2013

The Impact Of Group Personality Characteristics On Group Decision-Making

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A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department: Leadership Studies

Major: Leadership Studies

Major Professor: Dr. Comfort Okpala

Greensboro, North Carolina

2013

School of Graduate Studies
North Carolina Agricultural and Technical State University
This is to certify that the Doctoral Dissertation of

Kevin Shawn Bottomley

has met the dissertation requirements of
North Carolina Agricultural and Technical State University

Greensboro, North Carolina
2013

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Biographical Sketch

Kevin Shawn Bottomley was born on October 21, 1975, in Greensboro, North Carolina. He grew up at the Church of God Children's Home in Concord, NC. His house parents and administrators at the Children's Home encouraged him to never give up and become whatever he wanted to be. He received a Bachelor of Science degree in Sports Medicine from Guilford College in 1998 and a Master of Public Administration degree from the University of North Carolina at Greensboro in 2006. He is a candidate for the Ph.D. in Leadership Studies.

Dedication

This dissertation is dedicated to Rachel Bottomley: My wife and best friend.

Acknowledgements

The dissertation journey cannot be completed alone and requires the advice, support, and encouragement from everyone in your life. First, I would like to thank those who helped mold an idea into a researchable and measureable product: Dr. Alexander Erwin, Dr. Alice Stewart, and Dr. William Gentry. Next, I would also like to thank Dr. Comfort Okpala my dissertation committee chair and all of my committee members who agreed to serve and provided invaluable help in refining the product and ensuring my writing was clear for everyone to understand: Dr. Abul Pitre, Dr. Louie Ross, and Dr. Cynthia McCauley. My committee members have fielded late night and early morning calls to work with me in addition to the many meetings I have had in their offices. They have endured weekend work on my behalf and have interrupted their personal vacations. I am forever indebted to them!

I would like to thank Dr. William Gentry for supervising my internship at the Center for Creative Leadership® in Greensboro, NC. This internship helped to see how research was conducted first-hand. It also provided ideas for developing my own research questions. I would also like to thank the Center for Creative Leadership® for providing the data used in this research.

I would like to thank the professors in the Leadership Studies Department who helped define the parameters of leadership as a field and who provided the understanding of the field and research for me to be able to complete this work: Dr. Alexander Erwin, Dr. Forrest Toms, Dr. Elizabeth Barber, Dr. Daniel Miller, Dr. Cynthia McCauley, Dr. Ellen Van Velsor, Dr. Dorothy Leflore, and Dr. Belinda McFeeters. I would like to thank Dr. Tom Smith for his support, reading numerous versions, and helping to refine my writing skills early in the process.

I would like to acknowledge the many friends who I made taking classes with and the encouragement they provided during this process, specifically the group I entered with: Sylvia Burgess, Ayanna Boyd-Williams, Casey Forrest, Moses, Fox, Cheresa Greene-Clemons, Renee Martin, Karen Martin-Jones, Letita Mason, Jeff North, and Erma Smith-King.

I would like to thank Greg Jones, President/CEO of the YMCA of Greensboro, who has been my supervisor during much of this journey for his support, understanding, and flexibility while I sought to take classes, complete my internship, and my dissertation. Greg allowed me to make application with what I was learning by allowing me to develop and implement a nine month leadership development program for our staff. I would also like to thank Sherri Self, Human Resources Director of the YMCA of Greensboro for providing support, a sounding board for my ideas, and help in creating the leadership development program that we deliver together. I would like to thank the staff that I've had the pleasure to lead and the boards that I have had a pleasure to interact with during this process at both the Reidsville Family YMCA and the Mary Perry Ragsdale Family YMCA.

Finally, I would like to thank my best friend and wife (Rachel) and three wonderful children (Nate, Nick, and Nash) for their unending support and understanding during this process. My wife has provided encouragement and helped to keep me on task.

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Abstract

The purpose of this study was to determine (1) how group information sharing impact group decision effectiveness, (2) how group personality composition impact group information sharing, and (3) how group personality composition impact group decision effectiveness. The data collected was FIRO-B® scores on the expressed scale, group information sharing data as measured by the Process and Issues Questionnaire (PIQ), and group decision effectiveness data as measured by the PIQ. Correlation analysis were performed to analyze the group psychological characteristics (H_2, H_3, & H_4,) based on an index created for each group where the data is represented by a range: H_2) group average level scores on the psychological characteristic of expressed inclusion-group (eI-G) is positively related to group information sharing; H_3) group average level scores on the psychological characteristic of expressed control-group (eC-G) is related to group information sharing; and H_4) group average level scores on the psychological characteristic of expressed affection-group (eA-G) is positively related to group information sharing. A mediated regression analysis was used to analyze H_5) group interpersonal psychological factors on group decision effectiveness and mediated by group information sharing. The results indicated, as hypothesized that the strongest predictor of group decision effectiveness was group information sharing. However, the results from this study did not find a significant link between group personality characteristics and group information sharing or group decision effectiveness. The present study provides support to previous research that group information sharing has a positive impact on group decision effectiveness.

CHAPTER 1

Introduction

A variety of group decision processes whether implicit or explicit are being used throughout organizations. White, Dittrich, and Lang (1980) emphasized that a major problem is for managers to ensure effective decision making and implementation are accomplished within the same organization. This is a challenge because often there is significant distance between those who are responsible for making the decisions and those responsible for implementing the decisions. Another challenge is dealing with issues within the context of a group can be a daunting task and personality conflict is inherent within work groups. Based on the make-up and interactions of group members, a group personality composition emerges (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005).

The field abounds with examples of negative consequences due to ineffective decisions in real world practice, academic research, and public policy implementation. The Challenger Space Shuttle explosion (Garrett, 2004) and the Tenerife Air Disaster (Weick, 1990) highlight the consequences associated with these ineffective decisions and the need for effective decision-making processes to be implemented. While there were many contributing factors, each of these tragic incidents occurred in part because of decisions that were made during interactive episodes associated with the talk-in-interaction model. The talk-in-interaction perspective holds that decision-making episodes are shaped by the conversation that occurs within meetings (Huisman, 2001).

Previous academic research studies on decision-making have been exploratory in nature employing qualitative research methods to discover mechanisms for group decision-making practices (Huisman 2001). Other researchers have provided theoretical building blocks to

explain the decision-making process (Shrivastava & Schneider, 1984) or to describe the interactions between those involved in the process (Miller, 2009). Whether leaders can use talk-in-interaction episodes to make decisions within the organization and capture the decision to explicitly articulate, codify, and implement the decision throughout the organization has yet to be empirically tested.

Often public policy and foreign policy are based on the framing of these important issues through conversation. Neustadt and May (1986) provide timeless examples such as the Bay of Pigs affair in 1961 and the Cuban Missile Crisis of 1962 of how conversation can ultimately impact the final decision. More recently, the decision to go to war in Iraq was based on the case for weapons of mass destruction, and then the political conversation shifted to the war on terror.

Taken together the examples listed above show a need for effective decision processes to synthesize the conversations and resulting decisions that already occur in everyday practice, academic research, and public policy. In addition, these examples provide a basis for solving the dilemma of effective decision-making and implementation proposed by White, Dittrich, and Lang (1980).

Likert and Likert (1978) propose a problem solving process that sets up a win-win situation among group members similar to the concept of consensus building. Fambrough and Comerford (2006) state that "the intent of consensus is to give all voices the opportunity to be heard and through rational discussion reach agreement about outcomes deemed satisfactory by all participants" (p. 339). In another study, Kayes, Kayes, and Kolb (2005) propose that learning teams create discussion spaces and experiential learning opportunities that encourage all group members is to be viewed as peers.

Decision-making theory encompasses a variety of conceptualizations, models and strategies, which are often in competition with one another. One such model is the rational decision-making model, which consists of the following steps: defining the problem, setting objectives and criteria, generating alternatives, analyzing alternatives, and implementing the decision (Lussier, 2008). However, Etzioni (1989) criticizes the rational decision-making model because it expects decision makers to evaluate and compare all of the alternatives to a decision prior to choosing the course of action. Etzioni (1989) further argues that it is impossible to know and evaluate all of the alternatives.

The purpose of decision-making episodes is to identify a change within the organization that needs to take place; however, the implementation of these decisions often fails. One reason for this apparent failure to fully implement decisions is that post-meeting follow-up and support is limited. Borges, Pino, and Valle (2002) "…identify four aspects of post-meeting support: the decision implementation plan; the follow-up of implementation activities; the support for interaction between decision makers and implementers; and the awareness support to external members" (p. 367). The authors concluded that "post-meeting activities should be explicitly defined and assessed by decision meeting participants" (Borges et al., 2002, p. 372).

Huisman (2001) provides a linguistic perspective to view the decision-making process within organizations. This perspective holds that decision-making episodes occur and are shaped by the conversation that occurs within a meeting. This type of "dialogical engagement is about establishing interactive contexts wherein change can occur" (Miller, 2009, p. 506). Huisman (2001) regards decisions as emergent in nature and notes these decisions are often not articulated. The talk-in-interaction perspective shows how decisions are made during meetings through various forms of discourse. Applying the work of Shrivastava and Schneider (1984) for

example, on organizational frames of reference to decision-making provides an argument for leaders to more explicitly articulate, codify, and implement decisions.

Postmes, Spears, and Cihangir (2001) discuss the dysfunctional properties of groups and group decision-making processes providing support for the idea of faulty decision processes. These researchers cite an exhaustive list of authors who contribute to the notion that faulty decision processes occur within organizations (Baron, Strobe, & Miller, 1992; Eser, 1998; Janis, 1982; Paulus, 1998; & Stroebe & Diehl, 1994). These decisions often negatively impact the quality of decisions made by the group, thus negatively impacting the organization as a whole (Postmes et al., 2001).

Purpose Statement

Group decision making has been studied in a variety of settings using various means. However, the research to date has provided limited opportunities to examine group decision-making in the context of group personality composition and the impact this may have on overall group decision-making. The purpose of this study is to examine the impact of group personality composition on group decision effectiveness. Leaders make decisions using the discussions that occur during meetings. Shrivastava and Schneider (1984) propose "…a framework [OFOR, organizational frames of reference] for examining the unquestioned assumptions and processes underlying strategic decision-making" (p. 795). The authors suggest that one hallmark of using the OFOR framework is the manner in which decisions and processes are made known and shared within the group. Building on the concepts from Shrivastava and Schneider (1994) this researcher proposes that often decisions are not articulated, codified, and fully implemented throughout the organization.

Talk-in-interaction provides a linguistic perspective on the decision-making process in meetings, and analyzes decision processes to determine when a decision has actually taken place (Huisman, 2001). Using the talk-in-interaction perspective the researcher found that decisions in meetings tend to be emergent and not necessarily explicitly stated as decisions. When a leader gains agreement throughout a meeting, decisions may be formed and implemented without questioning the effectiveness of the decision being made. When decisions get made in this fashion, people are generally not overtly aware of the decisions that have been made and "can only retrospectively interpret that a decision has been made" (Huisman, 2001, p. 77).

Research Questions

The present study explores three central research questions about group decision-making processes:

1. How does group information sharing impact group decision effectiveness?
2. How does group personality composition impact group information sharing?
3. How does group personality composition impact group decision effectiveness?

Definition of Terms

According to Mintzberg, Raisinghani, and Theoret (1976) a decision is defined "as a specific commitment to action (usually a commitment of resources) and a decision process as a set of actions and dynamics that begins with the identification of a stimulus for action and ends with the specific commitment to action" (p. 246). It is important to note that there are a variety of decisions that can be made during decision episodes including to defer the decision or to not make a decision at all. Both of these are conscious efforts made not to make a decision at this time.

For the purposes of this study, talk-in-interaction is defined as decision episodes that occur through conversations in meetings. Talk-in-interaction may describe either implicit or explicit decisions made through group conversation and/or group decision episodes. Group decision episodes are any event that results in a decision being made among the group members.

Group information sharing (GIS) is defined as the ability of the group to combine knowledge. One way to view the ability of a group to combine knowledge is for the group to be able to surface as much information available to individuals for the entire group to gain a better understanding of the issues. For the purposes of this study, group information sharing is determined by the percentage of information known within the group during the simulation.

Group decision effectiveness (GDE) is defined as whether an action was taken by the group on the critical action areas or strategic issues. For the purposes of this study, group decision effectiveness will be determined by whether the majority of group members are aware that an action was taken during the group simulation.

Faulty decision-making processes describe a host of factors that may be involved in group decision making episodes. Faulty decision processes refers primarily to the inability of the group to specifically articulate, codify, and fully implement a decision that has been made.

For the purposes of this study group personality composition is defined as the group mean of interpersonal psychological factors as measured by the FIRO-B® (Fundamental Interpersonal Relations Orientations-Behavior™) instrument on the expressed scale. At the individual level these factors are expressed inclusion (eI), expressed control (eC), and expressed affection (eA). At the group level these factors are denoted as expressed inclusion-group (eI-G), expressed control-group (eC-G), and expressed affection-group (eA-G).

Significance of the Study

This study is significant to future practice, research, and policy. In regards to practice, the present research investigates the link between group information sharing, group decision effectiveness, and the impact that group personality composition has on these. This study provides the necessary knowledge for leaders to understand the importance of increasing group information sharing. Finally, this study advises leaders to be aware that group personality composition will have an effect on overall group decision effectiveness.

The present research can be used as a basis for future studies as it explored the under-researched area of group personality composition and its effect on group information sharing (GIS). Future research could focus on the various group personality profiles to help determine and/or validate whether there is a right combination of interpersonal psychological characteristics needed to have the greatest impact on group decision effectiveness (GDE). Another area of future research could focus on how effective decisions are fully implemented across organizations.

Finally, this study is significant in terms of future policy as it identifies best practices for decision makers in all realms. The results provide clearer insight about the impact of group information sharing on group decision effectiveness. Policymakers may use this study to frame whether an interactive episode is about discussion or whether it is a decision episode.

