please fill in your ID number in the spaces provided first." After all subjects completed their questionnaires, I collected all Consensus Questionnaires.

3.3 I handed out a Perceptions-of-Met-Expectations Questionnaire (Appendix E) to each subject. I said, "This is the last questionnaire. It is very important that you read the instructions carefully before beginning. As always, answer all questions, individually, carefully, and as best you can. Please fill in your ID

number in the spaces provided first." After all subjects completed their questionnaires, I collected all Perceptions-of-Met-Expectations Questionnaires.

3.4. I said, "The results of this study will be available when the study is completed. If you would please sign the sheet[4] by your name, along with putting your major, year, and age, I'll give you your $5.00. If you would like a synopsis of the results, place a check by your name. Please do not discuss this experiment with anyone until the week after next because I'll be running groups next week. Thank you very much for your participation."

I handed $5.00 to each subject and told them they could leave.

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[4] I used this sheet to record payment of subjects and to identify subjects' major, academic year, and age.

RESULTS

Descriptive Statistics and Reliability Analysis for Original Research Model

Table 1 contains the descriptive statistics for the variables I used in my original

research model. The sample size for all variable measures was 97. My subjects were

all undergraduate and graduate college students ranging in age from 18 to 31. Most

of the subjects were junior and senior industrial and systems engineering students. I

assessed the internal reliability of my variable scales using a Chronbach's alpha

reliability analysis. (See Table 2.) Alpha values above .70 are considered good.

Alpha values in the .50 to .70 range are acceptable, considering the nature of the

analysis. Most of my Chronbach's alpha values exceeded .70. The Chronbach's

alpha values associated with decision quality were lower, but are acceptable

considering my analysis was exploratory and I didn't make decision's about

individuals. The Chronbach's alpha analysis also gives alphas that result if individual

items are dropped from the scale. In no cases did deleting an item from a scale result

in a significantly higher alpha value. Therefore all the items were used in the data

analysis.

Table 2 shows a higher Chronbach's alpha value (alpha = .793) for consensus than

either of its components, individual consensus (alpha = .725) or group consensus

(alpha = .677). This result supports the notion that consensus is a combination of

individual consensus (i.e., individual agreement with, acceptance of, and commitment

to the group decision) and group consensus (i.e., individual perception of other

Table 1: Descriptive Statistics for Original Research Model Variables

Variable	N	Mean	Standard Deviation
CONSENSUS	97	36.680	3.478
IND-CON	97	18.845	1.867
GR-CON	97	17.835	2.050
V-EOV	97	33.103	3.949
V-DQ	97	10.959	1.825
ME-EOV	97	32.650	5.198
ME-DQ	97	11.103	1.642
VERB	97	29.278	16.177
DEC-TIME	97	28.732	2.506

Key

IND-CON	= Individual consensus
GR-CON	= Group consensus
V-EOV	= Valence associated with expression-of-views expectations
V-DQ	= Valence associated with decision-quality expectations
ME-EOV	= Met expression-of-views expectations
ME-DQ	= Met decision-quality expectations
VERB	= Number of verbalizations
DEC-TIME	= Time it took group to come to a decision

Table 2: Reliability Analysis for Original Research Model

Variable	Chronbach's Alpha	k	N
CONSENSUS	.793	6	97
IND-CON	.725	3	97
GR-CON	.677	3	97
V-EOV	.707	6	97
V-DQ	.583	2	97
ME-EOV	.862	6	97
ME-DQ	.591	2	97

Key

IND-CON	=	Individual consensus
GR-CON	=	Group consensus
V-EOV	=	Valence associated with expression-of-views expectations
V-DQ	=	Valence associated with decision-quality expectations
ME-EOV	=	Met expression-of-views expectations
ME-DQ	=	Met decision-quality expectations

group members' agreement with, acceptance of, and commitment to the group decision). Furthermore, we (at MSL) are still in the process of developing these scales. Therefore, I concentrate on the results of testing my hypotheses with consensus as my dependent variable instead of individual consensus. I did test my hypotheses with both individual and group consensus. I briefly discuss the results after discussing the results pertaining to consensus.

There was a multicollinearity problem in my data. Table 3 shows high correlations between:

1) Met expression-of-views expectations and the expression-of-views interaction term ($r = .854$),
2) Valence associated with expression of views expectations and the expression-of-views interaction term ($r = .727$),
3) Met decision-quality expectations and the decision-quality interaction term ($r = .738$), and
4) Valence associated with decision quality expectations and the decision-quality interaction term ($r = .801$).

Since there was multicollinearity in the data, I can't be confident about my conclusions for Hypotheses 2 through 4 (i.e., I can't be confident how much effect met expression-of-views expectations or met decision-quality expectations had on consensus.) A ridge regression analysis indicated no single predictor variable was significant. I propose the new research model to deal with the multicollinearity

Table 3: Correlations for Original Research Model

	CON	ME-EOV	ME-DQ	V-EOV	V-DQ	INT-EOV	INT-DQ	VERB	DEC-TIME
CON	1.000								
ME-EOV	.257*	1.000							
ME-DQ	.247*	.404***	1.000						
V-EOV	.260*	.275**	.207*	1.000					
V-DQ	.228*	.048	.199	.516***	1.000				
INT-EOV	.319**	.854***	.418***	.727***	.324**	1.000			
INT-DQ	.317**	.285**	.738***	.463***	.801***	.472***	1.000		
VERB	.080	.156	-.145	.088	.130	.159	.008	1.000	
DEC-TIME	-.015	.017	-.203*	-.096	-.125	-.048	-.209*	.125	1.000

* $p < .05$
** $p < .01$
*** $p < .001$

Key

CON	= Consensus
ME-EOV	= Met expression-of-views expectations
ME-DQ	= Met decision-quality expectations
V-EOV	= Valence associated with expression-of-views expectations
V-DQ	= Valence associated with decision-quality expectations
INT-EOV	= Expression-of-views interaction term
INT-DQ	= Decision-quality interaction term
VERB	= Number of verbalizations
DEC-TIME	= Time it took group to come to a decision

problem. (See The New Research Model section.) Nevertheless, I tested Hypotheses 2 through 4 using the original research model.

Assumption Checks

I didn't have formal assumption checks because most of my assumptions were about variabilty of human perception, which is generally a given. Based on an overview of the data and the standard deviations associated with my variables, group members expectations, valence associated with expectations, and perceptions of met expectations varied. Therefore, my assumptions were correct.

Hypothesis Testing for Consensus Using the Original Research Model

My original research model was described in the Data Analysis section (Research Approach chapter). This section describes the results of my initial hypothesis testing using the original research model. The hypotheses I tested were the hypotheses listed in the Data Analysis section. All hypotheses were tested using the multiple linear regression model proposed in the Data Analysis section with a sample size (n) of 97. I regressed expression-of-views expectations, decision-quality expectations, valence associated with expression of views, valence associated with decision quality, expression-of-views interaction term, and decision-quality interaction term on consensus. I state each hypothesis, describe the result, and give a concluding remark. The results of these hypothesis tests address the first parts of outputs #5 through #8 in the Outputs section.

