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Identifying Functional Characteristics that Influence Team Outcomes

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This is to certify that the doctoral dissertation by

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Walden University
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Abstract

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B.A., Sonoma State University, California 2003

Dissertation Submitted in Partial Fulfillment

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Abstract

Industry and research have shown that, in addition to the knowledge, skills, and abilities of individuals, other factors play an influential role in the efficiency of a team. The research questions for this study examined the influence of functional characteristics, defined as the cognitive and evaluative processes such as intentions, emotions, planning, and perception that influence decisions, on team outcomes and the time it takes to complete a task. Using a quantitative, experimental research design, the research questions were grounded in personality systems interactions as the theoretical framework. Analysis of variance was applied to evaluate the hypotheses with an independent measure used to analyze 114 student participant responses to an online assessment and a team task. Results of a test of between-subjects effect identified their functional characteristic levels. Findings displayed statistical significance with main effect for (a) action orientation and (b) the time it takes to complete an assigned task, $F(2, 57) = 3.24$, $p = 0.047$. These findings could serve to decrease organizational costs such as those associated with human resource selection processes, team training, or team performance outcomes. The findings support positive social change by increasing social and behavioral psychologists' understanding of human-to-human behavioral interactions and the influence of functional characteristics on organizational teams.

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Dedication

I dedicate this research to my family; my wife Katie, my beautiful daughters Amy and Allegra, my mother and step-father. Thank you God for placing their spirits in my path. They helped me to recognize that we all must strive to bring about positive social change for our future and the whole of humanity.

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Chapter 1: Introduction

Introduction

When organizational management assigns a team to take on a task, it could be assumed that the individuals selected for the team will contribute to the team's total abilities in an attempt to increase the greatest possible team outcomes. This could raise questions as whether or not to select one individual over another in order to assemble the best team possible. For example, management might ask, what skill sets will this individual bring to the team? or What qualities will this individual have to improve the team's effectiveness? The combined value of team members could change the outcome of a team's efforts, ultimately affecting the organization. Whether referring to sales teams, customer service teams, or military teams, organizational management wants to know how to produce greater success with the teams they create. The influence of individual behavior on team dynamics, often called *human factors*, appears to be gaining momentum in the area of psychological inquiry. As it seeks to understand these human factors, psychological research has expanded beyond testing individual knowledge, skill sets, and abilities such as the ability to operate a computer, or having strong math skills. Here are three examples that go beyond individual skill sets:

1. The United States military uses several screening tools to evaluate the mental qualifications of its personnel (Casey, 2011).
2. Cross-cultural studies apply social identity theory and self-determination theory in educational settings in order to predict and identify the impact of

cultural communication on team performance and success outcomes (Wang, Hu & Cao, 2011).

3. In online job applications I have observed that the applications include behavioral qualification screening as a component of prequalification for employment.

Based on the growing use of assessment tools, it has become apparent that identifying functional characteristics that influence team functionality could lead to enabling organizational management to assemble teams that are more likely to improve their results than teams that are assembled based on intellect alone.

The aim of this study is to identify functional characteristics that influence team outcomes (e.g., action- and state- oriented behaviors, explicit and implicit behaviors, emotions and coping behaviors). Specifically, this research examined the functional characteristics of teams to determine whether they play a significant role in predicting or influencing team outcomes. The theory of Personality Systems Interactions (PSI) was used to examine these characteristics. PSI can identify four functional characteristics of individuals known to influence behavior (Kuhl, 2001). According to Kuhl, Kazen, & Koole (2006) as cited in Diaz, 2010, these functional characteristics include:

1. Object recognition (OR)
2. Intuitive behavior control (IBC)
3. Intention memory (IM) and
4. Extension memory (EM)

IBC and IM interact through positive affect systems and OR and EM interact through negative affect systems. This research focused on three of these systems: IBC, IM and EM. Also, because one of the PSI assessments are able to measure state and action orientation (Kuhl), this measure was incorporated into the research as explained in further detail in this chapter under instrumentation and operationalization of constructs.

This study concentrated on identifying which of these functional characteristics significantly affects team outcomes. Data were collected using students from a northern California university (NCU) and a team task that I designed. Using an experimental design, this study explored these characteristics identified through PSI to determine whether one characteristic stood out among the others or if there were a combination of characteristics that showed a significant relationship with the team's ability to complete a mission. The four implications of the findings are as follows:

1. Help identify and assemble teams that are more likely to produce more favorable results for organizations.
2. Suggest further psychological inquiry into whether these functional characteristics could become a way to train or improve already established teams.
3. Improve overall team functionality. This could yield increased mission success, decreased cost of human resources, and reduced financial investment (because it would take less time to complete a task or to improve team cohesion).

4. Promote positive social change by creating opportunity for social and behavioral psychologists to develop tools that could be used to improve individual and team social behavior in organizations.

The following sections discuss the background of the study, problem statement, purpose of the study, research questions and hypothesis, exploratory research objectives, nature of the study, theoretical framework for the study, theoretical foundation, definitions, assumptions, scope and delineations, limitations, and significance.

Background

The need for identifying new ways and methods for psychologically motivating individuals and improving their ability to work with others is ongoing. For example, a researcher conducted a study that looked at undergraduate student work groups and found that self-determined motivation was correlated with greater positive social outcomes than groups that were not self-determined (Amiot & Sansfacon, 2011). This correlation is important because it establishes that research is seeking to understand the relationship that ties individual motivation to team motivation and how an individual could influence the social outcome of a team. Researchers have also identified that an individual tends to form a type of social resilience using inherent abilities, which include the ability to perceive others, the ability to connect, communicate, or promote welfare, or the ability to respond to social challenges, express emotions, trust, tolerance, and openness (Cacioppo, Reis, & Zautra, 2011). It is expected that PSI will be able to measure the levels of these individual inherent abilities; if so, then this team research would have the opportunity to correlate these levels with their influence on team outcomes.

Having the ability to identify individuals who can promote social resilience is conducive to managing stressful situations, and being able to mitigate a member's feelings of isolation from the group can help a team's overall performance (Cacioppo, Reis, & Zautra, 2011). These research findings are important because they emphasize (a) the psychological need to understand the characteristic factors that influence an entire team and (b) how to help a team to overcome situations that could impair it and result in mission failure. Consider the Work Extrinsic and Intrinsic Motivational Scale (WEIMS) which found that (a) high levels of self-determination were positively correlated with job satisfaction and commitment; and that (b) low levels of self-determination were correlated with work strain, deviant behavior and turnover; future research needs to identify characteristics that "lead to different motivational orientations" (Tremblay, Blanchard, Taylor, Pelletier & Villeneuve, 2009). When considering the vast number of psychological variables that influence an *individual's* decisions, it is hard to imagine how much these variables would increase on a multitude of levels when a group of individuals is working as a team. According to Tremblay, et. al. the success of a team can often be based on the influence of individuals; they can strengthen or weaken the team's bond.