Limitations

As with all research, the present study has some limitations. First, this study uses a sample population of participants who had registered for a leadership development course and as part of this course participated in a simulation. The participants in the leadership development

course largely contain people who do not know each other, therefore if participants did not take the simulation seriously, and then the results might have been influenced. According to McCall and Lombardo (1982) the Looking Glass, Inc.® simulation "results generally support the validity of the simulation" (p. 546) on both content and construct validity. Second, the use of a simulation allows for many runs of the same type of experience to be conducted to increase the amount of data collected. However, the use of this particular simulation reduces the generalizability beyond the participants who participated in the study. Finally, the simulation measures action taken on specific decisions, however it is assumes that decisions would be fully implemented within the organization.

Delimitations

Participation in this study is delimited to participants who were enrolled in the Looking Glass Experience leadership development course and simulation conducted by the Center for Creative Leadership® (CCL®). Because the design of the simulation allows group members to indicate an interest in a position within the organization being studied, the groups are randomly assigned and do not attempt to balance participant characteristics in terms of age, experience, gender, race, or individual psychological characteristics. Therefore, this study uses the groups as assigned and further characterizes these groups based on the objectives of the present study.

Organization of the Study

The present study is organized using a six-chapter format. Chapter one introduces the statement of the problem, the purpose of the research, the research questions, and the significance of the study. The second chapter provides an extensive literature review on decision-making, group decision effectiveness, and group psychological factors. Chapter three

develops the conceptual framework by integrating the key elements to answer the research questions previously identified. The fourth chapter describes the methodology that will be used to conduct the study including techniques to collect and analyze the data. The fifth chapter describes the analysis and results of the study. The final chapter discusses the results, draws conclusions, and discusses the implications for future practice, research, and policy.

CHAPTER 2

Literature Review

This study examines the impact of group personality composition on group decision-making. This chapter traces the historical roots of organizational decision-making through group formation theory and group decision-making theory. Next, this chapter discusses decision effectiveness by examining the following components associated with decision effectiveness: defining the effective decision, looking at barriers inhibiting decision-making by leaders, principles and practices central to effective decision-making, and understanding decision effectiveness. Finally, this chapter examines literature on group personality composition by examining the following components: faulty decision processes, interpersonal communications perspective on decision-making, and group personality composition.

Literature on Group Decision Making

To understand the literature on group decision-making theory, one must have an overview of group formation theory. Group formation theory has been studied in the field of psychology, and then it has been applied to group dynamics and decision-making within organizations.

Group Formation. In a study, Tuckman (1964) investigated the "emergent group structure and information processing as a function of the personality structure of the group members" (p. 469). The purpose of this study was to determine the ability to generalize and predict group behavior based on the personality structure of homogenous groups. The findings confirmed that homogenous groups generate predictable group behaviors that are also homogenous. Moreover, Tuckman states the study of group development was beyond the scope of this study.

Later, Tuckman provides the seminal work on small group development, which has been applied to a variety of fields. Initially, Tuckman (1965) identified four stages of group development: forming, storming, norming, and performing. Then, Tuckman and Jensen (1977) amended the model of small-group development to include five stages: forming, storming, norming, performing, and adjourning. These stages provide one way of understanding the interactions of individuals within a work group.

Forming is described as the initial process of orientation, testing, and dependence within the group. Storming is characterized by "conflict and polarization around interpersonal issues" (p. 396). Norming is described as overcoming resistance within the group during which group identity and cohesiveness is developed. Performing is characterized when the "group attains… [an] interpersonal structure becomes the tool of task activities" (p. 396). In another study, adjourning is described as the process of the group separating or terminating its existence (Tuckman & Jensen, 1977).

Group Decision Making. Group formation processes as described by Tuckman (1965) and Tuckman and Jensen (1977) have been applied group decision-making theory. Then they further discuss the application of group decision-making theory in the areas of conflict, problem solving, and consensus building. Decision-making theory encompasses a variety of conceptualizations, models, and strategies, which are often in competition with one another. For example, Rice (1969) proposed to look at individual and group behavior using a systems approach. Using the systems approach usually reserved for enterprise systems he proposed to treat individuals, groups, and intergroup interactions as an open system. In order to accomplish this, Rice proposed the enterprise system considers "intakes and outputs are the results of import-

conversion-export processes that differentiate enterprises from each other" (p. 566). Then he concluded that all interactions could be seen through the import-conversion-export process.

A related example is the work of Sorenson (1971), who used problem-solving groups to investigate "the relationships among task demands, group interaction profiles, and group performance" (p. 483). Then Sorenson found task characteristics as one of the more important variables effecting group performance. In this study Sorenson identified the following group task behaviors: structuring, generating, elaborating, evaluating, and requesting. Finally, Sorensen defined group performance as "specific qualities of group products" (p. 486).

Similarly, Cohen, March, and Olsen (1972) proposed the garbage can model which bases decision outcomes on four streams of information as follows: problems, solutions, participants, and choice opportunities. This model is based on four variables as follows: a stream of choices, a stream of problems, a rate of flow of solutions, and a stream of energy from participants (Cohen, March, & Olsen, 1972). The authors concluded that the garbage can model explains decisions that are made in organizational anarchies where more classical models such as the rational decision-making model do not work.

Dealing with issues within the context of a group can be a daunting task. There exists a variety of ways to resolve the conflict inherent within work groups. Likert and Likert (1978) propose the problem-solving process that sets up a "win-win" situation among group members. This process should foster "solution minded" (Maier, 1967, 1970, as cited by Likert & Likert, 1978, p. 428) groups. Likert and Likert (1978) propose that individuals within the group should identify both desirable conditions and essential conditions for solving the problem. When selecting a solution the essential conditions of each group member must be met, therefore the group engages in "an imaginative search for new, creative solutions" such that "the search, in

itself, for an innovative solution builds group cohesiveness and teamwork" (p. 432). This view of problem solving is similar to the concept of consensus building within groups.

Moreover, Burton and Pathak (1978) discuss the difference between the nominal group technique for group decision-making and interacting groups. The authors describe the nominal group technique where ideas are brainstormed, and then each person individually prioritizes the list. Then they define interacting groups as those that use consensus to select ideas. The authors concluded that the nominal group technique is better than interacting groups because they provide a higher quantity and quality of ideas to choose from. However, the authors also conclude that the superior performance of nominal group technique is done at the expense of individual and group satisfaction.

In another study, Schweiger, Sandberg, and Ragan (1986) compare the effectiveness of three group approaches to strategic decision-making. These approaches include dialectical inquiry, devil's advocacy, and consensus approaches. The result of this study indicates that of the three approaches consensus may be better for nonstrategic decisions; however it is the least effective of the three for strategic decision-making (Schweiger et al., 1986). The authors further conclude that dialectical inquiry and devil's advocacy have no significant differences for strategic decision-making.

In a study by Murrell, Stewart, and Engel (1993) the authors "…compares two decision processes: consensus, a low-conflict process, and devil's advocacy, a high-conflict process within three types of task structures: additive, disjunctive, and conjunctive" (p. 399). The importance of this study is that it went beyond focusing on the process groups use to make decisions to look at the structure, and considered different types of task structures as well.

The rational decision-making model, which consists of the following steps: defining the problem, setting objectives and criteria, generating alternatives, analyzing alternatives, and implementing the decision (Klein, 1998 as cited in Osland, Kolb, & Rubin 2001; Lussier, 2008). The rational decision-making model is criticized because it expects decision makers to "explore every route that might lead to their goal, collect information about the costs and utility of each, systematically compare these various alternatives, and choose the most effective course" (Etzioni, 1989 p. 122).

In another study, Sutcliffe and McNamara (2001) examined how decision practices are enacted within organizations and how these practices are followed. The findings of this study showed that "decision-making practice is not solely a function of individual choice, and that decision practice influences decision outcomes" (Sutcliffe & McNamara, 2001, p. 496). The findings suggest, "decision makers were more likely to use prescribed decision criteria for important decisions" (Sutcliffe & McNamara, 2001, p. 496).

The concept of consensus building is a process based on values such as "cooperation, trust, honesty, creativity, equality, and respect" (Briggs, 2001). In an article by Fambrough and Comerford (2006) they state that "the intent of consensus is to give all voices the opportunity to be heard and through rational discussion reach agreement about outcomes deemed satisfactory by all participants" (p. 339). Accordingly, Briggs (2001) argues, "Consensus goes beyond majority rule. It replaces traditional styles of top-down leadership with a model of shared power and responsibility" (p. 43). For authentic consensus to be enacted Briggs (2001) provides a framework of five elements that must be in place: "(1) willingness to share power; (2) informed commitment to the consensus process; (3) common purpose; (4) strong agendas; and (5) effective facilitation" (p. 43). Next, Fambrough and Comerford (2006) assert "in a group with

implicit or explicit power differences, consensus can be an oppressive technique, all the while wearing the benign mask of egalitarianism" (p. 339). While many organizations claim to use consensus building, and may employ these techniques to arrive at possible solutions, when they get down to it they end up using a democratic process to make the final decision.

Using the group formation, problem solving, and consensus building literature as a basis for how teams form and make decision, Kayes, Kayes, and Kolb (2005) indicate that

> Small group research has identified a number of factors that negatively affect team performance and member satisfaction. These include phenomena such as overdependance on a dominant leader (Bion, 1959; Edmondson, Bohmer, & Pisano, 2001), the tendency to conform known as "group think" (Janis, 1972), overcommitment to goals (Staw, 1982), diffusion of responsibility (Wallach, Kogan, & Bem, 1964), a tendency to make risky or more conservative decisions than would individuals acting alone (Clarke, 1971), and social loafing (Latané, Williams, & Harkins, 1979), and the Abeline Paradox (Harvey, 1988) in which groups take action that most members disagree with because they fail to express their own feelings (p. 331).

Based on the above Kayes et al., (2005) propose that learning teams create discussion spaces and experiential learning opportunities with an "emphasis encouraging group discussion and decision making in an atmosphere where staff and participants are peers" (p. 332).

In this study conducted by Zeff, Higby, and Bossman (2006) they found that both "temporary and permanent groups can lead to higher performance and satisfaction for students" (p. 538). The authors conclude that permanent groups provide higher levels of overall

performance. The limitations of this study are that performance in students and the findings may not be able to be generalized to work groups.

Literature on Decision Effectiveness

The Effective Decision. Decision effectiveness is defined as the correct decision being made during a group decision episode. According to Drucker (1967) six sequential steps for effective decisions 1) classifying the problem, 2) defining the problem, 3) specifying the answer to the problem, 4) deciding what is "right," rather than what is acceptable, in order to meet the boundary conditions, 5) building into the decision the action to carry it out, and 6) testing the validity and effectiveness of the decision against the actual course of events. Accordingly, the author contends these steps are essential to developing a systematic decision-making approach, which will ultimately result in effective decisions. Next, the researcher also contends that an executive's role is to undertake strategic decision-making versus problem solving initiatives.

The author continues to state that there are only four types of problem classifications 1) truly generic event, 2) unique event for the individual institution, 3) truly exceptional event, and 4) truly unique event (Drucker, 1967). Truly generic events require an effective decision-maker to apply a generic solution, which has been previously specified through policy and procedures. One must first recognize that the event is truly generic, which may include analyzing data over time to discover the root cause of the problem. By discovering the root cause of the problem the decision-maker is able to address the problem itself versus the evident symptoms of the problem. The author contends, a truly exceptional event also requires a generic solution, which has been established in policy and procedures. The truly exceptional events are manifestations of generic

events that have been amplified by exceptional circumstances. Appropriately responding and addressing the underlying routine problems can readily solve the exceptional event.

A unique event for the individual institution is the next type of problem such as the opportunity for the institution to merge with another institution. These events do have history that can be analyzed, but one must analyze the history through the experience of other organizations that have faced a similar issue. The solutions to this type of event are also generic in nature that has been established through the experience of others.

As stated by Drucker (1967), a truly unique event requires that a leader be able to discover whether the event is an exceptional event or a new problem. Once the leader has distinguished that this event is unique they must then find a unique solution to the problem that addresses not only the symptoms, but also the root problem itself. By correctly classifying the events the decision maker can make the right decision.

According to Drucker (1967) problem definition seeks to determine what the problem is about, what is pertinent to the problem, and what is the key to the situation. By defining the problem comprehensively the decision-maker can then begin to check their problem definition. By checking the problem definition the decision-maker is searching to ensure that all of the questions are answered. In this step decision-makers determine what the problem definition is seeking to make happen. By specifying the answer to the problem and determining what is right, in this step the decision-maker is seeking to determine the boundary conditions of what the decision must accomplish. By determining the boundary conditions the decision-maker will know exactly what possible solutions must entail. Then the decision-maker must decide what is right to meet the boundary conditions. This ensures that if a compromise is needed for the

decision process the decision-maker will make the correct compromises, while maintaining the integrity of the right decision.

In the next step, it is essential to explicitly build into the decision the ability to implement the decision. In this step the decision-maker determines how to convert the decision into action. This is done by determining who needs to know of the decision, defining what action has to be taken, who is responsible for the action, and empowering others to be able to take action on the decision. Huisman (2001) finds that decisions in meetings are emergent and do not necessarily get explicitly stated as decisions. Using this perspective coupled with the perspective from Drucker (1967) it is important that an action plan is developed and accountability for implementing these decisions are clearly defined.

By testing the validity and effectiveness this step establishes a feedback system, which is ideally built into the system. While managers tend to rely on information monitoring and reports they must also rely on first-hand information. This is done by walking around to ensure that the decision is effective based on the specifications and making adjustments to the decision implementation when needed. Drucker (1967) states that the decision-maker cannot be weighed down with abstract information, they must get personal, firsthand information.

Barriers Inhibiting Decision-Making by Leaders. As a decision-maker one cannot separate their personal decision-making from their managerial decision-making processes. Because this separation is impossible often managers have interpersonal barriers that inhibit their decision-making. Accordingly, Argyris (1966) states, “the gap that often exists between what executives say and how they behave helps create barriers to openness and trust, to the effective search for alternatives, to innovation, and to flexibility in the organization” (p. 84). A manager must identify these elements and seek to ensure that they do not negatively impact their

managerial decision-making processes. The following barriers are discussed 1) the closed circuit, 2) lack of awareness, and 3) blind spots.

First, the author identifies the concept of the closed circuit, which limits flexibility, creativity, and openness to decision-making using new methods and/or new information (Argyris, 1966). The closed circuit exists as a defensive mechanism whereby individuals in the organization choose to limit their openness to new ideas and choose instead to conform to the prevailing managerial philosophy to reduce conflict. Although these individuals may not agree with a decision or the direction the organization is moving, they choose to implement these decisions in the best possible way to appear to be a team player. By limiting themselves they end up limiting the organization.