Hypothesis 1: Met expression-of-views and decision-quality expectations, along with their associated valences, will be a significant predictor of strength of consensus.
The hypothesis was supported ($F_{(6,90)} = 2.850, p = .01$). (See Table 4.) The variance of consensus explained by the model, R^2, was .160 and the R^2-adjusted was .104. This result suggests the combination of met expectations about expression of views and met expectations about decision quality, along with their associated valences, has a significant influence on strength of consensus.

Hypothesis 2: The higher the degree of met expectations about expression of views, the stronger the consensus.
Hypothesis 3: The higher the degree of met expectations about decision quality, the stronger the consensus.
Hypothesis 2 and 3 were not supported ($p = .37, p = .23$, respectively). (See Table 4.) However, the combination of predictor variables had a significant effect on consensus. These two results suggest expectations and valence shouldn't be treated independently when studying their effect on consensus. In The New Research Model section, I propose a model that uses two variables instead of six. I retest the effect of the two variables on consensus.

Hypothesis 4: Meeting decision-quality expectations will have a stronger effect on strength of consensus than meeting expression-of-views expectations.
Neither of the p values associated with met expression-of-views expectations ($p = .34$) nor met decision-quality expectations ($p = .23$) was significant. Therefore, I retained the null hypothesis for Hypothesis 4.

Table 4: Analysis of Variance for Original Research Model

Source	Sum of Squares	DF	Mean Square	F Value	p value
Model	185.382	6	30.897	2.850	.01
Error	975.710	90	10.841		
Total	1161.092	96			

$R^2 = .160$

R^2-adjusted $= .104$

Parameter Estimates

Variable	DF	Parameter Estimate	Standardized Estimate	Standard Error	t stat	p value
Intercept	1	32.557	0	20.160	1.539	.13
V-EOV	1	.486	.551	.495	.981	.33
V-DQ	1	-1.689	-.887	1.357	-1.245	.22
ME-EOV	1	.454	.678	.499	.909	.37
ME-DQ	1	-1.578	-.745	1.304	-1.210	.23
INT-EOV	1	-.011	-.766	.016	-.726	.47
INT-DQ	1	.177	1.490	.120	1.469	.15

Key

V-EOV	= Valence associated with expression-of-views expectations
V-DQ	= Valence associated with decision-quality expectations
ME-EOV	= Met expression-of-views expectations
ME-DQ	= Met decision-quality expectations
INT-EOV	= Expression-of-views interaction term
INT-DQ	= Decision-quality interaction term

Hypothesis Testing for Individual and Group Consensus Using the Original Research Model

In this section, I briefly describe the results of my exploratory hypothesis testing for individual and group consensus using the original research model. I regressed expression-of-views expectations, decision-quality expectations, valence associated with expression of views, valence associated with decision quality, expression-of-views interaction term, and decision-quality interaction term on individual and group consensus. Hypothesis 1 was supported for both individual consensus as the dependent variable ($F_{(6,90)} = 2.143, p = .06$) and group consensus as the dependent variable ($F_{(6,90)} = 2.416, p = .03$). The variance of individual consensus explained by the model, R^2, was .125 and the R^2-adjusted was .067. The variance of group consensus explained by the model, R^2, was .139, and the R^2-adjusted was .081.

I tested Hypotheses 2 through 4 with individual and group consensus. Like the results obtained with consensus, none of the p values were significant, therefore Hypotheses 2 and 3 were not supported for individual or group consensus. Also, as with consensus, I couldn't test Hypothesis 4 because the p values associated with expression-of-views expectations and decision-quality expectations weren't significant.

The New Research Model

There was multicollinearity in the data using the original research model. Figure 6 is the new research model I developed to overcome the multicollinearity problem. The
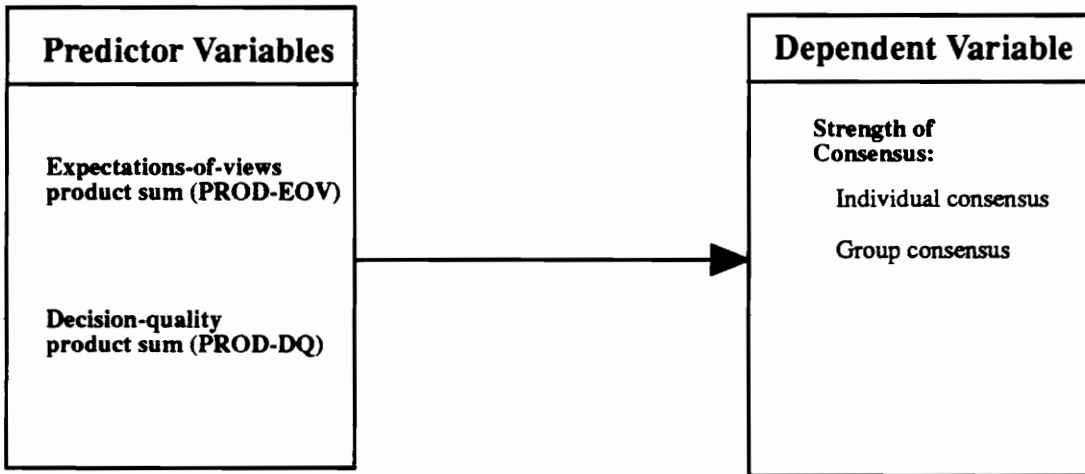
Figure 6: New Research Model

expression-of-views product sum is the sum of products of the expression-of-views expectations times their respective valences. The decision-quality product sum is the sum of the individual products of the decision-quality expectations multiplied by their respective valences. Tables 5 shows the descriptive statistics for the new research model and Table 6 shows the associated reliability values.

Table 7 shows the correlations associated with the new research model. The correlation between expression-of-views product sum and decision-quality product sum is .464. Therefore, the new research model doesn't have the problem of multicollinearity.

Hypothesis Testing for Consensus Using the New Research Model

I retested each hypothesis for consensus using the new research model. I used the following multiple linear regression model to test my hypotheses.

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + e$$

where,

Y	=	Strength of consensus,
X_1	=	Expression-of-views product sum,
X_2	=	Decision-quality product sum,
e	=	Error term, and
$\beta's$	=	Coefficients associated with variables.

I regressed expression-of-views product sum and decision-quality product sum on consensus. Hypothesis 1 was supported ($F_{(2,94)} = 7.377, p = .001$). (See Table 8.)