In addition to organizations seeking ways to identify characteristics that improve team adhesion, individuals themselves are seeking ways to improve their ability to increase success with their teammates. For example, a survey study of 109 respondents found that individuals want more training on how to successfully collaborate within work team environments (Canadian Medical Association, 2007 as cited in Diaz). This is consistent with behavioral theory of motivation which identified that individuals are

motivated by what a team needs from them (e.g. abilities, contributions) (Park & Hinsz, 2006). Additionally, self-determination theory was applied to identify individual behaviors associated within groups as a form of personal gain or personal needs (Amiot & Sansfacon, 2011). This is important because it establishes the fact that organizational management and researchers are not the only ones interested in understanding and improving team collaboration; members of organizational teams themselves are seeking to understand how they can contribute to their team in a manner that is meaningful and productive.

Researchers need to identify the combination of factors, characteristics, and causal links of personality and behaviors that lead to expected outcomes (Bermudez, 2006; Cervone, 2004; 2005; Wise, 2007 as cited in Diaz). Researchers must consider the impact of characteristics of individuals who can manage stressful situations and cope with circumstances that might otherwise impair them or cause them to emotionally freeze-up during a team exercise. A pilot study considered team composition and deviant behaviors of teams working in extreme environments. It identified that heterogeneous groups are more dependent on others within the group and that this dependency promotes more positive behaviors within the group than groups that were identified as being more homogeneous (Dudley-Rowley, 2000 as cited in Diaz). This suggests that a kind of social niche developed within the heterogeneous groups, which increased overall team member effectiveness (Dudley-Rowley, 2000 as cited in Diaz). Researchers have also identified that teams with higher team composition agreeableness (teams that are more compatible) perform better than non-agreeableness teams (Halfhill, Nielsen, Sundstrom, &

Weilbaecher, 2005) and action-oriented teams tend to perform better than state-oriented teams (Baumann & Kuhl, 2002; Ijzerman & Van Prooijen, 2008; Rudman & Spencer, 2007). Researchers have also identified that a positive correlation exists with having more members on a team then fewer (Sebok, 2000). Since PSI is known to measure levels of action-oriented and state-oriented behaviors, I applied PSI measurable levels as a point of observation in team behavior in order to determine their influence on team outcomes.

Theories such as the five-factor model, personality architecture, and self-regulation support the ongoing need to identify exactly what individual characteristics encourage positive situations where teams can bond more in order to improve their team outcomes. If a team's foundational make-up, such as their functional characteristics, were based on self-regulatory behavior combinations, team outcomes could be more predictable. Unfortunately, prior to this study, specific functional characteristics of individuals that could be used to help predict team behaviors have not been identified. Researchers have not addressed groups or individuals that display significant improvement of teams with low social resilience (those at the greatest risk of problematic situations) and real-life situations (Cacioppo, Reis, & Zautra, 2011). Since the key to social resilience cannot be found in just one individual (Cacioppo, Reis, & Zautra), there must be a combination of other factors that can explain social resilience, influence on groups of two or more persons, or an approach that identifies individuals who are equipped with functional characteristic skills necessary to explain team behavior. Although researchers have compared the relationship between team conflict,

disagreements, affective climate, and individual experiences that influence team disagreements or that a relationship exists between conflict and boundary conditions (Gamero, Gonzalez-Roma, & Peiro, 2008 as cited in Diaz) or that group norms have an impact on the performance of a team (Halfhill, Nielsen, Sundstrom, & Weilbaecher, 2005), researchers have not identified the specific functional characteristics of each individual that contributes to these team behaviors. This research intends to identify some of these characteristics and determine whether or not they do, in fact, influence a team's ability to carry out an assigned task.

Problem Statement

Researchers need to identify the functional characteristics of team members (Cervone, 2005; Peeters, Van Tuijl, Ruttle & Reymen, 2006; Ruef, Aldrich & Carter, 2003; Wood & Beckmann, 2006) and how these combinations of characteristics influence team outcomes. It is not clear if functional characteristics play a significant role in influencing a team's ability to complete a mission with greater success than any other team. In this study, PSI theory was used to identify functional characteristics that influence team outcomes to better understand them.

Purpose of the Study

The purpose of this quantitative study was to discover whether there were functional characteristics that influenced a team's ability to carry out a task. It was accomplished by comparing individual functional-characteristic scores derived from teams of three made up from student participants and then comparing their scores to those of 20 other teams comprised of different individuals. These teams were then given an

identical task (mission) to complete and the results were measured. It was anticipated that the differences in the combination of functional characteristics of each team would influence each team's ability to carry out the mission or would affect the time it required. Using correlation and regression analysis, this experimental study examined team outcomes and duration with respect to the impact of team design as defined by the functional-characteristic makeup of each team.

Research Questions and Hypotheses

The following research questions and hypotheses were based on a review of literature; for example, research and theory from PSI (Kuhl, 2000; Kuhl et al., 2006), the five-factor model of personality and personality architecture (Peeters, Van Tuijl, Rutte, & Reymen, 2006), functional personality and structures (Cervone, 2005), factors that influence behaviors (Wood & Beckman, 2006), and personality dynamics (Bermudez, 2006).

Research Question 1. Will individuals with specific functional characteristics; IBC, IM, EM or action/state orientation, influence their team's ability to successfully complete an assigned mission?

$H_0$1*:* IBC does not influence a team's ability to successfully complete an assigned mission.

$H_1$1: IBC does influence a team's ability to successfully complete an assigned mission.

$H_0$2*:* IM and EM do not influence a team's ability to successfully complete an assigned mission.

$H_1$2*:* IM and EM does influence a team's ability to successfully complete an assigned mission.

$H_0$3*:* Action or State orientation does not influence a team's ability to successfully complete an assigned mission.

$H_1$3*:* Action or State orientation does influence a team's ability to successfully complete an assigned mission.

Research Question 2. Will individuals with specific functional characteristics influence the time it takes for their team to successfully complete a mission?

$H_0$4*:* IBC does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$4*:* IBC does influence the time it takes for a team to successfully complete an assigned mission.

$H_0$5*:* IM and EM does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$5*:* IM and EM does influence the time it takes for a team to successfully complete an assigned mission.

$H_0$6*:* Action or State orientation does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$6*:* Action or State orientation does influence the time it takes for a team to successfully complete an assigned mission.

The Objectives of Exploratory Research

This research explored the influential relationships among the functional characteristics in teams to better understand their impact on team outcomes. It was anticipated that IM and EM systems, belonging to the functional characteristics identified by PSI, would explain the primary influence on team outcomes. Because the coordination between IM and EM primarily lends itself to the intended actions of an individual (Kuhl, 2001), it was anticipated that—compared to individuals with lower scores—individuals who have higher IM and EM scores would be more likely to influence a team's ability to carry out missions or to speed them up. According to J. Kuhl (personal communication, July 13, 2013), applying individual PSI functional characteristic scores in a team setting and exploring their influence on team behavior is an acceptable use of the theory. The functional characteristics of PSI will be discussed in detail in Chapter 3.

Nature of the Study

In this experimental design, individuals were paired with two other participants to form a team of three participants who were assigned to complete specific tasks, as outlined in Appendix D. I evaluated the team mission as either success or failure. I used a stop watch application on an iPhone 5 to measure the time it took to complete the mission. These dependent variables (team outcome and time) were used to evaluate the influence of team functional characteristics. The evaluation took into consideration the composition of the entire team's functional characteristics and compared the findings with team outcomes as discussed in detail in Chapter 4.