Next, the author states, "one of our most common observations in company studies is that executives lack awareness of their own behavior patterns as well as of the negative impact their behavior on others" (Argyris, 1966, p. 89-90). An aloof decision-maker who lacks personal awareness of the impact that their actions have on others in the organization can create a sense of insecurity among others in the organization. This insecurity creates an emotional tension within the organization, which makes the decision-making process strained especially in times where trust is needed to formulate and implement a decision.

Another barrier to the decision-making process is blind spots. Finally, Argyris (1966) identifies blind spots as "the tendency for executives to be unaware of the negative feelings that their subordinates have about them" (p. 91). These feelings could include negative personal feelings or negative feelings about the way the supervisor conducts business. Decision-makers must recognize how blind spots affect their decision-making methods and ultimately their final decisions. Managers must be committed to question themselves and look for blind spots to

ensure the best decision is made on behalf of the organization and they have minimized personal biases.

Principles and Practices Central to Effective Decision-Making. Leaders tend to believe that their problem solving and rational decision-making skills are important to the performance of their jobs. However, Stryker (1965) states, "…their actual practices has shown that even veteran managers are likely to be very unsystematic when dealing with problems and decisions" (p.73). The author continues to state that the very nature of the unsystematic way that these leaders use to solve problems can often lead to the wrong decision. Stryker proposes using a systematic method for analyzing problems such as the Kepner-Tregoe model, which develops a systematic approach to help leaders solve problems and make decisions more effectively. This model was developed by Kepner-Tregoe and Associaties in 1960. The model includes using the following steps 1) defining the problem, 2) outlining the specification, 3) spotting the distinction, 4) seeking the cause, and 5) respecifying the problem for resolution.

The first part of defining the problem is to separate the problem or issue from the decision or solution that has to be made in the end. Through defining the problem as an issue that needs to be fixed or a deviation from expected performance managers can more easily separate it from the decision. Decision-making would then be defined as the best way to address and correct the cause of the problem. The Kepner-Tregoe model uses a stair-stepping sequence, which relies on correcting the cause of the basic problem thus ensuring other problems, and their causes will automatically disappear (Stryker, 1965). In this model it is important to connect the problem with a cause, the problem-cause sequence.

Outline the specification is describing the problem precisely using only the facts that would be useful and using the specification to test possible causes of the problem. Outlining the

specification requires that you are able to dissect the problem in detail by defining the elements of the what, where, when, and to what extent the problem occurs. This is done by defining two sets of opposite facts; the "is" that describe precisely what the problem is and the "is not" that describe precisely what the problem is not (Stryker 1965). Using the two sets of opposite facts in the specification process identifies what the true problem is by drawing a tight line around the problem. It also helps to focus on the problem, a deviation from expected performance, and the personalities of the individuals involved. It helps to focus the attention on the facts versus the opinions.

The next step in the problem analysis process is to spot the distinction or difference for each aspect of the problem. Using the model to clearly define the problem and outline the specification makes it easier for one to spot the distinction in each aspect identified (what, where, when, and to what extent as well as the "is" and "is not"). Accordingly, Stryker (1965) states, "the contrast between the 'is' and the 'is not' not only draws a boundary around the problem, but strictly limits the amount of information needed for its solution" (p. 104).

By using the above steps all of the relevant information has been collected and precisely describes the problem and the distinctions (Stryker, 1965). At this point in the problem solving process it is critical to stay focused on the specifications previously defined by the process instead of shifting the conversation back to opinions and personalities. The next part of seeking the cause is to test the distinctions against the specifications and sharpen the facts if necessary. It is important to note that if the "possible cause fails to explain all the facts in the specification – that is, both the facts on the 'is' side and those on the 'is not' side – then we can be sure it's not the actual cause" (Stryker 1965, p. 108). For the true problem to be resolved the actual cause must meet the specification defined earlier and address both sides of the facts "is" and "is not"

which causes leaders to go back to sharpen the facts by respecifying the problem, then resolving it. Respecifying the problem requires that the leaders go back to the fact identified and be more exact on defining what the problem "is" and "is not" as well as redefining the areas of what, where, when, and to what extent. After redefining the problem by making the specification more exact the leader can then move on to resolving the problem.

Understanding Decision Effectiveness. According to Argyris (1976) there are no rigorous criteria of decision effectiveness. The author states, "The closest one could come to understanding effectiveness would be to define key questions, which, if answered would make it possible to evaluate effectiveness" (p. 365). Next, the researcher offers a framework to "explore the importance that learning processes play in problem solving and decision making" (Argyris, 1976, p. 365). The framework offered by the researcher is that of single-loop and double-loop learning. Single-loop learning does not question the fundamentals of the organization, whereas double-loop learning seeks to question the fundamentals of the organization (Argyris, 1976).

Argyris and Schon (1974 as cited in Argyris, 1976) "stated that all human action was based on theories of action" (p. 367). These theories of action are known as espoused theories and theories-in-use. Espoused theories are defined as the theories people report to base their actions on, while theories-in-use describe how people actually behave (Argyris, 1976). According to the author theories-in-use explain much of the behavior relevant to single-loop learning, while espoused theories explain much of the behavior relevant to double-loop learning.

Summary and Gaps in Group Decision Effectiveness. The literature previously reviewed examines several step-by-step progressions for managers and leaders to make effective decisions. However, these step-by-step methods do not take into account the complexity of

organizations. This leads one to question how group personality composition may play a significant role in group decision effectiveness.

Literature on Group Personality Composition

Faulty Decision Processes. Faulty decision-making processes describe a host of factors that may be involved in group decision-making episodes. Argyris (1997) posits that cognitive impairment arises because of individuals who strive for control, which results from faulty decision processes. According to Postmes, Spears, and Cihangir (2001) there is significant literature that has documented the dysfunctional properties of groups and group decisions. These authors continue to list the following properties: "groups have been described as inefficient, unimaginative, inaccurate, and unproductive" (Postmes et al., 2001, p. 918). These authors study the effect that group norms have on faulty decision processes.

Vroom (2003) reports on a study of managers in the USA, Canada, and Europe where two-years of decisions were analyzed and found that over half of the decisions failed or were never implemented during the study period. He reports "Decisions that used participation to foster implementation succeeded more than 80 percent of the time" (Vroom, 2003, p. 968). The author further states "that effective decision making is not merely a matter of decision quality but also of ensuring that the decision will have the necessary support and commitment for its effective implementation" (Vroom, 2003, p. 968).

Group Information Sharing Using an Interpersonal Communications Perspective. Maier and Maier (1957) studied the effects of developmental discussion versus free discussion on the quality of group decisions. This study brought to light "The question of whether the formalizing of the discussion required by the developmental procedure served as a distributing or

facilitating factor in making for agreement…" (Maier & Maier, 1957, p. 322). The authors concluded "The superiority of the developmental discussion seems to depend upon two things: it assures systematic coverage of the topic and it synchronizes the discussion so that all members tend to talk about the same thing at the same time" (Maier & Maier, 1957, p. 323).

According to Pondy (1978) "A great proportion of administrative activity consists of talk in interactional settings, yet talk remains a neglected dimension in accounts of leadership and administration" (as cited in Gronn, 1983, p. 1). Gronn uses a conversational analysis approach to analyze conversations between a school administrator and employees to determine what level interpersonal communication contributes to the overall work of the administrator. Gronn concludes that the administrator "power to control must be worked at linguistically and worked at never-endingly as an ongoing everyday activity" (Gronn, 1983, p. 20).

Schall (1983) proposes the use of a communication-rules perspective to analyze organizations and their cultures. The researcher indicates purpose of this study as a first attempt to measure organization culture through the communication-rules perspective. The researcher concludes, "The outcomes indicate that the integration is effective, because it captured organizational members' worklife experience in ways they assessed as accurate" (Schall, 1983, p. 574). This study raises the question of whether decision-making can be viewed as a form of interpersonal communication.

Dutton and Jackson (1987) propose, "Decision makers' cognitions and motivations systematically affect the processing of issues and the types of organizational actions taken in response to them" (p.76). The authors use categorization theory to frame the internal communications within organizations and test how these communications affect the response to these communications. The authors conclude that "categorizing and labeling an issue as a threat

vs. an opportunity had significant effects on the responses and performances of firms" (Dutton & Jackson, 1987, p. 85).

Boje (1995) uses a case study approach to analyze collective storytelling within organizations. The researcher states, "This question also speaks to important and timely concerns that organizational theorists are raising regarding the need to craft organization theories on the basis of linguistic, rather than mechanistic and organic metaphors" (Boje, 1995, p. 998). The author concludes that the focus of this type of research should examine the role of storytelling work that people in the workplace perform (Boje, 1995).

Huisman (2001) provides a linguistic perspective to view the decision-making process within organizations. This perspective holds that decision-making episodes occur and are shaped by the conversation that occurs within a meeting. Using the talk-in-interaction perspective the researcher found that decisions in meetings tend to be emergent and not necessarily explicitly stated as decisions. When a leader gains agreement throughout a meeting, decisions may be formed and implemented without questioning the effectiveness of the decision being made. When decisions get made in this fashion, people are generally not overtly aware of the decisions that have been made and "can only retrospectively interpret that a decision has been made" (Huisman, 2001).

This type of "dialogical engagement is about establishing interactive contexts wherein change can occur" (Miller, 2009, p. 506). Accordingly, Huisman (2001) regards decisions as emergent noting, "Decisions do not necessarily get explicated as such" (p. 75). The talk-in-interaction perspective shows how decisions are made during meetings through various forms of discourse. Applying the work of Shrivastava and Schneider (1984) on organizational frames of

reference to decision-making provides an argument for leaders to articulate, codify, and implement decisions.

Leaders must work to identify, clarify, and explicitly state the decisions, which have been made during meetings, in order to ensure that everyone is on the same page. The talk-in-interaction perspective helps to illustrate the gaps in actual decision-making processes, as well as the ultimate ownership of decisions. Effective organizational leaders use their power over the meeting to explicitly state the decision along with those responsible for follow-up. Without this final critical element, no one is held accountable for the implementation of the decisions.

Harvey (1988) defines the Abilene Paradox as follows: "Organizations frequently take action in contradiction to what they really want to do and therefore defeat the very purposes they are trying to achieve" (p. 19). Often this is done because no one in the organization wants to speak up against the action that is being proposed. Members of an organization have various reasons why they fail to object to the action being proposed. Harvey (1988) proposes, "The inability to manage agreement, not the inability to manage conflict, is the essential symptom that defines organizations caught in the web of the Abilene Paradox" (p. 19). In the Abilene Paradox, the management of agreement results in defective decision-making. Kim (2001) proposes that the solution to the Abilene Paradox can be addressed through "interventions at the individual level – stressing disclosure, feedback, and owning up to privately-held views" (p. 174).

Borges, Pino, and Valle (2002) provide an empirical study of post-meeting activities and find "without an appropriate follow-up, important decisions made in the previous phase may get lost or be implemented wrongly" (p. 366). The authors propose computer-based support to follow-up on decisions made in meetings. The authors further state, "post-meeting activities

should be explicitly defined and assessed by decision meeting participants" (Borges et al., 2002, p. 372).

Mallon (2004) posits "Conversation is the exchange of information in a participatory context" (p. 8). This quantitative study takes a look at the conversation and decision-making that occurs primarily through computer-aided conversations. Based on the work of Huisman, Mallon (2004) states, "Beyond the activity of simply sharing information and ideas, conversation is a mechanism through which people can plan and make decisions…" (p. 90). Mallon (2004) concludes her study by calling for quantitative research "…that looks at the role of the subconscious in organization and decision-making, the mechanism of practical rationality and narrative ways of knowing this study has made a useful contribution to theory as well as practice" (p. 131).

Group Personality Composition. Groups are made up of individuals who hold their own personal preferences and tendencies. These preferences are often referred to as personality characteristics or profiles. Often, groups are referred to as having their own group culture based on the group's preferences and tendencies. In a review of empirical research, Halfhill, Sundstrom, Lahner, Calderone, and Nielsen (2005) found that just as individuals maintain their own personality, a group personality composition emerges based on the make-up and interactions of group members. Past empirical research has used the "Big Five" personality traits (Anderson, Harr, & Gibb, 2010 and Bolin & Neuman, 2006) and the Myers-Briggs Type Indicator® (MBTI®) instrument (Siegel & Shultz, 2011) to create and discuss group-level personality traits.

Work by LePine, Hollenbeck, Ilgen, and Hedlund (1997) addresses the issue of combining individual psychological attributes into group-level measures in decision-making

teams. The authors propose that characterizations such as intelligence (cognitive ability) and conscientiousness can be measured on the individual level. These individual level attributes are then brought "as resources that influence team effectiveness" (LePine, et al., 1997, p. 804). The findings of this study indicate that decision accuracy was highest for groups where the leader and group members were high on both general cognitive ability and conscientiousness. Additional findings show that a team was only as strong as the group's weakest member, in terms of cognitive ability and conscientiousness, provided the weakest member was not the leader. In this study, team member's ability and conscientiousness resulted in different effects. This study also used post-hoc qualitative analysis to help explain their findings, which indicate that having a team member with low cognitive ability causes team members to exhibit helping behavior. The authors defined helping behavior as sharing information with low-ability staff persons even without these staff persons requesting help. While, on the other hand, team members with low-conscientiousness scores had requests to the group for help largely ignored and helping behaviors such as sharing information were not exhibited towards these team members.

Randall, Resick, and DeChurch (2011) indicate that previous research has found that team member information sharing was positively related to decision effectiveness. These authors examined team adaptive capacity of information-driven project teams using based on Motivated Information Processing in Groups theory (MIP-G). In their empirical study they found team psychological collectivism was positively related to team information sharing. The authors conclude, "…by indicating that psychological collectivism composition provides motivation to engage in information sharing behaviors and enable adaptive performance in project teams" (p. 535).