Table 5: Descriptive Statistics for New Research Model Variables

Variable	N	Mean	Standard Deviation
PROD-EOV	97	181.412	39.409
PROD-DQ	97	61.237	14.604

Key

PROD-EOV = Expression-of-views product sum

PROD-DQ   = Decision-quality product sum

Table 6: Reliability Analysis for New Research Model

Variable	Chronbach's Alpha	k	N
PROD-EOV	.826	6	97
PROD-DQ	.595	2	97

Key

PROD-EOV = Expression-of-views product sum

PROD-DQ   = Decision-quality product sum

Table 7: Correlations for New Research Model

	CONSENSUS	PROD-EOV	PROD-DQ
CONSENSUS	1.000		
PROD-EOV	.315 **	1.000	
PROD-DQ	.315 **	.464 ***	1.000

*   p < .05
**   p < .01
*** p < .001

Key

PROD-EOV   = Expression-of-views product sum

PROD-DQ   = Decision-quality product sum

Table 8: Analysis of Variance for New Research Model

Source	Sum of Squares	DF	Mean Square	F Value	p value
Model	157.516	2	78.758	7.377	.001
Error	1003.577	94	10.676		
Total	1161.093	96			

$R^2 = .136$

R^2-adjusted $= .117$

Parameter Estimates						
Variable	DF	Parameter Estimate	Standardized Estimate	Standard Error	t stat	p value
Intercept	1	30.095	0	1.751	17.184	.0001
PROD-EOV	1	.019	.215	.010	1.989	.05
PROD-DQ	1	.051	.215	.026	1.989	.05

Key

PROD-EOV = Expression of views product sum

PROD-DQ   = Decision quality product sum

The variance of consensus explained by the new research model, R^2, was .136 and R^2-adjusted was .117. The R^2 values were slightly lower than the original model's. However, the original model had four more variables than the new research model. With a decrease of four variables, going from the original research model to the new research model, you would expect R^2 to decrease significantly, because of the decreased prediction capability of fewer variables. The decrease from R^2 to R^2-adjusted in the new research model was .018 as opposed to .056 in the original research model. The smaller the decrease from R^2 to R^2-adjusted, the more reliable the model. Therefore, the following results support the use of the new research model over the original:

1) the decrease in the p value,

2) the lack of significance of any component parts related to expression-of-views expectations or decision-quality expectations (even after the ridge analysis) using the original research model,

3) the small decrease in R^2 going from the original research model to the new research model, and

4) the decrease from R^2 to R^2-adjusted being smaller using the new research model versus the decrease from R^2 to R^2-adjusted using the original research model.

These results support the idea that we shouldn't separate an expectation from its associated valence.

Hypotheses 2 and 3 were supported ($p = .05$ for both). (See Table 8.) The standardized estimates for expression-of-views product sum and decision-quality product sum were the same, .215. Since these estimates were the same, Hypothesis 4

was not supported. These results suggest meeting expression-of-views expectations has the same magnitude of effect on consensus as meeting decision-quality expectations, when the associated valences are incorporated.

Hypothesis Testing for Individual and Group Consensus Using the New Research Model

I retested each hypothesis for individual and group consensus using the new research model. I regressed expression-of-views product sum and decision-quality product sum on individual and group consensus. Hypothesis 1 was strongly supported when individual consensus was the dependent variable ($p = .007$) and when group consensus was the dependent variable ($p = .003$), but not as strongly as it when consensus was the dependent variable. The variance of individual consensus explained by the new research model, R^2, was .101 and the R^2-adjusted was .082. The variance of group consensus explained by the model, R^2, was .114, and the R^2-adjusted was .096.

Hypothesis 2 was supported when group consensus was the dependent variable ($p = .04$). This result suggests meeting group members' expression-of-views expectations affects their perceptions of other group members' consensus. Hypothesis 3 was supported when individual consensus was the dependent variable ($p = .05$). This result suggests meeting group members' decision-quality expectations affects their individual consensus. Hypothesis 4 could not be tested because neither expression-of-views product sum nor decision-quality product sum was significant in either situation.

Exploratory Analysis

I did an exploratory analysis on the relationships between the number of verbalizations each group member made and consensus, met expression-of-views expectations, and met decision-quality expectations.

Table 3 shows the correlation between number of verbalizations and these variables. None of the correlations between these variables was significant. The highest positive correlation with number of verbalizations was with met expression-of-views expectations ($r = .156, p = .13$). The highest negative correlation with number of verbalizations was with met decision-quality expectations ($r = -.145, p = .16$).

I did an exploratory analysis on the relationships between the time it took the group to come to a decision and consensus, met expression-of-views expectations, and met decision-quality expectations. The only significant correlation with decision time was with met decision-quality expectations ($r = -.203, p = .05$). (See Table 3.) This result suggests the longer it took groups to make a decision, the less the subjects perceived their decision-quality expectations as being met.

DISCUSSION

In the first part of this section, I discuss some of practical implications of my hypothesis testing. This discussion addresses the second parts of outputs #5 through #8 in the Outputs section. In the second part, I provide process steps for managers of consensus-gaining groups to help them strengthen consensus. In the third part, I provide some recommendations for future research.

Hypothesis Testing

The new research model was significant at the .005 level whereas the original research model was only significant at the .05 level. This result, along with the increase in reliability of the new research model over the original, strongly suggests that the valence associated with an expectation should not be separated from the expectation in determining the influence of meeting expectations on consensus. This conclusion is supported by Vroom's (1964) Expectancy Theory.

Another significant finding using the new research model was meeting expression-of-views expectations had essentially the same magnitude of effect (determined by the standardized parameter estimates) on consensus as meeting decision-quality expectations, when the associated valences were incorporated. The importance of meeting expression-of-views expectations (a subset of participation expectations) is supported by the literature on distributive versus procedural justice. In my literature review, I said procedural justice is similar to participation expectations being met. If participation expectations aren't met, group members' attitudes and commitment to

the group and the group's decision may be negatively influenced. This suggestion is supported on an organizational level by the work of Folger and Knovsky (1989), Lind and Tyler (1988), and Fryxell and Gordon (1989).

The following issues may have had an impact on my exploratory analysis. First, I'm not confident about my operational definition for a verbalization. As long as the subject uttered a single word, I counted it as one verbalization. However, if the subject continued to talk, I didn't add another verbalization until the subject had stopped talking and started again. Therefore, a subject could have spoken for one second or continuously for five minutes and each case would have resulted in one verbalization. Second, I gathered all verbalization data myself. Therefore, there was no inter-rater reliability. Third, the mean for decision time was almost 29 minutes (out of a possible 30) and the standard deviation was approximately 2.5 minutes. (See Table 1.) Therefore, most of the groups used all the time allowed. Because of this low standard deviation, it was hard to obtain any significant results relating variables to decision time. Therefore, the correlations associated with verbalizations and decision time were probably attenuated.

Process Steps for Managers of Consensus-Gaining Groups

I recommend the following process steps for managers to follow when working with consensus-gaining groups.[5] These steps are a result of the findings from my research. These steps address output #9 in the Outputs section.

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[5] When I say managers, I mean both managers and facilitators of consensus-gaining groups.

Step 1: Elicit group members' high-valence expectations.

Before the group begins interacting, the manager should elicit group members' high-valence expectations. The manager may want to refer to the taxonomy (Figure 2) to determine what type of expectations may be important to meet for a particular meeting. I found meeting expression-of-views expectations and decision-quality expectations influences consensus. Therefore, I recommend managers to elicit group members' expectations about opportunity to express their views, information sharing, and decision quality.

Managers should focus on group members' high-valence expectations (i.e., the expectations group members feel are important to be met). I found valence to be an integral link to an expectation. Therefore, when eliciting group members' expectations, managers should focus on expectations group members feel are important to be met. For example, managers can elicit high-valence expectations about opportunity to express views by asking group members, "What opportunity do you expect to have to express your views during the group discussion? How important is it for you to get this opportunity?"

When eliciting group members' expectations, I recommend formally writing down each expectation (e.g., on a flip chart) so all group members can see them. The manager could put a #1, #2, or #3 next to each expectation, indicating valence level. The manager may want to elicit expectations orally (similar to Brainstorming) or to have group members first individually write down their expectations on paper. Having group members write down their expectations would maintain anonymity. If there are a large number of expectations (e.g., over fifteen) the manager could focus

on the expectations with the highest importance (i.e., the expectations with a #3 beside them) or he or she could write one or two expectations from each group member.

