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**EFFECTS OF FUNCTIONAL DIVERSITY TRAINING, USING THE
MBTI INSTRUMENT, ON WORKGROUP PERFORMANCE**

Dissertation

**Presented in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Global Leadership**

Lynn University

By

Dale S. Sugerman

2007

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**EFFECTS OF FUNCTIONAL DIVERSITY TRAINING, USING THE
MBTI INSTRUMENT, ON WORKGROUP PERFORMANCE**

Sugerman, Dale S., Ph. D.

Lynn University, 2007

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My wife Lynn was a constant source of encouragement, support and patience. There is not a graphic or a table that she cannot create when sitting at a computer.

Finally, I dedicate the completion of this work to my mother who left this earth many years ago. She instilled in me a drive and a curiosity to both seek knowledge and to test all of my limits. This effort did both and I think she would be very proud today.

**EFFECTS OF FUNCTIONAL DIVERSITY TRAINING,
USING THE MBTI INSTRUMENT, ON
WORKGROUP PERFORMANCE**

Abstract

Little empirical research has focused on the personality and behavioral differences of individuals assigned to work together in workgroups. This study found that providing functional diversity training to a workgroup, using the Myers-Briggs Type Indicator® (MBTI), positively impacted workgroup performance when compared with the workgroup performance of those who did not receive the same training.

Over the last few decades, organizations have shown great interest in the concept of using teams in the workplace. Employees who work side-by-side in the same unit are routinely referred to as being part of a team. Often, organizations put groups of individuals together in teams, with the assumption that if people work together, rather than separate and apart, organizational performance will improve. Many believe that “teamwork” will lead to better performance. Stakeholders often look to the leadership of an organization expecting that efforts focused on work being done by teams will ensure delivery of a successful product (or service) to the marketplace. Unfortunately, the track record on teamwork initiatives is average at best, and replete with examples of failure at worse. While most organizations believe that they have formed teams, many of the key elements necessary for establishing a team (commonly accepted goals, agreed upon vision or mission, regular and open feedback, and measurable standards of performance) are typically missing. While there is a common belief that groups of employees placed together (working in proximity) are a team, they are more typically simply a workgroup.

One item impacting groups of workers placed together, which is rarely taken into account (and is even less-often measured), is the differences in the personality and behavior of those workers and the effects that those differences have on the performance of the workgroup. The personality and behavioral diversity of individuals within a workgroup can impact the workgroup's performance within the organization.

Organizational training within workgroups, which is focused on understanding and appreciating personality and behavioral diversity, can also have great impact on performance within the organization. This research focuses on the effects of personality and behavioral diversity training (also known as functional diversity training) on workgroup performance.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
ABSTRACT	iii
LIST OF TABLES	viii
LIST OF FIGURES	x
CHAPTER I: INTRODUCTION TO THE STUDY	1
Introduction and Background to the Problem	1
Purpose of the Study	4
Definition of Terms	6
Assumption of the Study	13
Justification of the Study	13
Delimitations of the Study	14
Organization of the Study	15
CHAPTER II: REVIEW OF THE LITERATURE, THEORETICAL FRAMEWORK, AND RESEARCH HYPOTHESES	16
Literature Review	16
Workgroups	16
Teams and Teamwork	17
Proximate Workgroups	22
Diversity	26
The Role of Personality and Disposition	27
Social Diversity	32
Team Diversity	34
Functional Diversity	38
Diversity Training	41
Functional Diversity Instruments and Indicators: The Myers- Briggs Type Indicator	45
Workgroup Performance	56
Behavior	57
Output	61
Theoretical Framework	65
Research Hypotheses	69

	Page
CHAPTER III: METHODOLOGY	71
Research Design	71
Population and Sampling Plan	73
Target Population	73
Accessible Population	74
Sampling Plan	74
Instrumentation	76
Socio-Demographic Profile	76
The Myers-Briggs Type Indicator® (MBTI)	77
An instrument of workgroup performance	79
Procedures: Ethical Considerations and Data Collection Methods	81
Methods of Data Analysis	82
Evaluation of Research Methods	82
CHAPTER IV: RESULTS	85
Socio-Demographic Characteristics of the Date-Producing Study and Study Mortality	85
Use of the Myers-Briggs Type Indicator	91
Description of the Functional Diversity Training Using the MBTI Instrument and MBTI Results	92
Performance Measurement	99
Description of Workgroup Performance	99
Description of Measurement Periods	102
Research Hypothesis 1	102
Independent <i>t</i> -Test Analysis of the Ten Performance Measurements	103
Results of Independent <i>t</i> -Test Analysis	109
Research Hypothesis 2	110
Analysis of Variance (ANOVA) of the Ten Performance Measurements	111
Results of the Analysis of Variance (ANOVA)	114
Conclusion	115
CHAPTER V: DISCUSSION	117
Interpretations and Hypothesis Testing	118
Limitations	127
Practical Implications	129
Conclusions	131
Recommendations for Future Studies	133

	Page
REFERENCES	136
BIBLIOGRAPHY	146
APPENDIXES	151
Appendix A: Instrument #1- Socio-Demographic Profile	151
Appendix B: Instrument #2- The Myers-Briggs Type Indicator®	154
Appendix C: Researcher's Certificate of Qualification	156
Appendix D: Instrument #3- Measurement of Workgroup Performance	158
Appendix E: Permission to Use the MBTI	160
Appendix F: Permission from the Company to Conduct the Study	162
Appendix G: Approval of Institutional Review Board	164
Appendix H: Control Group Informed Consent Letter	166
Appendix I: Treatment Group Informed Consent Letter	170
Appendix J: Permission to Reprint Table 2-1 and Table 2-2	174
CURRICULUM VITAE	176

LIST OF TABLES

		Page
2-1	The Eight Dichotomous Letters of the MBTI	49
2-2	The Sixteen Personality Types of the MBTI	50
4-1	Summary of Participants and Number of Valid Cases During the Study	86
4-2	Socio-Demographic Characteristics of Control Group and Treatment Group	88
4-3	Summary of Participants and Display of Mortality in Each Group During Periods #1, #2, and #3 of the Study	91
4-4	Reported MBTI of Control Group and Treatment Participants	95
4-5	“Best Fit” MBTI Scores for Treatment Group Participants	98
4-6	Scatter Plot of “As Reported” and “Best Fit” MBTI Results for Treatment Group Participants	99
4-7	Ten Performance Measurements and their Operational Definition as Used in the Study	101
4-8	Independent <i>t</i> -Tests of Five Behavioral Measurements Against the Total Sample Performed During Measurement Period #1 (H1a)	104
4-9	Independent <i>t</i> -Tests of Five Behavioral Measurements Against the Total Sample Performed During Measurement Period #2 (H1a)	104
4-10	Independent <i>t</i> -Tests of Five Behavioral Measurements Against the Total Sample Performed During Measurement Period #3 (H1a)	105
4-11	Independent <i>t</i> -Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #1 (H1b)	106
4-12	Independent <i>t</i> -Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #2 (H1b)	107
4-13	Independent <i>t</i> -Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #3 (H1b)	108

		Page
4-14	Analysis of Variance (ANOVA) of Socio-Demographics as a Predictor During Measurement Period #1	111
4-15	Analysis of Variance (ANOVA) of Socio-Demographics as a Predictor During Measurement Period #2	112
4-16	Analysis of Variance (ANOVA) of Socio-Demographics as a Predictor During Measurement Period #3	113
5-1	Research Hypotheses and Results	123

LIST OF FIGURES

	Page
1-1 Literature Map	4
3-1 Research Design	72

CHAPTER I

Introduction and Background to the Problem

During the last quarter century, organizations have shown great interest in the concept of using teams in the workplace. Employees who work side-by-side in the same unit are routinely referred to as being members of a team or working within a teamwork environment. Often, organizations put groups of individuals together in teams, with the assumption that if people work together, rather than separate and apart, organizational performance will improve. Many believe that “teamwork” will lead to better performance. Stakeholders often look to the leadership of an organization expecting that efforts focused on work being done by teams will ensure delivery of a successful product (or service) to the marketplace.

During the course of the last two decades, there has been a considerable amount of literature written on the value and use of teams in the workplace (Banker & Field, 1996; Bennis & Nanus, 1985; Block, 1987; Bolman & Deal, 2003; Gordon, 2002; Katzenbach & Smith, 1993 & 2003; Kouzes & Posner, 1987; Shaw, 1992, Sheard & Kakabadse, 2002; Wagner, 1994). While most organizations believe that when they assign employees to “work together” they have created teams, many of the key elements that are necessary for truly establishing a team (elements such as mutually accepted goals, agreed upon vision and mission, regular and open feedback, and measurable standards of performance) may, more often than not, be missing. While there is a common belief that groups of employees placed together (working in proximity) are a team, they are simply better identified, at least in their initial formation, as being assigned to a workgroup.

When employees work together and/or work on the same project, they may not necessarily be functioning as a team. “Forming teams is more than simply throwing a group of people together and telling them they are a team; they need to understand what is required of them and how they are expected to perform in the team” (Hyland, 1998, p. 350). It takes, at a minimum, some commitments and connections for employees working together to behave as a team. Katzenbach and Smith (1993) defined the concept of workplace teams as “a small groups of people with complementary skills who are committed to a common purpose, for which they hold themselves mutually accountable” (Katzenbach and Smith, 1993, p. 69). Chia-Chen’s 2004 theoretical outline on the impact of team leadership on team effectiveness provided another perspective on workplace teams by defining them as “a working unit composed of more than two members who stress interdependence and cooperation with each other, pursue common goal [sic], and take the responsibility for the success or failure of work” (Chia-Chen, 2004, p. 269).

Most medium to large size organizations today use some method for forming workgroups among their employees. “When these units work well, they elevate the performance of ordinary individuals to extraordinary heights” (Bolman, 2003, p. 95). While teaming may have become a standard business trend during the last quarter century, not everyone holds such a deep meaning or value for the concept of workplace teams. “When teams malfunction, as too often happens, they erode the potential contributions of the most talented members” (Bolman, 2003, p. 95). In a meta-analysis of 72 empirical studies investigating team performance, Stock argued that the Katzenbach and Smith (1993) definition of a team is “not yet widely shared” and further suggested

that “the words ‘team’ and ‘group’ are used interchangeably” throughout the empirical literature (Stock, 2004, p. 275).

Despite the debate on exactly what a “team” is, Stock’s review of workteams and team performance is based upon a premise that two or more people will have to work together (in proximity) in order for a team to exist. What makes for an effective team is clearly open to debate and interpretation, but the presumption here is that in order for there to be a determination of workgroup effectiveness it would have to be measured through some standard of workgroup performance. The workplace, however, is replete with examples of barriers for employees being able to work well together, and it has clearly been demonstrated that it is more typical for employees to actually have little or no satisfaction on the job, which tends to lead to reduced work performance, whether working alone, with a group, or on a team.

A literature map (Figure 1-1) was used to guide the search for theoretical and empirical literature on the subjects of workgroups, diversity, diversity training and workgroup performance. The literature map also served as a method for establishing the parameters for the experimental research.

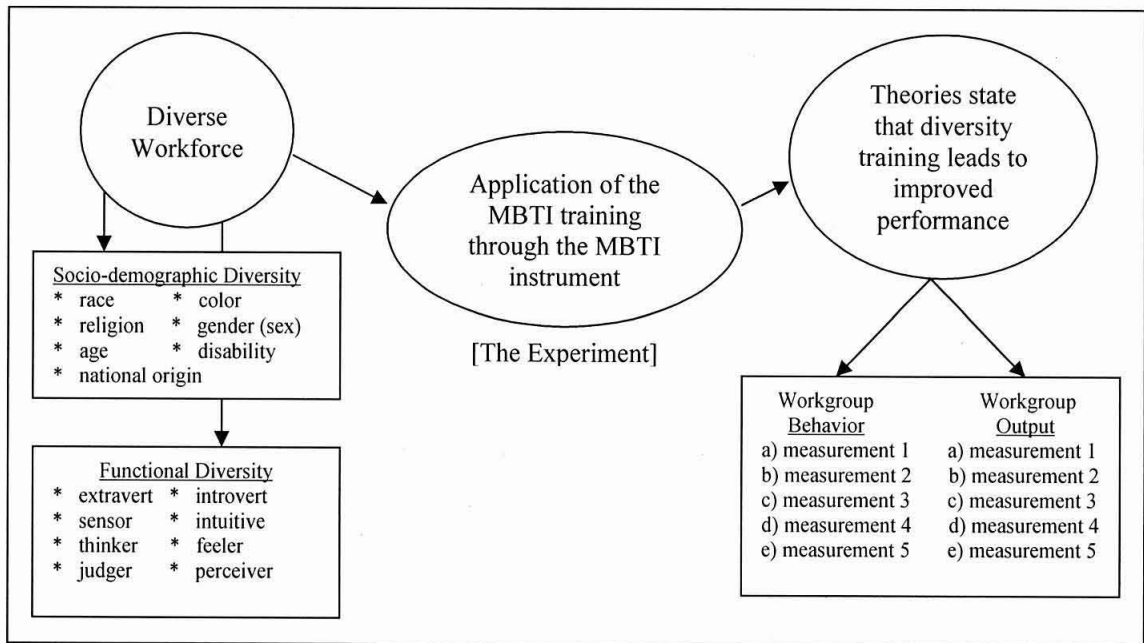


Figure 1-1. Literature Map.

This research does not endeavor to participate in the debate on whether or not collections of employees working side-by-side have established themselves as a team, or if they have met some pre-defined functionality as a team. Instead, the research assumes that individuals who work together within an organization are, at a minimum, considered to be a workgroup. With the only criteria being proximity and assignment, all groups of employees hereinafter will be considered by this researcher as workgroups, whether the literature or other researchers refer to them as a group, a team, a workgroup, or a workteam.

Purpose of the Study

While the literature during the last quarter century is full of studies and debate on how to improve the performance of workgroups in organizations, something very basic still seems to be missing. Little research has been focused on the differences between each of the individuals assigned to work together that might constitute a workgroup.

What often is not taken into account (and is even less-often measured) are the differences in the personality and behavior of the individuals placed in workgroups and the effect that this can have on the overall performance of the workgroup. Differences in personality and behavior (also known as functional diversity) amongst individuals in a workgroup can have a great impact on the workgroup's performance within the organization.

The specific purpose of this experimental, correlational and causal comparative study was to:

1. Discover ways to identify both workgroup deficiencies and strengths through a focus on personality and dispositional differences in individuals within the workgroup.
2. Research, test, and analyze a particular personality and disposition instrument (the Myers-Briggs Type Indicator[®]), by focusing on the functional diversity differences of individuals in a workgroup in order to determine its effect on the performance of members of a proximate workgroup.
3. Demonstrate the value of using the MBTI instrument as a functional diversity training tool for increasing the performance of proximate workgroups.

The study was conducted within a Fortune 200 Company based in South Florida, using two different groups of employees participating in a company-led training and assessment program. Although separated by a fairly substantial geographical distance, both proximate workgroups performed the same type of work. Participants in both groups were surveyed for socio-demographic factors and completed the MBTI instrument. One group served as the treatment group. That is, they were provided with functional diversity training using the outcome from their completed MBTI instrument. The other proximate

workgroup served as the control group. They were not provided with any specific functional diversity training. Over the course of the nine week study period (including two four-hour training sessions for the treatment group) workgroup performance was measured for both the treatment and the control groups.

Definition of Terms

The two dependent variables in this study were workgroup performance as measured by workgroup behavior (with five multiple indicators) and workgroup performance as measured by workgroup output (with five multiple indicators). The independent variable in this study was the assignment to either the control or the treatment group. The socio-demographics of the individual participants were attribute variables which were aggregated for this study. The application of functional diversity training using the Myers-Briggs Type Indicator as the training instrument (the treatment) was a mediating variable in the study.

Team/Teamwork

Theoretical definition. “Teams are discrete units of performance . . . they are a unit of performance that differs from the individual or the entire organisation. A team is a small group of people with complementary skills who are committed to a common purpose, for which they hold themselves mutually accountable” (Katzenbach and Smith, 1993, p. 69).

Operational definition. In this study, an operational definition of team or teamwork is being avoided, due to the fact that the assumption is that individuals who work together in the organization are considered to be nothing other than members of a proximate workgroup. However, the groups of employees that are working together in

proximity to each other may, in fact, refer to themselves as a team. For this particular research project, these groups of employees are “teams” of employees working together in a training and assessment cohort set up within a call center environment of a Fortune 200 Company.

Proximate Workgroup

Theoretical definition. Proximate workgroup can be defined as individuals who “[interact] on a day-to-day basis, [are] task interdependent, identif[y] each other as group members, and [are] seen by others as a workgroup” (Jehn & Bezrukova, 2004 p. 711). Further, “a workgroup is made up of individuals who see themselves and who are seen by others as a social entity, who are interdependent because of the tasks they perform as members of a group, who are embedded in one or more larger social systems, and who perform tasks that affect others” (Guzzo, et al, 1996 p. 308).

Operational definition. In this study, proximate workgroups are those collections of employees who are assigned to work together, based upon their proximate location to each other and to their assignment of working together in a training and assessment cohort within a call center environment of a Fortune 200 Company.

Diversity

Theoretical definition. The theoretical definition of diversity for this study “simply means variety, or a point or respect in which things differ” (Buford, 2002, p. 169), or “any attribute that people use to tell themselves that another person is different” (Jehn & Bezrukova, 2004, p. 704).

Operational definition. The operational definition of diversity for this study includes both the concept of social diversity as well as the concept of functional diversity

which are further defined. Social diversity often relates to factors such as race, gender and age. Functional diversity is narrowly focused on differences in personality and behavior and is intentionally limited to the psychological and behavioral preferences displayed by individuals in the workplace.

Social Diversity

Theoretical definition. Mannix and Neale (2005) used a bifurcated approach to defining diversity- visible and non-visible. Social diversity was made up of the “visible differences [which] include race, ethnicity, age, gender, and physical disabilities” (Mannix & Neale, 2005, p. 37).

Operational definition. For this study, social diversity includes the five socio-demographic factors of gender, race, age range, years of full-time work experience, and highest level of education completed. The five socio-demographic dimensions for this study have been aggregated for each workgroup.

Functional Diversity

Theoretical definition. Functional diversity is demonstrated in “a composition of people who offer different talents and perspectives” (Schneider & Northcraft, 1999, p. 1448). Mannix and Neale’s (2005) further bifurcated approach to defining diversity described functional diversity as the “less visible differences, also known as underlying attributes, including education, skills and abilities, values and attitudes, tenure in the organization, functional background, personality differences, and sexual orientation” (Mannix and Neale, 2005, p. 37).

Operational definition. In this study, functional diversity is specifically identified and defined by each of the sixteen behavioral preferences outlined in the Myers-Briggs Type Indicator.

Myers-Briggs Type Indicator (MBTI)

Theoretical definition. Itself, a theory-based instrument which has eight dichotomous characteristics describing 16 dynamic personality types (Myers, McCaulley, Quenk & Hammer, 1998, p. 5).

Operational definition. In this study, it is the application of the Myers-Briggs Type Indicator which is used to identify the functional diversity differences in members of a proximate workgroup. The eight dichotomies of the MBTI include a combination of two descriptors of attitudes (extraversion and introversion), four types of mental functions (sensing and intuition as well as thinking and feeling), and two attitudes or orientations toward the outer world (judging and perceiving).

Workgroup Performance- Behavior

Theoretical definition. Workgroup performance- behavior is related to the individual patterns of behavior toward the work found within a workgroup. Hogan, Curphy, and Hogan (1994), McCaulley (1990), and Organ and Bateman (1986) have generally described behavior as an interaction between personality and environmental conditions. McKenna, Shelton and Darling (2002) defined workgroup performance-behavior as “the variability among members of an organizational work group in their approaches to various tasks and interactions such as decision making, problem solving, communication or conflict resolution, and in their preferences regarding the pace and variety of the work they perform” (McKenna, Shelton & Darling, 2002, p. 320). Byer and

Weston (2004) defined workgroup productivity behaviors as “the adopted processes and structures that govern how the team and its members work together, so as to attain task goals and to achieve team interaction, and thereby to realize the team outputs” (Byer & Weston, 2004, p. 1434).

Operational definition. In this study, workgroup performance- behavior is a construct that has been established by the Fortune 200 Company where the research was conducted. The leadership of the researched organization uses a large variety of performance metrics with employees in this classification. For purposes of the study, the organizational leadership selected five workgroup performance- behavior indicators which were of particular importance to the organization. These five behavioral indicators included: 1) occasions of tardiness; 2) number of absences; 3) violations of professional conduct; 4) voluntary resignation; and, 5) forced termination. These became the basis for measuring workgroup performance- behavior. Table 4-7 provides a complete description of each of these five behavioral indicators.

Workgroup Performance- Output

Theoretical definition. Workgroup performance- output has a variety of definitions. Goodman and Harris (1995) defined workgroup performance (productivity) as “the ratio of the outputs of an enterprise to the inputs” (as cited in VonBorhnhagen & Lengnick-Hall, 1997, p. 753). Pritchard (1992) defined workplace productivity as “how well a system uses its resources to achieve its goals, or more specifically as an index of output relative to goals (effectiveness) or output relative to inputs (efficiency)” (as cited in VonBorhnhagen & Lengnick-Hall, 1997, p. 753). Guzzo, Dickson, and Marcus (1996) suggested that there was no singular, uniform measure of performance

effectiveness for group, and therefore decided to define it broadly as indicated by “(a) group-produced outputs (quantity or quality, speed, customer satisfaction, and so on), (b) the consequences a group has for its members, or (c) the enhancements of a team’s capability to perform effectively in the future” (Guzzo et al. 1996, p. 308).

Operational definition. In this study, workgroup performance- output is a construct that has been established by the Fortune 200 Company where the research was conducted. The leadership of the organization uses a large variety of performance metrics with employees who participate in the company-led training/assessment program. For purposes of the study, the organizational leadership selected five workgroup performance- output indicators which were of particular importance to the organization. These five output indicators included: 1) customer focus; 2) use of available tools; 3) process knowledge; 4) critical steps missed; and, 5) inappropriate actions. These became the basis for measuring workgroup performance- output. Table 4-7 provides a complete description of these five output indicators.

Improvement in Workgroup Behavior

Theoretical definition. Improvement in workgroup behavior has been related to organizational performance improvement in general. Marquardt, Smith, and Brooks (2004) discussed performance improvement factors having four inter-related components, the last two of which (culture and change management) are specifically related to the behavior of the workgroup:

Technology: all systems and infrastructure that enable an organization to produce and manage their products, services, and customer support;

Process: rules-defined activities, roles, and requirements that produce an organization's products and services in the most optimized manner;

Culture: the shared values, beliefs, and assumptions that govern how employees interact and how they approach work to achieve business goals;

Change Management: the strategic practice of managing change initiatives, aligning and engaging employees, and clearly defining the scope of change to achieve desired results (Marquardt, Smith & Brooks, 2004, p. 26)

Operational definition. In this study, improvement in workgroup behavior is measured by a limit in the occasions of tardiness and number of absences, avoidance in the number of violations of professional conduct, avoidance in the number of voluntary resignations and avoidance in the number of forced terminations.

Improvement in Workgroup Output

Theoretical definition. The theoretical definition of improvement in workgroup output has also been related to organizational performance improvement in general. Any improvement effort, when managed in an integrated manner within an organization, can lead to success for that organization

Operational definition. In this study, improvement in workgroup output is measured by an ability to increasingly meet all of the requirements for each of five output measures. This includes meeting four of four requirements of customer focus, meeting three of three requirements for use of available tools, meeting five of five requirements of process knowledge, meeting four of four requirements by avoiding any critical steps missed, and meeting five of five requirements by avoiding any inappropriate actions.

Assumptions of the Study

Since this was an experimental study involving human respondents, it was assumed that there was no cross-contamination of information sharing between the control group and the treatment group. It was also assumed that all participants were truthful in their responses. It was further assumed that there may have been a Hawthorne Effect created within the control group because it is unlikely that the organization where this research was conducted would typically use some of the study instruments that were used to conduct the research.