The bulk of past research on group psychological characteristics has focused on either the Myers-Briggs Type Indicator® (MBTI®) instrument or the Five Factor Inventory (FFI). Siegel and Shultz (2011) provide a review of previous studies that uses the MBTI® instrument and conclude the personality factors in the MBTI® instrument studies have yielded inconsistent results. Conversely, Siegel and Shultz (2011) also state "The reliability of the FIRO-B® (Fundamental Interpersonal Relations Orientation-Behavior™) scales is excellent and has evidenced stability over time" (p. 47). Thus these authors call for additional research using the FIRO-B® instrument.

In an empirical study by Bolin and Neuman (2006) the authors assessed the impact of group-level personality using the Five Factor Inventory on the processes and outcomes of brainstorming groups. The FFI measures the personality dimensions of openness, extraversion, and emotional stability. Specifically the researchers hypothesized the dimensions of openness, extraversion, and emotional stability would be mediated by the block process variables of production blocking, evaluation apprehension, and social loafing resulting in a higher quantity and quality of idea generation in brainstorming groups. Inconsistent with previous research this study failed to find a significant relationship between the dimensions of the FFI and the process variables. However, the authors noted that future research should look at the factor of conscientiousness.

Schutz developed the FIRO-B® assessment as an indicator of interactive behaviors. The FIRO-B® instrument measures interactive behaviors using the scales: expressed inclusion (eI), wanted inclusion (wI), expressed control (eC), wanted control (wC), expressed affection (eA) and wanted affection (wA). Schutz defines the expressed behaviors as the process that individuals and groups show behaviors toward others, while conversely defining wanted

behaviors as those processes that individuals want shown to them. Schutz states, "…behavior in the three interpersonal areas should be observable in the interaction of groups" (p. 48). Schutz (1958) theorized and provides a discussion on group dynamics, which indicates that, the imparting of information within the group, interpersonal learning from others in the group, and group cohesiveness affect the interpersonal relationships of the group. As early as 1966 authors have used the mean scores on the FIRO-B® instrument to describe group-level personality interactions (Biggs, Huneyager, & Delaney, 1966).

Recent research has aggregated the personality of individuals to look at group personality using the FIRO-B® instrument with internal auditors (Siegel & Schultz, 2011). This empirical study created an index to test the traditional FIRO-B® assessment factors of inclusion, control, and affection on both expressed and wanted scales. In addition, this study included the factor of "group warmth" on both the expressed and wanted scales, as identified by past researchers. Adding the inclusion and affection scores together created the group warmth factor. Together the researchers created the Social Index Indicator (SII). The authors found significant differences in internal auditors on the overall SII, however there were no statistically significant differences on individual dimensions of the FIRO-B® instrument between internal auditors and external auditors.

Summary and Gaps in Group Personality Composition. Currently, little peer-reviewed empirical studies have looked at the impact on the group-level expressed psychological characteristics from the FIRO-B® assessment results and its impact on group information sharing. Based on the calls for additional research on the FIRO-B® assessment and the lack of empirical work showing the impact on group information sharing this study seeks to fill in those gaps.

CHAPTER 3

Conceptual Framework

Introduction

In this chapter, the conceptual framework of group personality composition, group information sharing (GIS), and group decision effectiveness (GDE) is presented. The conceptual framework is divided into three sections. The initial section provides a brief overview of the research constructs. The second section discusses the relationship between group information sharing and group personality composition. This section then discusses the relationship between group information sharing and group decision effectiveness. The final section provides a model to test the impact of group personality composition on group decision effectiveness.

The present study explores three central research questions about group decision-making processes:

1. How does group information sharing impact group decision effectiveness?
2. How does group personality composition impact group information sharing?
3. How does group personality composition impact group decision effectiveness?

Overview & Research Constructs

Larson, Christenson, Franz, & Abbot (1998) conclude organizations rely on groups to make important decisions for a variety of reasons. These authors posit that some reasons may include these groups having greater access to expertise, having greater diversity of information (Larson, et al., 1998), and promoting knowledge transfer within the organization (Greitemyer, Schulz-Hardt, Brodbeck, & Frey, 2006). Because organizations rely heavily on groups, past research has shown various ways that group information sharing impacts group decision

effectiveness. Research has shown when groups share more information it increases the group's decision effectiveness, especially in hidden profile scenarios (Stasser & Titus, 1985). The authors define hidden profile scenarios as those in which some information is shared among group members and other information is unshared. In other words, shared information among group members means everyone will have overlapping or pooled information, while unshared information is unique to an individual and is not overlapping or pooled with the broader group.

Additional research has shown a decrease in group decision effectiveness when groups share less information or only share information that is common to other group members (Larson, Foster-Fishman, & Keys, 1994). However, other research shows that when groups have a history of working together they can fall into a defective decision trap, by either not surfacing all available information within the group or prematurely coming to a conclusion (Kayes, Kayes, & Kolb, 2005; Postmes, Spears, & Cihangir, 2001).

The literature on group information sharing as it relates to group decision effectiveness indicates that a variety of factors have been tested to help explain the relationship between these two elements. The research to date has built upon the work of Stasser and Titus (1985) primarily using an information-pooling model. More recent theory development has begun to question whether group research should move beyond this model (Steinel, Utz, & Koning, 2010; Wittenbaum, Hollingshead, & Botero, 2004). In an attempt to answer the call of recent theory development the purpose of this study is to determine if the group personality composition has an impact on group information sharing and subsequent group decision effectiveness. This study is grounded in the theoretical orientation of the input-process-output (IPO) model (Driskell, Hogan, & Salas, 1987; McGrath, 1984) and views group personality composition as the input, group information sharing as a process, and group decision effectiveness as the outcome.

Group Information Sharing Related to Group Personality Composition

Academicians, consultants, and leaders have long surmised that increased group information sharing would lead to increased group decision effectiveness. However, empirical evidence suggests mixed results. In a meta-analysis Hinsz, Tindale and Vollrath (1997) assert, "At the group level, information processing involves the degree to which information, ideas, or cognitive processes are shared, and are being shared, among the group members and how this sharing of information affects both individual- and group-level outcomes" (p. 43). For the purposes of this study and consistent with the view of Hinsz et al. (1997) group information sharing is defined as the ability of the group to combine knowledge. Group information sharing has been studied through a variety of disciplines such as group cognition, organizational knowledge, organizational learning, network theory, and group decision-making. The focus of this study will be to examine how group personality composition impacts group information sharing and thus impacts group decision effectiveness.

Group Information Sharing. A shared awareness among group members that a decision has been made is important because in many decision-making episodes the group is not explicitly aware when the decision has been made (Huisman, 2001). In a study using conversation analysis, Huisman concludes that in many decision-making episodes group members are only able to determine looking back at the episode retrospectively that a decision was made. Huisman discusses this in terms of "retrospective sensemaking" within groups. Thus in this study, the assumption is if team members are actually aware of the decision, then greater team effectiveness could be indicated.

According to Hinsz et al. (1997) group decision-making research has shifted from a shared versus unshared information paradigm to an information-processing paradigm. In a meta-

analysis focused on intragroup processes Kerr and Tindale (2004) found that previous group research has been focused on the individual-level of cognition about the group. The authors go on to conclude, "So far the strongest efforts have been made to apply individual-level cognitive and information processing models to the analysis of group processes…" (p. 641), thus supporting the assertion of Hinsz et al. (1997).

Empirical evidence suggests mixed results on the impact of the effects of group information sharing on group decision effectiveness. Kayes, Kayes, and Kolb (2005) state that group cohesion is an important factor for group decision-making, however it should be actively managed to ensure the group is open to more data (information sharing) during decision-making to prevent defective decisions. A recent empirical study by Randall, Resick, and DeChurch (2011) looked at reactive strategy adaptation (RSA) related to team decision effectiveness. The authors define RSA as the ability to alter existing strategies based on unanticipated changes in the performance environment. They proposed RSA would be mediated by information sharing and team decision effectiveness. This study found a significant positive relationship between reactive strategy adaptation and team decision effectiveness. However, this study failed to find a significant relationship between information sharing and team decision effectiveness as a mediator. However, there are many studies that indicate a positive relationship between information sharing and decision effectiveness at the group level (e.g. De Dreu, 2007; Laughlin, VanderStoep, & Hollingshead, 1991; Stasser & Titus, 1985).

Stasser and Titus (1985) proposed that groups who were given a hidden profile, where some information was shared (overlapping information) and other information was unshared (unique information), the group would make more effective decisions when they were able to surface and pool the overlapping information and the unique information. These researchers

used the biased sampling model. The bias sampling model states that when groups are confronted with a consensus requirement they are faced with a bias in two ways. There is a bias toward shared information and there is a bias in favor of current group preferences. The findings of this seminal study using a political caucus simulation showed that groups who had unshared information did not entirely pool their unique information with other group members and focused primarily on the overlapping (shared) information. Groups who focused on shared information versus the total pool of information available to the group reduced the likelihood that the best candidate based on the preponderance of information available was chosen by the group. In summary, groups who increase the total information shared within the group increased the group's decision effectiveness.

Laughlin, VanderSteop, and Hollingshead (1991) propose that groups make better decisions than individuals because they are able to combine nonredundant information, see patterns individuals would not see alone, and reject errors. Their overall view of groups is that they can process more information than individuals are able to, thus resulting in better decisions. In an empirical study Laughlin et al. (1991) found that groups perform better on average than individuals, groups reject errors, and groups could process more information than individuals. They also found that groups performed better when a group member suggested the correct solution; however the correct solution did not emerge from group discussion. Thus, this study moves beyond the basic approach that increased group information sharing increases group decision effectiveness by providing characteristics on how this occurs within groups.

Mennecke and Valacich (1998) hypothesized in their empirical study that group decision-making performance would be positively related to group information-sharing performance. The findings of this study partially supported their hypothesis; showing that the only significant

results related to decision quality were the sharing of previously unshared (unique) information. They did not find a significant level of support for information that was initially shared (overlapping information) among group members. In summary, this study confirms the findings of Stasser and Titus (1985) such that surfacing unique (unshared) information increases the overall group decision effectiveness.

De Dreu (2007) posited that groups often focus too much on consensus and shared information while sacrificing the beneficial effects dissent and listening to unshared information. The author hypothesized that cooperative outcome interdependence was related to more information sharing resulting in greater levels of learning and leading to higher levels of team effectiveness. This hypothesis was confirmed when task reflexivity was high, however when task reflexivity was low there was no significant relationship. De Dreu discusses task reflexivity as the extent the group reflects upon the group's objectives, strategies, and processes. Thus, groups with high task reflexivity tend to overtly reflect on these factors; while groups with low task reflexivity do not overtly reflect on the group's objectives, strategies, and processes. De Dreu credits the increase in team effectiveness was due to the mediating variable of learning and not information sharing. Thus, this study does not confirm the results of Stasser and Titus (1985) and broadens the discussion of what factors impact group decision effectiveness.

Baker (2010) replicated the Stasser and Titus (1985) study with undergraduate and graduate students. Consistent with the original study, Baker found that students tended to pool already shared information and neglected to pool unshared information. Baker adds to this knowledge by explaining that students tended to undervalue information that was not already previously shared among group members. In this study, Baker shows that shared information was viewed as true, whereas unshared information was viewed as suspect because all group

members could not confirm this information. In summary, groups must be made aware that the total information within the group is made up of both unique information, that only an individual or a minority of members have, and overlapping information that all group members have. Groups must also be open to accepting and value of the information added by other group members to get a complete picture of the situation.

Though the research is inconclusive, there is growing disagreement about the notion that greater group information sharing leads to a greater level of group decision effectiveness. The variety of research streams seems to stem from the different theoretical perspectives and methodologies used. However, these factors when taken together are showing support for the hypothesis that information sharing impacts decision effectiveness.

Research Question 1: How does group information sharing impact group decision effectiveness? Thus the following hypothesis should be tested:

Hypothesis 1 (H_1): Group information sharing is positively related to group decision effectiveness.

Group Personality Composition. As previously discussed groups are made up of individuals who hold their own personal preferences and tendencies. These preferences are often referred to as personality characteristics or profiles. Often, groups are referred to as having their own group culture based on the group's preferences and tendencies.

Currently, little peer-reviewed empirical studies have looked at the impact on the group-level expressed psychological characteristics from the FIRO-B® instrument and its impact on group information sharing. Based on the calls for additional research on the FIRO-B® assessment and the lack of empirical work showing the impact on group information sharing this study seeks to fill in those gaps.

Expressed inclusion is defined as the process in which individuals and groups show inclusion behaviors toward others. Varney and Hunady (1978) provide a list of "words commonly associated with an inclusion need are: *belong, communicate, associate, attend,* and *join*" (p. 442). According to Ilgen, Hollenbeck, Johnson, and Jundt (2005) inclusion increases the sense of organizational citizenship among group members, thus having a positive impact on the quality and quantity of team performance. Since inclusion allows group members to readily share information, the greater inclusion should result in a greater amount of information available across the group. Thus, groups with high mean scores on the expressed inclusion scale should provide an environment that positively increases group sharing.

Research Question 2: How does group personality composition impact group information sharing? Consequently, the following is proposed:

Hypothesis 2 (H_2): Group average level scores on the psychological characteristics of expressed inclusion (eI-G) is positively related to group information sharing.

Expressed control is defined as the process in which individuals and groups show controlling behaviors towards others. Varney and Hunady (1978) provide a list of "words associated with control are *authority, dominance, influence,* and *control*" (p. 442). Schutte et al. (2001) states, "control refers to the extent to which a person assumes responsibility, makes decisions, and dominates in relationships" (p. 531). Groups with high mean scores on the expressed control scale will tend to seek dominance over others, thus decreasing the information sharing within the group. Groups with a low mean of expressed control would seem to abdicate control, thus decreasing the information sharing within the group. Since a balance of control allows group's members to more readily share information, this should increase participation among group members, thus increasing information sharing within the group.

Research Question 2: How does group personality composition impact group information sharing? This leads to the following hypothesis:

Hypothesis 3 (H_3): Group average level scores on the psychological characteristic of expressed control (eC-G) is related to group information sharing.