The manager may also have certain expectations set for the meeting. For example, top management may feel it's important for the group to share and discuss information on the particular issues. Expectations to discuss this information must be set for the group. I recommend waiting until after eliciting group members' expectations to set the manager's expectations for the group. Perhaps one or more of the group members will give the same or similar expectations to the manager.

Step 2: Check Halfway Through the Meeting to Identify Unmet Expectations.
At a convenient breaking point near the midpoint of the meeting, the manager should confer with the group to determine unmet expectations. Referring back to the list of expectations, the manager should ask the group what expectations they felt have been met so far. The expectations that have been met (determined by a general agreement of the group) can be checked off.

The manager should examine the remaining unmet expectations and determine whether to modify the meeting to meet them. For example, if group members aren't getting enough opportunity to express their views, the manager may decide to extend the time of the meeting or the manager may decide to alter the participation itself, depending upon the case. For example, suppose one or two group members were dominating the discussion. The manager may "cut off" those who have been dominating the discussion and/or prompt group members that haven't been talking

as much. If the manager doesn't feel that meeting the unmet expectations will justify modifying the meeting, he or she should continue running the meeting as planned. However, the manager should determine how to communicate the reasons for not trying to meet certain expectations (i.e., not changing the meeting to meet the expectations) to the group. He or she should mark these expectations for action item discussion. (See Step 3.)

Step 3: At the End of the Meeting, Determine Further Actions to Meet Unmet Expectations.

This step is similar to Step 2, however, it occurs at the end of the meeting. The manager should once again confer with the group to determine any unmet expectations. The manager should explain to the group why these expectations weren't met so the group members will understand the factor (e.g., time limits, lack of resources) that prevented meeting the expectations. I believe this explanation will promote group understanding and a better attitude toward the meeting. The manager should work with the group to decide whether any unmet expectations are important enough to address later. If so, the manager and group should work together to develop action items to meet these expectations. The manager could list these action items on the flip-chart paper next to the unmet expectations. The manager may wish to assign responsible parties to the action items.

Recommendations / Suggestions for Future Research

Test the Effects of Meeting Other Types of Expectations on Consensus. I chose two types of expectations to study: expression-of-views expectations and decision-quality

expectations. I mentioned a number of other types of expectations in my taxonomy (Figure 2). Furthermore, the taxonomy is far from exhaustive. I recommend testing the effects of meeting other expectations (besides the ones I tested) on consensus. The results could be compared to the results I obtained. I still believe meeting certain types of expectations will strengthen consensus more than meeting other types, even though the magnitude of influence of expression-of-views expectations and the influence of decision-quality expectations on strength of consensus were identical. Perhaps I just picked two important expectations. By testing the effects of other types of expectations on consensus, the researcher could determine which types of expectations are important and which aren't. Group members may have any number of expectations. Must they meet as many of their expectations as possible, or just a few? Managers of decision-making groups need to know what types of expectations are important to meet. Therefore, if group members aren't sure about what expectations they want met, the manager can lead them in the right direction (e.g., by giving examples of these important types of expectations).

Test the Effects of Meeting Expectations on Consensus Without Structuring the Expectations. Instead of choosing expectations (i.e., asking subjects how much they expect certain predefined events to happen), simply ask subjects what their expectations are and determine how well these expectations were met. The researcher could use a Q-sort procedure to arrange the subjects' initial expectations into specific types of expectations. The researcher could test the effects of meeting each type of expectation on consensus. A caveat associated with this methodology would be a potential overload of different types of expectations, thus inflating alpha.

Test the Strength Associated with Each Expectation. I assumed the strength or probability associated with my subjects' initial expectations wouldn't affect the degree to which subjects perceived their expectations were met. The reason I didn't incorporate strength into my study was because of the extra subjects required and additional questions needed. However, a person likely may perceive an expectation as being met to different degrees, depending on how much he or she expected the expectation to be met. I would also think strength has an influence on valence associated with an expectation and vice versa. Therefore, when studying the effects of met expectations on consensus, I recommend studying both strength and valence associated with expectations.

Allow Subjects to See Their Initial Expectations. I didn't allow subjects to see what they had written for their initial expectations (on the Expectations/Valence Questionnaire) to help determine how well their initial expectations were met (on the Perceptions of Met Expectations Questionnaire). The reason I didn't allow subjects to see what they had written for their initial expectations was because I thought it may influence the responses on the Perceptions of Met Expectations Questionnaire. Also, in the pilot study, most subjects were confident about their responses to the Perceptions of Met Expectations Questionnaire. Finally, if someone can't remember what their expectation was, I didn't think meeting or not meeting it would have an impact on their consensus. However, two subjects in my full study did ask if they could see their Expectations/Valence Questionnaire. I believe it would be interesting to redo the study, handing back the Expectations/Valence Questionnaire for half the groups and not handing it back for the other half, and compare the

results. Specifically, one could look at the differences in accuracy of perceptions of met expectations.

Study the Effect of Actual Met Expectations on Strength of Consensus

I studied subjects' perception of how well their expectations were met. My results didn't prove actually meeting individuals' expectations strengthens consensus. My results suggest group members' perception of having their expectations met strengthens consensus. I recommend studying whether actually meeting individuals' expectations strengthens consensus. For example, subjects could be given certain expectations or asked for their expectations and then the situation could be structured to meet those expectations to various degrees during the consensus-gaining process.

Use a Manager

The results of this research are for managers (or facilitators) of consensus-gaining groups. I showed meeting certain types of expectations strengthens consensus. Future research should determine 1) whether a manager can effectively elicit group members' expectations and ensure those expectations are met during the process and 2) whether met expectations influence the strength of consensus in this manager-oriented situation. I recommend comparing groups where the manager elicits and tries to meet group members' expectations to control groups where the manager doesn't. The process described above could be used as a guide. The researcher may want to use a manager to proactively meet group members' expectations to various degrees. In other words, combine this research with the recommendation stated just above. For example, the researcher could use a manager to meet group members'

actual expectations to various degrees. In other words, combine this research with the recommendation to not structure group members' expectations.

Use Real-World Groups

My research was based on real-world group assumptions. I believe the real-world group discussion would involve more conflict and ultimately result in a higher standard deviation in perceptions of met expectations. Such an hypothetical standard deviation would probably be due largely to group members having different opinions, more buy-in on the issues, and perhaps hidden agendas to meet. I recommend repeating my study with real-world groups. The researcher could also use real-world groups with managers and compare the results.

Use the Change of Work Procedures Problem with Role Playing.

In the Task section (Materials and Methods chapter), I mentioned the Change of Work Procedures problem was designed as a role-playing activity. I redesigned the problem to exclude roles because I wasn't sure how much the roles would influence group members' expectations. In the pilot study, one subject mentioned it would be interesting to perform the task as a role play. A researcher could run the experiment using the role playing already developed by Maier, Solem, and Maier (1975) and compare the results to mine.

CONCLUSIONS

All research hypotheses were supported. My results showed that meeting both expression-of-views expectations and decision-quality expectations strengthens consensus. Therefore, managers should consider these types of expectations when eliciting expectations from consensus-gaining group members.