Justification of the Study

The topic area of workgroup performance being positively impacted by functional diversity training in an organization has been identified from personal work experience. From 2001 until 2004, a high-performance, team-based management organizational model was applied to a limited segment of a larger organization. The segmented model resulted in measurable increases in workgroup productivity after the introduction of a specific functional diversity training instrument (the Myers-Briggs Type Indicator). When the segmented model was compared to the balance of the organization, measurable increases in workgroup performance were demonstrated. Although improvements in workgroup performance occurred, the theoretical and empirical basis for these occurrences needed to be explored further to determine if it was actually the awareness of personality and behavioral differences in workgroup members (the understanding of the functional diversity of workgroup members) and the application of functional diversity training in workgroups that actually lead to an increase in workgroup performance or if it could have been attributed to something else.

This study was researchable because the study contained scientific questions and all of the variables could be measured. The study was feasible because the concepts in the theoretical frameworks could be measured, it could be implemented in a reasonable amount of time, the subjects were available, it had the cooperation of others, and it was done in an ethical manner.

Delimitations of the Study

This study was conducted based on the following delimitations which are the boundaries of this study:

1. The research was limited to one Fortune 200 Company located in the State of Florida.
2. The Fortune 200 Company is similar in nature to other companies that provide the same product or service throughout the world, but this company enjoys a geographical monopoly in the service it provides under a regulated license issued by the federal government.
3. Two sets of 15-20 person proximate workgroups participated in the study. The one control group and the one treatment group were geographically separated by a distance of approximately 50 miles.
4. Workgroups were made up of newly hired employees who participated in either an eight or nine week training class in preparation for their new job assignment as Customer Care Center call takers.
5. Study participants were able to read and write English and all were 18 years of age or older.

Organization of the Study

Chapter I provides an overview of the study. It includes an introduction and background to the study problem, the purpose of the study, the definition of terms, the assumptions and justification of the study, and study delimitations and scope.

Chapter II provides an in-depth review of existing literature about workgroups, diversity, functional diversity instruments and indicators, workgroup performance, and other constructs. This chapter also provides a critical analysis of related theoretical and empirical literature about workgroups, functional diversity and workgroup performance. Research hypotheses are also presented in this chapter.

Chapter III presents the methodology for testing the research hypotheses. It includes the study design, population and sample, the research instruments, procedures and ethical aspects, methods of data analysis, and evaluation of the research methodology.

Chapter IV presents the results of the experimental, repeated measures study using descriptive and inferential statistics, tests between the means of the independent groups, and causal comparative data analysis which lead to an outline of the tests of the hypotheses and other findings of the study.

Chapter V provides a discussion of the findings and interpretations of the statistical results in relationship to the body of literature on the subject. Conclusions from this study are drawn. Limitations of the study, including its strengths and weaknesses are discussed. Finally, practical implications and recommendations for future research are elaborated.

CHAPTER II
REVIEW OF THE LITERATURE, THEORETICAL FRAMEWORK,
AND RESEARCH HYPOTHESES

Review of the Literature

Workgroups

Since the start of the industrial revolution, businesses have always longed for opportunities to increase workplace performance. An ability to ensure increased performance from employees will often positively impact the ultimate tenure of a business or an organization. Success is often measured through the balancing of resources, both human and physical capital, in order to generate the greatest amount of output while using the smallest amount of input. Over the course of the last few decades, there has been an increased effort aimed at employee involvement toward the goal of improved workplace productivity and performance. Rarely can one individual do it alone. Instead, it takes groups of employees working side-by-side to deliver enhanced performance for the company or organization.

While there is a common belief that groups of employees placed together (working in proximity) are often referred to as a team, or as doing teamwork, they are at their most basic level simply a workgroup. Notwithstanding that distinction, the literature is explored for concepts of teams and teamwork, as well as on a variety of topics dealing with workgroups. Throughout the review, the reader may notice both a blending of issues dealing with teams and teamwork, along with the intentional distinction the researcher makes between teams and simple workgroups. For purposes of this review of the

literature, the distinction itself is less important than is the fact that there is actually a distinction held by some.

Teams and Teamwork

The literature is replete with discussions on the value of teams and teamwork. Organizations that are interested in sustaining a competitive advantage rely heavily on work handled by many people being able to work together, rather than many individuals working side-by-side, or even alone. Many organizations are intentionally creating teams of individuals and establishing teamwork environments in the configuration of their business approaches.

Allen and Hecht (2004) theorized that teams may not be as effective as many believe them to be, and they argued that there may be a romance effect and a psychological benefit enjoyed by team participants, based upon the individuals being able to collectively participate in group-based activities. "Overall, there appears only minimal evidence that group activity offers performance advantages compared with combining the performance of the same number of individuals working alone or , even, by a single talented individual" (Allen, 2004, p. 442).

Bradley and Hebert (1997) developed a theoretical framework of team performance based upon the impact of individual personality differences in information system (IS) development teams. Studying two different teams based in a medium-sized software development company located in the Southeastern USA, the authors found that the two similarly situated teams, performing similar tasks ended up with markedly different results. The authors' conclusion was that the reason one of the two teams was ineffective was that there was an inappropriate composition of personality types on one

of the two teams. They found that the dominant factor impacting team performance was “the mix of personality types and how the different types interact[ed] to effect team performance” (Bradley, 1997, p. 340).

Parry, Tranfield, Smith, Foster and Wilson (1998) studied manufacturing companies in the UK and looked at the work being completed by management consultants and academic researchers in support of companies using teamwork in order to become more competitive. They found that most of the historical research efforts on teams and teamwork had focused on team skills or issues of work design. They saw teamwork as a process that needed to be re-engineered into the building of relationships, specifically through the creation of “teamwork cultures” (Parry et al. 1998, p. 167). Further, “teamworking...permits different methods of co-ordinating work through the establishment and development of new organisational routines – the patterns of action through which a work unit pursues its task” (Parry et al. 1998, p. 167).

Their view was that teamwork was best understood from a global organizational perspective, rather than just from a narrow set of properties that defined a team. Parry et al. (1998) also identified three types of teams: “self directed teams”- permanent work groups that are allowed to demonstrate flexibility and innovation in the workplace; “lean teams” – whose emphasis is on quality, continuous improvement and productivity all set in an environment of reducing waste and unproductive time; and “project teams” – which are formed from internal cross-functional activities brought together with the objective of integrating and compressing organizational activities. The most prevalent type of team they found was the self-directed workteam whose purpose was “to create greater flexibility and innovation in permanent work groups” (Parry et al. 1998, p. 169).

Their longitudinal study focused on a single company based in Australia. This company and its founder developed the first windshield rain sensor in the world. It had traditionally been an organization that was built on a “command and control” operation as fashioned after its founder, Raymond J. Noack. Parry et al. (1998) introduced a new methodology for the organization’s managers wherein self-directed workteams were established. “This company offered an interesting opportunity to explore a major organizational shift in archetypal form, from a heavily functional command and control culture with high levels of waste in the production system to a more participative, empowered, team-based organization with an increasing emphasis on quality” (Parry et al. 1998, p. 170). Through a series of interviews with employees and managers, it was determined that the self-directed workteams were able to demonstrate tremendous increases in productivity. The authors found that “the best person to ask about the job is the person doing it” (p. 171). One particular weakness of this study was that the testing of its hypothesis was limited to the study of just this one firm rather than an entire industry; however, it did help to demonstrate the power of increased productivity through the use of teamwork, and the effect that a single individual can actually impact the overall productivity of an organization.

In another study of teamwork, one based in a manufacturing setting, Banker, Field, Schroeder and Sinha (1996) conducted a 21-month longitudinal field study of productivity and defect rates at an electromechanical assembly plant. They studied the value of forming teams to impact productivity and quality output. They reported on the successes and failures of the different types of workgroups and teams encountered during their research. The teams they studied tended to fall into one of five different categories,

including, a) traditional workgroups- those that performed core production or support activities, with members of these groups having no management responsibility; b) quality circles- made up of voluntary members who came from various departments to make suggestions for improvement, but who had no authority to make final decisions, c) semi-autonomous workgroups- made up of workers who were able to manage their own work and execute major production activities; d) self-managing teams- those who could self-regulate work and complete interdependent tasks, and finally; e) self-designing teams- who have all of the characteristics of self-managing teams, but who also have the ultimate control over the makeup of the team itself and are able to determine what issues and what tasks should be undertaken.

Banker, Field, and Sinha (2001) then followed up their earlier research effort with a 28-month longitudinal study in the same industry (an electromechanical assembly plant) while specifically researching the sustainability of manufacturing quality improvements following the implementation of one of the five workgroup types on the plant's production lines. Their follow-up research led them to conclude that while teamwork initiatives such as quality circles initially had positive effects on performance improvement, those positive effects were not typically sustainable over time. Instead, they found that sustainable manufacturing quality improvements came from implementing workteam initiatives such as "being proactive in identifying initial implementation difficulties and resolving them through the early use of techniques such as group problem solving and conflict resolution training, so that the quality impact of work teams can be realized faster" (Banker et al. 2001, p. 37). The method of forming the

team was less important than what was done when the members of a team developed a solution to a problem it was faced with.

Both of these studies are, therefore, helpful in understanding that if the goal for the organization is increased performance through the use of teams, then issues of personal interaction between team members must clearly be taken into consideration and must be considered as a key component of organizational performance success.

In a case study looking at self-managing work teams, Wageman (1997) observed 43 such teams in Xerox's customer service division to determine how those teams could enhance the company's performance, organizational learning and employee adaptability and commitment to the organization. She found that "self-managing teams are fast becoming the management practice of choice for organizations that wish to become more flexible, push decision-making to the front lines, and fully use employees' intellectual and creative capacities" (Wageman, 1997, p. 32). Xerox managers were surveyed to identify teams within the organization that were both superb as well as those that were ineffective in their efforts.

Superb teams were defined by Wageman as consistently meeting the needs of their customers, appearing to operate with increasing effectiveness over time, and were made up of members who were engaged in and satisfied with their work. Ineffective teams were defined as frequently failing to meet customers' needs, appearing to operate increasingly poorly over time and were made up of members who were alienated from or dissatisfied with their own work. Her findings suggested that there are seven critical features that lead to successful self-directed workteams, including: 1) a clear and engaging direction; 2) assigning a real team task; 3) providing rewards for team

excellence; 4) providing basic material resources; 5) granting employees the authority to manage their work; 6) establishing team goals; and, 7) creating team norms that promote strategic thinking.

Further, Wageman (1997) determined that there were two basic influences on these factors: 1) how the team was set up and supported and 2) how the team's leader behaved in his or her day-to-day interactions with the team. In this study, another factor identified was that the employees had the authority to manage their own work; in other words, they were empowered. "Authority to manage the work means that the team- and not the leader- has decision rights over basic work strategies" (Wageman, 1997, p. 39). She found, however, that although many of the teams were said to be empowered, they still had managers and leaders who frequently intervened in activities of the workers, so although they were labeled as empowered, that was not always the case. The most effective teams "explicitly addressed the teams' authority and the boundaries around it" (Wageman, 1997, p. 39).

Proximate Workgroups

In a meta-analysis of research studies on the impact of leadership on team effectiveness, Chia-Chen (2004) found that teamwork leads to the strengthening of organizational performance. His evaluation of the literature led him to divide team effectiveness into two index dimensions: performance and attitude. The performance dimension included issues such as productivity, innovation, customer service, cost reduction and organizational value. The attitude dimension included issues such as work satisfaction, organizational commitment, team commitment and team unification. From the analysis of these two dimensions throughout the literature, he concluded that "team

performance is based on the performance and consciousness of team member [sic]" and that "team attitude includes cooperation, satisfaction and commitment of team" (Chia-Chen, 2004, p. 268).

Sheard and Kakabadse (2002) first coined the terms and developed the differentiation between a "loose group" and an "effective team." They conducted a 12-month ethnographic study from September 1999 to September 2000 for a multinational engineering company engaged in the design, development and manufacturing of rotating turbomachinery. They articulated that "a loose group is defined as a number of individuals brought together to achieve a task, but with no further development undertaken. An effective team, by contrast, is one in which development of a supportive social structure has occurred, with each individual adapting behavior to optimize personal contribution to the team" (Sheard, 2002, p. 133). They postulated that before a loose group can transition into an effective team, there must be an alignment of four basic elements that are shared amongst the players attempting to become a team, including the task, the group formation, the differences of the individuals in the group, and the environment in which they function.

The alignment of the four elements does not mean that there can be no conflict between the individuals, only that "the conflict is handled in a manner that minimized negative aspects associated with the conflict, allowing the team to continue to function despite the disagreement" (Sheard, 2002, p. 135). Their study demonstrated that there is a specific process that helps loose groups transform into effective teams, and that the process takes some time. To work effectively, an organization needs to put into place a formal business process which will allow such a transformation, including a leadership

philosophy that is built on the dynamics of focusing attention on relationships between people. The authors' concluded that effective teams were built on involving all team members, having teams with close leadership support, and having a process in place to closely review the performance of the team against the stated goals.

Gordon (2002) analyzed the team effectiveness work completed by Margerison and McCann of the Institute of Team Management Studies (TMS) and reported that "effective teams must have individuals with complementary skills in order to meet [the] ever-changing needs of both internal and external customers. Further, effective teams must have specific goals to strive for which allow mutual accountability" (Gordon, 2002, p. 186). Gordon's work outlined ten elements that typify effective teams, as opposed to people just being assigned to proximate workgroups. Teams having clear goals, defined roles, open and clear communication, effective decision making, balanced participation, valued diversity, managed conflict, positive atmosphere, cooperative relationships and participative leadership. Proximate workgroups tend to have none of the above.

Jehn, Chadwick and Thatcher (1997) conducted a quasi-experimental study utilizing functional groups performing comparable tasks. Their study investigated the benefit of members of workgroups being different or alike, agreeing or disagreeing, with a resultant measurement of the impact on workgroup performance. Study participants were primarily full-time employees enrolled as part-time MBA students, as well as full-time MBA students. Eighty-eight teams of five participants each were given tasks to work on together within fictitious organizations, solving organizational problems by assessing the situation assigned, developing a solution expressed in the format of a strategic plan, and then presenting recommendations for implementation in the form of a

written, ten page report. The study examined two types of intragroup conflict that occurred during the assignment- relationship conflict and task conflict. Results of this study indicated that the visible forms of differences in the workgroups such as age and gender (social diversity) increased relationship conflicts, and that differences regarding informational demographics, such as education skills and abilities (functional diversity) increased task-focused conflicts.

This study was important in the identification of the distinction between values found in teamwork versus those found in workgroups. The authors found that “the content of the values influences the performance of the group” (Jehn, et al. 1997, p. 295). Study results showed that the individuals who valued the decisiveness of their group were happier and believed that their group performed better. In contrast, groups with strong outcome oriented group members performed better objectively; however, they did not perceive that they did so. The study also revealed that while some group members believed that certain values brought to the group by individuals would increase the groups’ performance, there was not any measurable increase in the group’s actual performance. Contrary to the authors’ predictions, “most groups with a team orientation were dissatisfied” (Jehn et al. 1997, p. 298). This was due to the fact that those groups that worked toward a team orientation were probably more likely to have higher expectations about what their group experience was going to be.

While this study does add to the general knowledge of the field, it is not without limitations, the biggest of which is that its sample was composed of MBA student workgroups rather than employees in workgroups within an organization. Also, since the study was quasi-experimental, rather than in a more controlled setting, the authors

admitted that they were unable to control the conditions of the study as well as they would have liked.

Diversity

The literature is full and rich with concepts of diversity; although a precise definition of diversity is rather elusive. There are, however, a few specific perspectives which are important distinctions in this review and they are broken down into the three categories of social diversity, team diversity, and functional diversity.

Wise and Tschirhart (2000) conducted a meta-analysis of empirical studies on work-related consequences of human diversity. In particular, they studied practices of managing for diversity (characteristics of people) in relationships among workers with varying levels of heterogeneity. Their focus was on public sector organizations, since there has been a strong belief in the practice of managing-for-diversity in this sector. The diversity literature reviewed was published from 1961 to 1998, using diversity key words searches to test the question: does diversity in work organizations influence specific work outcomes?

In their effort to assess the body of research on diversity, Wise and Tschirhart examined the topics of breadth and depth of coverage on work outcomes, diversity dimensions, the characteristics of those that published the work, and the quality of the research. Their conclusions were that empirical evidence about the consequences of diversity in work organizations was limited, and that much of what they had uncovered presented conflicting and inconclusive findings. They discovered “surprisingly little breadth and depth in the articles in [their] database in terms of the diversity effects investigated and the dimensions of diversity examined” (Wise, 2000, p. 390). This led to

the conclusion that literature on diversity suggests that managers were using largely untested propositions as a basis for diversity policies, strategies, and actions, and that both diversity dimensions and outcomes from diversity applications needed further study. One notable omission from their study was that they did not use any keywords to capture personality differences in their measurement of diversity. Personality differences and behavior are an important aspect of this literature review, thus this topic is further explored in greater depth.

The Role of Personality and Disposition

Every human being carries with them their own personality and patterns of behavior. The literature does not portend to offer a clear distinction between personality and behavior. According to George and Jones (2002), personality is defined as “the pattern of relatively enduring ways in which a person feels, thinks, and behaves” (as cited in McKenna, Shelton and Darling, 2002, p. 315). “At a deeper level, behavior can be the loyalty we show, the trust we place, the commitments we make, the honesty and truthfulness with which we deal with others” (Kippenberger, 2002, p. 6). Guilford in 1959, defined a personality trait as “a distinguishing, relatively enduring way in which one individual differs from another” (as cited in Noel, Michaels & Levas, 2003, p. 154).

Ashkanasy (2002) explored improving the understanding of organizational behavior through an investigation of the cognitive and affective processes that underlie attitudes and behavior. He examined three areas of behavior, including his own 1987 affective events theory, emotional intelligence theory developed by Goleman in 1995 and 1998, and the effects of supervisors’ facial expressions on employees’ perceptions of their leaders. Using affective events theory, Ashkanasy proposed that one’s behavior

within an organization will be affected by a series of either positive or negative events, which will ultimately accumulate in one's behavior mirroring those positive or negative series of events. For example, employees that are micromanaged by a demanding boss may become disgruntled; suffer job dissatisfaction and disenchantment, deciding eventually to move on to employment elsewhere.

His emotional intelligence methodological study led to the development of the Workgroup Emotional Intelligence Profile indicator, which he used to test interpersonal skills. Student participants were assigned to workgroups and given coaching in goal setting and interpersonal skills over a nine week period. The study was carried out by working with participants who viewed video vignettes of supervisors delivering both positive and negative feedback on subordinate subjects. Results of the study showed that low emotional intelligence workgroups performed initially at a lower level than high performance workgroups; however, when additional coaching was applied, both groups increased their interpersonal skills. Results further indicated that "reactions to the leader were determined more strongly by the leader's perceived facial expression than by the positive or negative feedback itself" (Ashkanasy, 2002, p. 15). Therefore, managers in organizations need to be aware that even the simplest events at work can and do affect workers, which can have an accumulating effect on determining both attitudes and behaviors at work. Ashkanasy suggests that further research needs to be done on what he terms multi-level theories of emotions in organizations. He believes that there is the potential for five different levels to be studied: within-person, individual, dyadic, group and organizational. Further, he claims that research to date has been too narrowly defined; that is, along the continuum of positive and negative mood and affect. He calls

for more research on some of the more discrete emotions such as anger and joy in reaction to events.

Chowdhury, Endres, and Lanis (2002) researched the importance for individuals to build confidence in workgroup environments. Their study sampled senior-level business students at a major university and reviewed individual behavioral variables, such as self-satisfaction and self-efficacy when those students participated as members of a team. The study involved 107 students broken out into twenty-three teams, who were working on team projects over a 16 week period (a class semester). "To improve individual performance and satisfaction of students in team settings and their ability to work in teams, it is important to improve their self-efficacy of working in a team environment" (Chowdhury et al. 2002, p. 347). Their methodology for assessing self-efficacy was a series of pre- and post questionnaires designed to measure an individual's level of confidence at being successful, as well as working in a team environment. Respondents were asked to indicate their degree of satisfaction working on the team and to indicate their opinion regarding their team members' performance while working on the team.

Their study revealed that low prior self-efficacy did not hurt individual performance and satisfaction when the team's overall performance was high. Results also indicated that in low-performing teams, prior self-efficacy of working in a team environment did influence an individual's performance and satisfaction. The ultimate findings of the study were that "members of teams with high performance are likely to experience more positive feedback than members in low-performing teams. Therefore, in a high performing team, one's low prior self-efficacy may not hurt his/her satisfaction

and performance; instead, the positive team performance would improve his/her self-efficacy” (Chowdhury et al. 2002, p. 353). The authors pointed out, however, that the results of the study should be interpreted with caution for two reasons. First, it was subjective data from college business students, and, second, the study was performed at just one university rather than using many different institutions. Therefore, the authors suggested that generalizations from the study should not be made.

House, Shane and Herold (1996) discussed the value of dispositional research in the field of organizational behavior. Their writings questioned whether individual disposition actually influenced behavior, or if situational forces alone could be used to predict and explain behavior. Davis-Blake and Pfeffer (1989) argued that “dispositions are likely to have only limited effect on individual relations in organizations” (Davis-Blake & Pfeffer 1989, p. 387). The meta-analysis by House et al. suggested that while Davis-Blake and Pfeffer found the value of dispositional research to be negligible, House et al. determined that “in most studies of dispositional and situational effects, both sets of variables predicted dependent variables significantly” (House, 1996, p. 212).

Additionally, they called for further research in the field of personality and disposition, including more specifically defining what is meant by disposition, and by determining which dispositions are operative in affecting behavior (and when). Further research would also be helpful in developing methods for theoretically linking dispositions and situations, focusing on better assessments and measurements of dispositions and their consequences, and lastly, the development of studies and the testing of interactional models in which the role of disposition was the key focus.

Interactions between individuals within organizations often are done through networks. Forret and Dougherty (2001) conducted a study of 418 graduates of a large Midwestern state university who had been in business since graduation as either managers or professionals to examine the relationship of personality and job characteristics on networking within organizations. They hypothesized that men were more likely to engage in networking behaviors than women, and that socioeconomic background was related to networking behaviors, as was self-esteem. They also examined whether extraversion was positively related to involvement in networking behaviors and with organizational rank.

Data were collected through a questionnaire, and results showed that gender differences had little impact on networking behavior within organizations, but socioeconomic background was a significant predictor. Extraversion was a strongly predictive network behavior and “self-esteem was a significant predictor of maintaining contacts, engaging in professional activities, and increasing internal visibility, highlighting the critical role self-confidence plays in [the] ability to engage in networking behaviors” (Forret & Dougherty, 2001, p. 293). This study, however, did have a number of limitations. First, the sample used was highly educated, full-time managerial and professional employees. It is not known if the study results could be generalized to less educated individuals or to those who are not employed as managers or professionals. Also, the authors were not able to compare survey respondents with non-respondents since the instrument used was a single self-report survey. While they did receive a 50% response rate, they did not have any method for measuring those who did not respond. In suggesting opportunities for future research, the authors raised the question of testing for

whether or not personality variables can be taught. They concluded that, “in organizations and occupations where networking is considered critical for success, knowledge of why some individuals are more likely to engage in networking behaviors than others represents valuable information for selection processes and training programs” (Forret & Dougherty, 2001, p. 295).

Social Diversity

Social diversity typically refers to issues of race, gender, age, ethnicity, national origin and sexual orientation (Schneider & Northcraft, 1999). References to diversity in organizations and the training associated with diversity typically use these descriptive characteristics when discussing the topic. In developing a theoretical model of the effects of culture and cultural diversity on workgroup processes and outcomes, Oetzel defined cultural diversity as a taxonomy that “can be indexed by natural culture, ethnicity, language, gender, job position, age, or disabilities” (Oetzel, 1999, p. 252). Social, cultural and ethnic diversity efforts in organizations often refer to the way individuals are treated. “A good workplace is serious about treating everyone well- workers as well as executives; women as well as men; Asians, African Americans, and Hispanics as well as whites; gay as well as straight” (Bolman, 2003, p. 153).