Expressed affection is defined as the process in which individuals and groups act close to others. Varney and Hunaday (1978) include "words associated with affection are *friendly, like, care,* and *concern*" (p. 442). For group members who act close to one another it increases the sense of cohesion, trust, and cohesion among group members. Consistent with the ELT model (Experiential Learning in Teams) provided by Kayes, Kayes, and Kolb (2005), discusses the need to build relationships and maintain good working relationships with group members. Olson, Parayitam, and Bao (2007) discuss the importance of task conflict in more effective group decision-making, while cautioning against relationship conflict as damaging to group decision making. This shows that the variable of affection insulates and protects group members when dealing with task conflict because they are working towards the most effective solution for the organization. However, it also shows that relationship conflict damages the variable of affection among group members and can cause the group to make less effective decisions. Thus, groups with a high mean score on the expressed affection scale should provide an environment that positively increases group sharing.

Research Question 2: How does group personality composition impact group information sharing? Consequently, the following is proposed:

Hypothesis 4 (H_4): Group average level scores on the psychological characteristic of expressed affection (eA-G) is positively related to group information sharing.

In an empirical study by Siegel and Schutlz (2011) the researchers raise the question of the interpersonal relationship effects of group dynamics on the collective individual characteristics that impact groups. Taken together, with the previous hypotheses the right combination of mean scores among the psychological characteristics scales should have a positive impact on group information sharing.

Group Decision Effectiveness

For the purposes of this study, group decision effectiveness (GDE) is defined as whether an action was taken by the group on the critical action areas or strategic issues. Researchers often use case studies with an expert solution to determine decision effectiveness (e.g. Maier & Maier, 1957; Stasser & Titus, 1985). Following the logic of the I-P-O model previously discussed, to organize the review of research, and to capture the hypotheses the following model is presented in Figure 1.

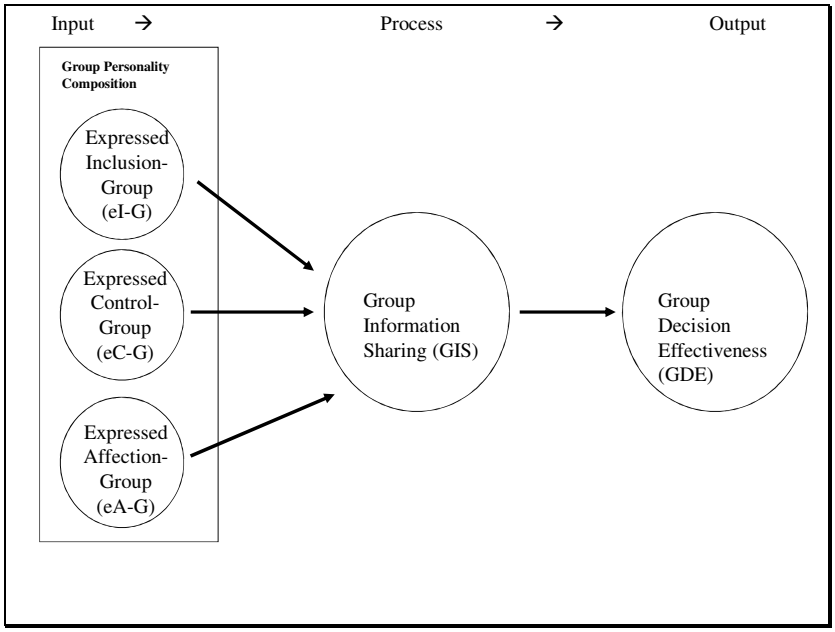

Figure 1. Impact of Group Personality Composition on Group Decision Effectiveness.

In this model, the present study directly compares the influences of group interpersonal psychological factors individually on H_1) group information sharing (GIS) that is proposed to lead to greater group decision effectiveness (GDE). As shown in the diagram H_2) expressed inclusion-group (eI-G) scores are hypothesized to have a positive relationship on group information sharing; H_3) moderate expressed control-group (eC-G) scores are hypothesized to have a positive relationship on group information sharing; and H_4) expressed affection-group (eA-G) scores are hypothesized to have a positive relationship on group information sharing. This study further advocates that groups who have the right combination of group mean scores among psychological characteristics of inclusion, control, and affection will have a positive effect on overall group information sharing.

Research Question 3: How does group personality composition impact group decision effectiveness? Taken together these hypotheses (H_1-H_4) suggest that an overall hypothesis be tested as follows:

> *Hypothesis 5 (H_5): Group interpersonal psychological factors will have a positive relationship on group decision effectiveness and will be mediated by group information sharing.*

In other words, the higher group score on interpersonal psychological factors will increase the information sharing within the group, thus increasing group decision effectiveness.

CHAPTER 4

Methodology

The purpose of this chapter is to describe the research design and discuss the methodology used in this study. The major components are overview of research site and sample selection, operationalization and measurement of variables, instrumentation, reliability and validity, data collection procedures, and data analysis procedures. This chapter was guided by the overall purpose and the research questions as stated in Chapter 1: The purpose of this study is to examine the impact of group personality composition on group decision effectiveness.

The present study explored three central research questions about group decision-making processes:

1. How does group information sharing impact group decision effectiveness?
2. How does group personality composition impact group information sharing?
3. How does group personality composition impact group decision effectiveness?

These three research questions were further examined through the following hypotheses that were developed in Chapter 3: The present study directly compares the influences of group interpersonal psychological factors individually on H_1) group information sharing (GIS) is positively related to group decision effectiveness (GDE); H_2) group average level scores on the psychological characteristic of expressed inclusion-group (eI-G) is positively related to group information sharing; H_3) group average level scores on the psychological characteristic of expressed control-group (eC-G) is related to group information sharing; and H_4) group average level scores on the psychological characteristic of expressed affection-group (eA-G) is positively related to group information sharing. This study also questions whether groups who have a certain combination of group mean scores among psychological characteristics of

expressed inclusion-group (eI-G), expressed control-group (eC-G), and expressed affection-group (eA-G) will have a positive effect on group information sharing. For instance, if group scores are higher on eI-G, moderate on eC-G, and higher on eA-G then there should be more information shared within the group as compared to other score combinations. Taken together these hypotheses suggest that overall H_5) group interpersonal psychological factors will have a positive relationship on decision effectiveness and will be mediated by group information sharing (GIS). In other words, the higher group score on interpersonal psychological factors will increase the information sharing within the group, thus increasing decision effectiveness.

Overview of Research Site & Sample Selection

A sample of 177 groups was selected from those who participated in the Center for Creative Leadership's ® Leading for Organizational Impact: The Looking Glass Experience. This is a five-day leadership development program that uses a one day simulation (Looking Glass Inc.®) to help assess leadership characteristics of the participants. Looking Glass Inc.® has been characterized as an enterprise simulation also known as a complex behavioral simulation (Keys & Wolfe, 1990).

Participants who register for the Leading for Organizational Impact: The Looking Glass Experience at the Center for Creative Leadership® are provided with a battery of assessments prior to participating in the leadership program. These assessments include a 360° performance evaluation and the Fundamental Interpersonal Relations Orientation-Behavior™ (FIRO-B®) assessment. The learning outcomes defined for the program are developing self-awareness, influence, communication, learning agility, working across boundaries, and thinking and acting

strategically. Thus, the simulation does not explicitly make group decision-making one of the learning outcomes.

On the first day of the Leading for Organizational Impact: The Looking Glass Experience, participants are introduced to CCL® (Center for Creative Leadership®) and the other participants, a discussion of the assessments that address personality preferences and interpersonal needs, the results of the FIRO-B® assessment, and an overview to prepare for the Looking Glass, Inc.® simulation. Participants take on roles in various departments and divisions within the corporation. Participants are given a profile of information needed for their role within the simulation. Throughout the information packets there is information specific to the position that only the person in that position knows (unshared information) and there is general information that is known by others participating in the simulation (shared information). Each division within the simulation has its own five critical strategic issues that some members of the division have information about. The five critical strategic issues for the Advanced Products Division (APD) include: LCD plant sale; invoicing problems; internal transfers, product/price; quality; and competitive threats. The five critical strategic issues for the Commercial Glass Division (CGD) include: equipment replacement/upgrade; business consideration (bribes); internal transfers, product/price; quality; and product development funding. The five critical strategic issues for the Industrial Glass Division (IGD) include: equipment replacement/upgrade; plant consolidation; sales practices; rethink product mix; and integrate ABG (Alan-Brooke Glass).

On the second day of the program participants engage in the Looking Glass, Inc.® simulation. The faculty from the CCL® observes and documents participant's behavior throughout the simulation. Finally, an introduction to feedback is provided at the conclusion of

the day. On the third day of the program feedback is used extensively to debrief the simulation. Participants are provided with an opportunity to reflect on the experience and receive peer-to-peer feedback. On the fourth day of the program the focus is on using the 360° evaluation with an emphasis on the participant's response to change as observed in the simulation. On the final day of the program participants create action plans to take back to their organization and is asked to reflect on their own personal responses to change within their organization.

Looking Glass, Inc.® is organized into the following divisions: APD (Advanced Products Division), IGD (Industrial Glass Division), and CGD (Commercial Glass Division). For the purposes of this study executive management is defined by the following roles within the organization: President, Managing Director of Strategic Initiatives (MDSI), and Division Vice Presidents (VP APD, VP IGD, and VP CGD). For a better understanding of the simulation an organizational chart has been included in Appendix A. The remaining participants include all other positions within the simulation and do not include members of the executive management team. The division Vice Presidents has a dual role within the organizational structure, they are part of the executive management team and they are also part of the divisional group they supervise. Because of the dual role the Vice Presidents play they will be included in the group reporting for each division.

At the conclusion of the simulation each participant completes the Process and Issues Questionnaire (PIQ). On day three of the program participants use information from the PIQ as one source of data to debrief the experience within their divisional group. Other sources of data include the peer-to-peer evaluation provided within the divisional group and the observations of the faculty from CCL® during the simulation.

The Looking Glass, Inc.® simulation has the industry edition and the university edition. The sample is made up of 1,180 participants who participated in the Looking Glass, Inc.® industry edition program from 2008 – June 2010 at one of the Center for Creative Leadership® Campuses. The president was elected from each group of participants and all participants were assigned to a division (APD, IGD, or CGD). Within each division the participants selected who would be in each role. Therefore, each participant was "randomly" assigned to his or her roles. The executive management group consisted of 280 participants, while 900 participants made up the rest of the groupings. For the purposes of this study, each division makes up the groups that will be studied.

Generally, the Looking Glass, Inc.® simulation uses two to three divisions depending on the number of people registered for the program. Since this study seeks to examine the research questions at the group-level the sample was consolidated to the 177 unique divisional groups represented in the data range, which represents 68 runs of the simulation. Upon examining the group sizes the researcher found two groups with one person in each group that had been run as a test. For the purposes of comparing similar sized groups who actually participated in the program the researcher decided to drop these two groups. The resulting sample includes 175 groups representing 1,178 individuals. Each run of the simulation ranges in size from 11 to 24 participants. The group size varies from four to eight participants. However all small groups will be treated the same regardless of the number of group members.

To have a better understanding of the Looking Glass, Inc.® simulation the researcher observed one run of the five-day leadership development program. The researcher followed the observer protocol established by the Center for Creative Leadership® as follows: the observer will introduce himself to the class and briefly explain his/her objective; the observer will sit

behind the mirror in the observation room, and use the headphones; the observer will only be allowed to observe the group simulation and may not observe individual feedback sessions; the observer will not in any way interfere with the training process or the trainers' focus on the program; the observer may schedule a convenient time to debrief with the trainers privately at the end of the training day or after the program has ended.

The researcher met with the design and delivery manager at the Center for Creative Leadership® at the conclusion of the simulation. The design and delivery manager also acted as the lead trainer during the five-day leadership program the researcher observed. In addition, the researcher met with the global manager for the Leading for Organizational Impact: Looking Glass Experience program to gain a better understanding of how the program and simulation were designed, delivered, and managed on the various campuses.

The researcher served as an intern in the research department at the Center for Creative Leadership® from June 2010 through August 2010. As part of the researcher's internship and dissertation development the Center for Creative Leadership® shared the data set used in this research study. However, the researcher was not involved in the data collection or the running of any simulation. The data provided by the Center for Creative Leadership® does not provide any identifiers that could be traced back to individual participants. Although data had been previously provided to the researcher as part of the researcher's internship the researcher was required to apply to the Center for Creative Leadership® for permission to use the data for the dissertation research purpose.

The researcher applied for approval through the North Carolina A&T State University's Institution Review Board (IRB) for human subject research. The determination through the IRB office was that the research activity does not require IRB approval because it does not constitute

human subjects research as defined by the federal regulations. The IRB office gave the study the following reference number (#12-0014).

The nature of this research requires the researcher to be familiar with the administration and interpretation of the FIRO-B® instrument used during the simulation. The researcher applied to become authorized to administer the FIRO-B® instrument and to use sample questions from the instrument for research purposes from CPP, Inc. The researcher was granted authorization as an instrument administrator and provided permission to use sample items from the FIRO-B® instrument (CPP Permission #19258).

Operationalization and Measurement of Variables

As a means to test the hypotheses presented above for this study three variables were examined as follows: group psychological profile, group information sharing, and group decision effectiveness.

Variable: Group Psychological Profile. Group psychological profile refers to the group scores for each group member's expressed inclusion (eI), expressed control (eC), and expressed affection (eA) scores as measured by the FIRO-B® assessment. The FIRO-B® instrument contains six scales with nine items per scale. The six scales are identified as expressed inclusion (eI), wanted inclusion (wI), expressed control (eC), wanted control (wC), expressed affection (eA), and wanted affection (wA). However, for the purposes of this study only the three expressed scales will be used. The FIRO-B® assessment is a 54-question inventory that uses the Guttman scale approach (Underwood & Krafft, 1973). According to Hammer and Schnell (2000) "When items are written to be consistent with the Guttman scaling procedures, the items reflect increasing intensity or difficulty of acceptance" (p. 19). The current study uses three of

the six scales of the FIRO-B® instrument. These three are expressed inclusion (eI), expressed control (eC), and expressed affection (eA). Each instrument "has a six-choice [Likert] response format ranging from 'never' to 'usually' for 30 of the items and [a six-choice response] from "nobody" to "most people" for the remaining 24 items" (Dancer & Woods, 2006, p. 386). A complex and proprietary algorithm is used to convert the six-choice Likert responses to a scale ranging from 0-9. The individual scores for each scale ranges from 0-9. Scores ranging from 0-3 on each scale is considered a low score; scores ranging from 4-5 on each scale is considered a moderate score; and scores ranging from 6-9 on each scale is considered a high score (Hammer & Schnell, 2000) (see Table 1). A composite index was created for each scale to represent a group score on the items of expressed inclusion-group (eI-G), expressed control-group (eC-G), and expressed affection-group (eA-G). Consistent with the ranges for individual scores, the composite index will convert individual scores into group scores by averaging the scores of each group member on each item of expressed inclusion (eI), expressed control (eC), and expressed affection (eA) (see Table 2).