I found valence associated with expression-of-views and decision-quality expectations was a key determining factor in predicting the influence of met expectations on consensus. This finding has two major implications, one for managers and one for researchers. First, managers should elicit expectations group members believe are important to be met. Second, when studying the influence of met expectations on consensus, researchers must consider the mediating effects of valence associated with the expectations. Researchers should also look at other variables that may have influence, for example strength (or probability) of the expectation. This recommendation would further extend Vroom's (1964) Expectancy theory which suggests that both strength and valence influence one's expectations.

I found meeting expression-of-views expectations and meeting decision-quality expectations had the same magnitude of influence on strength of consensus. These results suggest managers should focus on expectations related to participation just as much as expectations related to outcomes.

LITERATURE CITED

Adams, J. S. (1963). Toward an understanding of inequity. Journal of Abnormal and Social Psychology, 67, 422-436.

Brown, L. D. (1983). Managing conflict at organizational interfaces. Reading, MA: Addison-Wesley.

Brubaker, D. M. (1991). Predicting strength of consensus in small groups. Unpublished master's thesis, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Castore, C. H., & Murnighan, J. K. (1978). Determinants of support for group decisions. Organizational Behavior and Human Performance, 22, 75-92.

Crawford, K. S., Thomas, E. D., & Fink, J. J. (1980). Pygmalion at sea: Improving the work effectiveness of low performers. The Journal of Applied Behavioral Science, 16, 482-505.

DeStephen, R. S. (1983). High and low consensus groups: A content and relational interaction analysis. Small Group Behavior, 14, 143-162.

Deutsch, M. (1973). The resolution of conflict. New Haven, CT: Yale.

Eden, D. (1984). Self-fulfilling prophecy as a management tool: Harnessing Pygmalion. Academy of Management Review, 9, 64-73.

Eden, D. (1988). Pygmalion, goal setting, and expectancy: Compatible ways to boost productivity. Academy of Management Review, 13, 639-652.

Eden, D., & Ravid, G. (1982). Pygmalion versus self-expectancy: Effects of instructor- and self-expectancy on trainee performance. Organizational Behavior and Human Performance, 30, 351-364.

Fisher, B. A. (1974). Small group decision making. NY: McGraw Hill.

Folger, R., & Knovsky, M. A. (1989). Effects of procedural and distributive justice on reactions to pay raise decisions. Academy of Management Journal, 33, 115-130.

Forsyth, D. R. (1983). Group dynamics (2nd ed.). Pacific Grove, CA: Brooks/Cole Publishing Co.

Fryxell, G. E., & Gordon, M. E. (1989). Workplace justice and job satisfaction as predictors of satisfaction with union and management. Academy of Management Journal, 32, 851-866.

Gentry, M. E. (1982). Consensus as a form of decision making. Journal of Sociology and Social Welfare, 9, 233-244.

Gero, A. (1985). Conflict avoidance in consensus decision processes. Small Group Behavior, 16, 487-499.

Hall, J. (1971). Decisions, decisions, decisions. Psychology Today, 51-54, 86-88.

Hirokawa, R. Y. (1985). Does consensus really result in higher quality group decisions? In G. M. Phillips & J. T. Wood (Eds.), Emergent issues in human decision making. Carbondale: Southern Illiniois University Press.

Hirokawa, R. Y. (1987). Why informed groups make faulty decisions: An investigation of possible interaction-based explanations. Small Group Behavior, 18, 3-29.

Hoffman, R. L. (Ed.) (1979). The group problem solving process: Studies of a valence model. NY: Praeger.

Holder, J. J. (1972). Decision making by consensus. Business Horizons, 47-54.

Jablin, F. M. (1980). Groups within organizations: Current issues and directions for future research. Paper presented at the annual meeting of the Central States Speech Association, Chicago, IL.

Kabanoff, B. (1988). Analyzing organizational conflicts using a model based on structural role theory. Human Relations, 41, 841-870.

Kaprzyk, J., & Fedrizzi, M. (1988). A soft measure of consensus in the setting of partial (fuzzy) preferences. European Journal of Operational Research, 34, 316-325.

Katzell, M. E. (1968). Expectations and dropouts in schools of nursing. Journal of Applied Psychology, 52, 154-157.

King, A. S. (1974). Expectation effects in organizational change. Administrative Science Quarterly, 19, 221-230.

Knight, K. E. (1967). A descriptive model of intra-firm innovation process. The Journal of Business, 40, 478-496.

Knutson, T. J. (1972). An experimental study of the effects of orientation behavior on small group consensus. Speech Monographs, 39, 159-165.

Knutson, T. J., & Holdridge, W. E. (1975). Orientation behavior, leadership and consensus: A possible functional relationship. Speech Monographs, 42, 107-114.

Kurstedt, H. A., Jr., Brubaker, D. M., Doss, A. R., & Koelling, C. P. (1989). Measuring consensus. In J. R. Baker and R. T. Sumichrast (Ed.), Proceedings of the Southeastern Region of the Institute of Management Sciences, 63-65. Myrtle Beach, SC.

Kurstedt, H. A., Jr., Middleman, L. I., & Jones, R. M. (1989). Shared information processing links managers and affects productivity. In H. K. Eldin and J. W. Nazemetz (Ed.) Proceedings of Computers in Industrial Engineering, Vol. 17, 397-403. Orlando, FL.

Lind, E. A., & Tyler, T. R. (1988). The social psychology of procedural justice. NY: Plenum.

Lyons, T. (1971). Role clarity, need for clarity, satisfaction, tension and withdrawal. Organizational Behavior and Human Performance, 6, 99-110.

Maier, N. R. F. (1958). The appraisal review: Objectives, methods and skills. NY: Wiley.

Maier, N. R. F., & Hoffman, L. L. (1960). Quality of first and second solutions in group problem solving. Journal of Applied Psychology, 44, 278-283.

Maier, N. R. F., & Solem, A. R. (1952). The contribution of the discussion leader to the quality of group thinking. Human Relations, 3, 155-174.

Maier, N. R. F., Solem, A. R., & Maier, A. A. (1975). The role-play technique: A handbook for management and leadership practice. La Jolla, CA: University Associates.

Miner, F. C. (1979). A comparative analysis of three diverse group decision making approaches. Academy of Management Journal, 22, 81-93.

Muchinsky, P. M. (1987). Psychology applied to work: An introduction to industrial and organizational psychology (2nd ed.). Chicago, IL: The Dorsey Press.

Pehazur, E. J., (1973) Multiple regression in behavioral research: Explanation and prediction (2nd ed.). NY: Holt, Rinehart and Winston.

Polk, J. (1991) The effects of an expert on the small-group consensus process. Unpublished master's thesis, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. Psychological Bulletin, 80, 151-176.

Prothero, J., & Beach, L. R. (1984). Retirement decisions: Expectation, intention, and action. Journal of Applied Social Psychology, 14, 162-174.

Reid, W. (1972). Inter-organizational coordination: A review and critique of current theory. In P. White and G. Vlasak (Ed.) Proceedings of the Interorganizational Research in Health. (pp. 102-111).

Rosenthal, R. (1966). Experimenter effects in behavioral research. NY: Meredith Publishing Co.