Combs (2002) offered a theoretical approach for a new type of leadership in order to improve organizational performance through a focus on improved diversity performance. She wrote on ways to implement diversity training by describing the value of using a self-efficacy construct to build diversity self-efficacy, which helps to bridge the gap between diversity training and diversity performance. Combs’ implication for

leaders in organizations was to provide a more systemic and innovative approach to using differences in others to provide positive influences on the organization.

Combs believed that an individual's approach to and commitment toward diversity in the workplace would allow for and then possibly facilitate organizational greatness. Performance monitoring would be the key to success. "In this regard, performance monitoring becomes more a function of the individual employee's self-efficacy mechanisms rather than supervisory imposed monitoring practices and procedures" (Combs, 2002, p. 4). Further, the "major workplace dilemma for many organizations is determining methods and processes for encouraging and harnessing the creative energies and talents that result from a diverse employee base" (Combs, 2002, p. 8).

Bernstein's (2003) theoretical review of empowerment suggested, "the appeal for organizations [to] 'empower' employees is that they will be able to take advantage of each individual's most intense energetic investment- the realization of the self- and co-opt this energy in the service of organizational achievement" (Bernstein, 2003, p. 75). His premise was that organizations, leaders, and coaches don't "empower" employees, only the employees can empower themselves. According to Bernstein (2003), it is a personal matter to take on responsibility and ownership of ideas and tasks. "Management's attempts to shift the responsibility for an employee's actions onto the employee, out of a misguided presumption that such a shift amounts to an 'empowerment attempt', may indicate guilt and anxiety about disregarding the multiple forces, including extrinsic monetary and social pressures, operating on the individual to behave in a particular way at a particular time" (Bernstein, 2003, p. 81). For Bernstein, it is individual differences, or

the social diversity, which provides the basic catalyst for those individuals to believe that they are empowered to positively impact organizational performance.

Hartenian and Gudmundson (2000) conducted an empirical study to determine if there was an economic advantage for small firms to promote cultural diversity within the ranks of their employees. They were driven to conduct this study because “a review of the literature could find no empirical studies that examined work force diversity and firm economic performance” (Hartenian & Gudmundson, 2000, p. 209). In their study, they examined the economic performance of a group of service industry companies located in a large mid-west metropolitan area, based upon the percentage of cultural minorities employed by those companies. Questionnaires were mailed to firms, asking them to provide both financial data and workforce diversity data.

Two sets of *t*-test analyses were completed in order to compare those companies that had diverse work forces verses those with non-diverse work forces. Results showed that “firms with diverse work forces (between 10% and 90% minorities) had better financial performance than firms with non-diverse work forces (less than 10% or more than 90% minorities)” (Hartenian & Gudmundson, 2000, p. 213). However, their study was a bit inconclusive on why this was so. Limitations included whether or not it is appropriate to relate financial results to operational issues. Their study looked at the diversity make up of the companies at a moment in time, not over a length of time. In addition, just because the firm had a diverse workforce, it did not mean that the workforce was managed well, and the firm’s financial results could have been the result of other factors.

Team Diversity

The concept of team diversity is as complex as it is multi-faceted. Ollilainen (1999) described the issue of team diversity as being “quite complex because individuals can identify with multiple sources, which, in addition to one’s demographic and social groups, include also one’s organization, functional specialty, geographical unit, and work groups” (Ollilainen, 1999, p. 91). Further, Ollilainen suggests that if “problems in teams result from team members’ conflicting identities, one solution is to establish a common team identity that will override in-group loyalties and rivalries that stand in the way of team efficiency and effectiveness” (Ollilainen, 1999, p. 91). Her theoretical approach to team diversity concluded that there needs to be a broader analysis of team diversity, beyond the traditional organizational demographics. Additionally, she called for a more historical, and in particular, a more contextual understanding of the diversity of individual employees who actually work together when they are formed into teams.

Rather than focusing on and placing an overemphasis on individual competence levels, Castka, Bamber and Sharp (2003) suggested that “a team as a whole can possess most of the desirable characteristics” (Castka, 2003, p. 150). A team will successfully utilize its own diversity when it is able to develop an “understanding of [teammates’] personality preferences, and how it affects the way team members prefer to operate, [which in turn] helps to understand and deal with other team members” (Castka, 2003, p. 150).

D’Netto and Sohal (1999) conducted a survey in 500 large Australian organizations by questioning human resources managers on their effective practices for managing workforce diversity. Using a structured questionnaire, the authors tried to determine if the organizations surveyed were creating diverse teams of employees. Their

hypothesis was that “diversity management emphasizes building specific skills, creating policies and drafting practices that get the best from every employee. It assumes a coherent environment in organizations and aims for effectiveness, productivity and ultimately competitive advantage” (D’Netto & Sohal, 1999, p. 531).

The results of the study indicated that diversity management practices in the organizations sampled were mediocre at best. There are a number of reasons, including the fact that the concept of diversity management within teams was still a new concept in Australia at the time of their study. Also, Australia tended to be more of a homogeneous society, and therefore workforce diversity tended not to be much of an issue. Finally, Australia, at the time of the study, remained fairly isolated from the world economy, so the desire to use team diversity to develop a competitive advantage was less important in Australian organizations than for those in more heterogeneous societies in other parts of the world.

The study was not without its limitations however. First, the variety of dimensions of diversity was relatively narrow. Second, respondents in the study were all part of the management team, and their responses to issues of diversity management practices might have been biased. The study could have been broadened if it had included the responses of workers as well as managers.

In 2001, Howard and Brakefield studied the relationship between the diversity of team members against the team’s performance on a task. The study was designed to examine if team diversity interacted with team type to affect performance. Their hypothesis was to test if staffing teams according to similarities in team members’

abilities had the effect of reducing diversity within the teams, while actually increasing the diversity between teams.

Study participants were introductory management and human resource management students at two Midwestern universities. They were asked to participate in a paper-based “disarmament exercise” where each of two groups were given written instructions for completing the exercise, with one group being given instructions to “collaborate” and the other group given instructions to “compete”. Data from the study was analyzed in two ways. First, the researchers used independent *t*-tests to determine if diversity had any impact on the outcome of the exercise. Second, they analyzed the variance using ANOVA to determine what impact, if any, task type and diversity had on outcomes.

The only consistent finding of their study was that the type of task undertaken was found to have significant influence on the results. The effects of diversity were determined to be negligible. One item of importance was that although the results of the research did “not support the idea that diversity influences team performance, neither [did] they refute the idea. From the type of methodology and analyses conducted, the strongest reasonable conclusion [was] that the effects of diversity [were] not so straightforward, and further study [was] needed to examine possible interactive and contingency variables” (Howard & Brakefield, 2001, p. 152). The researchers further recommended that empirical research should be conducted “to determine whether or not various types of diversity do have a quantitative influence on group performance” (Howard & Brakefield, 2001, p. 153).

Functional Diversity

When thinking of issues of diversity in the workplace, initially most people tend to think of themes related to social, cultural and ethnic diversity as was outlined previously. This literature review, instead, continues its focus more on diversity that is functional or behavioral in nature. The balance of this review relates to topics of diversity based upon personality and disposition. Also known as cognitive diversity, or informational diversity (Jehn, 1999), it is a distinction involving groups of people looking at a task, a problem or a situation, based upon their differences in perspectives and talents, personality and disposition. Amabile (1983) suggested that “functional diversity is also important to innovation, renewal, and creativity in organizations” (as cited in Schneider and Northcraft, 1999, p. 1449).

McKenna, Shelton and Darling (2002) defined behavior style diversity as “the variability among members of an organizational work group in their approaches to various tasks and interactions such as decision making, problem solving, communication or conflict resolution, and in their preferences regarding the pace and variety of the work they perform” (McKenna et al. 2002, p. 320).

McGrath, Berdahl, and Arrow (1995) noted several different types of diversity that fit under the functional diversity characteristic umbrella, including differences within a workforce in knowledge, skills, and abilities (KSAs), values, beliefs, and attitudes (VBAs), and personality, cognitive style, and behavior style (PCBs) (as cited in Schneider & Northcraft, 1999, p. 1446). “Behavioral style diversity refers to the variability among members of an organizational work group in their approaches to various tasks and interactions such as decision making, problem solving, communication

or conflict resolution, and in their preferences regarding the pace and variety of the work they perform” (McKenna et al. 2002, p. 319).

Hostager and De Meuse (2002) conducted an empirical study designed to assess the degree to which members of an organization hold simple or complex views on workplace diversity. Their desired outcome from the research was to develop an assessment tool to help trainers implement customized diversity training activities tailored to the specific perceptions held by individuals. In their study, the *Reaction-To-Diversity (R-T-D) Inventory* tool was developed by using key-word identification to assess the generalized perceptions and attitudes toward diversity that individuals bring to the workplace. The R-T-D Inventory instrument listed positive words and negative words within five diversity categories, including: a) emotional reactions; b) behavioral reactions; c) judgments; d) personal consequences; and e) organizational outcomes. Their research was conducted at three different locations wherein they invited 110 university students, 66 employees of a white-collar organization, and 90 employees of a blue-collar firm to complete a questionnaire. Study participants were asked to circle all of the words on the questionnaire that they frequently associated with workplace diversity. Those key-words were then placed into the R-T-D Inventory and measured for depth, breadth and balance of diversity perceptions. Data were analyzed using MANOVA.

The author’s research summary indicated that university students displayed significantly lower levels of complexity and were least likely to view diversity in positive terms. Their findings also revealed that managers had higher levels of complexity than did their employees regarding judgment about diversity and those managers were more likely than employees to see workplace diversity as being good in principle. Based upon

the results of their study, the researchers were able to conclude, “that one goal of diversity training should be to create a broad, deep and balanced awareness of the light and dark side of diversity” (Hostager & De Meuse, 2002, p. 202). If one were to follow this thinking to its logical conclusion, the authors’ prescription for diversity application would be to “design diversity activities in ways that increase...chances for expanding the breadth, depth and balance of participants’ perceptions of diversity in the workplace” (Hostage & De Meuse, 2002, p. 202).

Jehn, Northcraft, and Neale (1999) refer to functional diversity as informational diversity. Specifically, they define informational diversity as the “differences in knowledge bases and perspectives that members bring to the group” (Jehn et al. 1999, p. 744). Discussing the fact that groups with diverse members often prove ineffective in taking advantage of that informational diversity, and that managers of diverse workgroups often complain that there is difficulty in motivating highly diverse teams to effectively work together, they conducted an empirical study on the effects of informational diversity within workgroups. A voluntary survey comprised of 85 self-report, Likert-style questions was distributed to 545 employees in one of the top three firms in the household goods moving industry.

Results of the survey demonstrated that informational diversity is positively related to the actual performance of the organizational workgroups. Further results also indicated that informational diversity also leads to conflict among group members. Additionally, the authors found that “different forms of diversity exacerbate different forms of conflict (within different task configurations), which in turn affects perceived

performance, actual performance, satisfaction, intent to remain, and commitment” (Jehn et al. 1999, p. 752).

While this study helps to understand the value of functional (informational) diversity, it was not without its limitations. First, the study was cross-sectional, so the authors were clear that no causal inferences could be drawn from the study. Further, the variables that were measured were self-reported, so they could not rule out the possibility of response bias in some of their analyses. While the authors did not offer any specific recommendations for future research, they did reach a particular conclusion that could lead to future research. They suggested that “previous research even with its contradictory findings and inconsistent empirical support, may have been easier to tell- heterogeneity leads to better workgroup performance and homogeneity leads to easier workgroup process- the more complex representation of these relationships...should enhance our understanding [through future research] of the ways to create, intervene in, and manage high-performance groups and teams” (Jehn et al. 1999, p. 754).

Diversity Training

In recent years, efforts at diversity training have become more commonplace in the U.S. work environment. Changing demographics of the workplace have necessitated a need for organizations to provide a variety of methods for how organizations manage their human resources. Managing a diverse workforce is now an important part of many business strategies, corporate cultures and human resource management systems being implemented by organizations. While diversity training programs have gained a general acceptance over the last decade or so, there have been very few attempts to empirically evaluate their impact or value.

Adler (1990) found that people who were exposed on a limited basis to cultural diversity training were more likely to associate the differences in culture amongst co-workers to actual behavior in the workplace and were able to recognize the potential advantage to having a workplace which was diverse, rather than homogeneous. Diversity training programs, as critiqued by ten years of annual reports released by the Society for Human Resource Management (SHRM) between 1988 and 1998 demonstrated that it had not always been smooth sailing, although good progress in the number of diversity training programs had increased. Allen and Montgomery stated, "In 1988 diversity was not one of the top 40 training topics reported by companies in the [SHRM] study. By 1998 a study by the same organization reported that 75 percent of the Fortune 500 firms and 36 percent of companies of all sizes had some sort of diversity program in process" (as cited in Swanson, 2002, p. 266).

To look at businesses' diversity programs, Carrell, Mann and Sigler (2006) completed a longitudinal study on workforce programs and practices. Their research compared responses on three topics of diversity (one of which was the extent to which diversity policies and programs are actually utilized in the organizations surveyed) from the period of 1993 to 2004. Their initial effort was a two-page survey developed such that human resource managers could provide information on the workforce diversity programs within their own organizations. The survey included both objective and open-ended items in an effort to collect data on the responding organization's approach to diversity issues, including the diversity training provided by the organization. The survey was sent to a random sample of members of the Society for Human Resource Management (SHRM), the same organization used by Allen and Montgomery (2001).

Comparative results for the twelve year period showed that 46 percent of the respondents to the updated survey had a written policy or program including concepts of employee diversity; a 35 percent increase over the initial survey results. Diversity activities such as recruitment (73 percent of respondents) and selection (59 percent of respondents) did not show an appreciable difference between the 1993 and 2004 results. While comparative results for the actual increase in awareness training (41 percent), sensitivity training (41 percent), workshops on issues (25 percent) and skills enhancements (21 percent) were not reported by the authors, they did say that “skills enhancement, awareness training, and sensitivity training were more likely to be included in current diversity programs and policies in 2004,...[and] this may indicate an increased awareness of the importance of the issue for retraining, developing, and promoting employees once they are selected” (Carrell, Mann & Sigler, 2006, p. 9).

Hanover and Cellar (1998) recognized the growing use of diversity training in organizations and wanted to assess the extent to which such training could be an effective means of achieving the learning objectives associated with it. Their research on diversity training workshops conducted in a Fortune 500 consumer products organization headquartered in the Midwest United States looked at the impact and value of diversity training within that organization. Participants were 99 middle managers each of whom had responsibility to supervise 12 to 18 employees. Approximately one half of the managers were placed in a treatment group with the other half in a control group.

Treatment participants attended one of five scheduled workshops on diversity. Attendees at the workshops included African-American and Asian subordinate employees, however, these attendees did not actually participate in the research aspect of

the study. Their role was to provide a minority point of view during workshop discussions. The stated objectives of the diversity training included: “1) to underscore the role of diversity in the company’s goal to be a world class organization; 2) to understand cultural biases and stereotypes as part of cultural conditioning; 3) to heighten awareness about ways in which personal behavior contributes or detracts from a productive environment; and 4) to reinforce and practice skills needed for managing a diverse workforce” (Hanover & Cellar, 1998, p. 109).

The study had a pre-test and post-test design for both the treatment and control groups. The independent variable was the type of treatment (training vs. no training) and the dependent variables were the measures of training effectiveness (such as reaction, rated importance of diversity-related management practices, and self-perception of behavior). Two types of analyses were conducted in order to determine the effects of diversity training on the dependent variables.

Paired *t*-tests were conducted within the treatment and the control groups. ANCOVAs were conducted to assess between-group effects of the training manipulation on the dependent variables. “Results of the paired *t*-tests indicated that participants who attended the workshop showed significant improvement on the importance variable after the workshop, whereas participants who did not attend the workshop did not. Furthermore...the results of the ANCOVA indicated a significant effect for the training manipulation for this variable. Thus, the results of the paired *t*-tests and ANCOVA both indicated that the training program affected attitudes toward diversity-related management practices” (Hanover & Cellar, 1998, p. 111).

The authors did indicate a number of limitations of their study, including the non-random assignment to the groups, a reliance on self-reported data, and a limited sample size. Opportunities for future research were identified, such as the development of key components, or common denominators of diversity training, where expected outcomes are more clearly understood (both positive and negative). In particular, the authors suggested that “a key question concerning diversity training is whether it can affect organizational effectiveness outcomes- productivity for example, ...[since]...research linking any training program to organizational effectiveness outcomes is sparse” (Hanover & Cellar, 1998, p. 115).

Functional Diversity Instruments and Indicators: The Myers-Briggs Type Indicator

As already pointed out, every individual is unique in his or her own way. Everyone is a creation of that which they inherit and the environment in which they exist. We are all different from each other. “The doctrine of uniqueness, however, gives no practical help in understanding the people whom we must educate, counsel, work with, or interact with in our personal lives” (Myers, McCaulley, Quenk & Hammer, 1998, p. 21). Quite often, people will assume that others see things the same way that they see things themselves. “All too often, however, people with whom we interact do not reason as we reason, do not value the things we value, or are not interested in what interest us” (Myers et al. p. 21). Having an indicator or an instrument available in the workplace to assist employees and employers better understand and appreciate the differences between co-workers can be a very powerful tool impacting workgroup performance.

Functional diversity indicators for the assessment of personality have been used in non-clinical settings for years. Instruments such as the Sixteen Personality Factor Model

(Cattell, 1932), the Personal Preferences Self-Description Questionnaire (PPSDQ; Thompson, 1996, 1998), the Revised NEO-Personality Inventory (NEO PI-R; Costa & McCrae, 1987, 1989, 1991), the Kirton Adaptation Inventory (KAI; Kirton, 1976, 1986, 1989, 1999), and the Myers-Briggs Type Indicator[®], (MBTI) (Myers & McCaulley, 1985, 1992) are a few of the more popular instruments in use. The NEO PI-R inventory is mostly used in the academic research area. The MBTI is mostly used in the applied field of management training and counseling. Norman (1963) identified five personality descriptors (Extraversion, Emotional Stability, Agreeableness, Conscientiousness, and Culture) which are used commonly in the literature and are traditionally referred to as the “Big Five” or the 5-Factor Model.

Barrick and Mount (1991) conducted a meta-analysis of criterion-related validity studies of organizational hiring practices based upon personality. Their review looked at both published and unpublished literature from 1952 to 1988. They examined the relationship of Norman’s Big Five personality constructs to job performance measures for five occupational groups (professionals, police, managers, sales, skilled and semi-skilled). In particular, they studied the constructs of “conscientiousness” and “emotional stability” as being valid predictors of job performance because they believed that these two criteria would be important for accomplishing work tasks in all types of jobs.

Conscientiousness, in particular, was found to be a consistently valid predictor for all of the occupational groups studied. “Thus, this aspect of personality appears to tap traits which are important to the accomplishment of work tasks in all jobs. That is, those individuals who exhibit traits associated with a strong sense of purpose, obligation, and persistence generally perform better than those who do not” (Barrick & Mount, 1991, p.

18). The Barrick and Mount study was somewhat different from previous studies on this subject in that they used, in particular, an accepted taxonomy (the Big Five) to study the relationship of personality to job performance criteria. Using the Big Five taxonomy, they were “able to show that there are differential relations between personality dimensions and occupations and performance criteria” (Barrick & Mount, 1991, p. 17).

Barrick and Mount (1991) outlined important areas for future research, suggesting that their results were limited by the fact that they generally focused on just two of the dimensions (of the Big Five) within their study and that the results were based on only five sample sets. They were also limited in the types of jobs that were studied. It was also clear that use of the dimensions based within the Five Factor model (the particular taxonomy used) was a limit on their results as well. They concluded their study with a recommendation for additional future research by suggesting that “perhaps future research and practice in the training and development field will be stimulated by the availability of a classification scheme for organizing individual differences in personality” (Barrick & Mount, 1991, p. 22). The work of Barrick and Mount was a great stimulant for this researcher. To that end, the balance of this review of the literature focuses particularly on the use of the Myers-Briggs Type Indicator® in the workplace as the taxonomic instrument for measuring functional diversity and its impact on workgroup performance.

Studies, theories and perceptions on personality and behavior, diversity and diversity training abound. The literature is full of calls for additional definitions and empirical research to determine whether or not issues of diversity have a measurable influence on group performance. There appears to be a constant search for the right tool

for quantifying that influence. McKenna, Shelton, and Darling's (2002) study of the historical origins of behavioral style assessment on organizational effectiveness recommended further use of behavioral style assessment instruments to validate perceived organizational benefits of using style assessments in the workplace. Their conclusions are that "little research has been published that demonstrates statistically significant differences between the performance of organizations that use such assessment instruments compared to those that do not" (McKenna et al. 2002, p. 322).

The Myers-Briggs Type Indicator® (MBTI) is a tool that was developed by the mother-daughter team of Katherine Cook Briggs and Isabel Myers-Briggs to help make sense of the specific differences among people. Building on the psychological type work of Carl Jung, Briggs and Myers developed this tool to "enable individuals to grow through an understanding and appreciation of individual differences in healthy personality and to enhance harmony and productivity among diverse groups" (Myers et al. 1998, p. xv).

Topping (2002) reported that "the Myers-Briggs Type Indicator® (MBTI) is probably the most widely used personality indicator" (Topping, 2002, p. 20). Myers et al. (1998) identified the Myers-Briggs Type Indicator® as "the most widely used personality assessment instrument in the world" (as cited in de Charon, 2003, p. 13). McKenna, et al. (2002) indicated it is "the most widely used assessment instrument in contemporary business organizations at the present time" (McKenna et al. p. 318).

The MBTI uses two descriptors of attitudes (extroversion and introversion represented by the letters E-I), four types of mental functions (sensing and intuition as well as thinking and feeling represented by the letters S-N and T-F), and two attitudes or

orientations toward the outer world (judging and perceiving represented by the letters J-P). Each of the eight letters found in Table 2-1 represents a preferred way of making decisions and how individuals interact with the outside world. They each contribute to the process of making decisions. They demonstrate eight different mental habits. “Everyone uses all eight, but each person has preferences among them and uses those more. It is a lot like handedness- everyone uses both hands, but favors and is better at using one of them” (Lawrence, 1998, p. 1).

Table 2-1

The Eight Dichotomous Letters of the MBTI

E -----	----- I
S -----	----- N
T -----	----- F
J -----	----- P

Note: From “*Descriptions of the Sixteen Types*” by Lawrence, G.D. (1998), p. 1. Copyright 1998 by the Center for Applications of Psychological Type, Inc., Gainesville, FL. Reprinted with Permission.

The four dichotomous sets of descriptors (E-I, S-N, T-F, and J-P) can be assembled to indicate 16 distinct personality types. Those 16 personality types are outlined in Table 2-2. The MBTI instrument measures the relative strength along each of the four dichotomous pairs to develop a personality inventory for any individual. Taken together, “these functions and orientations influence how a person perceives a situation and decides on a course of action” (Myers et al. 1998, p. 33).

Table 2-2

The Sixteen Personality Types of the MBTI

ISTJ	ISFJ	INFJ	INTJ
ISTP	ISFP	INFP	INTP
ESTP	ESFP	ENFP	ENTP
ESTJ	ESFJ	ENFJ	ENTJ

Note: From “*Understanding the Type Table*” by McCaulley, M.H. (1976), p. 2, [Training Handout]. Copyright 1976 by the Center for Applications of Psychological Type, Inc., Gainesville, FL. Reprinted with Permission.