This quantitative study used correlation and regression analysis to address the research questions. The validated self-reported assessments, developed from PSI theory, were used. Power analysis, determined that a sample size of 61 participants would be sufficient, as discussed in Chapter 3.

Data were collected in three parts from student participants at an NCU: (a) demographic data were gathered via questions I generated; (b) team data were collected from randomly selected student teams who performed the tasks outlined in the design (see Chapter 3); (c) the functional characteristics of each participant were gathered using the secure, online PSI assessments.

Theoretical Foundation

The theoretical foundation was based on PSI theory, which focuses on the cognitive-emotional systems through which behavior is guided (Alsleben & Kuhl, 2010; Kuhl, 2000). Using self-reported measures developed from PSI, this diagnostic tool assesses functional characteristics of an individual (Kuhl et al., 2006) in order to provide a measure for within-team design which is discussed in more detail in Chapter 2. As described by Kazen (personal communication, January 8, 2014), the set of measures include (a) MUTK, which measures IM and EM systems; (b) BEF41/IMPAF1, which measures IBC (explicit/implicit affect, respectively); (c) and the evolvement-oriented scan (EOS), which measures global and underlying functions of personality, including state and action orientations (Alsleben & Kuhl, 2010; Kuhl & Kazen, 2006). The following two instruments were not used in this research because I felt that the current set of measures were sufficient for this study, these included: operant multi-motive test

(OMT), a written self-evaluation that assesses latent responses through image association as a measure of implicit motives (Baumann, Kaschel, & Kuhl, 2005) and the emotional scan (EMOSCAN), which measures volitional responses (activation of IM), task relevance, Stroop task, approach and avoidance orientations (Alsleben & Kuhl, 2010; Kazen & Kuhl, 2005; Kuhl et al., 2006). This study applied the diagnostic tools derived from PSI to measure the sum total of team member characteristics.

PSI relates to the current study and research questions because it identifies the functional characteristic variables that explain the entire self and expected outcomes of an individual (Kuhl, 2000; 2001). I theorized through the application of PSI that it could identify functional characteristic combinations of individuals that made up a team and correlate these combinations with team outcomes (i.e., success or failed mission and time to complete a mission). The findings identified functional characteristic combinations in teams that could lead to the development of more effective teams and teams that are better equipped for communication, collaboration, agreeableness, and overall team success. By applying PSI theory in an experimental environment—where members of a team are working together to achieve a common goal—training was consistent, and mission objectives were similar, I was able to see whether identifying the different characteristic combination of team members has an influence on team outcomes.

This research could be used to identify individuals who possess the functional characteristics to act alone. This could provide solutions for military applications by assessing individuals for specific missions that do not require team participation. PSI can identify individual functional characteristics which account for behavior caused by

motivational variables and self-regulation, even when a subject is experiencing a stressful situation (Kuhl, 2001; Kuhl et al., 2006). See the literature review for a discussion of several applications of PSI theory that supports identification of functional characteristics.

PSI theory was explored in a dynamic setting to determine if it can be used to identify the influence of functional characteristics on team design. Here are several examples of questions that could address team outcomes, homogenous mix, and characteristic combinations:

- Would data analysis yield significant evidence to support the inquiry as to whether or not a correlation exists between team functional characteristics and team outcomes?
- Will a significant heterogeneous mix of functional characteristics be more influential on improving team outcomes or will a more homogenous mix of functional characteristics be more influential?
- Are there teams who have greater success based on their team's characteristic combination?
- Could data analysis identify these functional characteristics?

Definitions

Functional application: A step-by-step process which leads to an expected outcome (Kuhl et al., 2006).

Functional Characteristics: Cognitive and evaluative processes based on functional systems which are learned through life experiences, influenced through

intentions, emotions, planning, and perception of expectations that, when combined, influence decisions (Kuhl, 2001; Kuhl et al., 2006).

Internal Responses: Learned covert behaviors that developed during childhood and are expressed through current actions (Geert, 1998; Kuhl et al., 2006).

Mission Outcome: A dependent variable that includes the success or failure to complete a number of assigned tasks within a mission and the duration invested to complete the mission.

Social Niches: A silent communication between two or more individuals that allow them to have mutual understandings of situations and events (Dudley-Rowley, 2000).

Social Resilience: The ability to cultivate, engage and sustain positive relations that can bend with circumstances, including stressful situations, and quickly recover from adverse situations (Algoe & Fredrickson, 2011; Cacioppo, Reis, & Zautra, 2011).

Stroop Task: A delay in responding to a difficult task which can be overcome by presenting a positive achievement-related prime prior to the difficult task (Alsleben & Kuhl, 2010; Kazen & Kuhl, 2005).

Team: Teams have been characterized as "individuals working interdependently toward a common goal" (Rentsch & Woehr, as cited in Miles & Kivlighan, 2008) and being comprised of two or more individuals.

Volitional: a conative component in the decision making process (self-control and self-regulation) which leads to enactment (Orbell, 2003).

Volitional Avoidance: Having difficulty forming intentions and being inclined not to react to difficult tasks (Alsleben & Kuhl, 2010; Kazen & Kuhl, 2005).

Volitional Facilitation: A reduced delay in acting on a difficult task under positive primes compared to a control condition with neutral primes (Alsleben & Kuhl, 2010; Kazen & Kuhl, 2005).

Volitional Inhibition: An increased delay in acting on a difficult task under aversive primes compared to a control condition with neutral primes (Alsleben & Kuhl, 2010; Kazen & Kuhl, 2005).

Further discussion of these definitions will be addressed in Chapter 3.

Assumptions

It was assumed throughout this research (a) that functional characteristics are among the personality variables that influence team behavior; (b) and that the participants were a representative sample of this study. These assumptions were necessary in order to conduct this research.

Scope and Delimitations

The scope of this study was designed to identify a gap in current research surrounding functional characteristics as the source of influencing team outcomes. I also believe that there is a misuse of personality tests and psychological research findings applied in current organizational selection processes and that organizational screening mistakenly considers an applicant's personality with team fit when, in fact, the personality potential has no relationship to team outcomes. This study sought to identify whether functional characteristics influence team outcomes in team design.

Internal validity was maintained by ensuring that the need to conduct this research would contribute to the field of scientific study. External validity was maintained in this study because I selected a population that was not influenced by external sources, as would be expected in a work environment, in order to gain promotion. Also, participation was voluntary and not required for graduation or to move forward in one's career. Other populations were considered and could be explored for future studies.

Self-regulation theory is most related to this research, but not applied in this study because the theory is geared toward the identification of social processes from developmental stages, not identifying the application of these processes into real life situations (Diaz).

It is possible that this research could be generalized to a population larger than what is intended. For example, functional characteristics could be generalized to support organizational screening processes thereby preventing employment of individuals based on (a) organizational misuse or (b) selective interests in the research findings. However, the research findings could lead to greater opportunity for additional psychological inquiry that could be used to determine if the findings are (a) transferable to organizational applications, from one organization to another, from one group to another, or if they are (b) cross-cultural, or influenced by homogeneity or heterogeneity.