Rosenthal, R., & Jacobson, L. (1968). Pygmalion in the classroom - Teacher expectation and pupils' intellectual development. NY: Holt, Rinehart and Winston, Inc.

Ross, I. C., & Zander, A. (1957). Need satisfaction and employee turnover. Personnel Psychology, 10, 327-338.

Schein, E. (1969) Process consultation: It's role in organization development. Reading, MA: Addison-Wesley Publishing Co.

Schermerhorn, J. R. (1977). Information sharing as an interorganizational activity. Academy of Management Journal, 20, 148-153.

Schweiger, D. M., Sandberg, W. R., & Ragan, J. W. (1986). Group approaches for improving strategic decision making: A comparative analysis of dialectical inquiry, devil's advocacy, and consensus. Academy of Management Journal, 29, 51-71.

Shaw, M. E. (1981). Group dynamics: The psychology of small group behavior (3rd ed.). NY: McGraw-Hill.

Stasser, G., & Titus, W. (1987). Effects of information load and percentage of shared information on the dissemination of unshared information during group discussion. Journal of Personality and Social Psychology, 53, 81-93.

Telly, C. S., French, W. L., & Scott, W. G. (1971). The relationship of inequity to turnover among hourly workers. Administrative Science Quarterly, 16, 164-172.

Tjosvold, D., & Field, R. H. G. (1983). Effects of social context on consensus and majority vote decision making. <u>Academy of Management Journal,</u> <u>26</u>, 500-506.

Tjosvold, D., & Field, R. H. G. (1984). Effect of concurrence, controversy, and consensus on group decision making. <u>The Journal of Social Psychology,</u> <u>125</u>, 355-363.

Tyler, T. R., Rasinski, K. A., & McGraw, K. M. (1985). The influence of perceived injustice on the endorsement of political leaders. <u>Journal of Personality and Social Psychology,</u> <u>15</u>, 700-725.

Vroom, V. H. (1964). <u>Work and motivation</u>. Malabar, FL: R.E. Kreiger Publishing Co.

Wall, V. D., Galanes, G. J., & Love, S. B. (1987). Small, task-oriented groups: Conflict, conflict management, and decision quality. <u>Small Group Behavior,</u> <u>18</u>, 31-55.

Wall, V. D., & Nolan, L. L. (1986). Perceptions of inequity, satisfaction, and conflict in task-oriented groups. <u>Human Relations,</u> <u>39</u>, 1033-1052.

Weitz, J. (1956). Job expectancy and survival. <u>The Journal of Applied Psychology,</u> <u>40</u>, 245-247.

Zaleznik, A., & Moment, D. (1964). <u>The dynamics of interpersonal behavior</u>. NY: Wiley.

APPENDICES

Appendix A: Definition of Terms

Appendix B: General Information

Appendix C: Expectations/Valence Questionnaire

Appendix D: Consensus Questionnaire

Appendix E: Perceptions-of-Met-Expectations Questionnaire

Appendix F: Results of Pilot Study

Appendix G: Verbalization Recording Sheet

Appendix A: Definition of Terms

Consensus: A state where a common judgment has been reached by most of those concerned. Consensus exists when a group makes and supports a decision.

Convenor: A person who brings a group together for a purpose. In this research, the purpose will be to strive for consensus on a group decision.

Decision Quality: The degree to which the group's decision is the best decision or the correct decision.

Decision-Quality Expectations: A group member's beliefs about the quality of the group decision.

Expectation: A belief about the probability of some future event or outcome.

Expression-of-Views Expectations: A group member's beliefs about the opportunity he or she will have to express his or her views and the information sharing that will take place during the group-decision-making or consensus-gaining process.

Participation: The manner in which group members interact to accomplish the expected outputs and outcomes of the consensus-gaining process.

Participation Expectations: A group member's beliefs about the interaction of the group during the consensus-gaining process.

Perceived Decision Quality: A group member's perceptions of the quality of the group decision.

Perceived Expression of Views: A group member's perceptions of the opportunity he or she had to express his or her views and the information sharing that took place during the group-decision-making or consensus-gaining process.

Outcome Expectations: A group member's beliefs about the outcomes (e.g., strong group cohesion, high decision quality, strong consensus) that will result from the consensus-gaining process.

Stakeholder: Someone who has a concern with or a stake in the group's product (output[s]/outcome[s]).

Valence (Associated With an Expectation): A group member's anticipated importance for an expectation to be met.

Appendix B: General Information

In a company manufacturing subassemblies for automobiles, the assembly work is done by small groups of employees. In one of these groups, Jack, Steve, and Walt work together assembling carburetors. This operation is divided into three positions. The three men work side by side and it's possible for them to help each other out if they wish. Since all the jobs are simple and fairly similar, the three men exchange positions every hour. This trading of the positions was developed by the men themselves. It creates no financial problem for the men because they are paid on a team piece-rate basis (i.e., the more pieces they produce the more they are paid). In this way, the three men share the total group pay equally.

Lately, Jim Clark, the efficiency expert, has been around studying conditions in the shop. He timed Jack, Walt, and Steve on each of the positions and came up with the table of facts listed below. Jim observed that with the men rotating, the average time for producing one unit (a carburetor) is 11.5 minutes. If, however, Jack worked in Position 1, Steve in Position 2, and Walt in Position 3, the average time for producing a carburetor would be 9.5 minutes. Therefore, in an 8 hour day, the men could produce 8.8 more carburetors (a productivity increase of over 20%)

Time per Operation (in Minutes)

	Position 1	Position 2	Position 3	Total
Jack	3	4	4.5	11.5
Walt	3.5	3.5	3	10
Steve	5	3.5	4.5	13
			average time/unit	11.5

Jack, Steve, and Walt like working with each other and think they make a pretty good wage. They all think rotating positions makes work more interesting. Steve thinks Jack and Walt work a little faster than is necessary, but he goes along with them and works as hard as he can to keep the production up where they want it. Jack and Walt don't mind "picking up the slack" because they like Steve. All three men like changing positions for various reasons. Jack says it breaks the monotony, Walt says it gives him a rest, and Steve says it allows him to be in Position #2, which is the easiest. Each man is concerned about the efficiency expert who has been hanging around and watching them work. They wonder what management is up to. Jack feels if they make these jobs any simpler, he won't be able to stand the monotony. Steve asks why management can't leave them alone when they're doing all right. Walt thinks the company could get more for its money if it put some of those efficiency guys to work.

Appendix C: Expectations/Valence Questionnaire

Please circle only one response to each question. Answer all questions as best you can. Use a No. 2 pencil to mark your responses in the answer column according to the following scale.

1 strongly disagree	2 disagree	3 moderately disagree	4 neither agree nor disagree	5 moderately agree	6 agree	7 strongly agree

1. I do not expect the group members to listen to what I have to say.

2. It is important to me that the group members listen to what I have to say.

3. I expect the group members to accept what I have to say.

4. It is important to me that the group members accept what I have to say.

5. I expect group members to understand my opinions.

6. It is important to me that group members understand my opinions.

7. I expect information to be shared among group members.

8. It is important to me that information will be shared among group members.

9. I do not expect to be satisfied with the quality of the group's final decision.

10. It is important to me that I am satisfied with the quality of the group's final decision.

11. I expect questions during the discussion to be adequately addressed by other group membe

12. It is important to me that questions during the discussion will be adequately addressed by other group members.

13. I expect my views to be given full consideration by the other group members.

14. It is important to me that my views be given full consideration by the other group member

15. I expect the group's final decision will be the best decision we can make given the time constraint.

16. It is important to me that the group's final decision be the best decision we can make given the time constraint.

Appendix D: Consensus Questionnaire

Please circle only one response to each question. Answer all questions as
best you can. Use a No. 2 pencil to mark your responses in the answer
column according to the following scale.