“Type is not a pigeonhole or stereotype; it is a particular way that mental energy is organized” (Lawrence, 1998, p. 1). A brief descriptive outline of each of the 16 personality types of the MBTI offered by Lawrence includes:

ISTJ: An analytical manager of facts and details; dependable, conservative, systematic, painstaking, decisive, stable;

ISTP: A practical analyzer; values exactness; more interested in organizing data than situations or people; reflective, cool and curious observer of life;

INFJ: A people-oriented innovator of ideas; serious, quietly forceful and persevering; concerned with work that will help the world and inspire others;

INTJ: A logical, critical, decisive innovator of ideas; serious, intent, very independent, concerned with organization; determined and often stubborn;

ISTP: A practical analyzer; values exactness; more interested in organizing data than situations or people; reflective, cool and curious observer of life;

ISFP: Observant, loyal helper; reflective, realistic, empathetic, patient with details; shuns disagreements and generally reserved and modest;

INFP: Imaginative, independent helper; reflective, inquisitive, empathetic, loyal to ideals: more tuned to possibilities than practicalities;

INTP: Inquisitive analyzer; reflective, independent, curious; more interested in organizing ideas than situations or people;

ESTP: Realistic adapter in the world of material things; good-natured, easygoing; oriented to practical, first-hand experience; highly observant of details of things;

ESFP: Realistic adapter in human relationships; friendly and easy with people, highly observant of their feelings and needs; oriented to practical, first-hand experience;

ENFP: Warmly enthusiastic planner of change; imaginative, individualistic; pursues inspiration with impulsive energy; seeks to understand and inspire others;

ENTP: Inventive, analytical planner of change; enthusiastic and independent; pursues inspiration with impulsive energy; seeks to understand and inspire;

ESTJ: Fact-minded practical organizer; assertive, analytical, systematic; pushes to get things done and working smoothly and efficiently;

ESFJ: Practical harmonizer, works with people; sociable, orderly, opinionated; conscientious, realistic and well tuned to the here and now;

ENFJ: Imaginative harmonizer, works with people; expressive, orderly, opinionated, conscientious; curious about new ideas and possibilities;

ENTJ: Intuitive, innovative organizer; analytical, systematic, confident; pushes to get action on new ideas and challenges. (pp. 2-5).

Understanding individual differences of personality and behavior may possibly lead to an enhanced work environment. There are distinct differences in how individuals approach their work. "Some individuals tend to be systematic thinkers, building on ideas and facts in the problem and focusing on rationality and logic, while others rely more

heavily on intuition and imagery, looking beyond current rules, boundaries, and rational logic” (Garfield et al. 2001, p. 326). The MBTI as an assessment tool helps to identify, for example, the distinctions between the systematic, data-driven, cognitive style of individual versus the intuitive, imaginative-driven style of other individuals.

Sample (2004) wrote a theoretical analysis on the use of the MBTI as a tool for recognizing and prizing individual differences in organizations. This work was geared toward the Organizational Development (OD) professional. “Appreciating and valuing individual differences has long been in the OD mix of theory and practice. Such differences give rise to complexity in understanding and managing many important functions of businesses. These include communication processes, functional roles of group members, problem solving and decision-making processes, and understanding group dynamics and norms of teams” (Sample, 2004, p. 67). In particular, Sample suggested that the power of the use of the MBTI is evidenced in its application to and impact on teams. “Knowledge of individual differences will help teams identify the particular talents and gifts that each member can bring to the task. This knowledge can help reduce conflict by reframing potential sources of misunderstanding as natural individual differences” (Sample, 2004, p. 68).

Sample (2004) cautioned that there were a number of issues that must be considered when using the MBTI. He warned of the potential abuse by management over an incorrect interpretation of an employee’s feedback score. Sample (2004) also strongly suggested that the MBTI should only be administered by an individual who is qualified to do so. Finally, he expressed a concern about the ethical issue of balancing privacy and confidentiality in the use of the MBTI.

Berr, Church, and Waclawski (2000) used personality preferences and behavior ratings collected over a two-year period from a multi-rater feedback intervention with 343 senior managers working in a global health services organization. “Relatively few studies [had] explored the relationship between personality preferences and perceptions of workplace behavior from different independent observers. This lack of research is somewhat surprising given the widespread use of measures such as the MBTI in many developmental settings and interventions” (Berr et al. 2000, p. 136). Results of the research revealed a modest relationship between individual worker personality and their behavior toward work when using the MBTI as the assessment tool. “When multi-rater feedback and personality assessments are presented in a protected, confidential coaching environment, the individual manager or executive has greater opportunity to explore the underlying issues in the data, work through his or her initial resistance, and move toward identifying and solidifying a formal action plan for addressing needed areas of behavior change” (Berr et al. 2000, p. 135).

Additionally, the results of the study provided support “for the use of personality measures in conjunction with multi-rater feedback interventions to help individuals understand the importance of their own as well as others’ preferences” (Berr et al. 2000, p. 145). This research was not, however, without its limitations. First, the individuals from the study all originated from the same global health services organization. In addition, all of the participants were from senior ranks of management and, therefore, generalization of the relationships observed could not be made. In addition, participants were typically highly educated and were self-nominated; therefore the outcome could be influenced by

selection bias. Therefore, future research was called for in other types of organizations, including the use of middle and first-line supervisors, as well as entry-level employees.

In a methodological study on measuring group creativity through the use of the MBTI as an assessment instrument, Garfield, Taylor, Dennis and Satzinger (2001) randomly selected 219 undergraduate business students to undertake an experimental task of group brainstorming to solve a hypothetical problem that all of the students could relate to (lack of parking spaces on campus). The task had hundreds of possible solutions. The participants were pre-tested using the MBTI instrument and the Kirton Adaption-Innovation Inventory (KAI) to identify the individual functional diversity characteristics of each of the students. Working alone at computer workstations, students were given 15 minutes to develop as many creative ideas as they could to solve the problem. Participants believed that their ideas were networked through the computer and that they were participating in a group brainstorming session with other students. They were, in fact, only connected to a simulator that presented responses from a preset database of ideas.

Data were analyzed with ANCOVA using creativity techniques and the application of the MBTI as one of the independent variables. There were two extraneous variables- creativity technique and stimuli from the “other” participants (which were actually computer generated). The first set of hypotheses, which were only partially supported, examined the relationship between individual characteristics and ideas. The second set of hypotheses, which was supported, examined the effects of the technique and external stimuli. The third hypothesis, which was only partially supported, contended that that the exposure to more novel and paradigm-modifying stimuli would result in

more novel ideas. The final hypothesis, which argued that the combination of technique with stimuli matching the technique would encourage a greater conformance to the technique, was not supported. That is, there was no significant interaction between technique and stimuli for novel ideas. The overall results from the study highlighted “the necessity to consider incorporating tools into the groupware [personality and behavior instruments- such as the MBTI] that will enhance or harness individual characteristics to meet specific task outcomes” (Garfield et al. 2001, p. 332).

The study did have its limitations. First, the authors’ laboratory experiments used student subjects and, therefore, their results may not be generalized to different environments and different individuals. Secondly, the authors limited their research to subjects indicating just the N-F (intuition-feeling) dichotomy and, as a result, broader implications cannot be drawn from their conclusions.

There are some amounts of conflict in the literature as to the value of the use of the MBTI as a tool for understanding diversity in others. In a theoretical report on the MBTI, Michael (2003), suggested that “despite its wide use as a tool to enhance leadership development, the current way in which the Myers-Briggs Type Indicator (MBTI) is administered provides limited value to managers” (Michael, 2003, p. 68). He further suggested that researchers and organizations tend to use the MBTI as an all-or-nothing descriptor of personality type and behavior. However, in a number of training sessions undertaken by organizations, he had personally observed that MBTI workshops can add value such that individuals could identify their dominant and least developed functions. He additionally found that they could also begin to appreciate type diversity so that they could work more effectively with others that have a different type, but that

“using the MBTI alone provides an incomplete picture of managerial behavior” (Michael, 2003, p. 75). There are other factors that go into making up an individual’s personality and behavior such as education, training, experience and social skills. His research concluded that using the MBTI in a rigid fashion may lead to an inaccurate assessment of an individual’s personality.

Workgroup Performance

While the last few decades have seen organizations undertake many different types of teamwork initiatives, the effort to measure the effectiveness of such a movement has generally been lacking. In a theory on measuring team performance, Chang, Bader, and Bloom (1995) proposed that “teams rarely know how to check their own strengths and weaknesses and many organizations moved towards team-based organization without changing their measures of performance” (as cited in Castka, Bamber and Sharp, 2003, p. 155). In an outline for creating team performance measurement standards, Zigon (1997) suggested that those standards should include, 1) an outline of the results the team will be working to achieve; 2) an outline of each individual’s results; 3) a distinct outline of the priorities and relative importance of both the team and the individual results; and, 4) a plan of how to collect and summarise performance data, “so the team and individuals will know how they are performing compared to the performance standards” (as cited in Castka et al. 2003, p. 156).

Castka, Sharp and Bamber (2003) researched teamwork performance and the way that performance can be measured. It is their belief that if an organization can provide evidence that teamwork development leads to improved performance within the organization, the overall value of the organization would be improved for various

stakeholders. According to Castka et al. (2003), “organizational teams can improve organizational performance through involvement, learning and increased communication that transpire through teamwork and team interactions” (p. 30).

Castka et al. (2003) conducted theoretical research at a number of UK-based organizations from different sectors over a period of three years. The first stage of their research facilitated and implemented work teams and teamwork environments in three case studies. The second stage of the research conducted training sessions on how teamwork “works”. The third stage created the actual teamwork model. All three steps led to the creation of a model of teamwork excellence, coined the TEaM model. The TEaM model is a self-assessment program which “can proactively act to internally spread knowledge of team performance and internal TEaM diagnosed best practice[s] that other companies will find almost impossible to copy”. It is also a “self-diagnosis tool [wherein] a company can self-assess team performance levels of many teams that operate within the organization”. The TEaM model is a tool that “promotes learning and institutionalizes behavior routines” (Castka et al. 2003, pp. 32-33).

Behavior

There is a wide belief that workgroups made up of individuals who have diverse behavioral styles and personalities will be more effective than those workgroups that lack diversity in personality and behavior. According to McKenna et al. (2002), “it is commonly believed that work groups whose individuals are aware of and respect one another’s diverse behavioral styles tend to experience improved communication and higher morale, and that individuals whose work environments most closely align with their behavioral styles tend to be more satisfied” (McKenna et al. 2002, p. 315). To date,

there has been very little empirical evidence demonstrating the impact of individual or group behavior in the workplace on workgroup performance.

Byer and Weston (2004) defined workgroup productivity behaviors as, “the adopted processes and structures that govern how the team and its members work together, so as to attain task goals and to achieve team interaction, and thereby to realize the team outputs” (Byer & Weston, 2004, p. 219). A four-stage model of a team life cycle has been theorized and discussed by many (Woodcock, 1979; Scholtes, 1988; Foster et al. 1996; Thompson et. al. 1997; Holpp, 1999; Caracciollo, 2000) with the stages being those of forming, storming, norming and performing. Each of the four stages specifically deals with the behavior of the workgroup.

In stage one, when a workgroup is first forming, members will typically look for and attempt to discover the acceptable group behavior boundaries within the group. Stage two, storming, is where the group and its members will experiment with how it wants to perform as a group. This is often the most difficult aspect of operating as a workgroup. Members will try to figure out the best way to approach team tasks and differences in the various approaches exhibited by others within the workgroup. Differences in the personality and behavior of individual group members toward the task will often result in arguments, confusion and stress between individuals.

The third stage is that part of the group life cycle where there is a norming of the workgroup, or more particularly, the consolidation of the “team”. This is the point where the workgroup resolves their conflicts and outstanding problems and issues between the participants. It is at this stage where the differences and diversity between individuals is not only acknowledged, but is generally accepted and bonds between workers tend to

form. The final stage is that of performing; an act of a mature team where working together toward common goals can be achieved because of an acceptance of the various aspects of cooperation and understanding which all individuals bring to the effort.

The quicker a workgroup can move through these four stages, the quicker the behavior of the group will lend itself to stage-four performance. “No team exists without problems, but some teams, and particularly those who have learned to counter influences of negative team dynamics, seem to be especially good at preventing typical group problems” (Byer & Weston, 2004, p. 1444).

VonBorckenhagen and Lengnick-Hall (1997) conducted a meta-analysis on the effects of different types of psychologically-based organizational interventions with regard to worker productivity. Looking at 22 different empirical studies conducted between 1982 and 1996, their research determined that in these studies, worker productivity was raised, on average, by nearly one-half due to psychologically based organizational interventions. Their study replicated a similar study conducted by Guzzo, Jette and Katzell (1985) which also was a meta-analysis that reviewed productivity improvement studies in organizations conducted between 1971 and 1981.

VonBorckenhagen and Lengnick-Hall’s research found that “organizational culture and managerial interventions can have a significant impact on productivity, which in turn can affect an organization’s ability to compete in the marketplace. Thus, more organizations are placing emphasis on discovering ways to elevate productivity” (VonBorckenhagen & Lengnick-Hall, 1997, p. 754). The specific interventions which VonBorckenhagen and Lengnick-Hall found to have the greatest effect on productivity were those involving supervisory methods, goal setting, and appraisal and feedback.

These interventions were similarly found in the Guzzo et al. (1985) study, thus demonstrating that for the nearly 25-year period from 1971 to 1996, teamwork initiatives were most positively impacted by providing an intervention, such as including employees in the organization's operations and decision making.

Bradley and Hebert (1997) developed a model of the theoretical impact that differences in personality had on the productivity of two information technology teams. Their study determined that the differences in each of the team's performance were primarily caused by the differences in the composition of the personality types found on each of the teams. Their study was conducted in a medium-sized software development company located in the Southeastern United States. Management of the company had noticed that, between two teams that were given assignments for developing information systems of comparable complexity, one team seemed to take twice as long to finish their assignment as did the other. The entire process of completing the work was extremely painful for the much slower team. Lack of communication and understanding between team members was often cited as a reason for the team's inability to get the work done.

The management of the firm decided to use the MBTI as one method of psychometric evaluation of team members. Results of the MBTI analysis revealed "very little difference in the average team composition except for personality differences" (Bradley & Hebert, 1997, p. 343). In this case example, Team 1 was composed of 80 percent introverts and 20 percent extraverts. Team 2 (the more successful team) was composed of an equal distribution (50 percent each) of extraverts and introverts. To that end, one could conclude that when forming teams, organizations need to give greater thought to finding a diverse balance in the personalities of team members. Finding a

diverse balance in the personality and behavior of workgroup members will quite often lead to greater organizational productivity.

Output

Davey, Gore, and Parker (2003) developed an approach to engaging, measuring and managing employees in greater workplace productivity through their Four Pillars model. This theoretical model calls for employee alignment (the extent to which employees know what they should be doing); developing employee capability (using work-related training to help employees to do the jobs they need to do); providing adequate resources, specifically including the tools and materials that employees need to be successful; and, finally, motivating those employees. Davey et al. (2003) reported that organizations will typically use lagging indicators to measure the productivity and quality of the work being performed by employees. Lag indicators traditionally were deployed through employee satisfaction surveys and are based on metrics such as the use of sick leave and employee turnover. But use of such “lag” indicators may be too late for anything useful to be done. Lag indicators are actually a measurement of employee productivity and quality already being low. In the end, the true measure of productivity and quality is based upon the motivation of the employees. “Motivation is the desire[d] component of productive engagement, the extent to which employees want to perform well” (Davey et al. 2003, p. 1).

Productivity and quality in workteams has also been looked at from a competency perspective. Hartle and Elias (1995) suggested that competency-based performance management is “a process for ensuring a shared understanding of what has to be achieved (and how), and of managing people in a way which increases the probability of job

related success” (Hartle & Elias, 1995, p. 543). It was their theory that performance improvement in the organization was gained by providing clarity on the “what” (i.e. end results) and on the “how” (i.e. skills and behaviors), but that in all cases, it would not be successful unless it received on-going support from leadership. More specifically, competency-based productivity and quality is most appropriate in organizations undergoing a cultural change agenda. This would typically be those operating in uncertain environments, in learning organizations, in qualitative and process service jobs or self-managing work teams.

Hamilton, Nickerson, and Owan (2003) conducted an empirical study measuring team performance. Their analysis looked at the impact of firms which used teams to determine if they were able to attract a different quality workforce than firms relying on individual productivity. Their research utilized worker productivity records between 1995 and 1997 from a major garment factory being operated in Southern California. Weekly productivity figures for 288 employees were analyzed over a 156 week period. The factory allowed employees to participate either in the formation of self-selected teams or to be measured on the amount of their individual completed piecework.

The introduction of teams at the factory was associated with an average 18 percent increase in productivity. What was somewhat surprising to the researchers was that the teams that formed early on tended to attract the relatively high-ability workers. In this case the researchers found that the attraction to a particular team was based on individual productivity under individual piece rate incentives. Utilizing the collaborative skills of all members of the formed teams was seen as the key to increased team productivity. “Such skills differ from and are not necessarily perfectly correlated with the

more technical ability associated with individual piece rate production, in which collaborative skills are likely to be less valued” (Hamilton et al. 2003, p 469). One important conclusion from the study was that “when one is forming a team, it appears to be better to have a mix of high-ability and low-ability workers rather than a set of workers with identical technical abilities” (Hamilton et al. 2003, p 492). This was demonstrated in the study by the fact that many of the high-ability workers were able to teach, train, and demonstrate to the low-ability workers how to be more productive so as to increase overall team performance. The researchers found that when average ability was held constant, the more socially and functionally diverse teams were the more productive teams.

In a theoretical outline using a competency metric as being the basis for measuring productivity, Hoffman (1999) suggested, as did Stock (2004), that competency can be looked at according to both the inputs and the outputs of an organization. For Hoffman (1999) the input, or the “underlying attribute,” is what is required of a person to achieve competent performance. An output, on the other hand, is the result of training, which demonstrates competence in the work being performed. From this, Hoffman suggested that two questions must be asked to determine productivity based upon a criterion of competency: “What needs to be done and how well does it need to be done?” (Hoffman, 1999, p. 282). Once those two questions are answered, then it is possible to write the necessary competencies to determine the level of productivity and quality required of the person performing the job.

Stock (2004), conducted a meta-analysis of 72 empirical studies investigating the value of team performance. Her analysis looked at capturing performance outcomes for

individuals, teams, and business units as well as companies from studies published between 1990 and 2003. Like VonBorckenhagen and Lengnick-Hall, what evolved from her review was a general framework for improving team performance based upon a series of input-process-output models. Stock found that research in the field of workteam performance tended to focus on senior management teams and new product development teams. The productivity and quality of simple workteams had been much less vigorously investigated during that time period. On the other hand, characteristics of teams, in general, have been investigated much more intensively compared to individual team member characteristics, with issues of communication and cooperation between team members' directly impacting productivity and quality.

Further, the empirical studies reviewed indicated that the "mechanisms for team performance are typically highly complex" (Stock, 2004, p. 285). Stock contended that this was due to a number of moderator variables (such as personality, personal traits and expertise) that are relevant in the study of team performance. She suggested that there is still a lot to learn about teamwork productivity and quality through future empirical research, including the approach of using economic theories to measure productivity and quality of teamwork, a look at analyzing moderator effects (personality and expertise among others) on productivity and quality as well as looking at different types of teams to a larger extent than what has been done in the past.

Increases in productivity and increases in quality have not always gone hand in hand. Fairris (2002) researched a variety of attempts by employers to improve productivity and product quality through increased flexibility in the use of their labor force, coupled with greater participation by workers in various production decisions. He

conducted a series of case studies primarily in Japanese automobile plants. Approaches to employee involvement in operations and decision-making tended to transform those workplaces into examples of higher productivity. Many of the case studies linked increased productivity to harder or more sustained efforts by workers. Some of the case studies implicated worsening health and safety practices within the organizations being studied, which, while they did improve workplace productivity, they also resulted in decreased employee satisfaction. “While there is evidence to suggest that these institutional transformations at work have resulted in minor improvements in labor productivity, there are lingering concerns regarding their negative impact on workers’ work lives” (Fairris, 2002, p. 660).

Further, “the empirical evidence connecting transformed workplaces to worsened levels of health and safety, increased labor effort, and greater worker stress in productions suggest that at least part of the productivity increase associated with workplace transformation may be due to a worsening of working conditions” (Fairris, 2002, p. 665). Lastly, Fairris (2002) also suggested that possibly the best way to reorganize for productivity and quality is to develop genuine improvements in productive efficiency, not just in productivity. Such improvements most likely will come from an effort at shared efficiency enhancements by all of the individuals involved in workplace productivity.

Theoretical Framework

The major finding from this review of the literature is that diversity within workgroups and the use of functional diversity training, through feedback and assessment instruments, can and does have an effect on workgroup performance. However, the

literature has demonstrated that there are significant gaps in what those effects are; suggesting further empirical research is needed.

While many organizations have undertaken teamwork initiatives in the last few decades, few if any have made much effort at actually measuring the effectiveness of those initiatives. Chang et al. (1995) theorized that teams rarely know how to check on their own strengths and weaknesses. Therefore, the setting of performance measurement standards is of great importance. Allen and Hecht (2004) studied the psychological underpinnings and the belief that teamwork typically results in higher performance, compared to outcomes based upon performance that is undertaken by a set of individuals working alone. Their theoretical work on the actual effectiveness of teams, however, argued that teams are not necessarily as effective as many believe them to be, but instead, “the romance of teams stems from the psychological benefits of group activities” (Allen & Hecht, 2004, p. 439).

Ashkanasy (2002) explored improving understanding of organizational behavior through an investigation of the cognitive and affective processes that underlie attitudes and behaviors. He proposed that one’s behavior within an organization will be affected by a series of either positive or negative events, and that managers in organizations need to be aware that even the simplest events at work can and do affect workers, which can have an accumulating effect on determining both attitudes and behaviors in the workplace.

Organizations have shown a great interest in using teams in the workplace. There is a strong belief that teamwork leads to better end results. For many, the mantra has become the use of teams and teamwork as the optimal format for delivering increased

workplace performance. However, when employees work together and or work on the same project, they may not necessarily be functioning as a team.

Based upon the review of the theoretical and empirical literature, it has become evident that there are, and can be, a number of influencing factors that impact workgroup performance. In particular what often is not taken into account (and is even less-often measured) is the diversity in the personality and behavior of individuals placed on teams and the effects that their diversity has on the performance of the workgroup. The differences of the individuals in a workgroup (their functional diversity) can and does have great impact on that workgroup's performance. Any instructive process applied in the workplace such as diversity training which helps with the understanding of personality differences and behavior (functional diversity) amongst co-workers can provide a major boost in the performance of workgroups within the organization.

The problems and limitations with some of the theories that have been developed on the subject of the effects of functional diversity training on workgroup performance is that there are an extremely vast number of organizations with extremely different and diverse situations. It is fairly clear from the review of the literature that there are substantial gaps on the subject of the effects of functional diversity training on workgroup performance. It would be presumptuous to suggest that conceptual and theoretical frameworks that guide future research could be anything but improved. The perfect theoretical framework for improving workgroup performance has not been identified, nor is it ever likely to. However, the theoretical framework for this study focuses on the concept of using a specific functional diversity training instrument (the MBTI) within an organization to improve workgroup performance.

The major empirical problems, issues and questions that need to be developed and or examined further include a greater effort to test the impact of identified employee diversity and the application of functional diversity training on workgroup performance. The existing research on team performance has been full of hypotheses on subjects as broad as leadership, employee satisfaction, as well as on the topic of diversity; yet the bulk of the empirical research has been focused almost exclusively on social-based diversity, rather than functional-based diversity. A greater set of empirical research needs to focus on functional-based diversity, rather than the more common social-based. Use of personality and behavioral measurement instruments such as the Myers-Briggs Type Indicator® (MBTI) need to be given more of an empirical test to determine their impact on workgroup performance.

This topic has clearly not been thoroughly researched. Most likely, that is because few researchers have put together the parameters or variables of worker diversity, diversity training and workgroup productivity through enough empirical research to have any meaningful depth to the subject. The existing empirical literature, such as the work done by Garfield, Taylor, Dennis, and Satzinger (2001) on workgroup decision-making needs to be expanded to broader organizations, rather than the sterile environment of university students. Further, Church, Waclawski, and Janine (1996) and Church and Waclawski (1998) have set a basis of work for studying individual personality orientation and workplace behavior. Their work needs to be carried to the next level of study. Additional work, such as that done by Forret and Dougherty (2001) on networking behaviors in the workplace, should be explored in greater depth. The meta-analysis work

of Wise and Tschirhart (2000) clearly demonstrates that evidence about the consequences of diversity in work organizations was limited, so there is so much more to do.