Limitations

This study was subject to three limitations. First, the study did not identify whether the participants would perform equally under life-threatening circumstances or other traumatic events. This prevents the findings from being transferable to high stress

events such as what would be expected in military applications, space exploration, or other isolated, extreme environment missions. Second, the online assessments (e.g. MUTK, BEF41/IMPAF1, EOS) used for this research were translated from German to English. However, I was given personal responsibility by the author to e-mail him any reasonable revisions. Also, the pilot study determined that participants were able to understand the assessment without any revisions. Third, participant bias could have developed. For example, they could have assumed that their responses could affect their social standing at the university. To protect participants' anonymity and avoid this potential, the assessments were coded by number as discussed in detail in Chapter 3.

Significance

This research sought to identify whether functional characteristics could influence team outcomes. I was able to apply PSI's assessments as a tool to identify the cognitive emotional components of an individual that guide behavior (Alsleben & Kuhl, 2010; Kuhl, 2000). Using current theory and the PSI assessments, the research potential could be used to support professional practice applications to increase our understandings of how teams are influenced by individual characteristic contributions to the overall team and how those influences can be improved upon—or in some cases extinguished—should the characteristic be determined undesirable. The research could lead to positive social change by increasing our understanding of human-to-human interactions and it could provide new direction and insight into how social interactions and perception could play a vital role in organizational team development, performance, and needed development of group norms.

Summary

It is clear that this research was needed to fill a gap in current psychological understandings by identifying specific functional characteristics of individuals that influence team outcomes. The theory of self-regulation was considered, but its functional application was not apparent. PSI theory was selected as the theoretical framework because it provides a sound approach to identifying functional characteristics which are documented as having an influence on motivation and self-regulation. Definitions of variables were given along with a review of assumptions and limitations. The significance of the study's intent to identify functional characteristics was explained along with positive social change implications.

Chapter 2 will provide a detailed analysis of PSI theory, Chapter 3 will discuss the methods and approach, Chapter 4 will discuss the results of the study, any changes in instrumentation, data analysis, including the time frame used to collect data, participation and response rates ,and Chapter 5 will discuss prescriptive material including interpretation of the findings, its contribution to the knowledge of science, limitations, and recommendations for further research, implications, and conclusion.

CHAPTER 2: Literature Review

Introduction

The purpose of this research was to identify whether individual functional characteristics within a team could influence a team's ability to complete a mission or influence the time it took to complete a mission. It was hypothesized that functional characteristics could play a significant role. Using an experimental design, the PSI assessments were applied to explore three functional characteristics in order to determine whether one or more stood out among the others and whether there was a significant relationship with any of the characteristics influencing team outcomes. The three independent variables included- IBC, IM and EM (evaluated as one system), and action/state orientation. The measurement tools used for the independent variables included BEF/IMPAF, MUT, and AOF respectively. The two dependent variables were team outcome and the time it took to complete the mission.

The functional characteristics of team members were identified as having an influential impact on the behavior and abilities of an entire team. The outcome of a mission is dependent on the influences of the characteristics within a team and its ability to carry out assigned tasks. In the case of military expectations, applying these factors could lead to increasing mission success rates and reducing the loss of lives by (a) identifying functional characteristics that encourage ideal team behaviors and (b) promoting social niches among team members when a team is created. Even though researchers acknowledge that there is a combination of characteristics that would lead to expected team performance outcomes (Bermudez, 2006; Cervone, 2004, 2005; Kazen,

Baumann & Kuhl, 2003; Wise, 2007), prior to this research, studies had not identified the functional characteristics of team members and how they can impact team performance (Cervone, 2005; Peeters, Van Tuijl, Ruttle & Reymen, 2006; Ruef, Aldrich & Carter, 2003; Wood & Beckmann, 2006). Having the ability to identify functional characteristics that make up and influence a team could provide opportunities to manage team outcomes from within the group, providing a measure from which to guide team development and maintain team direction. PSI theory—an established theory—is ideally suited for identifying functional characteristics of individuals.

This chapter will discuss the study's theoretical foundations, conceptual framework, and key variables related to PSI.

Literature Search Strategy

The literature search strategy began with a review of motivational and behavioral articles which served as a base for selecting key words. My original thesis work was also referenced. The following five databases—limited to full text and peer-reviewed journals within the past 5 years—were used: Academic Search Complete, Mental Measurements Yearbook, Military & Government Collection, PsycARTICLES, and PsycINFO. The databases were set to the following keywords: *team, performance, social, social niche, personality systems interactions, personality architecture, self-regulation theory, isolation, composition, workforce solutions, social network analysis, coordinator, communication, joint intentions, framework model, architecture, qualifications, military, personnel, cooperation, group processes, resilience, motivation, patterned interactions, individual differences, formal training, shared mental model, social resilience, student,*

group, project-based, qualifications, mission, simulation, training, national security, differences, military training, and differences. Since the theory of PSI is a functional approach to personality architecture (Kuhl & Kazen, 2006), personality architecture was omitted (Diaz). Additional supporting literature and peer-reviewed articles on PSI theory was provided by Dr. Julius Kuhl and Dr. Miguel Kazen via e-mail.

Theoretical Foundation

PSI theory was originally developed by Julius Kuhl with its functional design and approach assembled in the late 1990s to early 2000s. PSI focuses on how cognitive emotional systems guide behavior (Alsleben & Kuhl, 2010; Kuhl, 2000, 2001) and was developed from self-regulation theory and personality architecture (Kuhl et al., 2006) as a functional approach aimed at causal relationships to situational outcomes (Diaz). Unlike the theory of motivation which focuses on goal oriented behavior, PSI focuses on the mechanics of cognition and how these systems guide behavior (Kuhl, 2000, 2001).

Self-regulation theory by Lev Vygotsky in the 1930's explains how individuals manage and cope with situational circumstances from developmental positions learned through developmental stages (Geert, 1998) and that it is a process that promotes healthy psychological and behavioral performances that directly influences individual motivation (Kuhl et al., as cited in Diaz). However, self-regulation theory is focused on childhood developmental and psychological processes expressed through established internal and mechanical responses (Geert, 1998). Personality architecture is focused on understanding and identifying an individual's response patterns that make up the individual and the processes that influence behavior by considering the structure, knowledge, intentions,

environmental surroundings, beliefs, personality, dynamics, expressions, health, adaptivity, and other variables that produce performance outcomes (Bermudez, 2006; Cervone, 2004; 2005; Wise, 2007) using self-regulation theory and the five-factor model (FFM; Wood & Beckmann, as cited in Diaz). The five-factor personality inventory was not considered because it appears to focus on identifying where an individual's personality falls in terms of personality categories and it does not consider processes which influence motivation or the relationship of cognitive processes related to situational outcomes. Not to be confused with the five-factor model, PSI identifies several cognitive emotional systems that guide behavior. These systems work in collaboration with each other to make-up the entire self and includes object recognition (OR), IBC, IM and EM which interact through positive or negative affect systems and carried out at emotions and coping avoidance systems (Kuhl, 2000, 2001).

OR, according to Kuhl, is a lower level experiential system, and is based on one's life experiences from which we exhibit awareness of physical, social, and spiritual location. OR relates to past experiences from which we draw a comparison of objects in the present (Kuhl). In other words, when we observe something in the present we make assumptions about it based on similar images that we have stored from past experiences. For example, when we see a facial expression of sadness captured in an artist painting we reference stored facial images through memory recall that we consider to hold similar facial patterns which we have identified as sadness. We compare our perceived idea of any memory stored images that we have encountered in our lives and we match them to

the paintings depiction. Essentially, we project our understanding and beliefs on a present object by associating similar characteristics of objects we encountered from the past.