1	2	3	4	5	6	7
strongly disagree	disagree	moderately disagree	neither agree nor disagree	moderately agree	agree	strongly agree

1.   If asked to defend the group's final decision, I would be willing to do so.

2.   If asked to defend the group's final decision, I believe the other group members would do so.

3.   The group reached agreement on the final decision.

4.   I am willing to accept the group's final decision as my own.

5.   The group's final decision represents the preferences of everyone in my group.

6.   I did not like the group's final decision.

Appendix E: Perceptions of Met Expectations Questionnaire

The first statement in each pair of statements refers to the group discussion;
the second statement requires you to compare what occurred in the group
discussion to your responses to the first questionnaire you filled out.

1	2	3	4	5	6	7
strongly disagree	disagree	moderately disagree	neither agree nor disagree	moderately agree	agree	strongly agree

1. Information was shared among group members.

2. The extent to which information was shared among group members met my initial expectation.

3. Group members did not listen to what I had to say.

4. The extent to which group members listened to what I had to say met my initial expectation.

5. Questions during the discussion were adequately addressed by other group members.
6. The extent to which questions during the discussion were adequately addressed by other group members met my initial expectation.

7. Group members understood my opinions.

8. The extent to which group members understood my opinions met my initial expectation.

9. The group's final decision is the best decision we could make within the available time.
10. The extent to which the group's final decision is the best decision we could make, within the available time, met my initial expectation.

11. I am not satisfied with the quality of the group's final decision.
12. The extent to which I am satisfied with the quality of the group's final decision met my initial expectation.

13. Group members accepted what I had to say.

14. The extent to which the group members accepted what I had to say met my initial expectation.

15. My views were given full consideration by the other group members.
16. The extent to which my views were given full consideration by the other group members met my initial expectation.

Appendix F: Results of Pilot Study

Overview

I ran a pilot study with ten male and ten female full-time employees and part-time student workers of MSL. The subjects' ages ranged from 20 to 30. Each group had four subjects: two males and two females. In some of the groups, two or more group members knew each other and, in a few groups, subjects had worked together before. I used the General Information and questionnaires in Appendices B-E, although the questionnaires were updated since the pilot study. I updated the objective I gave groups in the pilot study, for the full study, because of the lack of interactive discussions in the pilot study. At the end of the pilot study, I had group members fill out a written statement describing what they thought the experiment was about. The purpose of having group members do this was to determine if any demand characteristics were present.

Experiment

During the experiment, many group members put too much effort into addressing the problem as a mathematical/analytic problem. Two subjects asked me if there was a "right" answer. In many of the groups, it wasn't until about halfway through the discussion that many of the subjects began to realize there wasn't a mathematical/analytic solution to the problem and they should consider both productivity and worker satisfaction. I believe addressing the problem as a mathematical/analytic problem inhibited interactive discussion. I believe the following objective, which I used in the pilot study, caused the groups to put too much effort into addressing the problem as a mathematical/analytic problem.

> "You are a task force brought together to address the issue described in the General Information you just read. Your objective as a group is to develop the best solution you can, considering the company and Jack, Steve, and Walt. The solution should describe how Jack, Steve, and Walt can best work together to accomplish their operation of assembling carburetors. You will probably want to include who will work in what position, when, and for how long. Please use the paper provided to describe your solution. You will have 30 minutes to do this. Your solution will be presented to management."

I modified this objective for the full study, specifying there was no correct answer to the problem and specifying a focus on the issues of productivity, quality, and employee satisfaction. (See Procedure section, Materials and Methods chapter.) I also changed the word "solution" to "decision" because solution tends to imply a need for solving the problem (mathematically).

Group discussions had little to no conflict. Subjects seemed to be relaxed during the discussions and seemed to have ample opportunity to express their views and share information. I think the relaxed atmosphere could be attributed, at least partially, to the size of the groups. The groups had only four people and were in a big room by themselves (i.e., the environment was quiet). I used six per group in the full study because I though it would cause more interactive discussion (and perhaps more conflict) and I would have to run less groups.

Most groups considered worker satisfaction in their solutions. For example, one group solution said the goal was to increase productivity and maintain quality and the problem was to keep the workers happy by achieving the goal. One subject in another group said, "Maybe we should do something human like give them a bonus." Another group's solution included the statement, "This may make Steve work harder, but he is happier in position 2." Finally a subject stated on his or her questionnaire that he or she "felt the need to keep the employees satisfied as well as management."

Most subjects didn't know what the experiment was supposed to test. However, four subjects had a pretty good idea. They said things like "comparing and contrasting our initial expectations of the discussion to what actually resulted", "one's perception and expectation of a group decision", "how one expected to be acknowledged by the group", "how much impact one expects and perceives oneself to make", and "what people automatically assume when placed in a group." Two of the four subjects who had a pretty good idea about what the experiment was about weren't confident about their responses. Most subjects mentioned one or more of the following in the open-ended questions on the questionnaires:

> o group versus individual decision-making, e.g., two heads are better than one (Most subjects said this.);
> o how a group can work together;
> o information exchange;
> o expression of views;
> o consideration of others opinions;
> o support of ideas you don't believe in;
> o how women and men interact in a group;
> o constraint of time on group decision making;
> o sacrifice goals for consensus; and
> o influence of a group on an individual.

Therefore, because most subjects didn't know what the experiment was about, I'm confident there were no influential demand characteristics that may have altered my data. In other words, I didn't influence the experiment to turn out the way I wanted it to.

Task

Most subjects were interested in the task and thought it was understandable. Most subjects also felt they had a stake in the decision (i.e., the outcome was important to them). Four subjects said it wasn't important to them. One of these four said he or she wanted a logical solution though. Another said the problem was too hypothetical. Interestingly, one subject said the task was important to some extent, "but it might be interesting if we had a Steve, Jack, and Walt to role play with." Several subjects commented on the short amount of time to address the problem. They felt they could have come up with a better solution with more time. They also said time affected their feelings toward the group solution. I believe trying to solve the problem mathematically delayed many of the groups in their decision making process. I changed the objective so groups would understand there was no mathematical solution.

Questionnaires

Most subjects were confident about their responses to the questionnaires. Subjects were, for the most part, confident about their initial expectations and their perceptions of met expectations. A couple of subjects weren't too confident about their initial expectations because they hadn't had time to think about them or said it was difficult to predict his or her and the group's input. Two subjects said they weren't sure about their initial expectations because they hadn't been involved in a lot of group decision-making before.

One subject wasn't sure what the difference between "I expect" and "It is important to me" was. I added a statement in the procedure ensuring the proctor would distinguish between an expectation and valence associated with an expectation.