Research Hypotheses

The research hypotheses in this study on effects of functional diversity training, using the MBTI instrument, on workgroup performance follow:

H1: Proximate workgroups that participate in functional diversity training using the Myers-Briggs Type Indicator® (MBTI) show significant improvement in workgroup performance compared to proximate workgroups that do not participate in functional diversity training.

H1a: Proximate workgroups that participate in functional diversity training using the Myers-Briggs Type Indicator® (MBTI) show significant improvement in workgroup behavior compared to proximate workgroups that do not participate in functional diversity training.

H1b: Proximate workgroups that participate in functional diversity training using the Myers-Briggs Type Indicator® (MBTI) show significant increase in workgroup output compared to proximate workgroups that do not participate in functional diversity training.

H2: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup performance than the aggregation of socio-demographic variables of a workgroup.

H2a: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in

workgroup behavior than the aggregation of socio-demographic variables of a workgroup.

H2b: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup output than the aggregation of socio-demographic variables of a workgroup.

Chapter II presented a review of the literature, theoretical framework and the hypotheses to be tested in this study. The literature review demonstrated that organizations desire to have high performance and therefore put workers into proximate workgroups to accomplish tasks. A key factor impacting performance within those workgroups is the diversity of the workers. The role of personality and disposition is a special aspect of diversity and there is a growing use of diversity training in organizations aimed at helping the organizations to be more effective.

The major gaps in the literature are that most of the research on using diversity training, to improve organizational and workgroup performance, has focused on socio-demographic factors. The focus on personality and dispositional factor training for improving organizational and workgroup performance has been missing. Little research has been published on training tools available to organizations that focus on differences in personality and disposition, and the effects that they have for improving performance in workgroups. Chapter III presents the research design, population and sampling plan, instrumentation, procedures, methods of data analysis, and evaluation of research methods employed for testing the hypotheses for this study about the effects of functional diversity training, using the MBTI instrument, on workgroup performance.

CHAPTER III

METHODOLOGY

The purpose of this chapter is to present the methodology which will be used to address the proposed hypotheses for the study of using the MBTI as a functional diversity training tool and its impact on the performance of proximate workgroups. Included in this chapter is a description of the study's experimental, correlational, causal-comparative design, its population and sampling plan, the instrumentation used, data collection procedures and ethical aspects, the methods of data analysis, and an evaluation of the methodology. The instrument design section includes a full description of the socio-demographic information which was collected, the Myers-Briggs Type Inventory (MBTI), and a self-designed instrument of organizational productivity created with the input of the organization where the research was conducted. The instrument design section also includes discussions on the validity and reliability of the MBTI instrument.

Research Design

The research design for this study, which was experimental, repeated measures, correlational, and causal-comparative was used to test two main research hypotheses each with two sub-hypotheses for a total of six hypotheses. It was interventional research in that its experimental design employed a method of comparison between two independent groups. The study was experimental in its design because it allowed for randomization, manipulation and the use of a control group. This research was a comparison of one control group (where $n = 19$ participants) and one experimental (or treatment) group (where $n = 17$ participants). [See Figure 3-1 for a diagram of the research design]. The groups were made up of newly hired employees who participated in either an eight or

nine week training class in preparation for their new job assignment. While the physical sites where the control and treatment groups conducted their training and assessment classes were chosen out of convenience, the individuals who participated within those classes were selected purely randomly because they were new hires who met certain minimum criteria and had never worked in the organization prior to the beginning of the study.

Control Group	O _a		O ₁	O ₂	O ₃
Treatment Group	O _a	X	O ₁	O ₂	O ₃
Key: O _a = Initiation of study, socio-demographic and MBTI type data collection X = Treatment (MBTI functional diversity training) O ₁ = Post-test 1 O ₂ = Post-test 2 O ₃ = Post-test 3					

Figure 3-1. Research Design.

The research was correlational quantitative in that it involved two dependent variables (workgroup behavior and workgroup output) each with five multiple indicators, one non-manipulated independent variable (IV1: the reported MBTI descriptor of each of the participants), a series of attribute variables (the socio-demographic characteristics of each participant), as well as one mediating variable (MV: the application of the MBTI functional diversity training). The correlational factors being measured were different levels of workgroup performance using both behavioral and output data. Performance assessment data were collected three times over the course of the study period, once within the first three weeks of the study period, once near the mid-point of the study period and once at the end of the study period. The intervention (treatment) was applied

within the first ten working days of the study period. After collection and analysis of the socio-demographic factors of all study participants, a total of eight hours, split into two four-hour segments, of MBTI (MV) functional diversity training was provided to the treatment group. A correlational analysis of workgroup performance was done between the independent groups (control and treatment) as well as a correlational analysis between groups based upon an aggregation of each group's socio-demographic data.

The research was causal-comparative in that it attempted to identify the main factors of difference between the treatment and control workgroups. The research methodology did not attempt to demonstrate a cause and effect connection but, rather looked to identify any existing comparative relationships between or among the dependent and independent variables, realizing that the mediating variable (functional diversity training) may have an impact on outcome. The study's causal-comparative measurement is of performance improvements in workgroup behavior and workgroup output, as a result of the application of functional diversity training through the use of the MBTI instrument. The causal-comparative analysis was also intended to disconfirm a relationship between socio-demographic diversity and workgroup performance within the entire population.

Population and Sampling Plan

Target Population

The target population for this study is any medium or large-sized organization in which employees are organized into workgroups and whose workgroups do not have regular contact with each other. Since the study was truly experimental, geographical separation of the control and treatment groups within a target organization is important.

Accessible Population

The accessible population was a Fortune 200 Company with their organizational headquarters located in Southeast Florida. The company employs over 13,000 people throughout the United States with just over 11,000 people based out of its South Florida headquarters. The company's Human Resources Department runs regular training programs of new employees who will be considered for employment within the company's call center. The call center is where employees take telephone calls from customers wanting to start or relocate service, those that are experiencing problems with their service, questions about their billing, etc. Training and assessment programs are conducted at two different major training sites operated by the company. The two training sites are geographically located approximately 45 miles apart.

Sampling Plan

The sampling plan in this study, although small, was selected randomly. The connection between sample size and statistically significant results has been demonstrated by Thompson (1989a, 1989b). In a treatise on the value of reporting statistical significance for the journal *Measurement and Evaluation in Counseling and Development*, Thompson was able to demonstrate through an empirical field research study that a sample size of $n = 17$ was not statistically significant, while in another portion of the same study a different sample size of $n = 18$ was. He suggested that for reporting out the results of his study, a comprehensive description of the sample size, and why it was chosen, was just as important as the statistical significance. "Rather than simply describing a result as statistically significant or as not statistically significant, authors can explain the result in the context of sample size. Such an interpretation

acknowledges directly that sample size affects statistical significance” (as cited in Vacha-Haase, 1998, p. 50).

In a field study of how the context of an organizational workgroup affects the relationship between group diversity and various performance outcomes, Jehn and Bezrukova (2004) studied employees from a large Fortune 500 information-processing company with over 26, 000 employees at all ranks within the organization. Their sample included 10,717 individuals in 1,528 groups consisting of 3-18 employees. Relying on group process theories regarding group size (Bettenhausen, 1991; Goodman, Ravline & Argote, 1986), the study authors were able to verify that their “groups of 3-18 were appropriate for the study of group diversity” (Jehn & Bezrukova, 2004, p. 710).

What was important to this research project was that the sample size be specifically related to the primary research hypotheses posed and the analysis required to test those hypotheses. In this research, the hypotheses are related to the performance of proximate workgroups. Limitations of time (especially the need for the researcher to perform on-site functional diversity training of workgroup participants), distance and financial resources forced the researcher to limit the size of the sample to two proximate workgroups, using a control workgroup of 19 participants and a treatment workgroup of 17 participants.

The Fortune 200 Company used in this study conducts a series of training and assessment classes for newly hired employees. This research studied two different groups of newly hired employees who participated in either an eight week or nine week training and assessment class in preparation for their new job assignment. Employees in these training and assessment classes are set up as cohorts, and are often referred to by the

company as “training teams” while they complete their coursework. Separated by a fairly substantial geographical distance, the proximate workgroups performed the same type of work and assignments during their eight or nine week training and assessment programs. Participants in both groups were surveyed for socio-demographic factors and completed the MBTI instrument. One group served as the treatment group. That is, as part of their training and assessment program curriculum they were provided with functional diversity training through an analysis and study of the results of the MBTI instrument. The other proximate workgroup was the control group. They completed the socio-demographic instrument and the MBTI instrument, but were not provided with any functional diversity training. Over the course of the eight or nine week study period (including two four-hour training sessions for the treatment group), changes in workgroup performance (behavior and output) were measured for both the treatment and the control groups.

Instrumentation

Instrument Number 1

Socio-Demographic Profile

Data collection Instrument Number 1 is a self-reported *Socio-Demographic Profile* designed by the researcher (see Appendix A- Socio-Demographic Profile). *The Socio-Demographic Profile* was completed and obtained from all participants (both control and treatment) at the outset of the study period. The *Socio-Demographic Profile* was used to collect data regarding the participants’ (a) gender, (b) race, (c) age range, (d) years of full-time work experience, and, (e) highest level of schooling completed. All questions in this section were multiple-choice questions. The socio-demographic data were gathered in order to describe the sample and to examine any relationships between

the socio-demographic variables and other study variables as they affected workgroup performance.

Instrument Number 2

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator® (MBTI) is probably the most widely administered and respected instrument used in contemporary business for assessing and understanding differences in personality and behavioral style (Lawrence, 1998; Garfield, 2001; Topping, 2002; McKenna et al. 2002; Sample, 2004). The instrument was not designed to be administered as a test with scoring resulting in correct or incorrect answers, but rather as an assessment of an individual's personal life preferences. There are no right or wrong answers generated from the MBTI instrument; rather responses indicate preferences. Using a forced-choice selection of approximately 100 bivariate statements and scoring responses along a Likert-scale continuum to measure the strength of the response, the instrument helps to determine respondents' personal preferences for two descriptors of attitude (extraversion or introversion), four types of mental functions (sensing or intuition as well as thinking or feeling), and two attitudes or orientations toward the outer world (judging or perceiving).

The MBTI instrument (See Appendix- B) may only be administered by a "qualified" individual who must successfully complete the appropriate MBTI Qualifying Program training offered by the Center for Applications of Psychological Type (CAPT), based in Gainesville, Florida. The MBTI qualification course includes approximately 30 hours of classroom training and ends with a final examination used to demonstrate a participant's competency in both the administration and interpretation of individual

MBTI assessment results. This researcher was qualified to administer the MBTI in 2001. He has also completed 24 hours of additional continuing education training in administering the MBTI instrument since initially being qualified by CAPT (see Appendix C for a copy of the researcher's Certificate of Qualification).

Care must be used when administering the MBTI instrument, as it is not an all-or-nothing measurement of personality type or behavior. Instead, the instrument is best used only as an indicator of preferences. For example, when an individual is confronted by a circumstance in which he or she is under pressure, stressed or strained, he or she will likely revert to the personality or behavior style with which he or she is most comfortable. This is the individual's preferred state or preference. The MBTI is best used as an instrument to indicate this preference, not as a final measurement of a person's exact personality type or behavior.

Reliability and Validity of the MBTI

Berr et al. (2000) reported that the MBTI instrument "could be shown to be relatively reliable across a variety of samples and applications" (Berr et al., p. 136). Carskadon (1975) and Carskadon and Cook (1982) reported that the results of the MBTI instrument "seem to have high face validity for many clients" (as cited in Vacha-Haase & Thompson, 2002, p. 174). Finally, Church and Waclawski (1998) reported that the MBTI has considerable field validity amongst human resources consultants, organizational psychologists, behavioral counselors and even lay people "in helping others to improve their understanding of themselves and the impact that these preferences in the four primary areas have on their own behaviour as well as the interactions with others" (Church & Waclawski, 1998, p. 102).

The actual creators of the MBTI instrument reported that “the internal consistency [reliability] of the four MBTI scales is quite high in all samples to date, whether computed using logical split-half, consecutive item split-half, or coefficient alpha” (Myers et al. 1998, p. 165). The creators of the instrument have also conducted confirmatory factor analysis on the instrument using data from a random national sample (n = 3,036). The software package PRELIS was used to obtain polychoric correlations and asymptotic variance matrices suitable for dichotomous use. In their national study, the adjusted goodness to fit was measured at .949 and the nonnormed fit index was measured at .967. The median of the fitted residuals was measured at -.008. “These results indicate an excellent fit to the four factor model” (Myers et al. 1998. p. 173).

Instrument Number 3

Measurement of Workgroup Performance

Jenn, Northcraft, and Neale (1999) conducted a multi-method field study of 92 different workgroups to determine the influence three different types of workgroup diversity (social, value, and informational) had on workgroup outcomes. Workgroup performance was measured by looking at actual departmental production records and error reports which the firm had standardized. Young and Selto (1993) studied cross-sectional workgroup performance at a relatively large, just-in-time, manufacturing firm based in the electronics industry. The study looked at data on cycle time efficiency, yield rate, defective rate, production schedule adherence, product cost efficiency and the number of manufacturing process problems. According to the researchers, the firm generated “six major types of information that are for the most part consistently measured

and reportedly used to access the performance of workgroups” (Young & Selto, 1993, p. 304.)

In the Jehn and Bezrukova (2004) study on the relationship between group diversity and various performance outcomes, the authors used merit-based performance ratings, payment of bonuses and the granting of stock options as performance outcomes variables. Actual behavior and worker performance was measured by supervisors using predefined criteria and rating scales. All three of these examples demonstrate the validity of using an organization’s own pre-defined categories for measuring workgroup performance.

This study’s proposed research was designed to test two major hypotheses dealing with the impact of functional diversity training on workgroup performance. Each of the major hypotheses is sub-divided into focus areas that measured actual workgroup behavior and workgroup output. Workgroup behavior and workgroup output were measured using a self-designed instrument developed with the input of the appropriate executive team of supervisors at the Fortune 200 Company.

Companies in this industry typically collect large amounts of data on employee performance. Workers in this industry have their output measured by items such as customer complaints, response times to complete assignments, length of telephone calls with customers, set up times and or down times, and the elimination of waste. The company already collected data for these outputs, along with behavioral data such as absenteeism and employee retention rates, the number of on-the-job injuries, and incidences of the use of disciplinary practices. Instrument Number 3 was designed by the researcher and included five measurable workgroup behavior items of 1) occasions of

tardiness; 2) number of absences; 3) violations of professional conduct; 4) voluntary resignation, and 5) forced termination and five measurable output items of 1) customer focus; 2) use of available tools; 3) process knowledge; 4) critical steps missed, and 5) inappropriate actions. A copy of Instrument Number 3 can be found in Appendix D.

Procedures: Ethical Considerations and Data Collection Methods

1) This study uses three different instruments, two of which have been designed by the researcher. Written permission has been obtained from the owners of the Myers-Briggs Type Indicator to use that instrument in this study. Copies of that permission can be found in Appendix E.

2) Permission was granted by the Fortune 200 Company located within the State of Florida for conducting the field research. A copy of that permission can be found in Appendix F.

3) Prior to beginning any part of the actual study, an application was submitted to the Institutional Review Board (IRB) of Lynn University and approval was granted. A copy of the IRB approval to conduct the study can be found in Appendix G.

4) All study participants were required to participate in the study, as all research activities were conducted on the job-site during normal working hours. The researcher insured that there was informed consent of all participants. Participants were provided an explanation of the dissertation research. A copy of the control group informed consent letter can be found in Appendix H. A copy of the treatment group informed consent letter can be found in Appendix I.

Methods of Data Analysis

The data collected from the field study was analyzed using the statistical software package SPSS 15.0. The methods of data analysis included descriptive statistics where items of frequency distribution were reported. Measures of central tendency and differences between two means were reported using independent *t*-tests where both the pre- and post-treatment results were compared between the treatment and the control group. In addition, analysis of variance (ANOVA) were conducted where the impact of the aggregation of the participants socio-demographics were examined for the impact on workgroup performance.

The method of data analysis for *H1: Proximate workgroups that participate in functional diversity training using the MBTI, show significant improvement in workgroup performance compared to proximate workgroups that do not participate in functional diversity training* was conducted using independent-sample *t*-testing. The method of data analysis for *H2: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup performance than the aggregation of socio-demographic variables of a workgroup* was conducted using analysis of variance (ANOVA).

Evaluation of Research Methods

This study is built on a small, random sample of participants (two workgroups- one composed of 19 individuals and the other with 17 individuals). Generally, scholarly research is built on observable and inferential statistics that can be measured for reliability and validity using standardized testing instruments. While it has been demonstrated that the MBTI instrument has been found to be reliable and valid, the

nature of this experimental, correlational, causal-comparative, repeated measures research is not as straight forward as it might be if the study were a quantitative, random statistical survey using a significantly larger population of participants.

There were a number of potential reliability concerns associated with this study's proposed research design and methodology. First, the study was conducted at two different locations, using newly hired employees assigned to training and assessment cohorts. This did not allow for the gathering and use of any historical data about the participants' workgroup performance. Second, because the field study was conducted over a short period of time, there could have been a minimal measurable difference once the MBTI training was applied. Third, since this was a training and assessment scenario for new employees, and it was possible that some employees would "wash out" during the eight or nine weeks, a differential attrition rate (mortality) could have occurred between the workgroups. Fourth, although the groups were geographically separated during their training sessions, they were all new employees working for the same company and there was the possibility of "cross talk" between participants of a training and assessment cohort. Additionally, participants within groups could have talked amongst themselves during the period of the study, thus creating the potential for competition amongst a few close members of the workgroup. Finally, there may have been an initial selection difference between the participants in each of the two groups (such as community-based ethnic or cultural differences of the participants who typically get hired into these training programs because of the specific geographical location of the training center) which was unknown to the researcher.

Chapter III presented the research methodology that addresses the research hypotheses about using the MBTI as a functional diversity training tool and its impact on the performance of proximate workgroups. The chapter included a description of the research design, the sampling plan, instrumentation, ethical considerations, data collection procedures, methods of data analysis, and an evaluation of the research methods. Chapter IV presents the results of the study. Chapter V is a discussion of the findings and interpretations of the statistical results along with implications for theory and practice. This final chapter also discusses study limitations and recommendations for future study.

CHAPTER IV

RESULTS

Chapter IV presents the results of this experimental, repeated measures study about effects of functional diversity training, using the MBTI instrument, on workgroup performance. Descriptive and inferential statistics, tests between the means of the independent groups, and causal comparative data analyses (analysis of variance) were used as the methods of data analysis of the hypotheses, generating this study's findings. An explanation of the mortality rate of study participants during each of three measurement periods is also detailed.

Socio-Demographic Characteristics of the Data-Producing Study and Study Mortality

The study was conducted at a Fortune 200 Company which has multi-site assessment and training programs for individuals being considered for full-time permanent employment within the company's call centers. Candidates are hired as permanent employees if they are able to successfully complete the initial assessment and training program. The company's call centers (known within this company as Customer Care Centers) handle telephone calls from customers who want to start or end service, might be experiencing service problems, have questions about their billing, etc.

A total of 36 participants began the study and were organized into two geographically separate training and assessment groups. The control group had an initial total of 19 participants, and the treatment group had an initial total of 17 participants. Socio-demographic information was collected from all 36 participants on the first day of class at each of the two assessment and training facilities.

While the total number of participants at the beginning of the study was 36, each group was deemed to have one invalid case. In the control group, one participant had a death in the family during the study period and asked for a leave of absence, withdrawing from the training and assessment program. In the treatment group, one participant was absent on the day performance measurements were taken during Period #2. Although this participant completed the entire class for the company, because there were no assessment scores for this individual during Period #2, this case was removed from the study. The total number of participants measured during the study ranged from a high of $n = 36$ (at the initial point of collecting socio-demographic data) to a low of $n = 28$ (at the end of the study when all invalid cases were removed and all incidents of study mortality were accounted for). Table 4-1 presents the summary of participants and the number of valid cases.

Table 4-1

Summary of Participants (n = 36) and Number of Valid Cases During the Study (n =34)

Group	Initiation of Study	Valid Cases
Control	19	18
Treatment	17	16
Total	36	34

Control group participants attended company assessment and training classes at their training location from 1:15 pm until 7:15 pm Monday through Friday for eight (8) weeks. They also trained for one week of “live” simulated call-taking for a total of 280 hours of company assessment and training. Treatment group participants attended company assessment and training classes at their training location from 8:00 am until

5:00 pm (with a one hour meal break and two fifteen minute personal breaks) Monday through Friday for seven weeks, plus four days of “live” simulated call-taking for a total of 292.5 hours of company assessment and training.

The researcher provided eight hours of functional diversity training for the treatment group within the 292.5 hours of company assessment and training. Net company assessment and training hours for the treatment group were 284.5 hours. The study period was limited to the 280 hours of control group company assessment and training and the 284.5 hours of treatment group company assessment and training. The difference of 4.5 hours of additional company assessment and training between the control and treatment groups was deemed by company management not to have any impact on the overall results of the company-provided training.

While the two groups (control and treatment) were purposively selected from a Fortune 200 Company willing to participate in this study, the actual participants in each of the two groups were totally random. There was no particular methodology for how an individual was invited to participate in an assessment and training class. Participants completed a company application for employment and were selected for a class by meeting the company’s minimum knowledge, skills and ability requirements for participation in the entry-level assessment and training class. Both the control and the treatment groups displayed good, random diversity in their socio-demographic makeup. Table 4-2 presents the descriptive statistics of the control and treatment groups.

Table 4-2

Socio-Demographic Characteristics of Control Group (n = 19) and Treatment Group (n = 17)

Group Demographics	Valid Number	Percentage
Control Group		
Gender		
Female	13	69.4
Male	6	30.6
Total	19	100.0
Race		
African- American	7	36.8
Non-Hispanic Caucasian (white)	2	10.5
Hispanic	8	42.2
Other	2	10.5
Total	19	100.0
Age		
18-27 years of age	17	89.4
28-37 years of age	1	5.2
38-47 years of age	0	0.0
48 years of age and older	1	5.2
Total	19	100.0
Years of Full-Time Work		
0-12 months	5	26.3
1-3 years	7	36.8
4-6 years	3	15.8
9-11 years	2	10.5
12-14 years	1	5.2
15 years or more	1	5.2
Total	19	100.0
Highest Level of Education Completed		
Earned a G.E.D.	1	5.2
High School Graduate	12	63.1
Technical School Graduate	1	5.2
2 year college degree	5	26.3
4 year college degree	0	0.0
Total	19	100.0
Treatment Group		
Gender		
Female	12	70.6
Male	5	29.4
Total	17	100.0

Table 4-2 continued

Socio-Demographic Characteristics of Control Group (n = 19) and Treatment Group (n = 17)

Group Demographics	Valid Number	Percentage
Race		
African- American	7	41.2
Non-Hispanic Caucasian (white)	9	52.9
Hispanic	1	5.9
Other	0	0.0
Total	17	100.0
Age		
18-27 years of age	14	82.4
28-37 years of age	0	0.0
38-47 years of age	1	5.9
48 years of age and older	2	11.7
Total	17	100.0
Years of Full-Time Work		
0-12 months	4	23.5
1-3 years	4	23.5
4-6 years	6	35.3
9-11 years	0	0.0
12-14 years	0	0.0
15 years or more	3	17.6
Total	17	100.0
Years of Schooling		
Earned a G.E.D.	3	17.6
High School Graduate	9	52.9
Technical School Graduate	1	5.9
2 year college degree	1	5.9
4 year college degree	3	17.6
Total	17	100.0

In both groups most of the participants were female (72.2%). The largest ethnic group represented was African-American (38.8%), followed by non-Hispanic Caucasian (white) (30.5%), and Hispanic (25%). While both groups were diverse in their ethnic makeup, the control group had a larger representation of African-Americans and Hispanics (78.9%) within group, and the treatment group had a slight majority representation of non-Hispanic Caucasians (white) (52.9%) within group.