IBC is related to one's motor controls and the decision making ability of the individual to move in and out of the paths such as making a decision to turn left versus right (Kuhl, 2001). IBC is associated with the lower level monitoring systems (low-inferential systems) which integrates present and future orientations, context, social interaction, and other modalities (Kuhl). Essentially IBC draws from several resources within the individual and referencing contextual situations in order to support one decision over another. Its decisions are based more on thought and consideration of variables rather than reaction and impulse.

IM refers to the ability to identify, plan, maintain and execute (in coordination with the IBC system) events in order to achieve goals (Kuhl, 2000, 2001). It is a high-level system and it works sequentially. It uses combined experiences as learned from perceived conclusions and anticipates expected outcomes from these experiences. IM monitors and controls whether to inhibit or enact step by step intended actions when there are at least two steps in a process and when the process is difficult to carry out (Kazen & Kuhl, 2005) and planning with analytical thinking are needed (Shallice, as cited by Kuhl, 2001). IM includes explicit commitments and ideals of intended actions (goals) which are consciously and readily available (Kuhl, 2000, 2001).

EM is a high-level representational system. It works in parallel and includes one type of sophisticated intuitive reaction to situations, associated with the right hemisphere of the brain. It takes into account the needs, emotions, personal preferences, values, and

historical personal experiences to support implicit decisions that serve to represent an individual in a manner that is consistent with their held ideals or feelings. That is, EM includes self-representation and motives, both of which are important to motivational and personality psychology (Kuhl, 2000, 2001).

Positive and negative affect systems refers to the ability to manage emotional responses and their influences in terms of approaching or avoiding situations, respectively (Kuhl, 2001). This is consistent with classical conditioning and incentive management whereby repeating a desired outcome over and over, either through negative or positive reinforcement, you strengthen the connections between subsystems. The repetition of two subsystems is strengthened through repeated action (Kuhl, 2000). According to Kuhl, if these subsystems are strengthened enough then the need for external motivation is reduced and an internal motivation is developed. This concept is the process of taking an explicit motivational tendency and rewiring it to become implicit motivation through repetitive design of a positive or negative stimulus.

Emotions and coping is where guidance for behavior is managed and where individual motives are housed (Kuhl & Kazen, 2006). According to Kuhl and Kazen these systems interact with positive and negative affect systems by influencing the directional decision of a given situation. For example, if an individual has an emotional fear to enter into a dark room then their emotions and coping mechanisms will interact with the positive or negative potential outcomes of the situation based on past experiences. This will undoubtedly weight in on the decision to walk into the dark room or find another course of action.

PSI combines the aspects of personality architecture and self-regulation, organizing motivation and personality into understandable responses (Kuhl et al., 2006). PSI has been applied in several similar research studies to account for behavior variance such as the comparisons between action and state oriented individuals. For example, in one study PSI accounted for volitional components relating to intention behavior, accounting for predicting 10% to 18% of behavior variance (Orbell, 2003 as cited in Diaz). PSI also identified that in comparison to state-oriented subjects, action-oriented subjects were more goal oriented, had the ability to self-regulate negative moods, manage group and social pressures, and reduce the negative impacts of stressful situations by minimizing negative influences on goal outcomes (Baumann & Kuhl, 2005; Baumann & Kuhl, 2002; Ijzerman & Van Prooijen, 2008; Kazen, Baumann, & Kuhl, 2003; Rudman & Spencer, 2007 as cited in Diaz).

The theory relates to the current study by providing a process through which to measure individual functional characteristics, the responses of which have helped to identify whether or not these variables are correlated with the total make-up of team characteristics that influence team outcomes. The research questions which were sought to identify the influence of these characteristics on team outcomes were addressed through the application of the PSI theory whereas other theories did not provided a comparable opportunity. This research was also built upon historical theory applications which to date have not provided a comparison of functional characteristic outcomes in team settings, but instead provided outcomes from individual stand points. Based on current research available, this study has expanded our understanding of functional

characteristic influences from the perspective of team composition, increasing our knowledge of what does or does not account for influencing social combinations, combined perception and influences, and other combined individual modalities as defined by PSI.

Literature Review Related to Key Variables and/or Concepts

Identifying variables that provide the opportunity to evaluate individuals that are statistically better suited for one team over another is not uncommon. For example, 112 undergraduates forming 34 cross-cultural teams from multi-disciplinary projects were examined using a self-efficacy scale found that the learning abilities of individuals, including identification, recognition and the ability to integrate their knowledge, increased for those with higher grade point averages and years in college (Schaffer, Xiaojun, Xiumei, & Oakes, 2012). Another study examined team communication among English speaking Chinese and Belarusian students and found that there are different communication styles depending on group mix (majority vs. minority) and points out that team composition has a direct impact on team performance (Wang, Hu, & Cao, 2011). Researchers have also considered 145 students organized in teams of three and examined the personality characteristics conducive of creativity; it compared the relationship of creativity and confidence using correlation and regression analysis ($r = .17$, $p < .05$) and found that creativity increased with teams comprised of individuals having high scores of extraversion, openness, and low conscientiousness (Baer, Oldham, Jacobsohn, & Hollingshead, 2008). Researchers have further examined the impact of team heterogeneous ability on self-efficacy and group-efficacy of 1,921 Hong Kong students

working in 367 groups and found that project outcome influenced student reported group efficacy regardless of individual abilities contributing to the team's outcome (Cheng, Shui-fong, & Chan, 2008). In other words, when the team project performed well all the team members rated higher in group efficacy and when team project scores were low all the team members rated lower in group efficacy regardless of initial self-efficacy scores prior to team project completion. Researchers have also examined team composition and communication with international business students. Butler and Zander (2008) found that creativity and conflict will occur in multicultural groups, but that when the team recognizes how to manage what the team needs in order to achieve their goals throughout the learning and working together processes it can help to reduce conflict and increase creativity. For example, Butler and Zander found that once responsibilities and timelines are identified by the group the amount of conflict is reduced. However, the interactions of self-esteem, self-understanding, and distinctiveness within a team are difficult to predict (Butler & Zander, 2008).

The variables and concepts in consideration of this research go beyond the classroom setting. For example, research examines communication, adaptability, interdependence, common goals and interaction using the Shared Mental Model to explore performance levels of Naval teams in a simulated training environment and found that familiar teams outperformed unfamiliar teams, suggesting that communication and coordination was strong for familiar teams because they seemed to change from explicit to implicit communication whereas unfamiliar teams engaged in more explicit communication styles (Espevik, Johnsen, & Eid, 2011). The ability for familiar team

members to sense when other members of the team were in need of assistance showed an implicit style of communication whereas teams that were unfamiliar continued with explicit communication and showed less ability to identify when other members were in need of assistance (Espevik, Johnsen, & Eid, 2011). Researchers acknowledge that there is a gap in variance which does not predict training performance and could include additional measures to identify other factors such as communication, task management, cooperativeness, other skills, abilities, and characteristics that could help to improve predictability of other tests (Carretta, 2011) and predictability of the members that serve on a team.