The sample items for the FIRO-B® instrument are provided in Appendix B. The construct, expressed inclusion (eI), is measured through nine questions on the instrument such as: I try to include other people in my plans. The construct, expressed control (eC), is measured through nine questions such as: I try to be the dominant person when I am with people. The construct, expressed affection (eA), is measured through nine questions such as: I try to have close relationships with people.

Variable: Group Information Sharing. Group information sharing refers to the average of each group member's percent of information known where the percent of information known is calculated as the number of items checked in question number five on the Process and Issues

Questionnaire (PIQ) divided by the total number of items in question number five found in Appendix C (see Table 2). The question asks participants to indicate whether or not they knew information that covered between 33 to 36 distinct areas. Responses are coded on a "yes" or "no" response scale of whether or not they knew the information. There are three versions of the PIQ, one for each division. The Advanced Products Division PIQ has 33 variables in question number five, the Commercial Glass Division has 35 variables in question number five, and the Industrial Glass Division has 36 variables in question number five. The total items in question number five represents pieces of knowledge that individuals have. At the group-level the more of the items that are indicated are known by group members represents the higher combined knowledge for the group.

Variable: Group Decision Effectiveness. Group decision effectiveness refers to whether an action was taken by the group on the critical action areas defined in question number four on the PIQ found in Appendix D. The PIQ identifies five issues in each division for group members to rate with the following four response options: action taken (AT), no action taken (NA), the issue was discussed or deferred (DD), or the group member does not know (DK). This question also allows group members to identify the primary person responsible for driving the issue or action toward conclusion. A group score for action taken was calculated (see Table 2). The criteria for deciding if the group decided to take action is that 50% or more of the group must identify that a critical action was taken by their group in question number four. An index ranging from 0 to 5 was created for group effectiveness for each group. While there are four critical action issues identified in question number four on the PIQ, each division has their own unique set of critical issues. The PIQ identifies the issues in each division with the data coded as

action taken (AT) is equal to one and all other responses are equal to zero, therefore the data gathered is organized into an index used as a continuous variable (see Table 1).

Table 1

Summary of Individual Quantitative Measures

Measure	Description	Source	Scale
Expressed Inclusion (eI)	The extent to which a person includes others	FIRO-B®	A scale from 0-9: 0-3 Low eI 4-5 Moderate eI 6-9 High eI
Expressed Control (eC)	The extent to which a person want to have control	FIRO-B®	0-3 Low eC 4-5 Moderate eC 6-9 High eC
Expressed Affection (eA)	The extent to which a person or group acts close to others	FIRO-B®	0-3 Low eA 4-5 Moderate eA 6-9 High eA
Information Sharing	Information known	PIQ Q#5	Numerical amount of information known
Decision Effectiveness	Action taken on strategic issues	PIQ Q#4	Numerical amount of action taken versus other responses

Table 2

Summary Operationalization of Group Variables

Measure	**Description**	**Source**	**Scale**
Expressed Inclusion-Group (eI-G)	Average group expressed inclusion scores	FIRO-B®	Group scale 0-9: 0-3 Low eI-G 4-5 Moderate eI-G 6-9 High eI-G
Expressed Control-Group (eC-G)	Average group expressed control scores	FIRO-B®	Group scale 0-9: 0-3 Low eC-G 4-5 Moderate eC-G 6-9 High eC-G
Expressed Affection-Group (eA-G)	Average group expressed affection scores	FIRO-B®	Group scale 0-9: 0-3 Low eA-G 4-5 Moderate eA-G 6-9 High eA-G
Group Information Sharing (GIS)	Percent of information known	PIQ Q#5	% of information known
Group Decision Effectiveness (GDE)	Action taken on strategic issues	PIQ Q#4	% of action taken versus other responses

Instrumentation

This study utilized data that was collected by the Center for Creative Leadership®. A personality assessment and a survey instrument were used to collect data for this study. The

personality assessment used was the FIRO-B® instrument, which was administered online prior to the participants arriving at the leadership simulation conducted by the Center for Creative Leadership®. The FIRO-B® instrument was administered as an intact instrument.

At the conclusion of the simulation a survey instrument known as the PIQ was used to collect information about the participant's experience in the simulation. The PIQ data collection is aligned to capture data that is subsequently used in debriefing the Looking Glass, Inc.® simulation (Campbell, McLaughlin, Scharlatt, & Trovas, 2008). The authors emphasized that "The PIQ allows participants to reflect on their experience and provide insights on how individual, group, and corporate needs and issues interweave and sometimes compete with each other" (p. 1).

Reliability and Validity

Schutz developed the Fundamental Interpersonal Relations Orientation-Behavior™ (FIRO-B®) assessment as an indicator of expressed and wanted interactive behaviors. Schutz (1958) indicates the FIRO-B® instrument was developed to see how individual personality affected interpersonal relationships within groups. The FIRO-B® instrument has been used to describe group-level personality interactions since 1966 (Biggs, Huneyager, & Delaney, 1966). Siegel and Shultz (2011) state "The reliability of the FIRO-B® scale is excellent and has evidenced stability over time" (p. 47). The current research creates a group FIRO-B® assessment score for each dimension of expressed inclusion-group, expressed control-group, and expressed affection-group.

Data Collection Procedures

Data for this study uses existing data collected by the Center for Creative Leadership®. Prior to participants attending the Looking Glass Experience the participants complete the FIRO-B® personality assessment. At the conclusion of each run of the Looking Glass Experience participants complete the "Process and Issues Questionnaire" (PIQ). These two data points are reported at the individual-level; therefore the data is matched with the participant's group to create group-level scores for both the FIRO-B® personality assessment and the PIQ.

Data Analysis Procedures

The data analysis procedures and the identification of independent and dependent variables are discussed in this section. Depending on the hypothesis each of the variables previously discussed will be analyzed differently. In H_1) group information sharing is positively related to group decision effectiveness this hypothesis is analyzed using correlation analysis.

Correlation analysis is used to analyze the group psychological characteristics (H_2, H_3, & H_4,) based on an index created for each group where the data is represented by a range: H_2) group average level scores on the psychological characteristic of expressed inclusion-group (eI-G) is positively related to group information sharing; H_3) group average level scores on the psychological characteristic of expressed control-group (eC-G) is related to group information sharing; and H_4) group average level scores on the psychological characteristic of expressed affection-group (eA-G) is positively related to group information sharing.

A mediated regression analysis is used to analyze H_5) group interpersonal psychological factors are predicted to have a positive relationship on group decision effectiveness and will be mediated by group information sharing. Mediated regression requires that four steps are done in

order to determine if mediation exists. According to Baron and Kenny (1986) these steps are as follows: 1) show that an initial variable is correlated with the outcome; 2) show the initial variable is correlated with the mediator; 3) show that the mediator affects the outcome variable; and 4) establish that the mediator completely mediates the relationship.

Scale Reliability. The researcher used SPSS 20 to calculate Cronbach's Alpha (α) for each of the following scales: scale 1) expressed inclusion (eI); scale 2) expressed control (eC); scale 3) expressed affection (eA); and scale 4) group information sharing (GIS) as shown in Table 3.

Table 3

Reliability Table for Individual Psychological Characteristics

Scale	**Cronbach's Alpha (α)**
Scale 1 – Expressed Inclusion (eI)	.882
Scale 2 – Expressed Control (eC)	.912
Scale 3 – Expressed Affection (eA)	.712
Scale 4 – Group Information Sharing (GIS)	.713

The purpose for calculating Cronbach's Alpha was to determine the internal consistency and reliability of the scales and sample used in this research study. The eI construct consisted of nine items (α= .882) indicating good internal consistency. The eC construct consisted of nine items (α= .912) indicating excellent internal consistency. The eA construct consisted of nine items (α= .712) indicating an acceptable level of internal consistency. The GIS scale consisted of a range of 33 to 36 items (α= .713) indicating an acceptable level of internal consistency.

CHAPTER 5

Analysis of Results

In this chapter the results from the data analysis is presented. The main components of this chapter include a description of the sample, reporting on the descriptive statistics, and results of the data analysis. A more detailed interpretation of the results, discussions, and implications can be found in chapter 6.

Description of the Sample

A sample of 175 groups was selected from those who participated in the Center for Creative Leadership's ® Leading for Organizational Impact: The Looking Glass Experience. The sample represented 1,178 individuals who participated in the program from January 2008 through June 2010. The 175 groups had a range of four to eight participants with a mean of 6.10 participants in each group. The demographics of this sample are analyzed in the subsequent section.

Demographic

The Center for Creative Leadership® collects demographic information for the participants of the Looking Glass Inc.® simulation. For the sample used in this research study there were a total of 1,178 participants. The following demographics are described in this section: age, gender, race, highest level of education attained, and the participant's level within their organization.

Age. The participants of the Looking Glass Inc.® simulation self-reported age. Of the age reported the usable range was from 25-66, which represents 1,162 participants who

responded to this question. The mean age of the sample was 43.5 years old with a standard deviation of 7.285 years. Missing data accounted for 16 participants.

Gender. In the area of gender this sample represents 735 (62.4%) male participants, 439 (37.3%) female participants, and four (0.3%) respondents who did not report gender (Table 4).

Table 4

Demographics – Gender

Characteristic	***n***	**%**
Gender (*n* = 1,174)		
Male	735	62.4
Female	439	37.3

Race. The Looking Glass, Inc.® simulation is a multi-national program that is administered at several of the Center for Creative Leadership® campuses throughout the world. For the sample used in this research study race was consolidated into major categories of Caucasian, Africa American, Asian, and Other. The sample represented 828 (70.3%) Caucasian participants; 63 (5.3%) Africa American participants, 58 (4.9%) Asian participants, and 206 (17.6%) participants who are classified as other (Table 5). Strikingly, the category "other" represents the second largest distribution of participants when grouped together. The "other" category included responses such as American Indian or Alaskan Native, Hawaiian or Pacific Islander, Hispanic, Multiracial, and Other (please specify). Individually all of these groups were small with the largest group representing 142 of the 206 "other" responses. Finally, 23 (2%) of the participants did not respond to.

Table 5

Demographics - Race

Characteristic	***n***	**%**
Race (*n* = 1,155)		
Caucasian	828	70.3
African American	63	5.3
Asian	58	4.9
Other	206	17.6

Educational Level. Participants in the Looking Glass Experience also come to the leadership development program with varying levels of formal education. The sample used in this research study responded that the highest level of education completed was as follows: 42 (3.6%) participants reported High School diploma, 39 (3.3%) participants reported an Associate's degree, 453 (38.5%) participants reported a Bachelor's degree, 462 (39.2%) indicated a Master's degree, and 147 (12.5%) participants reported a Doctorate/Professional Degree (e.g. Ph.D., Ed.D., JD, MD). Doctorate/Professional was consolidated into one classification. With the participants who reported a Doctorate or Professional Degree 58% reported a Doctorate, while the remaining 42% reported a Professional Degree. In the area of education 32 (2.7%) participants indicated other as their highest level of education and three (0.3%) participants did not respond. This information has been summarized in Table 6.

Table 6

Demographics – Educational Level

Characteristic	***n***	**%**
Educational Level (n = 1,175)		
High School	42	3.6
Associate's	39	3.3
Bachelor's	453	38.5
Master's	462	39.2
Doctorate/Professional	147	12.5

Organizational Level. The participants of the Looking Glass Experience leadership development program occupy a variety of positions within the organization or business they work for. The participants indicated their level within the organization as follows: 45 (3.8%) participants reported being Top level primarily in C-level positions, 316 (26.8%) participants indicated they were at the Executive level in positions such as Vice President, 449 (38.1%) reported being at the Upper Middle level in positions such as department head or plant manager, 242 (20.5%) participants indicated they were Middle level in positions considered managerial senior professionals, 38 (3.2%) participants responded they were at the First Level in supervisory professional positions, six (0.5%) indicated they were hourly in technical or clerical positions, 17 (1.4%) participants responded that the organizational level was not relevant to their situation, and 65 (5.5%) participants did not respond (Table 7).

Table 7

Demographics - Organizational Level

Characteristic	***n***	**%**
Organizational Level (*n* = 1,113)		
Top	45	3.8
Executive	316	26.8
Upper Middle	449	38.1
Middle	242	20.5
First Level	38	3.2
Hourly	6	.5
Not relevant	17	1.4

Independent and Dependent Variables

The descriptive statistics for the psychological characteristics were calculated at the individual level for the sample of 1,178 participants. The psychological characteristics expressed inclusion (eI), expressed control (eC), and expressed affection (eA) is measured on a scale ranging from zero to nine. For the sample studied the mean score for all participants was as follows: eI was 4.01 with a standard deviation of 2.237; the mean score for eC was 4.55 with a standard deviation of 2.676; and the mean score for eA was 4.14 with a standard deviation of 2.402 (Table 8).

Next, the descriptive statistics for the group psychological characteristics were calculated for the 175 groups. These psychological characteristics are reported as expressed inclusion-

group (eI-G), expressed control-group (eC-G), and expressed affection-group (eA-G). For the groups studied the range of eI-G was 2.20 to 6.0 with a mean score of 3.97 and a standard deviation of .855; the range for eC-G was 2.0 to 7.33 with a mean score of 4.545 and a standard deviation of 1.120; and the range for eA-G was 1.4 to 7.0 with a mean score of 4.143 and a standard deviation of .916 (Table 8).

Group information sharing (GIS) was measured by the percent of information known within the group. The range of information available among the groups ranged from a minimum of 39% to a maximum of 83%. The mean for group information sharing was 60.24% with a standard deviation of 6.08% (Table 8).

Group decision effectiveness (GDE) was measured by an index ranging from zero to five each group. The criteria for deciding if the group decided to take action is that 50% or more of the group must identify that a critical action was taken by their group in question number four. The range for group decision effectiveness was a minimum of zero and a maximum of three based on the criteria created. The mean for group decision effectiveness was .549 with a standard deviation of .756 (Table 8).