Most of the participants in the study were in the age range of 18-27 years old (86.1%), which is to be expected of newly hired applicants into an entry level position such as a Customer Care Center call taker. Four participants were in the age ranges of 38 years or older (11.1%).

Most of the participants had some previous full-time work experience; however the majority (55.6%) consisted of participants having three years or less of full-time work experience. The largest percentage of education completed by all participants was a high school education (58.3%). Four participants had earned G.E.D.'s (11.1%), two had earned a technical school certification (5.5%), six had earned two-year college degrees (16.6%), and three had earned a four year degrees (8.3%).

Both control and treatment groups experienced different levels of mortality during the study. The control group experienced one voluntary resignation and two forced terminations before the end of Period #2. There were two additional voluntary resignations in the control group before the end of Period #3. The mortality rate for the control group (excluding the one invalid case) was 27.7%. That is, five of 18 participants did not complete the assessment and training class within the control group setting.

The treatment group experienced one voluntary resignation before the end of Period #1. There was no further mortality experienced in the treatment group during Period #2 or Period #3. The mortality rate for the treatment group (excluding the one invalid case) was 6.25%. That is, one of 16 participants did not complete the assessment and training class within the treatment group. Details of the mortality rates are outlined in Table 4-3.

Table 4-3***Summary of Participants and Display of Mortality in Each Group During Periods #1, #2, and #3 of the Study***

Group	Beginning of Period #1	End of Period #1	Beginning of Period #2	End of Period #2	Beginning of Period #3	End of Period #3
Control	19	18	18	15	15	13
Treatment	17	15	15	15	15	15
Total	36	33	33	30	30	28

Use of the Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator® (MBTI) is considered the most widely administered and respected instrument used in contemporary business for assessing and understanding differences in personality and behavioral style (Lawrence, 1998; Garfield, 2001; Topping, 2002; McKenna et al. 2002; Sample, 2004). The instrument was not designed to be administered as a test with scoring of correct or incorrect answers, but rather as an assessment of an individual's personal life preferences. Using a forced-choice selection of approximately 100 bivariate statements and scoring responses along a Leikert-scale continuum to measure the strength of the response, the instrument helps to determine respondents' personal preferences for two descriptors of attitude (extraversion or introversion), four types of mental functions (sensing or intuition as well as thinking or feeling), and two attitudes or orientations toward the outer world (judging or perceiving).

The MBTI instrument may only be administered by a "qualified" individual who must successfully complete the appropriate MBTI Qualifying Program training offered by the Center for Applications of Psychological Type (CAPT), based in Gainesville, Florida. The MBTI course includes approximately 30 hours of classroom training and a

final examination used to demonstrate a participant's competency in both the administration and interpretation of individual MBTI assessment results. The researcher was qualified to administer the MBTI in 2001 and completed 24 hours of additional continuing education training in administering the MBTI instrument in 2005.

Description of the Functional Diversity Training Using the MBTI Instrument and MBTI Results

The researcher provided eight hours of functional diversity training for the treatment group participants only, using the MBTI instrument and individual participant's MBTI results as the basis for that training. The MBTI training was broken into two four-hour sessions. The first four-hour session of MBTI training was provided on the morning of the third day of the first week of the assessment and training program. The second four-hour session of MBTI training was provided on the morning of the fourth day of the second week of the assessment and training program. All MBTI functional diversity training was provided to the treatment group within the first two weeks of the assessment and training program during the first measurement period.

MBTI functional diversity training for this study consisted of nine components of training. The first four hours of MBTI training included:

- Learning to understand that there are as many as 16 different styles of behavior and personality according to the MBTI (see Table 2-2 for a detailed description), and that none of the styles are right or wrong; they are just different from each other.
- Learning that there are different psychological preferences for how individuals:

- Gain energy
- Take in information
- Make decisions
- Approach life
- A history of the topic of psychological type, including an outline of the works of Sigmund Freud, Carl Jung, Katherine Briggs and Isabel Myers.
- Instruction in the four dichotomous preferences of the MBTI, including:
 - The “attitude” preference known as the difference between Extraversion (E) and Introversion (I).
 - The first “mental function” preference known as the difference between Sensing (S) and Intuition (N).
 - The second “mental function” preference known as the difference between Thinking (T) and Feeling (F).
 - The “lifestyle approach” preference known as the difference between Judging (J) and Perceiving (P).
- A series of physical and mental MBTI exercises in which all participants actively engaged in each exercise in an effort to visually demonstrate the differences among the four dichotomous preferences.

The second four hours of MBTI training included:

- A review of the eight psychological (four dichotomous) preferences presented in the first diversity training class.

- A thorough discussion in the concept of “best fit” of MBTI type, including an opportunity for participants to indicate and select an MBTI preference for a different type other than the one reported in the original output.
- A more in-depth series of MBTI exercises to help participants develop a deeper appreciation for valuing differences in others and, in particular, for gaining deeper understanding of the differences amongst treatment group study participants.
- Answering any questions study participants had on the topic of diversity, diversity training, psychological preferences, typology and the MBTI.

The MBTI training was delivered in addition to the 284.5 hours of company-led scheduled assessment and training for the treatment group. The treatment group curriculum was not modified to accommodate the functional diversity training component using the MBTI instrument. Except for the addition of the researcher’s MBTI training, the curriculum for the control and treatment groups was identical.

The treatment group had four and one-half additional hours of classroom assessment and training over the course of their eight weeks of class, compared to the control group. This additional four and one-half hours of classroom assessment and training were determined, both by company management and by the experienced company trainers, not to have any significance in how the company-led assessment and training was rolled out. Both control and treatment group programs showed some flexibility in their scheduling to allow for a few short refreshment/bathroom breaks during the assessment and training programs.

All 36 participants completed the Myers-Briggs Type Indicator® (MBTI) instrument on their first day (control group) or second day (treatment group) of their training programs. Once the completed instruments were collected from participants, the researcher subsequently “scored” all MBTI results off-site, using a scoring template provided by CAPT, the organization which sells the rights to use the MBTI instrument to qualified trainers. By “scoring” the MBTI results, the researcher was able to generate individual MBTI reports for each participant.

An individual participant’s “as reported” MBTI result is one of sixteen personality types which is presented as an outcome of the participant’s completion of the MBTI instrument. The “as reported” MBTI is an initial indication of personality preferences, based solely on the responses selected on an MBTI instrument. (Refer to Table 2-2 for a brief outline of each of the 16 MBTI personality types). Table 4-4 presents the “as reported” MBTI results of control group and treatment group participants.

Table 4-4

“As Reported” MBTI of Control and Treatment Group Participants

Reported MBTI	Number	Valid Percentage	Cumulative Percentage
Control Group			
ISTJ	1	5.3	5.3
ISFJ	3	15.7	21.0
INFJ	1	5.3	26.3
INFP	1	5.3	31.6
ESTP	1	5.3	36.9
ENFP	3	15.7	52.6
ENTP	1	5.3	57.9
ESTJ	5	26.3	84.2
ESFJ	1	5.3	89.5
ENTJ	2	10.5	100.0

Table 4-4 continued

“As Reported” MBTI of Control and Treatment Group Participants

Reported MBTI	Number	Valid Percentage	Cumulative Percentage
Treatment Group			
INFJ	4	23.5	23.5
INFP	2	11.8	35.3
ESFP	1	5.9	41.2
ENFP	5	29.4	70.6
ESTJ	2	11.8	82.4
ESFJ	2	11.8	94.2
ENFJ	1	5.9	100.0

Control group participants did not receive their MBTI reports until the end of the study period, because the sharing of MBTI results (the mediating variable) was part of the experiment (treatment) for this study. Treatment group participants received their initial (“as reported”) MBTI results on day three of the first week of their training program. This was also the third day of this study as well as the first of two four-hour functional diversity training classes taught by the researcher to the treatment group.

Once the “as reported” MBTI personality type was identified by the trainer for each treatment group participant, the researcher generated a single sheet narrative describing the individualized MBTI type for each participant. The narrative sheet is purely descriptive and does not include any further input or discussion about understanding personality or behavioral type. During the first four-hour functional diversity training session on day three of the training program, the researcher led a discussion, analysis and “discovery” process to help each participant gain deeper understanding of each of the identified types.

Participants in the treatment group studied their MBTI results and discussed the different MBTI types during their functional diversity training sessions. In their second four-hour functional diversity training session, participants were encouraged to determine if they felt there were a better MBTI type for them (a “best fit” MBTI) than their “as reported” MBTI results.

This self determined MBTI “best fit” is an important aspect of this type of functional diversity training. Research has concluded that, while initial MBTI (“as reported”) results shared with participants helps to set a baseline of individual personality preferences, only a participant who has received some functional diversity training can determine if his or her “as reported” results are truly reflective of how comfortable he or she is with those results. “Although interpreting and verifying type results are important even when respondents report clear preferences, a major task in interpretation is to help respondents with less clear reported preferences arrive at a comfortable and accurate assessment of their type. This is accomplished in an interpretation session [the functional diversity training] mainly through an exploration of how type preferences appear in client behaviors” (Myers et al. 1998, p. 116).

In this study, treatment group participants were trained and encouraged to find their “best fit” MBTI preference at the beginning of the second four-hour functional diversity training session delivered by the qualified trainer (the researcher). The researcher encouraged participants to change their “as reported” MBTI preference to a “best fit” MBTI preference as long as participants making those changes felt comfortable doing so. At the beginning of the second round of functional diversity training, four study participants self-selected different MBTI results which they felt were more of a

“best fit”. Table 4-5 presents the final “best fit” MBTI results for treatment group participants.

Table 4-5

“Best Fit” MBTI Scores for Treatment Group Participants

Reported MBTI	Number	Valid Percentage	Cumulative Percentage
ISTJ	2	11.8	11.8
INFJ	3	17.6	29.4
ISTP	1	5.9	35.3
ISFP	1	5.9	41.2
INFP	2	11.8	53.0
ESFP	1	5.9	58.9
ENFP	3	17.6	76.5
ESTJ	1	5.9	82.4
ESFJ	2	11.8	94.2
ENFJ	1	5.9	100.0

A comparison of the “as reported” MBTI preferences to the “best fit” MBTI preferences showed that, after the first four hours of functional diversity training, the treatment group participants self-modified the group’s collection of seven different MBTI types (“as reported”) to a collection of ten different MBTI types being represented (“best fit”). This process therefore resulted in an increase in the overall reported functional diversity of the group.

Qualified MBTI trainers will often present scatter grams of MBTI results in what is known as a Type Table. Type Tables indicate how a group is represented within the chart of the 16 personality types of the MBTI. Table 4-6 presents the scatter gram of the “as reported” collection of MBTI types (n = 7) for the treatment group participants and the “best fit” collection of MBTI types (n = 10) which were self-selected by the treatment group participants.

Table 4-6

Scatter Plots of “As Reported” and “Best Fit” MBTI Results for Treatment Group Participants

“As Reported”

ISTJ	ISFJ	INFJ * * * *	INTJ
ISTP	ISFP	INFP * *	INTP
ESTP	ESFP *	ENFP * * * * *	ENTP
ESTJ * *	ESFJ * *	ENFJ *	ENTJ

“Best Fit”

ISTJ * *	ISFJ	INFJ * * *	INTJ
ISTP *	ISFP *	INFP * *	INTP
ESTP	ESFP *	ENFP * * *	ENTP
ESTJ *	ESFJ * *	ENFJ *	ENTJ

Performance Measurement

Description of Workgroup Performance

The Fortune 200 Company where this study was conducted uses many measures of workgroup performance as part of its initial analysis for determining the suitability of potential employees. Two particular categories of performance which can be evaluated

are “behavior” and “output”. Companies in this industry typically collect large amounts of data on employee performance in both categories. Worker behavior is measured by items such as absenteeism, employee retention rates, tardiness, the number of on-the-job injuries, and incidences of the need for the use of discipline. Worker output is measured by items such as customer complaints, response times to complete assignments, length of telephone calls with customers, set up times and down times, and the elimination of waste. Historically, the company collects significant amounts of both behavioral and output data for all assessment and training group participants.

Behavioral performance is reported as the actual number of incidents occurring during the assessment and training class. Output performance is reported on a scale specific to each measurement. “Customer Focus” has a total of four required measurements. “Use of Available Tools” has a total of three required measurements. “Process Knowledge” has a total of five required measurements. “Critical Steps Missed” has a total of five required measurements. “Inappropriate Actions” has a total of five required measurements.

For purposes of this study, and prior to the study’s start date, the researcher and senior managers from the company selected a limited set of five behavioral attribute variable measures (DVs 1-5) and five output attribute variable measures (DVs 6-10). During the study period, company representatives continued to collect their entire set of performance data on both groups (control and treatment); however, for the purpose of this study, performance data reported to the researcher was limited just to the ten performance measurements agreed to in advance (behavioral attribute variable measures 1-5 and output attribute variable measures 6-10). Table 4-7 presents the ten performance

measurements (five behavioral measures and five output measures) along with an operational definition for each performance measurement.

Table 4-7

Ten Performance Measurements and their Operational Definition as Used in the Study

Performance Measurement	Type	Operational Definition
Behavioral Attribute Variable Measures		
Occasions of tardiness	Behavioral (DV 1)	The number of instances of late occurrences (greater than five minutes but less than 20 minutes).
Number of absences	Behavioral (DV2)	The number of unscheduled absent hours a participant has accrued.
Violations of professional conduct	Behavioral (DV3)	The number of instances a participant violates one of the company's written professional conduct policies, such as insubordination or workplace violence.
Voluntary resignation	Behavioral (DV4)	When a participant voluntarily resigns from the program.
Forced termination	Behavioral (DV5)	When a participant is released from the program by the company.
Output Attribute Variable Measures		
Customer focus	Output (DV 6)	Use of appropriate soft skills, empathy, acknowledgement statement, greeting and closing.
Use of available tools	Output (DV 7)	Proper use of "Care Center Web and Advice" (internal company website) to obtain process steps and scripts.
Process knowledge	Output (DV 8)	Knowledge of appropriate process and all steps involved in satisfying the customer's concerns and company requirements.
Critical steps missed	Output (DV 9)	Demonstration that a participant has followed all appropriate steps involved in a process, however, the participant does not follow through with submitting an order, completing a ticket, or noting an account.
Inappropriate actions	Output (DV 10)	Personal use of e-mail, the Internet or cell phone while handling a customer call.

Description of Measurement Periods

The study was conducted as an experimental, repeated measures study between geographically separated control and treatment groups. Each group participated in an assessment and training program at a different company location and each had different hours of assessment and training, although the total number of company assessment and training hours between the two groups was nearly identical. Each group had two instructors conducting its assessment and training program, and each site had its own set of instructors.

The control group assessment and training program began two weeks before the treatment group began its assessment and training. Each group received either a total of 280 hours (control group) or 284.5 hours (treatment group) of company assessment and training. These totals excluded the eight hours of functional diversity training only provided to the treatment group by the researcher.

Classroom instructors at both sites conducted performance measurements at the end of the third, fifth and final weeks of assessment and training. Performance measurement results were recorded by company trainers. Company trainers reported performance results for each of the ten measures to the researcher generally within two business days of their collection. The next section discusses each of the research hypotheses and the results of the collection of data.

Research Hypothesis 1

H1: Proximate workgroups that participate in functional diversity training using the Myers-Briggs Type Indicator® (MBTI) show significant improvement in

workgroup performance compared to proximate workgroups that do not participate in functional diversity training.

H1a: Proximate workgroups that participate in functional diversity training using the Myers-Briggs Type Indicator® (MBTI) show significant improvement in workgroup behavior compared to proximate workgroups that do not participate in functional diversity training.

H1b: Proximate workgroups that participate in functional diversity training using the Myers-Briggs Type Indicator® (MBTI) show significant increase in workgroup output compared to proximate workgroups that do not participate in functional diversity training.

Independent t-Test Analysis of the Ten (10) Performance Measurements (H1)

Analyses of performance measurement data partially support this hypothesis.

Independent *t*-tests of the total sample were performed over three measurement periods to determine if there was a difference in the average scores for each of the ten performance measurement variables between the control and the treatment groups. In measurement Period #1, just one performance measurement (“customer focus”) was found to be significantly different ($p \leq .05$) between the two groups. In measurement Period #2, three performance measurements (“occasions of tardiness”, “customer focus” and “use of available tools”) were found to be significantly different ($p \leq .05$) between the two groups. In measurement Period #3, one performance measurement (“critical steps missed”) was found to be significantly different ($p \leq .05$) between the two groups. Tables 4-8 through 4-10 present the summary of the independent *t*-Test analyses, listing the performance measurement, the participant group, the mean, the standard deviation, the

independent *t*-values, and the *p*-values for each of the five behavioral performance measurements over each of the three measurement periods. Tables 4-11 through 4-13 present the summary of the independent *t*-Test analyses, listing the performance measurement, the participant group, the mean, the standard deviation, the independent *t*-values, and the *p*-values for each of the five output measurements over each of the three measurement periods.

Table 4-8

Independent t-Tests of Five Behavioral Measurements Against the Total Sample Performed During Measurement Period #1 (H1a)

Performance Measurement		Participant Group	Mean	Standard Deviation	<i>t</i> -value	<i>p</i> -value
Occasions of tardiness	(n= 18)	Control	.44	.705	.025	.980
	(n= 16)	Treatment	.44	.892		
Number of absences	(n= 18)	Control	.17	.383	-.405	.688
	(n= 16)	Treatment	.25	.775		
Violations of professional conduct	(n= 18)	Control	.11	.323	1.372	.180
	(n= 16)	Treatment	.00	.000		
Voluntary resignation	(n= 18)	Control	.00	.000	-1.063	.296
	(n= 16)	Treatment	.06	.250		
Forced termination	(n= 18)	Control	.00	.000	a	a
	(n= 15)	Treatment	.00	.000		

^a. *t*-value and *p*-value could not be computed because the standard deviations of both groups = 0.

Results of the independent *t*-Tests of the five behavioral measurements during Period #1 are reported in Table 4-8. During measurement period #1, there were no behavioral measurements that displayed a statistically significant different mean between the two groups.

Table 4-9
Independent t-Tests of Five Behavioral Measurements Against the Total Sample Performed During Measurement Period #2 (H1a)

Performance Measurement		Participant Group	Mean	Standard Deviation	<i>t</i> -value	<i>p</i> -value
Occasions of tardiness	(n= 18)	Control	.50	.707	3.000	.008
	(n= 15)	Treatment	.00	.000		
Number of absences	(n= 18)	Control	.17	.514	.683	.500
	(n= 15)	Treatment	.07	.258		
Violations of professional conduct	(n= 18)	Control	.28	.958	1.120	.271
	(n= 15)	Treatment	.00	.000		
Voluntary resignation	(n= 18)	Control	.06	.236	.910	.370
	(n= 15)	Treatment	.00	.000		
Forced termination	(n= 18)	Control	.11	.323	1.327	.194
	(n= 15)	Treatment	.00	.000		

Results of the independent *t*-Tests of the five behavioral measurements during Period #2 are reported in Table 4-9. During measurement Period #2, the behavioral performance measurement of “occasions of tardiness” displayed a statistically significant different mean ($p = .008$) between the two groups and resulted in an independent *t*-value of 3.000.

Table 4-10***Independent t-Tests of Five Behavioral Measurements Against the Total Sample Performed During Measurement Period #3 (H1a)***

Performance Measurement		Participant Group	Mean	Standard Deviation	t-value	p-value
Occasions of tardiness	(n= 15)	Control	.00	.000	-1.871	.072
	(n= 15)	Treatment	.20	.414		
Number of absences	(n= 15)	Control	.40	.828	.269	.790
	(n= 15)	Treatment	.33	.488		
Violations of professional conduct	(n= 15)	Control	.00	.000	a	a
	(n= 15)	Treatment	.00	.000		
Voluntary resignation	(n= 15)	Control	.13	.352	1.468	.153
	(n= 15)	Treatment	.00	.000		
Forced termination	(n= 15)	Control	.00	.000	a	a
	(n= 15)	Treatment	.00	.000		

^a. t-value and p-value could not be computed because the standard deviations of both groups = 0.

Results of the independent *t*-Tests of the five behavioral measurements during Period #3 are reported in Table 4-10. During measurement period #3, there were no behavioral measurements that displayed a statistically significant different mean between the two groups.

Table 4-11***Independent t-Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #1 (H1b)***

Performance Measurement		Participant Group	Mean	Standard Deviation	t-value	p-value
Customer focus	(n= 18)	Control	.5556	.3382	-4.052	.000
	(n= 15)	Treatment	.9167	.1543		
Use of available tools	(n= 18)	Control	.7378	.29399	-.144	.886
	(n= 15)	Treatment	.7520	.26756		

Table 4-11 continued

Independent t-Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #1 (H1b)

Performance Measurement		Participant Group	Mean	Standard Deviation	t-value	p-value
Process knowledge	(n= 18)	Control	.9556	.08556	.609	.547
	(n= 15)	Treatment	.9333	.12344		
Critical steps missed	(n= 18)	Control	.9083	.19039	-.389	.700
	(n= 15)	Treatment	.9333	.17593		
Inappropriate actions	(n= 18)	Control	1.000	.00000	1.099	.280
	(n= 15)	Treatment	.9867	.05164		

Results of the independent *t*-Tests of the five output measurements during Period #1 are reported in Table 4-11. During measurement Period #1, one performance measurement (“customer focus”) displayed a statistically significant different mean ($p = .000$) between the two groups and resulted in an independent *t*-value of -4.052.

Table 4-12

Independent t-Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #2 (H1b)

Performance Measurement		Participant Group	Mean	Standard Deviation	t-value	p-value
Customer focus	(n= 15)	Control	.7333	.29073	-2.719	.014
	(n= 15)	Treatment	.9500	.10351		
Use of available tools	(n= 15)	Control	.9093	.15563	2.661	.013
	(n= 15)	Treatment	.7073	.24944		
Process knowledge	(n= 15)	Control	.9867	.05164	1.058	.299
	(n= 15)	Treatment	.9600	.08281		
Critical steps missed	(n= 15)	Control	.9833	.06455	.000	1.000
	(n= 15)	Treatment	.9833	.06455		

Table 4-12 continued

Independent t-Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #2 (H1b)

Performance Measurement		Participant Group	Mean	Standard Deviation	t-value	p-value
Inappropriate actions	(n= 15)	Control	.9867	.05164	.000	1.000
	(n= 15)	Treatment	.9867	.05164		

In Table 4-12 the performance measurement of “customer focus” displayed a statistically significant different mean ($p = .014$) between the two groups and resulted in an independent t -value of -2.719. The performance measurement of “use of available tools” displayed a statistically significant different mean ($p = .013$) between the two groups and resulted in an independent t -value of 2.661.

Table 4-13

Independent t-Tests of Five Output Measurements Against the Total Sample Performed During Measurement Period #3 (H1b)

Performance Measurement		Participant Group	Mean	Standard Deviation	t-value	p-value
Customer focus	(n= 13)	Control	1.000	.00000	.929	.362
	(n= 15)	Treatment	.9833	.06455		
Use of available tools	(n= 13)	Control	.8700	.21909	-1.746	.093
	(n= 15)	Treatment	.9773	.08779		
Process knowledge	(n= 13)	Control	.9538	.08771	-1.160	.874
	(n= 15)	Treatment	.9600	.11212		
Critical steps missed	(n= 13)	Control	1.000	.00000	3.055	.009
	(n= 15)	Treatment	.9000	.12677		
Inappropriate actions	(n= 13)	Control	1.000	.000	a	a
	(n= 15)	Treatment	1.000	.000		

^a. t -value and p -value could not be computed because the standard deviations of both groups = 0.