This research study was consistent with current research practices seeking to identify functional characteristics that influence team communication from a functional application approach. Although research has identified several aspects of personality that influence individuals, team communication, and performance outcomes, it has left several gaps in the findings which researchers have acknowledged. The gaps in research included the need to identify other characteristics that serve to increase performance, increase predictability of teams, and identify individuals capable of higher levels of ability to communicate implicitly within team design. Using PSI this research addressed these gaps and provided measure to some of these variables.

Summary

Team composition requires a focus on identifying functional characteristics that influence team interactions dependent on a given environment. Through the identification of these influences, a team that is assembled for a given environment based on their

combined functional characteristics could thrive better than teams that are randomly assembled for the same environment. However, if a mission strays from its original design as a result of unforeseen circumstances, there could be a social breakdown within the team if the team is solely based on compatibility of their ability to perform individualized specific tasks. If functional characteristics of one team member is paired with the functional characteristics of another team member in order to promote a higher level of implicit team communication, the ability to cope with stress, resilience and unforeseen circumstances could improve the overall team composition, ultimately providing the opportunity to predict team outcomes early on. This predictability could reduce organizational costs, reduce the use of resources, reduce the loss of lives in situations of extreme environment applications, increase the success rates of team outcomes, and increase the overall team effectiveness.

This study identified these functional characteristics as discussed in the methods and approach in Chapter 3.

Chapter 3: Methodology

Introduction

The purpose of this research was to identify whether individual functional characteristics within a team could influence a team's ability to complete a mission or influence the time it took to complete a mission. It was hypothesized that functional characteristics could play a significant role. Using an experimental design, the PSI assessments were applied to explore three functional characteristics in order to determine whether one or more stood out among the others and whether there was a significant relationship with any of the characteristics influencing team outcomes. The three independent variables included- IBC, IM and EM (evaluated as one system), and action/state orientation. The measurement tools used for the independent variables included BEF/IMPAF, MUT, and AOF respectively. The two dependent variables were team outcome and the time it took to complete the mission.

This chapter discusses the experimental research design, the rationale behind the applied research, and the methodology, which includes the population, pilot study, sampling procedures, data collection, and instruments. The chapter closes with a discussion of any threats to validity and ethical issues.

Research Design and Rationale

A quantitative experimental design used to explore the influence of functional characteristics on team outcomes. There were three independent variables in this study: IBC, IM and EM (evaluated as one system), and action/state orientation. There were two dependent variables: (a) team-assigned tasks that made up the total team outcome and (b)

the time it took to complete the task. The tasks were identical in terms of purpose and level of difficulty for each team. Identical tasks allowed me to measure the abilities of each team as a whole in terms of completing their assigned mission and the time invested to complete the mission. Both the ability to complete a mission and the completion time were good indicators that a combination of functional characteristics can influence a team's outcome. This research design was consistent with its intended purpose because it provided data that identified functional characteristics that influence team outcomes.

Methodology

Population

The population of this research was recruited from students attending an NCU. The available population of students at the NCU was, at the time of the study, approximately 2,000 males and females between 18 and 30 years of age (Dominican University, 2013). The participants for this study was based on a convenience sample of students at NCU students which was representative of the California education system. The students came from 58 counties in California, 27 states in the United States, and 19 different countries (Dominican University, 2013). All students attending the NCU were considered for this study. Because of the greater number of females attending the university in comparison to males, gender representation was comprised of a disproportionate number of females.

Pilot Study

I conducted a pilot study of ten percent of the sample size (12 participants) prior to executing the main study. However, during the process of the pilot study and after

working with half the number of participants in the pilot study, I was advised by the chair to continue with the main study since initial results were consistent with expectations. The pilot study provided me with an opportunity to review any needed changes in experimental design, determine the average time it takes a team to complete the assigned task, and for me to incorporate the information into the expectations of participant's time commitment. The process to carry out the pilot study was identical to the main study in all aspects and procedures which included Internal Review Board (IRB) approval from both Walden University and IRB approval from the NCU. There were no significant changes to the experimental research design as determined by the pilot study and as such the proposed study was carried out.

Sampling and Sampling Procedures

In order to carry out the sampling process I performed the following procedures:

1. Presented the purpose of the study to each classroom and solicited students to participate in the study.
2. Returned to my office located in the NCU library where I remained available Monday thru Thursday from 10:30 a.m. to 12:15 p.m.
3. Set up a research information table in front of the NCU library where students and participants could ask questions pertaining to the study.
4. Scheduled individual appointments with students that expressed interest in participating in the study (appointments were based on student availability and researcher office hours).

5. Conducted the study during office hours and occasionally added additional office hours until such time that the convenience sample size was achieved.
6. Posted an information pamphlet securely on the information table and provided a copy of the study to those who inquired (Appendix A).
7. Conducted the interview process by reading aloud the script provided in Appendix A to each participant, provided my contact information, and provided a link to a webpage displaying the research study.

Using Cohen's d power analysis tables, it was determined that a sample size = 61, where P =.80, alpha =.05, and effect size = .35 (a total of 20 teams) would be used to satisfy the power analysis target. The effect size was determined by creating a range from .17 and .48 then selecting the middle effect size at .35 and power level was selected at .80 in accordance with current practice (Burkholder, 2013). Alpha was set at .05 consistent with similar research such as that used by Espevik, Johnsen, and Eid (2011) and Baer, Oldham, Jacobsohn, and Hollingshead (2008). A convenience sample of 120 participants was selected in consideration of attrition. Upon completion of the research, a total of 114 participants were considered. However, the final number of participants evaluated in the study was 60 in consideration of attrition, participants not completing all requested components of the research process and other factors as explained in Chapter 4.

Procedures for Recruitment, Participation and Data Collection

While I was conducting the interview process, applicants who acknowledged that they were active students at the NCU, were 18 years of age or older, and did not have any

disabilities preventing them from carrying out the tasks assigned in the study, were approved to participate in the study. Of the applicants considered, I selected a representative sample of male and female participants. Based on the population of university students it was anticipated that the ratio of selected participants would be one male to every three females. With exception to gender, age, and ability to complete the described task no additional demographics were collected.

Informed Consent

I provided all participants an Informed Consent form (Appendix B), detailed instructions on completing the online assessments (Appendix C), and a copy of the team task to be completed (Appendix D). As each participant signed the consent form to participate and returned the form to me, I assigned to the participant a username and unique identification number that the participant used to gain access to and complete the online assessments located at http://www.impart-tests.com. Throughout the research study I used the unique identification number to protect the name and information of each participant from being associated with the findings of the research and a unique team code to identify which team the participant was assigned.

Data Collection and Analysis

I used an experimental design to measure the functional characteristics of each participant according to the three independent variables defined by PSI. I compared the data with mission outcomes and the time it takes to complete the mission as described below. At the start of the data collection process and after I received the consent form from each participant, I asked each participant to complete a demographic questionnaire

(Appendix E). After the demographic questionnaire was completed, using the participants e-mail address provided on the consent form I contacted the participant via e-mail in order to schedule a convenient time that the participant could return to my office to conduct the mission component of the research. After the participants completed the mission component of the research, I e-mailed each participant the website link to the online PSI assessments along with their assigned username and unique identification number. The participant were given 72 hours to complete the online assessments at a time that was convenient for the participant. The participants who responded to and completed the online assessments completed the assessments within the time allotted with the exception of one participant who completed the responses five days after the request was sent. The PSI data was collected by IMPART using the online PSI assessments as indicated by the access link. The PSI assessment process was conducted over a secure internet connection managed by IMPART at the University of Osnabruck. The responses gathered by the PSI assessments were stored in a secure database managed by IMPART. I accessed the database using an encrypted password to open participant responses gathered by IMPART. After the participant completed the online assessments I accessed the IMPART database to identify which participant completed the assessments and to record the data.