Table 8

Means and Standard Deviations

Variable	***M***	***SD***
eI (*n* = 1,178)	4.01	2.237
eC (*n* = 1,178)	4.55	2.676
eA (*n=1,178)*	4.14	2.402
eI-G (*n* = 175)	3.974	.855

Table 8 (Continued)

Means and Standard Deviations

eC-G (*n* = 175)	4.545	1.120
eA-G (*n* = 175)	4.143	.916
GIS (*n* = 175)	.602	.061
GDE (*n* = 175)	.549	.756

Note: Expressed Inclusion (eI), Expressed Control (eC), Expressed Affection (eA), Expressed Inclusion-Group (eI-G), Expressed Affection-Group, Expressed Control-Group, Group Information Sharing (GIS), and Group Decision Effectiveness (GDE).

Results of Analysis

Correlations. Correlations coefficients were performed for each of the variables at the group level. Only two variables had a significant correlation and they were strongly correlated. The variable GIS (group information sharing) was significantly positively correlated (*r*=.224) with GDE (group decision effectiveness) with p=.003 (Table 9). The correlations indicate the greater the group information sharing (GIS), then the greater the group decision effectiveness (GDE).

The variable eI-G (expressed inclusion-group) was significantly positively correlated (.409) with eA-G (expressed affection-group) at the p≤.05 level with p=.0001 (Table 9). The correlations indicate the greater the expressed inclusion-group (eI-G), then the greater the expressed affection-group (eA-G). The correlation between expressed inclusion and expressed affection at the group level was not hypothesized.

There were no significant correlations at the p≤.05 level or greater to suggest that any of the group psychological characteristics were related to group information sharing. Thus, the

thought that as expressed inclusion-group, expressed control-group, and/or expressed affection-group increase group information sharing would also increase.

Table 9

Correlations

	eI-G	eC-G	eA-G	GIS	GDE
eI-G	-	.102	.409***	-.058	-.040
eC-G		-	.002	-.075	.032
eA-G			-	.047	.026
GIS				-	.224**
GDE					-

Note: Expressed Inclusion-Group (eI-G), Expressed Control-Group (eC-G), Expressed Affection-Group, Group Information Sharing (GIS), and Group Decision Effectiveness (GDE).
*p≤.05 **p≤.01 ***p≤.001

Mediated Regression. Using the Barron and Kenny model, discussed in Chapter 4, to test for mediation the initial variable (group psychological factors) must be correlated with the outcome (group decision effectiveness). The second step is to show that the initial variable (group psychological factors) must be correlated with the mediator (group information sharing). The third step is to show that the mediator (group information sharing) affects the outcome variable (group decision effectiveness). The final step is to establish that the mediator (group information sharing) completely mediates the relationship between group psychological factors and group decision effectiveness.

Complying with step one of the Barron and Kenny model, there is no significant correlation between the group psychological factors and group decision effectiveness (Table 9); therefore the remaining steps to determine mediation are no longer applicable.

Multiple Regression. Multiple regression analysis is used to determine the relationship between multiple independent variables and a dependent variable. For this study, multiple regression analysis was conducted with the dependent variables indicated as psychological characteristics expressed inclusion-group (eI-G), expressed control-group (eC-G), and expressed affection-group (eA-G) regressed on the independent variable of group decision effectiveness (GDE). The results of this multiple regression analysis did not yield a significant relationship between the group psychological characteristics and group decision effectiveness (Table 10).

Table 10

Multiple Regression Analysis for Group Decision Effectiveness

Variable	***B***	***SE B***	**β**	***t***	***p***
eI-G	-.057	.074	-.065	-.773	.441
eC-G	.026	.052	.039	.504	.615
eA-G	.043	.069	.052	.627	.532

Note: N = 175. Expressed Inclusion-Group (eI-G), Expressed Control-Group (eC-G), and Expressed Affection-Group (eA-G).

Another multiple regression analysis was conducted with the dependent variables indicated as psychological characteristics and group information sharing (GIS). The results of this analysis indicate based on the variable entered into the model for analysis that GIS is the strongest predictor on group decision making. For each unit increase in group information sharing there is a .224 increase in group decision effectiveness (Table 11). This is consistent with the correlation results.

Table 11

Multiple Regression Analysis Summary for Group Decision Effectiveness

Variable	***B***	***SE B***	***β***	***t***	***p***
eI-G	-.041	.073	-.046	-.560	.576
eC-G	.036	.051	.054	.713	.477
eA-G	.028	.068	.034	.418	.677
GIS	2.782	.933	.224	2.983	.003**

Note: N = 175. *p≤.05 **p≤.01 ***p≤.001

Summary of Results

The results provided statistical answers to the research questions posed at the beginning of this study and the subsequent hypotheses. The characteristics of the sample population were described and the model set forth in Chapter 3 was tested. A detailed discussion on the research and interpretation of the implications are detailed in the subsequent chapter.

CHAPTER 6

Discussion

The purpose of the present study was to examine the impact of group psychological composition on group decision effectiveness. Previous research has examined the impact of group psychological characteristics on communication (Randall, Resick, & Dechurch, 2011) and emotional intelligence (LePine, Hollenbeck, Ilgen, & Hedlund, 1997). However, little research has made an explicit connection between group psychological composition using the FIRO-B® instrument, group information sharing, and group decision effectiveness.

In this chapter a detailed discussion of the study, implications, limitations, and recommendations for further studies are presented.

Summary of Research Findings

The present study explored three central research questions about group decision-making processes and the hypotheses that followed. Research question 1: How does group information sharing impact group decision effectiveness? This indicated that the following hypothesis should be tested (H_1): Group information sharing will be positively related to group decision effectiveness, that is the greater the information sharing among group members, the greater the group decision effectiveness will be.

The results of this research indicated that the variable GIS (group information sharing) was significantly positively correlated (.224) with GDE (group decision effectiveness) at the $p \leq .05$ level (Table 9), thus providing support for Hypothesis 1 that increased information sharing among group members would lead to greater decision effectiveness. In this study, for every unit increase in group information sharing, there is a .224 increase in group decision effectiveness.

The association of group information sharing and group decision effectiveness was further supported when analyzed using multiple regression analysis. When controlling for all of the variables presented in the research model (Figure 2) group information sharing was the only significant independent variable (Table 11).

The findings of this research study are consistent with prior research on group information sharing (Larson, Foster-Fishman, & Keys, 1994; Stasser & Titus, 1985). Stasser and Titus (1985) proposed the sharing of unique and overlapping information would lead to more effective decisions. However, they found that groups tend to focus on information that many group members had access to (overlapping information) and tended to focus less on information that only few group members had access to (unique information). The current research study indicates that group information sharing (GIS) is the strongest predictor on group decision effectiveness (GDE) in the model tested. The results of this study does not indicate that group personality composition impacts group information sharing, thus calling into question what factors would actually increase group information sharing.

Then, research question 2: How does group personality composition impact group information sharing (GIS)? This indicated that the following hypotheses should be tested (H_2): Group average level sores on the psychological characteristics of expressed inclusion-group (eI-G) will be positively related to group information sharing; (H_3): Group average level scores on the psychological characteristics of expressed control-group (eC-G) will be related to group information sharing; and (H_4): Group average level scores on the psychological characteristic of expressed affection-group (eA-G) will related to group information sharing, that is as group psychological characteristic scores increase there should be more information sharing within the group. There were no correlations at the $p \leq .05$ level, thus in this study there was no significant

relationship indicated between group psychological characteristics and group information sharing. The results of this study did not find support for Hypotheses 2-4.

The results for Hypotheses 2-4 were surprising because previous research by Halfhill, Sundstrom, Lahner, Calderone, and Nielsen (2005) indicates that a group personality emerges based on the make-up and interactions of group members. Other researchers found that group personality as indicated by psychological collectivism increased group information sharing (Randall, Resick, & DeChurch, 2011). While previous research on group simulations (McCall & Lombardo, 1982) support the validity using simulations, this particular simulation brings together participants with no prior work experience. Thus, one explanation for group personality composition not playing a significant role in group information sharing could be because there has not been enough time for a group personality to form and emerge. Another explanation could be the simulation represents what some researchers have termed as a "strong situations" which means the demands of the simulation may account for the behavior observed in the simulation versus the individual and/or group personality (Beaty, Cleveland, & Murphy, 2001).

Next, research question 3: How does group personality composition impact group decision effectiveness? This indicated that the following hypothesis should be tested (H_5): group interpersonal psychological factors will have a positive relationship on group decision effectiveness (GDE) and will be mediated by group information sharing. This hypothesis suggests a test of the overall model presented (Figure 1) using a mediated regression analysis. Using the four-step process proposed by Barron and Kenny (1986), the mediated regression analysis did not meet the criteria in step one for mediation, therefore the results of this study does not support this hypothesis.

However, when a multiple regression analysis was conducted for the psychological characteristics and group information sharing (GIS), the results indicated that GIS is the strongest predictor on group decision effectiveness (GDE). Previous research supports that interpersonal relationship effects impacts groups (Siegel and Schutz, 2011); it is not yet clear how group psychological factors influence either group information sharing (GIS) or group decision effectiveness (GDE).

Relationship of the Findings to Prior Research

The present study provides support to previous research that group information sharing has a positive impact on group decision effectiveness such as research presented by Stasser and Titus (1985). Stasser and Titus used a bias sampling model and found that when group members were able to share information unknown to other group members it increased group decision effectiveness, however in many cases groups tended to focus too much on information that was already known by the majority of group members. Previous research taken together is inconclusive and there is growing disagreement about the notion that greater group information sharing leads to a greater level of group decision effectiveness (e.g. De Dreu, 2007 and Stasser & Titus, 1985). The current research study affirms that group information sharing increases group decision effectiveness and examines the conditions necessary for groups to share more information such as group psychological profile, thereby making more effective group decisions.

Although the present research study affirms previous research related to the impact of group information sharing on group decision effectiveness there still is little clarity on what conditions are necessary for groups to share information. There is also still little clarity on how

to get groups to focus on unique information instead of focusing on information that is known by all group members during episodes of group information sharing and group decision-making.

There was no known previous research on how group interpersonal psychological factors as measured by the FIRO-B® instrument that impact group information sharing, however this study fills the gap by indicating that these factors may not have an impact on group information sharing. In other words, in an effort to determine what conditions are necessary for groups to share more information group personality profile was examined. Previous studies have examined the impact of group personality on group decision effectiveness using other instruments such as the Myers-Briggs Type Indicator® (MBTI®) and the Five Factor Inventory (FFI). In a study by Halfhill, Sundstrom, Lahner, Calderone, and Nielsen (2005) the researchers found that group personality composition as measured by the Five Factor Inventory was related to group decision effectiveness. Although the current research study does not indicate a significant relationship between the psychological factors and group information sharing, this leads to additional questions as to what factors impact the ability of groups to increase information sharing.

The results of this study led to some questions such as: 1) what other factors in conjunction with group information sharing leads to better group decision effectiveness, and 2) whether group personality is an important construct when describing what happens within organizations? As previous research indicates that a group personality emerges one must examine how it emerges and question whether it is just an average of the personalities within the group or if another distribution best describes the group personality. If group personality is an important construct, then how is group personality best measured and does the FIRO-B® assessment lend itself to creating a group personality profile.

Implications for Future Practice, Research, & Policy

This study suggests a variety of implications for future practice, research, and policy. In regards to practice this study provides support for the link between group information sharing and group decision effectiveness. Thus, this study indicates to leaders that they must find ways to increase group information sharing particularly by surfacing information that is not available to all group members so that the group can make better decisions. In addition, leaders must find ways to ensure that decisions are fully articulated, codified, and implemented throughout the organization. By ensuring that these three steps are taken then the overall effectiveness of a decision may be measured more accurately in practice.

In the area of research this study has explored the link between group personality characteristics, which indicated no significant impact. However, this research was a first attempt to correlate the group personality composition as measured by the FIRO-B® instrument. Previous research that has correlated group personality composition with group decision effectiveness and group information sharing was done in the areas of the MBTI® instrument and the Five Factor Inventory. Areas of future research can further examine what factors increase group information sharing. An unanticipated finding was the variable eI-G (expressed inclusion-group) was significantly positively correlated with eA-G (expressed affection-group). This finding does not answer one of the original research questions; however it provides direction for future research and supports the idea of group warmth as identified in past research, however group warmth was identified as a correlation between wanted inclusion and wanted affection in groups. Siegel & Schultz (2011) indicate the group warmth is an important measure of social interaction skills through the social index indicator (SII) within groups or work teams. If group warmth is an important factor within groups then the role that it plays within groups may be

examined further in future research using both the expressed and wanted scales for inclusion and affection. Future search can examine the SII in place of group personality to determine what/if any impact it has on overall group information sharing and group decision effectiveness. Other directions this research may be examined could be by collecting and comparing sociodemographic characteristics with group personality factors.

Finally, in the area of future policy the results of this study provide clearer insight that group information sharing does have an impact on group decision effectiveness. Policymakers may use this study to frame whether an interactive episode is about discussion and how to best get all the information from group members to make more effective decisions. Future research in this area may focus on how effective decisions are fully implemented across organizations and what factors contribute to this level of implementation.

Strengths and Limitations of the Study

The strengths of the present study are that the study examined the FIRO-B® instrument which has been well-researched and widely used in a variety of contexts including business simulations. According to Hammer and Schnell (2000) the FIRO-B® instrument provides a context to better understand group interactions. The overall reliability of the FIRO-B® instrument has been well-documented in previous research (e.g. Siegel & Shultz, 2011). Another strength of this study is that it used data provided by real people in the context of personal development and the data was collected professionally by the Center for Creative Leadership®.

As with all research, the present study has some limitations. Although this study provides clearer insight into the impact of group information sharing and group decision effectiveness and makes contributions to future practice, research, and policy some limitations

may be present. First, this study relied on intuitive definitions to determine an acceptable level for group decision effectiveness. This study used a stringent definition that 50% or more of group members must have known that action was taken for it to be counted as a group decision. It is unclear if a less stringent definition of 33% or more of group members must have known that action was taken for it to be counted as a group decision may have significantly impacted the results. It is also unknown if 33% is an acceptable lower level to define group decision effectiveness.