Results of the independent *t*-Tests of the five output measurements during Period #3 are reported in Table 4-13. During measurement Period #3, the performance measurement of “critical steps missed” displayed a statistically significant different mean ($p = .009$) between the two groups and resulted in an independent *t*-value of 3.055.

Results of Independent t-Test Analysis (H1a)

This hypothesis stated that proximate workgroups that participate in functional diversity training using the MBTI (the “treatment group”) would show significant improvement in workgroup behavior compared to proximate workgroups that did not participate in functional diversity training (the “control group”). During Period #1 this hypothesis was not supported because there were no statistically significant differences between the two groups for any of the five dependent variable multiple indicators of workgroup behavior (DVs 1-5). During Period #2 this hypothesis was partially supported for the performance measurement of “occasions of tardiness” (DV1) which did show statistically significant differences ($p = .008$) between the two groups. During Period #3 this hypothesis was not supported because there were no statistically significant differences between the two groups for any of the five dependent variable multiple indicators of workgroup behavior (DVs 1-5). Therefore, H1a for the first five dependent variable multiple indicators for workgroup behavior (DVs 1-5) was partially supported but only for “occasions of tardiness” during one of three measurement periods.

Results of Independent t-Test Analysis (H1b)

This hypothesis focused on workgroup output as opposed to the workgroup behavioral measures which were tested in H1a. In particular, this hypothesis stated that proximate workgroups that participate in functional diversity training using the MBTI

(the “treatment group”) would show significant improvement in workgroup output compared to proximate workgroups that did not participate in functional diversity training (the “control group”). During Period #1 this hypothesis was partially supported for the performance measurement of “customer focus” (DV6) which did show a statistical significance ($p = .000$) between the two groups. During Period #2 this hypothesis was partially supported for the performance measurements of “customer focus” (DV 6) which did show a statistical significance ($p = .014$) between the two groups and was partially supported for the performance measurement of “use of available tools” (DV 7) which did show a statistical significance ($p = .013$) between the two groups. During Period #3 this hypothesis was partially support for the performance measurement of “critical steps missed” (DV 9) which did show a statistical significance ($p = .009$) between the two groups. Therefore, H1b for the second five dependent variable multiple indicators for workgroup output (DVs 6-10) was partially supported for “customer focus”, “use of available tools” and “critical steps missed” during each of the three measurement periods.

Research Hypothesis 2

H2: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup performance than the aggregation of socio-demographic variables of a workgroup.

H2a: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup behavior than the aggregation of socio-demographic variables of a workgroup.

H2b: Functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup output than the aggregation of socio-demographic variables of a workgroup.

Analysis of Variance (ANOVA) of the Ten (10) Performance Measurements.

The analyses of the performance measurement data partially support this hypothesis. Analysis of variance (ANOVA) tests were performed over three measurement periods to determine if the aggregation of socio-demographics was a predictor for each of the ten performance measurement variables. The aggregation of socio-demographics was only found to be statistically significant ($p \leq .05$) against two of the dependent variable multiple indicators (“voluntary resignation” and “customer focus”) and only in measurement Period #1. The aggregation of socio-demographics was not found to be statistically significant for any dependent variable multiple indicators in either measurement Period #2 nor in measurement period #3. Tables 4-14 through 4-16 present the summary of the analysis of variance for the aggregation of socio-demographics as the predictor, listing the performance measurement, the R^2 , the F -values and the p -values for each of the ten performance measurements over each of the three measurement periods.

Table 4-14

Analysis of Variance (ANOVA) of the Aggregation of Socio-Demographics as a Predictor During Measurement Period #1

Performance Measurement	R Square	F-value	p-value
Behavior			
Occasions of tardiness	.232	1.689	.170
Number of absences	.168	1.133	.366
Violations of professional conduct	.167	1.122	.371
Voluntary resignation	.338	2.865	.033
Forced termination	n/a	n/a	n/a
Output			
Customer focus	.401	3.613	.012
Use of available tools	.060	.344	.881
Process knowledge	.108	.652	.662
Critical steps missed	.118	.726	.610
Inappropriate actions	.263	1.928	.122

During measurement Period #1, one behavioral performance measurement (“voluntary resignation”) displayed a statistically significant different mean ($p = .033$) with an F -value of 2.865. During measurement Period #1, one output performance measurement (“customer focus”) displayed a statistically significant different mean ($p = 0.12$) with an F -value of 3.613 with the aggregation of socio-demographic factors being the predictor.

Table 4-15

Analysis of Variance (ANOVA) of the Aggregation of Socio-Demographics as a Predictor During Measurement Period #2

Performance Measurement	R Square	F-value	p-value
Behavioral			
Occasions of tardiness	.194	1.299	.294
Number of absences	.160	1.027	.422
Violations of professional conduct	.146	.925	.480
Voluntary resignation	.158	1.012	.430
Forced termination	.180	1.183	.343
Output			
Customer focus	.171	.987	.446
Use of available tools	.158	.898	.499
Process knowledge	.162	.925	.482
Critical steps missed	.199	1.189	.344
Inappropriate actions	.139	.778	.575

During measurement Period #2, no behavioral performance measurements displayed a statistically significant different mean with the aggregation of socio-demographic factors being the predictor. Also in measurement Period #2, no output performance measurements displayed a statistically significant different mean with the aggregation of socio-demographic factors being the predictor.

Table 4-16

Analysis of Variance (ANOVA) of the Aggregation of Socio-Demographics as a Predictor During Measurement Period #3

Performance Measurement	R Square	F-value	p-value
Behavioral			
Occasions of tardiness	.102	.545	.740
Number of absences	.252	1.616	.194
Violations of professional conduct	n/a	n/a	n/a
Voluntary resignation	.145	.811	.553
Forced termination	n/a	n/a	n/a
Output			
Customer focus	.181	.975	.455
Use of available tools	.204	1.127	.375
Process knowledge	.184	.994	.444
Critical steps missed	.111	.549	.737
Inappropriate actions	n/a	n/a	n/a

During measurement Period #3, no behavioral performance measurements displayed a statistically significant different mean with the aggregation of socio-demographic factors being the predictor. Also in measurement Period #3, no output performance measurements displayed a statistically significant different mean with the aggregation of socio-demographic factors being the predictor.

Results of the Analysis of Variance (ANOVA)

For H2a, during Period #1, the aggregation of socio-demographics as a predictor of the first five dependent variable multiple indicators of workgroup behavior (DVs 1-5) showed statistical significance ($p = .033$), but only for “voluntary resignation”. During

Period #2 and Period #3, the aggregation of socio-demographics as a predictor of the first five dependent variable multiple indicators of workgroup behavior (DVs 1-5) showed no statistical significance.

Therefore H2a, for the first five dependent variable multiple indicators for workgroup behavior (DVs 1-5), was not supported during Period #1, but was fully supported during Periods #2 and #3. The overall result would therefore demonstrate a partial support for H2a.

For H2b, during Period #1, the aggregation of socio-demographics as a predictor of the second five dependent variable multiple indicators of workgroup output (DVs 6-10) showed statistical significance ($p = .012$), but only for “customer focus”. During Period #2 and Period #3, the aggregation of socio-demographics as a predictor of the second five dependent variable multiple indicators of workgroup output (DVs 6-10) showed no statistical significance. Therefore H2b, for the second five dependent variables for workgroup output (DVs 6-10), was not supported during Period #1, but was fully supported during Periods #2 and #3. The overall result would therefore demonstrate a partial support for H2b.

Conclusion

Chapter IV presented the results of the descriptive and inferential statistics, tests between the means of the independent groups, and causal comparative data analyses (analysis of variance) in this experimental, repeated measures study leading to an outline of the tests of the hypotheses and other findings from this study. In this chapter, the study process was described, including a thorough explanation of the functional diversity training (the treatment) provided by the researcher to one of the groups, the reported

MBTI results for both groups, the functional diversity of both the control and treatment groups, and the study's timeframe and performance measurement data collection process. The results of the descriptive and inferential statistics, tests between the means of the independent groups, and causal comparative data analyses (analysis of variance) in this experimental, repeated measures study were presented. The researcher also provided detailed data and explanations of the methods used to test the hypotheses and results of analysis.

In the following chapter, Chapter V, is a discussion of the findings and interpretations of the statistical results. In addition, implications for theory and practice are discussed. Study limitations and recommendations for future research are also elaborated.

CHAPTER V

DISCUSSION

Most medium to large size organizations today form workgroups among their employees to accomplish their goals. What makes for an effective team is clearly open to debate and interpretation, but research has found workgroup effectiveness needs to be measured through some standard of workgroup performance. "Forming teams is more than simply throwing a group of people together and telling them they are a team; they need to understand what is required of them and how they are expected to perform in the team" (Hyland, 1998, p. 350). Organizations that are interested in sustaining a competitive advantage rely heavily on work handled by many people being able to work together, rather than many individuals working side-by-side, or even alone. "An effective team... is one in which development of a supportive social structure has occurred, with each individual adapting behavior to optimize personal contribution to the team" (Sheard, 2002, p. 133).

A key element for building effective workgroups is participants' understanding and appreciation of the differences among the individuals that make up the workgroup. The Myers-Briggs Type Indicator® (MBTI) is a well-accepted instrument for identifying personality and behavioral differences in individuals. A method for learning how to understand and appreciate the differences between individuals within a workgroup is through the application of functional diversity training. Until now, research about the effects of functional diversity training, using the MBTI instrument, on workgroup performance has remained unexplored. This was the first study to conduct experimental, repeated measures, causal analysis of the application of functional diversity training using

the MBTI instrument and its effect on workgroup performance. Chapter V presents a discussion of the results reported in Chapter IV, along with interpretations of this investigation; an outline of the limitations of the study; practical implications; conclusions and recommendations for future research.

The specific purpose of this investigation was threefold: 1) to discover ways to improve workgroup deficiencies through a focus on personality and dispositional differences in people; 2) to research, test and analyze a particular personality and disposition instrument (the Myers-Briggs Type Indicator), by focusing on the functional diversity differences of workers in order to determine its effect on the performance of members of proximate workgroups, and; 3) to demonstrate the value of using the MBTI instrument as a functional diversity training tool for increasing performance of proximate workgroups.

Interpretations and Hypothesis Testing

This experimental, repeated measures study included one control group and one treatment group built through a random sampling of convenience based within a Fortune 200 Company. The groups performed the same work during the study period, but were geographically separated.

Socio-Demographic Characteristics

A total of 36 participants began the study. Most participants were female (72.2%). Ethnicity was relatively diverse with African-American's representing 38.8%, non-Hispanic Caucasians 30.5%, Hispanics 25% and all others 6.7%. Most of the study participants (86.1%) were in the age range of 18-27 years old. A majority of the

participants (55.6%) had three years or less of work experience. Most of the study participants (82.4%) had at least a high school or better level of education.

Study Mortality

Both control and treatment groups experienced some mortality during the study. The control group lost five of its 18 participants over the course of the study (excluding one invalid case) which represented a mortality rate of 27.7%. The treatment group lost one of its 16 participants (excluding one invalid case) which represented a mortality rate of 6.25%.

Use of the MBTI and Functional Diversity Training

The Myers-Briggs Type Indicator® was the instrument of choice for this study since it is probably the most widely administered instrument used in business today for assessing and understanding differences in personality and behavior styles. (Lawrence, 1998; Garfield, 2001; Topping, 2002; McKenna et al. 2002; Sample, 2004). The researcher provided eight hours of functional diversity training (the “treatment”) for the treatment group participants only, using the MBTI instrument and individual participant’s MBTI results as the basis of that training. The MBTI training was conducted in two four-hour segments within the first two weeks of the study.

MBTI Outcome of Treatment Group

Initial scoring of the MBTI instrument results for treatment group participants demonstrated a collection of seven different MBTI types being reported for the group. Upon completion of the eight hours of functional diversity training, some treatment group participants self-selected a “best fit” MBTI, resulting in a final total of a collection of ten different MBTI types being identified for the treatment group participants.

Description of Workgroup Performance and the Measurement Period

This study used two dependent variables (workgroup behavior and workgroup output) for measuring workgroup performance. The workgroup behavior dependent variable had a set of five indicators and the workgroup output dependent variable had a different set of five indicators. Companies in the industry where this study was conducted typically collect large amounts of data on employees in both behavioral and output categories. The ten dependent variable multiple indicators identified for this study were selected as a matter of convenience, and were developed as part of a pre-study discussion with senior management of the company.

Performance was measured at three distinct points during the study. All ten dependent variable multiple indicators were measured at the end of the third week, the fifth week and at the end of the final week of the study. Data were collected by company training and assessment instructors and reported to the researcher within two business days of the collection of the data.

Literature Review of Diversity, Functional Diversity Training, the MBTI, and Behavioral and Output Measurements

Hypothesis 1

House, Shane and Harold (1996) discussed the value of dispositional research in the field of organizational behavior. In particular, they called for further research in the field of personality and disposition, including more specifically defining what is meant by disposition, and by determining which dispositions are operative in affecting behavior (and when). Their recommendations for further research suggested that “it is imperative that those interested in dispositional research do a better job of theoretically linking

dispositions and situations in predicting outcomes” (House et al. 1996, p. 213). They further called for research which would be helpful in developing methods for theoretically linking dispositions and situations, focusing on better assessments and measurements of dispositions and their consequences, and lastly, the development of studies and the testing of interactional models in which the role of disposition was the key focus. This study was a response to that call for further research.

Hartenian and Gudmundson (2002) conducted an empirical study to determine if there was an economic advantage for small firms to promote cultural diversity within the ranks of their employees. They examined the economic performance of a group of service industry companies located in a large Midwest metropolitan area, based upon the percentage of cultural minorities employed by those companies. Two sets of *t*-test analyses were completed in order to compare those companies that had diverse work forces versus those with non-diverse work forces. Results showed that “firms with diverse work forces had better financial performance than firms with non-diverse work forces” (Hartenian & Gudmundson, 2000, p. 213).

Hypothesis 1a

Castka, Bamber and Sharp (2003) theorized that workteams would be able to successfully utilize their own diversity when it developed an “understanding of personality preferences, and how it affects the way team members prefer to operate” (Castka et al. 2003, p. 150). Of particular importance was the workgroup process of “the behaviors, attitudes, and interactions that occur within the organization at the individual, group, and intergroup level” (Castka et al. 2003, p. 152).

Hanover and Cellar (1998) recognized the growing use of diversity training in organizations and wanted to assess the extent to which such training could be an effective means of achieving the learning objectives associated with it. Their research, based on socio-demographic diversity training workshops conducted in a Fortune 500 consumer products organization looked at the impact and value of that diversity training within that organization. Their study had a pre-test and post test design for both the treatment and control groups. The independent variable was the type of treatment (training vs. no training) and the dependent variables were the measures of training effectiveness.

Paired *t*-tests were conducted within the treatment and the control groups. ANCOVAs were conducted to assess between-group effects of the training manipulation on the dependent variables. "Results of the paired *t*-tests indicated that participants who attended the workshop showed significant improvement on the importance variable after the workshop, whereas participants who did not attend the workshop did not. Furthermore...the results of the ANCOVA indicated a significant effect for the training manipulation for this variable. Thus, the results of the paired *t*-tests and ANCOVA both indicated that the training program affected attitudes toward diversity-related management practices" (Hanover & Cellar, 1998, p. 111).

Berr, Church, and Waclawski (2000) used personality preferences and behavior ratings collected over a two-year period from a multi-rater feedback intervention with 343 senior managers working in a global health services organization. "Relatively few studies [had] explored the relationship between personality preferences and perceptions of workplace behavior from different independent observers. This lack of research is somewhat surprising given the widespread use of measures such as the MBTI in many

developmental settings and interventions” (Berr et al. 2000, p. 136). Results of their research revealed a modest relationship between individual worker personality and their behavior toward work when using the MBTI as the assessment tool.

Hypothesis 1b

Howard and Brakefield (2001) studied the relationship between the diversity of team members against the team’s performance on task (output). The only consistent finding of their study was that the type of task undertaken was found to have significant influence on the results; but that the effects of diversity were negligible. Their strongest reasonable conclusion was that the effects of diversity were not so straightforward and that further study was needed. Specifically, they called for further empirical research “to determine whether or not various types of diversity do have a quantitative influence on group performance” (Howard & Brakefield, 2001, p. 153).

Hypothesis 2

Jehn, Chadwick, and Thatcher (1999) conducted a quasi-experimental study utilizing functional groups performing comparable tasks. Results indicated that the visible forms of differences in the workgroups (socio-demographics) increased relationship conflicts, and that differences regarding informational demographics (functional diversity) increased task-focused conflicts, finding that “the content of the values influences the performance of the group” (Jehn et al. 1997, p. 295).

Hypothesis 2a and Hypothesis 2b

Forret and Dougherty (2001) conducted a study of 418 graduates of a large Midwestern state university to examine the relationship of personality and job characteristics on networking within organizations. Data were collected through a

questionnaire, and results showed that gender differences had little impact on networking behavior within organizations, but socioeconomic background was a significant predictor in the study.

Hypothesis Testing

A total of six hypotheses were tested by the researcher using independent *t*-Tests and analysis of variance (ANOVA) against ten dependent variable multiple indicators. Table 5-1 provides a list of the research hypotheses tested in this study, and summarizes the results of analyses and linkage to the literature.

Table 5-1

Research Hypotheses and Results

	Research Hypothesis	Results	Literature	Consistent with Literature
H1	Proximate workgroups that participate in functional diversity training using the MBTI show significant improvement in workgroup performance compared to proximate workgroups that do not participate in functional diversity training.	Partially supported in all three measurement period	House, Shane, and Harold (1996) Hartenian and Gudmundson (2002)	Yes Yes partially
H1a	Proximate workgroups that participate in functional diversity training using the MBTI show significant improvement in workgroup behavior compared to proximate workgroups that do not participate in functional diversity training.	Partially supported in measurement Period #2, but not supported in measurement Periods #1 and #3.	Castka, Bamber, and Sharp (2003) Hanover and Cellar, (1998) Berr, Church, and Waclawski (2000)	Yes partially Yes Yes
H1b	Proximate workgroups that participate in functional diversity training using the MBTI show significant increase in workgroup output compared to proximate workgroups that do not participate in functional diversity training.	Partially supported in all three measurement periods.	Howard and Brakefield (2001) Hanover and Cellar (1998)	No Yes

Table 5-1 continued

	Research Hypothesis	Results	Literature	Consistent with Literature
H2	Functional diversity training using the MBTI and changes in workgroup performance is a significantly greater explanatory variable than socio-demographic variables.	Partially supported in measurement period #1, but not supported in measurement periods #2 and #3.	Jehn, Chadwick, and Thatcher (1999)	Yes partially
H2a	Functional diversity training using the MBTI and changes in workgroup behavior is a significantly greater explanatory variable than socio-demographic variables.	Partially supported in measurement period #1, but not supported in measurement periods #2 and #3	Forret and Dougherty (2001)	Yes partially
H2b	Functional diversity training using the MBTI and changes in workgroup output is a significantly greater explanatory variable than socio-demographic variables.	Partially supported in measurement period #1, but not supported in measurement periods #2 and #3	Forret and Dougherty (2001)	Yes partially

Outcomes

The study had three measurement periods for both the control and the treatment groups. Overall, each of the three measurement periods displayed some incidents of statistical significance, but not for all of the hypotheses. For H1 out of a possible 30 items of statistical significance (10 DVs measured over 3 periods = 30 items), there were a total of five incidents of statistical significance (16.7%). There were four incidents of statistical significance for the output measurement (H1b), including incidents of statistical significance in each of the three measurement periods. There was only one incident of statistical significance for the behavioral measurement (H1a), and it appeared

in Period #2. There were no incidents of statistical significance for behavioral measurement in either Period #1 or Period #3.

For H2 out of a possible 30 items of statistical significance, there were just two incidents of statistical significance (6.67%). There was just one incident of statistical significance for the behavioral measurement (H2a) and just one incident of statistical significance for the output measurement (H2b). There were no incidents of statistical significance for socio-demographics as a predictor in either Period #2 or Period #3. This outcome would further support the hypothesis that functional diversity training using the Myers-Briggs Type Indicator® (MBTI) is a significantly greater explanatory variable for improvement in workgroup performance than the aggregation of socio-demographic variables of a workgroup.

In summary, while the length of this repeated measures study was somewhat limited in scope due to the short nature of the data collection period, portions of the findings did demonstrate a link to the theoretical work by House, Shane, and Harold (1996). This study was able to focus on a particular assessment tool (use of the MBTI) as a method for linking dispositions, consequences and work situations. Also, similar to the work done by Hanover and Cellar (1998), this study demonstrated that use of diversity training “could be an effective means of achieving the learning objectives associated with it” (Hanover & Cellar, 1998, p. 111). While Hanover and Cellar (1998) reported significant improvements in their study, the incumbent study was a bit less robust.

On the other hand, results of this study matched up very well with the work done by Berr, Church, and Waclawski (2000), in that their findings “revealed a modest relationship between individual worker personality and behavior toward work when using

the MBTI as the assessment tool” (Berr et al. p. 136). Findings in this study had similarly reported modest results by demonstrating that in a number of measurement periods, functional diversity training using the Myers-Briggs Type Indicator® (MBTI) was a significantly greater explanatory variable for improvement in workgroup performance than the aggregation of socio-demographic variables of a workgroup. In particular, this outcome was fully demonstrated during measurement periods #2 and #3.

Finally, the work of Jehn, Chadwick, and Thatcher (1999) showed that socio-demographics increased relationship conflicts, and that functional diversity increased task-focused conflicts in workgroups. While both studies are important in demonstrating workgroup outcomes based upon the impact of functional diversity training and allowing for the measurement of socio-demographic diversity’s impact, results of their study did not match up conclusively with the results of this study in that the incumbent study demonstrated no particular conflict within the workgroups based upon measuring differences between workgroup diversity and workgroup tasks.

Limitations

The present investigation was the first study to conduct experimental, repeated measures, causal analysis of the application of functional diversity training using the MBTI instrument and its effect on workgroup performance. While this is valuable research for both industry and academia, the sample used and the structure of the study do present the following limitations.

- 1) This study was limited to measuring performance of newly hired individuals in a training group which did not have any history of performance for purposes of establishing baseline data.

- 2) A limited number of dependent variables were selected for the study, and these variables were limited to workgroup behavior and workgroup output.
- 3) Three different scales were used for each of the five output performance measures (dependent variable multiple indicators). Some of these multiple indicators were based upon three of three factors being measured, some were based on four of four factors being measured and some were based on five of five factors being measured. This could have had an impact on internal validity and presented issues in analyzing overall performance.
- 4) In each measurement period, the worst participants were either asked to leave the training program or they chose to leave themselves because they knew, based upon their performance, that they were not measuring up to company standards. Because poor performers left the training program as the study progressed, this created an environment where during each succeeding measurement period there was a smaller sample with fewer differences to evaluate, thus creating a threat to internal validity.
- 5) The study used only the Myers-Briggs Type Indicator® (MBTI) as the instrument for measuring dispositional and behavioral factors in individuals. Although the MBTI has been determined to be both valid and reliable, other instruments are available.
- 6) The study was built on a very small sample. Incidents of participant mortality during the study period created a threat to external validity.

- 7) This repeated measures study was limited to a maximum period of just nine weeks of conducting the experiment, which may have been a threat to internal validity.
- 8) This study was conducted in just one company; therefore, the findings cannot be generalized to other groups, companies or industries.

Practical Implications

Organizations have demonstrated great interest in the concept of using teams in the workplace. Often, organizations put groups of individuals together in teams with the assumption that if those individuals work together, rather than separate and apart, organizational performance will improve due to the collective teamwork effort. While most organizations believe that when they assign employees to work together they have created a team, many of the key elements that are necessary for truly establishing a team may actually be missing. While there is this common belief that groups of employees placed together (working in proximity) are a team by nature, for purposes of this study, they were more simply identified as being part of a workgroup.