As part of the mission objective component, I assembled a team of three student participants. In order to assemble a team of three student participants, I used a convenience sample by selecting from the participants who were available to participate in the study during the same availability schedule provided by each participant. In the

event that there were more than three participants available at the same time I used a random number generator application on my iPhone 5 to select the first three participants and scheduled appointments accordingly. Once participants arrived at my office, they were asked to wait five minutes to allow for all three scheduled participants to arrive. If all three participants did not arrive during the five minute waiting period, the participants who did arrive were asked to reschedule. Of the teams that did arrive, two teams were asked to reschedule as a result of one of the three members not being able to arrive on time for the study. If all three participants arrived during the five minute waiting period I read aloud the script provided in Appendix A to the participants, provide my contact information, and provide a link to a webpage displaying the research study.

Each team that I assembled was assigned a team number for future reference in the study. Once participants were documented with their team I walked the entire team to a designated room in the NCU library where the team commenced with their mission as illustrated in Appendix D. During the experiment I observed the participants from a distance and made notes as to how the team interacted during the study, if each task was carried out according to the instructions outlined in Appendix D, and any other details observed by me. Once the mission exercise was completed by the team I thanked each participant for their time and informed them that an e-mail would be sent to each of their e-mails in order for them to complete the online assessments.

Using the unique participant identification numbers, I used my personal computer to access the IMPART database in order to identify which participants completed the online assessments. The data results were then entered into a spreadsheet in order to

document each of the participant's results according to the team for which they were assigned. I used a password to protect the spreadsheet document from being accessed by anyone other than myself and my computer was also password protected from access to anyone other than me.

When all the participants and teams reached the convenience sample goal I used correlation and regression analysis to examine IBC as the first independent variable, intention and EM as the second independent variable, and action/state orientation as the third independent variable. I then examined team outcomes as the first dependent variable with each of the independent variables and then examined mission duration as the second dependent variable with each independent variable. I used a digital stop watch application on his iPhone 5 to measure the duration of each team's mission for the second dependent variable (the time began when one of the team members opened the door to the room where the experiment was to be carried out and the time ended after all the participants on each team exited the room and the door was closed). I collected all dependent data, and demographic data. After data cleaning and evaluation of assumptions, I conducted data analysis using IBM Statistical Package for the Social Sciences (SPSS) software program version 21.

Debriefing Procedures

Once each participant submitted the online assessments I notified the participant by e-mail that the online was assessments were received. I then e-mailed each participant that their participation in the research was complete, a copy of the debriefing and to schedule an appointment at my office where I could complete the debriefing procedures

as outlined in Appendix M. Twenty-seven participants responded to my e-mail notifying me that they did not require a gift card or any further debriefing. For the remaining participants who selected to meet with me at my office, I acknowledged to each participant that the team outcome was a success as a result of the data collected, provided the participant with a plastic gift card containing $5 credit good at Peet's coffee or Starbucks, and notified the participant that they would receive a copy of the summary findings to the e-mail address they provided on the consent form. I then concluded the participant's role in the research study by reading the same script e-mailed to all participants from Appendix A and thanking the participant for their contribution to the field of psychological inquiry. Once the debriefing was complete, the participant exited my office.

Instrumentation and Operationalization of Constructs

Dr. Julius Kuhl is the author of the PSI theory which was developed in the early 1990s. The online assessments include the evolvement oriented scan (EOS), which measures global and underlying functions of personality from state and action orientations (Alsleben & Kuhl, 2010; Kazen & Kuhl, 2005; Kuhl et al., 2006 as cited in Diaz), MUTK which measures IM and EM, and BEF41/IMPAF1 which measures IBC according to Kazen (personal communication, January 8, 2014). The assessments are managed by IMPART at the University of Osnabruck, Germany. The theory and assessments are appropriate to the study as they measure the functional characteristics of individuals as outlined in Chapter 1. A letter of permission from the developer to use the instrument for this experimental research study is attached in Appendix G.

There are several published works related to the use, relevant to the study, and that support validity and reliability in the references (see: Alsleben & Kuhl, 2010; Baumann, Kaschel, & Kuhl, 2005; Baumann & Kuhl, 2002, 2005; Kazen, Baumann, & Kuhl, 2003; Kazen & Kuhl, 2005; Kuhl et al., 2006; Orbell, 2003). For example, the PSI instrument was previously used to evaluate state and action orientations of 60 student participants between the ages of 18 and 49 years, 46 student participants between the ages of 19 and 35 years, and 48 students between the ages of 19 and 51 years with reliability of Cronbach's alpha = .78 (Kazen, Baumann, & Kuhl, 2003; Kuhl & Beckmann, 1994). The instrument was also used to access volitional components in 81 undergraduate students in the United Kingdom with a mean age of 20 years and reliability ranging from Cronbach's alpha = .79 to .94 (Orbell, 2003).

Each variable is measured using a Likert scale. For example, the action vs. state orientation is measured using the Action Control Scale developed and validated by Kuhl, with one subscale having 12 items related to coping in demanding situations (Kadzikowska-Wrzosek, 2012). An example would include: "When I know I must finish something soon: a) I have to push myself to get started, or b) I find it easy to get it done and over with", where "a" refers to state orientation and "b" refers to action orientations with Cronbach's alpha = .78 (Kadzikowska-Wrzosek, 2012; Kuhl & Beckmann, 1994). Explicit affect uses eight items related to positive and negative moods, four on each side, such as pleased, merry, or helpless and insecure, with ranging scores from 1 – 10 (1 = not at all agree, 10 = completely agree) with Cronbach's alpha = .78 for positive and .86 for negative (Quirin, Bode, & Kuhl, 2011).

Data Analysis Plan

SPSS predictive analytics software was used to clean, and analyze the data collected for this study. Data was cleaned by removing team data that was incomplete. Incomplete team data was data that had only one team participant complete all aspects of the study (e.g., demographic questionnaire, team mission exercise, online PSI assessments). After incomplete data was removed, team data which required one additional team members data was inserted provide for a complete team data set (described in more detail in Chapter 4). Once all the data was cleaned the following hypothesis were analyzed and the research questions were answered.

Research Question 1. Will individuals with specific functional characteristics; IBC, IM, EM or action/state orientation, influence their team's ability to successfully complete an assigned mission?

$H_0$1*:* IBC will not influence a team's ability to successfully complete an assigned mission.

$H_1$1: IBC does influence a team's ability to successfully complete an assigned mission.

$H_0$2*:* IM and EM do not influence a team's ability to successfully complete an assigned mission.

$H_1$2*:* IM and EM does influence a team's ability to successfully complete an assigned mission.

$H_0$3*:* Action or State orientation does not influence a team's ability to successfully complete an assigned mission.