Next, previous research has shown an impact between psychological factors/group personality and group information sharing using other instruments. Results of previous studies indicate there should be a relationship between psychological factors and group information sharing, therefore one must question why support not found in this particular study. This raises the following questions: 1) whether the simulation setting provides enough opportunity for a group psychological composition to merge and to elicit such responses because participants do not have experience with each other, 2) does the "strong context" of the setting with a large amount of information to process in a short amount of time account for the behaviors observed, and 3) are there other variables that should be examined?

Finally, the limitation of the generalizability of this simulation beyond the research setting and whether the actions taken would be fully implemented within the organization is called into question. In general, simulations assume that actions would be fully implemented; however research indicates that more than half of strategic decisions are never fully implemented (Vroom, 2003).

Recommendations and Conclusions

Despite the limitations previously discussed this study contributes to the scholarly literature on the impact of group information sharing and group decision effectiveness. This study breaks ground in an area of group personality and its effect on other factors, such as group information sharing and group decision effectiveness within an organization, empirically by using the FIRO-B® assessment. This study provides support for the idea that group information sharing impacts group decision effectiveness. Next, this study provides directions for future research to determine what factors impact the ability of a group to share information. Finally, this study provides additional questions about group personality that require future examination through empirical research and indicate a significant relationship between two of the group personality factors studied.

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Appendix A

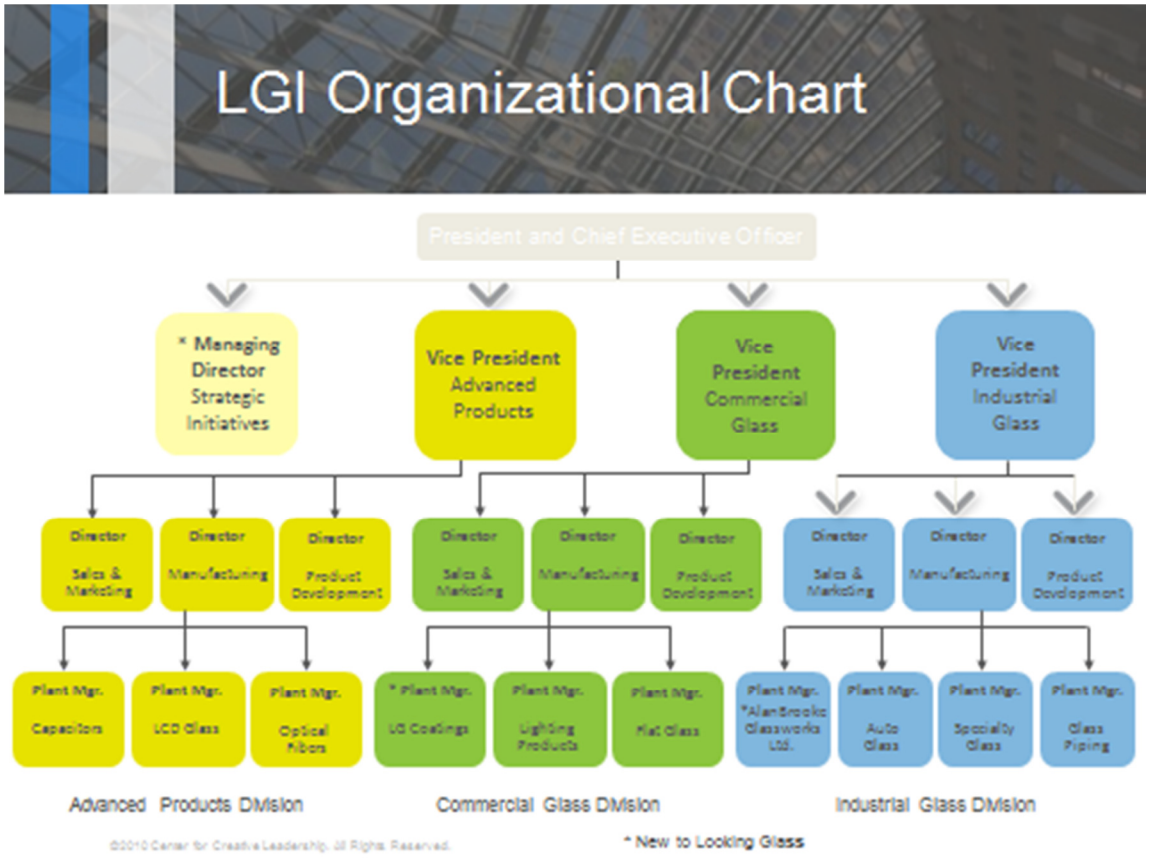

Figure 2. Looking Glass, Inc. Organizational Chart

Appendix B

Sample Items from the

FIRO-B® Instrument
based on the work of Will Schutz

Directions: This questionnaire explores the typical ways you interact with people. There are no right or wrong answers. Sometimes people are tempted to answer questions in terms of what they think a person *should do*. This is *not* what is wanted here. We would like to know how you actually behave. Some items may seem similar to others. However, each item is different so please answer each one without regard to the others. There is no time limit, but do not debate long over any item.

Expressed Behavior

For each statement below, decide which of the following answers best applies to you. Place the number of the answer to the left of the statement. Please be as honest as you can.

1. never 2. rarely 3. occasionally 4. sometimes 5. often 6. usually

Control ___ I try to be the dominant person when I am with people.

Inclusion ___ I try it include other people in my plans.

Affection ___ I try to have close relationships with people.

Wanted Behavior

For each of the next group of statements, choose one of the following answers:

1. nobody 2. 1 or 2 people 3. a few people 4. some people 5. many people 6. most people

Control ___ I let other people control my actions.

Inclusion ___ I like other people to include me in their activities.

Affection ___ I like people to act close and personal with me.

* CPP, Inc provided this sample. It is not intended to represent a "mini-test" or anything other than a sample of typical instrument questions.

Appendix C

5)(APD) For each issue listed below, indicate whether or not you knew this information by marking yes or no.
Did you know that...

1. capacitor sales are diminishing?
2. there is a pending soda ash shortage?
3. a consortium has been suggested for dealing with hazardous waste problems?
4. the company is responsible for toxic wastes as long as they exist, anywhere?
5. the Optical Fibers plant will exceed allowable toxic wastes storage capacity within 30 days?
6. Bond accounts for one-third of optical fibers sales and wants a 10% price cut?
7. the Flat Glass plant makes glass blanks for the Capacitors plant?
8. ADP saves 70% over the cost of buying glass blanks outside?
9. if CGD converts its sheet line to the float process, APD will be forced to go elsewhere for glass blanks?
10. there is an offer to purchase the LCD plant?
11. the product line has lost money in last two years?
12. a potential new LCD product can dramatically increase sales?
13. ADP plans to build a new Capacitors plant?
14. market research thinks the glass capacitors market should be de-emphasized?
15. a major aerospace customer is looking for a plant site in Great Britain to be close to European suppliers?
16. the invoicing system is inadequate?
17. customers are complaining about inadequate supply?
18. sales people are quitting?
19. there is no monetary incentive for sales people to service contracts?
20. there are shipping and delivery problems in LCD Glass?
21. the President and Director of Manufacturing are questioning Product Development's staff performance?
22. scientists are transferring from CGD and IGD to APD?
23. a proposal has been made to explore fiber-optic markets in Eastern Europe?
24. there are few women on the management ladder?
25. EEOC threatens a lawsuit in three months?
26. a woman fired at the Capacitor's plant alleges sexual harassment by her former supervisor?
27. ABG wants to begin doing work presently done at LCD?
28. there's a potential to collaborate with Bond telephone on placing optical fibers in new construction?
29. LGC's new process produces better color than what's being produced in Japan or Korea?
30. the global LCD television market will double in the next two years?
31. the German-based glass company, Slott, is expanding production in India?
32. the capacitor plant can easily convert to make HDD substrates?
33. generation H LCD sales are expected to be outstanding, world wide?

5)(IGD) For each issue listed below, indicate whether or not you knew this information by marking yes or no.
Did you know that...

1. because of the rising energy costs, the VP wants energy cost reduction methods implemented in IGD?
2. soda ash prices vary by about $10 per ton?
3. the use of cheaper raw materials required the use of a coarser sorting screen that may be causing a quality problem?
4. ADP is trying to cut off IGD's supply of glass blanks which would force IGD either to buy outside or raise prices of the finished product?
5. the plant may not be able to handle the increased production capacity demands needed to secure the new contracts with foreign car manufacturers or domestic production increase?
6. VP wants a plan to improve most of the machinery over the next 10 years?
7. PD has traditionally hired line managers instead of professionals?
8. IGD staff are transferring to ADP
9. IGD needs a new packing concept for Glass Piping products to lower breakage?
10. IGD hourly pay rates are below the national glass industry average?
11. the pro-union vote at Auto Glass increased from 15% to 39% during the last two years?
12. more and more immigrants are taking jobs that once belonged to U.S. natives?
13. small batch sales at Specialty and Glass Piping have created higher production costs and may be directly responsible for obtaining larger contracts?
14. a salesperson has been accused of unethical sales practices?
15. about 80% of Glass Piping sales are accounted for by 20% of the clients?
16. a Japanese and a German auto manufacturer have become increasingly interested in IGD as their sole window supplier?
17. IGD has lost major auto glass contract to Singapore competitor?
18. LGD has spent $21 million on the President's pet underwater project?
19. market for underwater glass products is uncertain and is of questionable potential?
20. women and minorities account for only a small percentage of the management and professional staff at Auto Glass, and this constitutes a failure to meet affirmative action guidelines?
21. minority group applicants are not seeking jobs at Auto Glass?
22. an increasing percentage of our customer base is on the West Coast?
23. Glass Piping needs to increase the versatility of its machinery to meet varied glass specifications?
24. executives being pirated by the competition may be revealing confidential IGD information?
25. the effect of furnace heat on employees has been a chronic corporate-wide problem and has created difficult working conditions?
26. Auto Glass is facing a soda ash supply crisis?
27. CGD has six-week supply of soda ash?
28. alternative suppliers exist for soda ash?
29. the company has been cited by the EPA as a responsible party at nine hazardous waste disposal sites?
30. the silver oxide coatings may not meet European Community environmental regulations?
31. biologically active glass for some implants has been developed at ABG?
32. shipping overseas is often less expensive than our domestic shipping by rail?
33. a strong, storm resistant glass, known as hurricane glass, is likely to be a tremendous new market?
34. China is the #1 producer of soda ash?
35. toxic waste disposal regulations and costs are going higher?
36. ABG is a unionized plant?

5)(CGD) For each issue listed below, indicate whether or not you knew this information by marking yes or no.
Did you know that...

1. environmental glass markets are projected to grow?
2. CGD can expand Flat Glass capacity through a joint venture in South America?
3. the Lighting Products plant has the oldest machinery in the company?
4. the plant has a problem with EPA over emissions?
5. although costs are increasing, prices must stay low to remain competitive?
6. the Flat Glass plant makes glass blanks for the Advance Products Division?
7. CGD could make a 15% margin by devoting glass blanks capacity to environmental glass?
8. APD will lose 30% of its market share if forced to buy outside?
9. Sylvester Electric has made inquiries into producing its own fluorescent tubes and incandescent envelops?
10. Sylvester Electric accounts for 35% of all lighting product sales?
11. APD feels that Sylvester's complaints about LCD glass quality is a ploy to gain concession on a new contract?
12. most of CGD's product development effort has gone into existing equipment and products (rather than new product development)?
13. many current PD staff lack up-to-date technical skills?
14. many different products have been identified by Product Development staff as feasible for production in CGD?
15. a proposal has been made to enter into a joint venture with a Mexican firm?
16. there is soda ash supply crisis in CGD?
17. National Construction, which accounts for 21% of flat glass sales, threatens a lawsuit against CGD?
18. Legal thinks CGD would win the National Construction lawsuit?
19. shipments are being diverted to bigger customers?
20. 25% of environmental glass shipments are, on average, three days to three weeks late?
21. IGD is also losing personnel to APD (scientists and sales reps)?
22. methods are available that can significantly cut gas usage by 75%?
23. energy is a substantial percentage of the cost of goods manufactured?
24. compensation is lower than union average?
25. the latest union vote was 42% in favor (versus 21% last time)?
26. automation in packaging is raising fear of layoffs?
27. the VP-CGD has called together a task force to suggest policies on workforce diversity?
28. a Federal court has blocked a new toxic waste site?
29. Looking Glass has been named by EPA as a responsible party in nine toxic waste site violations?
30. China is the #1 producer of soda ash?
31. research is taking place at LG Coatings on a self-cleaning glass?
32. the flat glass industry is growing rapidly in Turkey?
33. we are looking into foam packaging for glass shipments?
34. there is opportunity to leverage our presence in China to increase flat glass sales?
35. toxic waste regulations for disposal are getting more difficult and more costly?

Appendix D

4)(APD) Consider the following critical action issues within your division. Mark the appropriate response if (NT) no action was taken, (D/D) the issue was discussed or deferred only, or (DK) you don't know. If action was taken on the issue, indicate the division member(s) who was primarily responsible for driving the issue or action toward conclusion. Choose as many division members as apply.

1. LCD Sale
2. Invoicing Problems
3. Internal Transfers, Product/Price
4. Quality
5. Competitive Threats

4)(IGD) Consider the following critical action issues within your division. Mark the appropriate response if (NT) no action was taken, (D/D) the issue was discussed or deferred only, or (DK) you don't know. If action was taken on the issue, indicate the division member(s) who was primarily responsible for driving the issue or action toward conclusion. Choose as many division members as apply.

1. Equipment Replacement/Upgrade
2. Plant Consolidation
3. Sales Practices
4. Rethink Product Mix
5. Integrate ABG

4)(CGD) Consider the following critical action issues within your division. Mark the appropriate response if (NT) no action was taken, (D/D) the issue was discussed or deferred only, or (DK) you don't know. If action was taken on the issue, indicate the division member(s) who was primarily responsible for driving the issue or action toward conclusion. Choose as many division members as apply.

1. Equipment Replacement/Upgrade
2. Business Consideration (Bribes)
3. Internal Transfers Product/Price
4. Quality
5. Product Development Funding