A few subjects were a little confused about the instructions on the Perceptions of Met Expectations Questionnaire. One subject was confused about one statement in each pair of statements referring to the discussion and the next statement referring to their initial expectation. Another subject said he or she continually had to flip his or her frame of thinking from the discussion to his or her initial expectations. Essentially, this is what I wanted the subjects to do to determine their perceptions of met expectations. I added dotted lines between pairs of questions to distinguish each pair of questions from the other pairs. I also made the instructions on the Perceptions of Met Expectations Questionnaire clearer.

Several subjects were confused that all the questions on the Consensus Questionnaire were positively worded except the last one. I reworded two more questions on the Expectations/Valence Questionnaire and two on the Perceptions of Met Expectations Questionnaire, making them negatively worded. All negatively worded questions will be reverse coded in my data analysis. I reworded question #6 on the Consensus Questionnaire to avoid the two "disagree" words, one in the question and one on the scale.

I made a big mistake of placing "moderately agree" higher on the 7-point Likert scale than "agree" (i.e., the scale went . . . neither agree nor disagree, agree, moderately agree, and strongly agree). All statements on all questionnaires had this erroneous scale. (Obviously, I didn't mean to do this.) About eight subjects commented that they didn't know which was higher, agree or moderately agree. Most of the eight said they thought agree would be higher but were confused that it was lower on the scale. Several subjects made the same comment for each questionnaire. I analyzed my data based on scale position not wording. In other words, since moderately agree was placed higher on the scale than agree, moderately agree responses received a 6 and agree responses received a 5. I don't know what effect the erroneous scale had on my results. At least I know my subjects were paying attention. I changed the scale for my full study, switching the positions of agree and moderately agree.

Data Analysis, Results, and Discussion

I felt that met expectations about opportunity to express views and met expectations about information sharing were measuring very similar constructs because of the very high correlation between them ($r = .724$). Therefore, I combined opportunity to

express views and information sharing into, "expression of views." This combination reduced the number of variables in my regression model from nine to six.

In my analysis, I dropped an item (question) from the Perceptions-of-Met-Expectations Questionnaire because it increased the alpha value for met expression-of-views expectations by approximately .2. I replaced this item with another of the common questions from Brubaker's (1991) and Polk's (1991) research. I also added another item from the common questions to the Perceptions-of-Met-Expectations Questionnaire to be consistent with the common questions. (See Predictor Variables section, Materials and Methods chapter.)

After the item was dropped, the questionnaires were highly reliable. The Chronbach's alpha values for the variables I measured and their associated valences were:

   o Met expression-of-views expectations (alpha = .902),
   o Valence associated with expression-of-views expectations (alpha = .689),
   o Met decision-quality expectations (alpha = .838),
   o Valence associated with decision-quality expectations (alpha = .707), and
   o Strength of consensus (alpha = .791).

Hypothesis 1 was not supported. The combination of met expression-of-views expectations and met decision-quality expectations, along with their associated valences and interaction term[6], wasn't a significant predictor of strength of consensus, $F_{(6,13)}$ = .686 (p = .66). However, met expression-of-views and decision-quality expectations, along with their associated valences, explained 24.05% of the variance for strength of consensus. This result was a good indicator that meeting expectations, especially expression-of-views and decision-quality expectations, may have an influence on strength of consensus. This result also indicated valence associated with expectations was an important factor to consider when examining the relationship between met expectations and strength of consensus.

There was a multicollinearity problem in the data. Pedhazur (1973) suggests two approaches for dealing with multicollinearity. The first approach is to drop a variable or variables involved in the multicollinearity. I tried dropping a variable, but it reduced my R^2 value by more than half. This result supports the use of all existing variables in the model. Therefore, the only change in the regression model as a result of the pilot study was to collapse met expectations about opportunity to express views and information sharing into expectations about expression of views. The second approach Pedhazur suggests for dealing with multicollinearity is to increase the sample size. I used 97 subjects in my full study.

Hypotheses 2 and 3 weren't supported. The correlation between met expression-of-views expectations and strength of consensus was insignificant (r = .217, p = .36). The correlation between met decision-quality expectations and strength of consensus was also insignificant (r = .327, p = .16). However, with a sample size of only 20, the

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[6] The interaction term (for each expectation) I used in the pilot study was different from the product sum term used in the full study. For the interaction term, I didn't multiply each individual expectation question by its associated valence, as I did with the product sum term. I simply took the sum of the expectation questions multiplied by the sum of the associated valence questions.

power of the statistical tests was low. I didn't test Hypothesis 4 in my pilot study because of the multicollinearity problem.

Appendix G: Verbalization Recording Sheet

I marked the number of times each subject talked during the group discussion in the appropriate box and recorded the totals in the lower right-hand corners of each box.

③

Total =

④

Total =

②

Total =

⑤

Total =

①

Total =

⑥

Total =

Beginning of discussion: _____

End of discussion: _____

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EDUCATION

Virginia Polytechnic Institute and State University
M.S. in Industrial and Systems Engineering (Management Systems Option), December 1991

Independent Study: A Management Plan for Recycling at Va. Tech

University of Virginia
B.S. in Systems Engineering, May 1988

EXPERIENCE

Management Systems Laboratories, VPI&SU, Blacksburg, VA
Graduate Research Assistant, September 1989 - Present
- Contributed research to a $10 million grant for the Department of Energy to study small group consensus and decision making.
- Helped facilitate DOE Management Training Workshop using expertise in group decision-making techniques.

Andersen Consulting (Arthur Andersen & Co.), Washington, D.C.
Staff Consultant, August 1988 - September 1989
- Developed programs for an artificial-intelligence-based-claims-processing system for Blue Cross/Blue Shield of Virginia and acted as sole support for project management.
- Developed on-line and batch programs in the field of General Ledger and Accounts Payable for the Social Security Administration.
- Developed ORACLE database prototypes for Work Order Processing and Physical Equipment system for Baltimore Gas & Electric.

Weyerhauser Paneling Co., Chesapeake, VA
Intern and Service Representative, Summers of 1983 - 1986
- Analyzed the uncrating process and developed an improvement evaluation for the head manufacturing manager. Most suggestions were implemented resulting in a downtime reduction of 1/3.
- Traveled to southeast region retail outlets, completing inventory records and making improvement evaluations.

**PUBLICATIONS /
CONFERENCE
PRESENTATIONS** "The Effects of Meeting Group Members' Expectations on Strength of Consensus", presented at the Southeastern Chapter of The Institute of Management Sciences conference (October 1991) and published in the proceedings.

"A Process for Meeting Expectations in a Decision-Making Group", presented at The Institute of Management Sciences/Operations Research Society of America conference (May 1991).

"Structured Meeting Techniques Identify Emergency Management Issues Practitioners Really Want to See Addressed", presented at the Mass Emergencies and Disasters conference (February 1991).

"A Selection Tool for Choosing the Best Participative Problem-Solving Technique", presented at the Southeastern Chapter of The Institute of Management Sciences conference (September 1990) and published in the proceedings.

SKILLS Interdisciplinary, systems approach for solving management, engineering, social, and/or environmental problems

Facilitating group problem solving/decision making

HONORS Alpha Pi Mu (National Industrial and Systems Engineering Honor Society)

Gamma Beta Phi (National Honor and Service Organization)