Prior to this study, little research had focused on the differences of each of the individuals assigned to work together in a workgroup. Some research has been published on socio-demographic diversity and workgroups. What has often not been taken into account (and is even less-often measured) are differences in the personality and behavior of the individuals placed in workgroups and the effects that this may have on overall workgroup performance. Differences in personality or behavior amongst individuals in a workgroup (their functional diversity) can have a great impact on the workgroup's

performance within the organization. Therefore, the following implications of theory and practice are offered:

- 1) Organizations should work at creating training programs to help employees understand the behavioral and personality differences of their co-workers. With this deeper understanding of the differences between individuals within the organization, many of the barriers to effective teamwork can be removed.
- 2) Better understanding of the differences between co-workers breaks down normal barriers that often exist in the workplace, leading to greater employee satisfaction in the work that is being done within the team. If there is greater employee satisfaction, this can lead to greater employee motivation which also can lead to greater employee performance.
- 3) Providing functional diversity training in the workplace can add an additional dimension to organizational teamwork beyond the traditional social diversity training commonly offered now in the workplace.
- 4) Functional diversity training can improve employee understanding and increase individual and collective performance at many levels of an organization. It can be introduced and implemented at the entry level as well as with mid-level employees. It can and should also be introduced and implemented at senior and executive levels of management.
- 5) Functional diversity training (training based upon differences in personality and behavior) actually crosses over and breaks down the barriers of some of the traditional social diversity training found in

organizations today. While there has been considerable effort made by organizations' Human Resource departments to train employees about diversity (typically race, ethnicity, gender and age), using functional diversity-based training steps around those social issues, focusing its impact on personality and behavior of individuals.

- 6) In its purest sense, the use of functional diversity training can help the sometimes volatile issues of race, age and gender, which can be impediments within the workplace, become a greatly diminished barrier because, after the training, co-workers develop a greater understanding and appreciation for those with whom they work in a team environment.
- 7) The use of functional diversity training has tremendous transferability across all sectors of organizations. It does not need to be confined just to for-profit organizations. Functional diversity training could have a positive impact in the public sector, the private sector, in education and within not-for-profit organizations. Anywhere there is a collection of employees working toward a common purpose or goal, functional diversity training could have a positive impact on the outcome of the workgroup's performance.

Conclusions

This study was conducted at a Fortune 200 Company, using a small number of participants, nearly equally distributed between a control and treatment group, to test hypotheses of the effect of functional diversity training, using the MBTI instrument, on workgroup performance. The dependent variables in this study were workgroup

performance as measured by workgroup behavior and workgroup output. The independent variable in this study was the assignment to either the control or the treatment group. The socio-demographics of the individual participants were attribute variables which were aggregated for this study. The application of functional diversity training using the Myers-Briggs Type Indicator® (MBTI) as the training instrument (the treatment) was a mediating variable in the study and was conducted during three different periods over either eight or nine weeks. There were a total of 30 measurable study outcomes. Statistical significance was found for some of the ten performance measurements, supporting each of the hypotheses within the totality of the study, but was not found for each hypothesis in each of the three different measurement periods. Nonetheless, the following conclusions can be made as an outcome of the testing of the hypotheses:

- 1) The findings of this experimental study support the existing literature on the effect of functional diversity training on pre-selected examples of workgroup performance.
- 2) From amongst the company-selected measurements of performance, functional diversity training was only found to be statistically significant in improving behavioral measures in two of 30 possible outcomes.
- 3) From amongst the company-selected measures of performance, functional diversity training was only found to be statistically significant in improving output measures in five of 30 possible outcomes.
- 4) From amongst the company-selected measurements of performance, the aggregation of socio-demographic variables as a significantly greater

explanatory variable than functional diversity training for improvement in workgroup performance was only found in two out of 30 possible outcomes.

- 5) In a study where there was participant mortality due to a failure to perform well enough to continue in the program (the study period), hypothesis testing became more and more difficult because the number of individuals who might impact the study results (both positively and negatively) diminished over time.
- 6) Each of the five dependent variable multiple indicators of output measurement had their own set of scales. One multiple indicator used three of three requirements, two multiple indicators used four of four requirements and two multiple indicators used five of five requirements. Performance measurement criteria which used the same scale of measurable requirements would have made for a better comparison of this dependent variable.

Recommendations for Future Study

This study was limited to measuring the effects of functional diversity training, using the MBTI instrument, on one of two very small sets of workgroup participants. Although the research was established as an experimental, repeated measures study to determine effectiveness of a particular treatment, study participants in the treatment group only received a total of eight hours of functional diversity training as part of the research. The length of the study was limited to a maximum measurement period of just nine weeks (the total amount of the assessment and training class provided by the

company where the study was conducted). The nature of this study was intentionally limited in its duration and scope. Future studies should address these limitations by conducting additional research which might:

- 1) Establish a methodology which uses a pre-and post-test of performance by using well established workgroups within an organization, rather than a collection of newly hired individuals who are going through an initial training and assessment program to determine their worthiness for future employment with that organization.
- 2) Replicate the study with sets of workgroups that have a history of performance which has previously been measured by the organization so that there is a baseline of data available to test against, once the study parameters are established.
- 3) Replicate the study format using different measurable variables of workgroup performance such that all variables use the same scale to make aggregate performance evaluation possible.
- 4) Replicate the study using a larger sample to see if findings are more robust.
- 5) Repeat the study with an increase in the amount of functional diversity training provided to the treatment group.
- 6) Conduct the study with different levels of workgroups within an organization or within an industry. That is, test the hypotheses using blue-collar workers, mid-level managers, and senior executives to determine

the effects of functional diversity training on workgroup performance within each classification of workgroup.

- 7) Conduct the repeated measures study over a greater length of time using a larger group of participants. This would help to improve the internal validity of the study's findings.
- 8) Conduct a similar study at different types of companies in different industries, looking at a broader range of performance measures.
- 9) Conduct a study looking at attitudes toward work, before and after the implementation of functional diversity training, to determine if there is a change in attitudes.
- 10) Replicate the study using workgroup goals and objectives as the measurements of performance rather than an aggregation of individuals participating in workgroups.

This study sought to add to the knowledge about effects of functional diversity training, using the MBTI instrument, on workgroup performance. Chapter V discussed the results of the analyses related to the testing of the hypotheses that flowed from the research purposes of the study. Findings were interpreted in light of the review of the literature. The limitations of the current study were outlined, as were the implications for theory and practice. Conclusions were drawn from those interpretations and recommendations for future study were also elaborated.

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Appendix A

Instrument #1- Socio-Demographic Profile

Information About You

Name: _____

Are you male or female?

- Male
- Female

What is your race?

- African American (black)
- Alaska Native
- American Indian
- Asian
- Non-Hispanic Caucasian (white)
- Hispanic
- Native Hawaiian
- Pacific Islander
- Other

What is your age?

- 18-27
- 28-37
- 38-47
- 48-57
- 58-65
- Over 65

Name: _____

How long have you worked full-time?

- 0-12 months
- 1-3 years
- 4-6 years
- 9-11 years
- 12-14 years
- 15 years or more

What is the highest level of schooling you have completed?

- Less than High School
- Earned a G.E.D.
- High school graduate
- Technical School graduate
- Two years of college
- Four year college degree
- Graduate degree
- More than a graduate degree

Appendix B

Instrument #2- The Myers-Briggs Type Indicator

Myers-Briggs Type Indicator® (MBTI) Form M

Psychological instrument not reproduced here as per copyright restrictions

Appendix C

Researcher's Certificate of Qualification



the

Center for Applications of Psychological Type

Awards this Document to

Dale S. Sugerman

for successfully completing training and examinations required to become recognized as a Qualified Administrator of the Myers-Briggs Type Indicator®.

Gainesville, FL
June 5-8, 2001

*Myers-Briggs Type Indicator (MBTI)
Qualifying Program*

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26

CE Credits

CAPT faculty

CAPT faculty

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Appendix D

Instrument #3- Measurement of Workgroup Performance

**[LOCATION] CUSTOMER CARE CENTER
EMPLOYEE TRAINING CLASS
PERFORMANCE MEASUREMENTS**

MEASUREMENT PERIOD #1

DATE: _____

NAME	B-1	B-2	B-3	B-4	B-5	O-1	O-2	O-3	O-4	O-5
Participant A										
Participant B										
Participant C										
Participant D										
Participant E										
Participant F										
Participant G										
Participant H										
Participant I										
Participant J										
Participant K										
Participant L										
Participant M										
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Participant O										
Participant P										
Participant Q										
Participant R										
Participant S										

B-1 = Occasions of tardiness

B-2 = Number of absences

B-3 = Violations of professional conduct

B-4 = Voluntary resignation

B-5 = Forced termination

O-1 = Customer focus (4 requirements.)

O-2 = Use of available tools/web reference (3 requirements.)

O-3 = Process knowledge (5 requirements.)

O-4 = Critical steps missed (4 requirements.)

O-5 = Inappropriate actions (5 requirements.)

Instructor's signature

Appendix E

Permission to use the MBTI



July 17, 2006

Dale S. Sugerman, Ph.Dc.
[REDACTED]

Dear Mr. Sugerman,

This letter is to confirm that you are authorized to administer the Myers-Briggs Type Indicator® instrument. In 2001 you successfully completed the MBTI Qualification training program at our center. This course involved pre-study, four days of class, and an exam.

You are thereby permitted to use the MBTI® instrument in your field research as a doctoral student at Lynn University in Boca Raton, Florida, studying Global Leadership with a specialization in Corporate and Organization Management. The title of your research project is *Effects of Functional Diversity Training, Using the MBTI Instrument, on Workgroup Performance*.

We hope that you will contribute the results of your research to the Isabel Briggs Myers Memorial Library here at CAPT.

Yours truly,
[REDACTED]

Ms. Jamelyn R. Johnson
Coordinator of Research Services

Appendix F

Permission from the Company to Conduct the Study



November 13, 2006

Mr. Dale S. Sugerman, Ph. D.(c)

[REDACTED]

Re: Consent to Participate in Ph. D. Candidate Project

Dear Mr. Sugerman:

The purpose of this letter is to confirm that Florida Power & Light Company ("FPL") has provided its consent to allow a select numbers of its employees, with whom FPL will select and designate, to participate as the workgroup(s) for your project pertaining to your thesis, *Effects of Functional Diversity Training Using the Myers-Briggs Type Indicator Instrument on Workgroup Performance*, which you are studying as a Ph. D. candidate at Lynn University in Boca Raton, Florida. FPL understands that your research is part of your candidacy as a doctoral student studying Global Leadership with a specialization in Corporate and Organizational Management. In consideration of FPL's consent, you have agreed to permit FPL the right to utilize your findings and conclusions as FPL deems necessary in connection with its business purpose at no cost.

If you or any of the members of your Dissertation Committee have any questions or FPL's consent in this matter, please do not hesitate to contact me at [REDACTED]. Thank you.

Very truly yours,

[REDACTED]

Rodney M. Miller
Dean, Group University

Appendix G

Approval of Institutional Review Board



Lynn University

Principal Investigator: Dale S. Sugerman

Project Title: Effects of Functional Diversity Training, Using the MBTI instrument, on Workgroup Performance

IRB Project Number 2006-052:

APPLICATION AND PROTOCOL FOR REVIEW OF RESEARCH INVOLVING HUMAN SUBJECTS OF A NEW PROJECT: Request for Exempt Status Expedited Review Convened Full-Board

IRB ACTION by the CONVENED FULL BOARD:

Date of IRB Review of Application and Research Protocol: 12/14/06

IRB ACTION: Approved Approved w/provision(s) Not Approved Other

COMMENTS:

Consent Required: No Yes Not Applicable Written Signed

Consent forms must bear the research protocol expiration date of 12/14/07

Application to Continue/Renew is due:

- 1) For a Convened Full-Board Review, two months prior to the due date for renewal
- 2) For an Expedited IRB Review, one month prior to the due date for renewal
- 3) For review of research with exempt status, one month prior to the due date for renewal

Name of IRB Chair (Print) Farideh Farazmand

Signature of IRB Chair _____ Date: 12/14/06

Appendix H

Control Group Informed Consent Letter



Lynn University

THIS DOCUMENT SHALL ONLY BE USED TO PROVIDE AUTHORIZATION FOR VOLUNTARY CONSENT

PROJECT TITLE: *Effects of Functional Diversity Training, Using the MBTI Instrument, on Workgroup Performance.*

Project IRB Number: 2006-052- Lynn University, 3601 N. Military Trail, Boca Raton, Florida 33431

I, Dale S. Sugerman am a doctoral student at Lynn University. I am studying Global Leadership, with a specialization in Corporate and Organization Management. One of my degree requirements is to conduct a research study.

DIRECTIONS FOR THE PARTICIPANT:

You are being asked to participate in my research study. Please read this carefully. This form provides you with information about the study. The Principal Investigator (Dale S. Sugerman) will answer all of your questions. Ask questions about anything you don't understand before deciding whether or not to participate. You are free to ask questions at any time before, during, or after your participation in this study. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You acknowledge that you are at least 18 years of age, and that you do not have medical problems or language or educational barriers that precludes understanding of explanations contained in this authorization for voluntary consent.

PURPOSE OF THIS RESEARCH STUDY: The study is about the effects of functional diversity training on workgroup performance. There will be approximately 40 people invited to participate in this study. All of the participants are employees of the Florida Power and Light Company and are enrolled in a classroom training program.

PROCEDURES:

You will first complete a socio-demographic survey. This survey will provide the researcher with a basic description of all of the participants engaged in the study. Then you will be asked to complete the Myers-Briggs Type Indicator (MBTI) instrument. Finally, you will be asked to complete the Fundamental Interpersonal Relationship Orientation-Behavior (FIRO-B) instrument. These three surveys should take a total of 60-90 minutes to complete. If necessary, the researcher, (Dale S. Sugerman), can guide you in completing the surveys. Performance data will be gathered by the researcher.

POSSIBLE RISKS OR DISCOMFORT: This study involves minimal risk. You may find that some of the questions and discussions are sensitive in nature. Participants will not be forced to discuss any matters that they do not wish to discuss. Participation in this study requires a set amount of your time and effort, and all activities will be conducted on company time. You will not be asked to spend any of your personal

time participating in this research study. It is estimated that the total amount of time for participants will be between 60 and 90 minutes for completion of the various survey instruments.

POSSIBLE BENEFITS: There may be no direct benefit to you in participating in this research.

FINANCIAL CONSIDERATIONS: There is no financial compensation for your participation in this research. There are no costs to you as a result of your participation in this study. All activities will be conducted on company time.

CONFIDENTIALITY: Every effort will be made to maintain confidentiality. Your identity in this study will be treated as confidential. Only the researcher (Dale S. Sugerman) will know the results of your survey material, unless you determine that you are willing to disclose the same to others. Once the survey results are collected, you will be given a fictitious name (or code number). Data will be coded with that fictitious name. The researcher will not identify you and data will be reported as "group" responses.

All the data gathered during this study, which were previously described, will be kept strictly confidential by the researcher. Data will be stored in locked files and destroyed at the end of the research. All information will be held in strict confidence and will not be disclosed unless required by law or regulation.

The results of this study may be published in a dissertation, scientific journals or presented at professional meetings. In addition, your individual privacy will be maintained in all publications or presentations resulting from this study.

RIGHT TO WITHDRAW: You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate.

CONTACTS FOR QUESTIONS/ACCESS TO CONSENT FORM: Any further questions you have about this study or your participation in it, either now or any time in the future, will be answered by Dale Sugerman (Principal Investigator) who may be reached at: [REDACTED] and Dr. Laura Hart, faculty advisor who may be reached at: [REDACTED]. For any questions regarding your rights as a research subject, you may call Dr. Farideh Farazmand, Chair of the Lynn University Institutional Review Board for the Protection of Human Subjects, at [REDACTED]. If any problems arise as a result of your participation in this study, please call the Principal Investigator (Dale Sugerman) and the faculty advisor (Dr. Laura Hart) immediately.

A copy of this consent form will be given to you.

AUTHORIZATION FOR VOLUNTARY CONSENT:

I have read and understand this consent form. I have been given the opportunity to ask questions, and all my questions have been answered to my satisfaction. I have been assured that any future questions that may arise will be answered. I understand that all aspects of this project will be carried out in the strictest of confidence, and in a manner in which my rights as a human subject are protected. I have been informed of the risks and benefits. I have been informed in advance as to what my task(s) will be and what procedures will be followed.

I voluntarily choose to participate. I know that I can withdraw this consent to participate at any time without penalty or prejudice. I understand that by signing this form I have not waived any of my legal rights. I further understand that nothing in this consent form is intended to replace any applicable Federal, state, or local laws. I understand that I will receive a copy of this form.

Participant's printed name

Participant's signature

Date

INVESTIGATOR'S AFFIDAVIT: I have carefully explained to the subject the nature of the above project. The person participating has represented to me that he/she is at least 18 years of age, and that he/she does not have a medical problem or language or educational barrier that precludes his/her understanding of my explanation. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid.

Signature of Investigator

Date of IRB Approval: 12/14/06



Appendix I

Treatment Group Informed Consent Letter



Lynn University

THIS DOCUMENT SHALL ONLY BE USED TO PROVIDE AUTHORIZATION FOR VOLUNTARY CONSENT

PROJECT TITLE: *Effects of Functional Diversity Training, Using the MBTI Instrument, on Workgroup Performance.*

Project IRB Number: 2006-052- Lynn University, 3601 N. Military Trail, Boca Raton, Florida 33431

I, Dale S. Sugerman am a doctoral student at Lynn University. I am studying Global Leadership, with a specialization in Corporate and Organization Management. One of my degree requirements is to conduct a research study.

DIRECTIONS FOR THE PARTICIPANT:

You are being asked to participate in my research study. Please read this carefully. This form provides you with information about the study. The Principal Investigator (Dale S. Sugerman) will answer all of your questions. Ask questions about anything you don't understand before deciding whether or not to participate. You are free to ask questions at any time before, during, or after your participation in this study. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You acknowledge that you are at least 18 years of age, and that you do not have medical problems or language or educational barriers that precludes understanding of explanations contained in this authorization for voluntary consent.

PURPOSE OF THIS RESEARCH STUDY: The study is about the effects of functional diversity training on workgroup performance. There will be approximately 40 people invited to participate in this study. All of the participants are employees of the Florida Power and Light Company and are enrolled in a classroom training program.

PROCEDURES:

You will first complete a socio-demographic survey. This survey will provide the researcher with a basic description of all of the participants engaged in the study. Then you will be asked to complete the Myers-Briggs Type Indicator (MBTI) instrument. Finally, you will be asked to complete the Fundamental Interpersonal Relationship Orientation-Behavior (FIRO-B) instrument. These three surveys should take a total of 60-90 minutes to complete. If necessary, the researcher, (Dale S. Sugerman), can guide you in completing the surveys. Performance data will be gathered by the researcher.

Within the first week of completing these forms, your individual results of the last two surveys (MBTI and FIRO-B) will be shared with you in workgroup meetings conducted at the worksite. The specific results of your survey information will remain confidential between you and the researcher. You will, however, be given an opportunity to share the results of your individual surveys with others if you chose to do so. You will not be forced to disclose your results at any time.

Over the course of the next 7 weeks of classroom training, the researcher will be conducting two 4 hour training sessions, including a general outline of the collective results of the survey instruments. Again, individual results will not be shared with the workgroup- only aggregate results. However, participants will be given an opportunity to share their survey results with others if they choose to do so. The two 4 hour training sessions will be conducted during the first and the second week of the training class.

POSSIBLE RISKS OR DISCOMFORT: This study involves minimal risk. You may find that some of the questions and discussions are sensitive in nature. Participants will not be forced to discuss any matters that they do not wish to discuss. Participation in this study requires a set amount of your time and effort, and all activities will be conducted on company time. You will not be asked to spend any of your personal time participating in this research study. It is estimated that the total amount of time for participants will be between eight (8) and ten (10) hours.

POSSIBLE BENEFITS: There may be no direct benefit to you in participating in this research. But knowledge may be gained which may help you to better understand differences (functional diversity) in yourself and in others.

FINANCIAL CONSIDERATIONS: There is no financial compensation for your participation in this research. There are no costs to you as a result of your participation in this study. All activities will be conducted on company time.

CONFIDENTIALITY: Every effort will be made to maintain confidentiality. Your identity in this study will be treated as confidential. Only the researcher (Dale S. Sugerman) will know the results of your survey material, unless you determine that you are willing to disclose the same to others. Once the survey results are collected, you will be given a fictitious name (or code number). Data will be coded with that fictitious name. The researcher will not identify you and data will be reported as "group" responses.

All the data gathered during this study, which were previously described, will be kept strictly confidential by the researcher. Data will be stored in locked files and destroyed at the end of the research. All information will be held in strict confidence and will not be disclosed unless required by law or regulation.

The results of this study may be published in a dissertation, scientific journals or presented at professional meetings. In addition, your individual privacy will be maintained in all publications or presentations resulting from this study.

RIGHT TO WITHDRAW: You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate.

CONTACTS FOR QUESTIONS/ACCESS TO CONSENT FORM: Any further questions you have about this study or your participation in it, either now or any time in the future, will be answered by Dale Sugerman (Principal Investigator) who may be reached at: [REDACTED] and Dr. Laura Hart, faculty advisor who may be reached at: [REDACTED]. For any questions regarding your rights as a research subject, you may call Dr. Farideh Farazmand, Chair of the Lynn University Institutional Review Board for the Protection of Human Subjects, at [REDACTED]. If any problems arise as a result of your participation in this study, please call the Principal Investigator (Dale Sugerman) and the faculty advisor (Dr. Laura Hart) immediately.

A copy of this consent form will be given to you.

AUTHORIZATION FOR VOLUNTARY CONSENT:

I have read and understand this consent form. I have been given the opportunity to ask questions, and all my questions have been answered to my satisfaction. I have been assured that any future questions that may arise will be answered. I understand that all aspects of this project will be carried out in the strictest of confidence, and in a manner in which my rights as a human subject are protected. I have been informed of the risks and benefits. I have been informed in advance as to what my task(s) will be and what procedures will be followed.

I voluntarily choose to participate. I know that I can withdraw this consent to participate at any time without penalty or prejudice. I understand that by signing this form I have not waived any of my legal rights. I further understand that nothing in this consent form is intended to replace any applicable Federal, state, or local laws. I understand that I will receive a copy of this form.

Participant's printed name

Participant's signature

Date

INVESTIGATOR'S AFFIDAVIT: I have carefully explained to the subject the nature of the above project. The person participating has represented to me that he/she is at least 18 years of age, and that he/she does not have a medical problem or language or educational barrier that precludes his/her understanding of my explanation. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid.

Signature of Investigator

Date of IRB Approval: 12/14/06



Appendix J

Permission to Reprint Table 2-1 and Table 2-2



September 4, 2007

Dale S. Sugerman


Dear Mr. Sugerman,

You are hereby granted limited permission to reproduce charts from the following handouts published by the Center for Applications of Psychological Type:

Descriptions of the Sixteen Types, 1998, Gordon D. Lawrence
Understanding the Type Table, 1976, Mary H. McCaulley

This limited permission has been granted solely for use in your doctoral dissertation, *Effects of Functional Diversity Training, Using the MBTI Instrument, on Workgroup Performance*, Lynn University in Boca Raton, Florida, 2007.

Permission is granted on the condition that the material:

- (a) will be used only for the purpose stated above
- (b) will cite the source fully and correctly

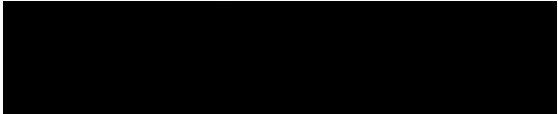
Permission is also extended to ProQuest Information and Learning Company (PQIL), Ann Arbor, Michigan, for the purposes of reproducing and distributing copies of the dissertation.

Please sign and return one copy of this letter as acceptance of these terms of agreement.

If we can be of any further assistance with your MBTI endeavors, please let us know. We will be happy to help you in any way we can.

Sincerely yours,


Jamelyn R. Johnson
Copyrights & Permissions Manager


Dale S. Sugerman

Enclosures:
Reply envelope
Extra copy of this letter

September 10, 2007
Date

344S13 T 867
02/18/08 39800 * EIT Group