$H_1$3*:* Action or State orientation does influence a team's ability to successfully complete an assigned mission.

Research Question 2. Will individuals with specific functional characteristics influence the time it takes for their team to successfully complete a mission?

$H_0$4*:* IBC does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$4*:* IBC does influence the time it takes for a team to successfully complete an assigned mission.

$H_0$5*:* IM and EM does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$5*:* IM and EM does influence the time it takes for a team to successfully complete an assigned mission.

$H_0$6*:* Action or State orientation does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$6*:* Action or State orientation does influence the time it takes for a team to successfully complete an assigned mission.

Threats to Validity

Internal and External Validity

To ensure internal validity wording throughout this study is consistent to the area of inquiry. Only resources related to similar studies was used to support the need for this research. Also, specific research related to this study was used. To support external validity the environment used for participants to participate in the study was consistently the same

and the experimental design was the same from one participant to the next and from one team to the next.

Construct Validity

To maintain construct validity an established questionnaire, supported by validity and reliability was administered through the supervision of the author of the assessments.

Ethical Procedures

Potential risk to participants was low. To ensure the ethical protection of all participants the Walden University IRB reviewed all measures prior to any data collection efforts. To ensure that all participants fully understood the purpose, length and measures that would occur during the experiment participants were required to review and sign an informed consent form prior to taking part in the research. The informed consent also address each participant's rights and addressed the confidentiality of the data as required by the American Psychological Association (2002).

To ensure that participant information remained confidential the research assessments were hosted with IMPART, an institute with research cooperation with the University of Osnabruck, Germany that uses SSL encryption to protect all transmitted data. Additionally, each participant was given a unique access number which was used as an identification number throughout the experiment. All research data was stored on a secure, password protected server which uses SSL encryption to protect all transmitted data. I also used different passwords to protect data on my personal computer and data on the spreadsheet that I used to evaluate the data. I was the only person who had access to my personal computer to which I carried with me at all times or secured at my place of

residence when not in use. No identifiable information was disclosed or published by me that could be used to identify any of the participants. All results were presented as summary data. The information was and will remain confidential and secure by design. All data will be stored in a secure data file for a minimum of five years and then permanently destroyed. All participants received full disclosure on the nature of the study including information that I am a Ph.D. candidate at Walden University.

Before selecting a convenience sample, I obtained approval from Walden University Internal Review Board (IRB; Approval No. 12-06-13-0062638). Once approval from the Walden University IRB was received I forwarded the Walden University IRB approval letter to the Institutional Review Board for the Protection of Human Subjects (IRBPHS) of Dominican University, which required approval from Walden University IRB and the committee member chair of prior to review by the IRBPHS. Once I received the approval letter from the IRBPHS of Dominican University (IRB; Approval No. 10229) I began;

1. Contacting faculty in all departments at the NCU in order to begin the process of conducting the research.
2. Explaining the nature of the study to each faculty member.
3. Requesting written permission from each faculty member to solicit participation from their students in each class (Appendix L).

The NCU also initiated a letter to all NCU faculty (Appendix I) informing them of the research study.

Summary

Research has long supported the need for the direction of research that this study proposed. The need to understand functional characteristics that influence motivation and behavior (with respect to cause and effect) extends beyond the abilities, skill sets, and common goals of a team. For example, teams assembled for space exploration missions require more rigorous understanding of team members involved because the crew could jeopardize the outcome of the mission, ultimately impacting the lives of the crew if something were to go astray. According to Dudley-Rowley, these type of situations become even more sensitive when teams are required to interact for long periods of time in a confined environment. When selecting candidates for long-duration space missions, Personality variables are key components that could influence team outcomes (Choi, 2009; White & Avener, 2001 as cited in Diaz). I believe that through the application of PSI theory researchers could address the cognitive structures, conscious and unconscious, that appears to have eluded scientific study. This could support future researchers by helping them to identify cognitive structures of individuals who have been influenced team outcomes by acting alone (Tambe, 1998).

The ability to measure and identify functional characteristics that influence team outcomes from with-in a group is long sought after in psychological inquiries. It is established that PSI theory is ideally suited for identifying the relationship of functional characteristics in teams and applying the relationship to team outcomes. This chapter considered the experimental research design, rationale behind the proposed research, the methodology, population, sampling procedures, data collection, instruments, and threats

to validity and ethical procedures to protect participants. The next chapter will discuss the results of the study, any changes in instrumentation, data analysis, including the time frame used to collect data, participation and response rates.

Chapter 4: Results

Introduction

The purpose of this research was to identify whether individual functional characteristics within a team could influence a team's ability to complete a mission or influence the time it took to complete a mission. It was hypothesized that functional characteristics could play a significant role. Using an experimental design, the PSI assessments were applied to explore three functional characteristics in order to determine whether one or more stood out among the others and whether there was a significant relationship with any of the characteristics influencing team outcomes. The three independent variables included- IBC, IM and EM (evaluated as one system), and action/state orientation. The measurement tools used for the independent variables included BEF/IMPAF, MUT, and AOF respectively. The two dependent variables were team outcome and the time it took to complete the mission.

This chapter will discuss the research findings including the pilot study, data collection process, participant sampling, descriptive statistics, and analysis. It will conclude with the results and summary of the research findings.

Pilot Study

Prior to carrying out the main study, I conducted a pilot study of 10% of the sample size. Using the power analysis conducted for the main study, the research considered 10% of the main study sample size and determined that a pilot study sample size equal to six participants was sufficient (main study sample size = 61, where P =.80, alpha =.05, and effect size = .35). Based on this power analysis, I conducted the pilot

study with two teams comprised of three participants per team, for a total of six participants. The participants (N = 6) were students (5 female, 1 male). Participants completed three components of the research: the demographic questionnaire, the team mission, and the online PSI assessments.

All participants completed the demographic questionnaire. Completion time was less than 1 minute. The team mission exercise was completed by all participants with an average time of 3.27 minutes (N = 6, SD = 0.95). The online was assessments were completed by four of the six participants. I received feedback from the four participants that the estimated time to complete the online assessments was less than 25 minutes.

I reported the findings to the research committee. Both the research committee chair and I agreed that the research study, the experiment design, and the online assessments met the requirements of participant understanding and that no significant changes would be required. It was recommended by the committee chair that I more forward with the main study.

Data Collection

I obtained two IRB approvals to conduct research, the first with Walden University IRB (approval to conduct research received on February 10, 2014) and the second with the NCU IRB (approval received on February 4, 2014) before conducting both the pilot study and the main study. After approval to conduct the pilot and main research was received on the same form by both IRB institutions, I began collecting data for the pilot study on February 11, 2014 and concluded data collection for the pilot study on April 9, 2014. Then, I began collecting data for the main study on April 9, 2014 and

concluded data collection for the main study on May 1, 2014 (the last day participants were available). I collected data from participants for 80 days. A total of 114 participants (88 female, 26 male) were considered in the study, including the six participants from the pilot. The data used in the final analysis of the study was reduced by several factors; one participant was excluded from the study because the participant appeared to not fully comprehend the research study when asked by me, one participant opted out of the study after completing the demographic questionnaire, and 54 participants did not complete the online assessments. All of the 114 participants completed the demographic questionnaire, 81 participants (65 female, 18 male) completed the team mission, 53 participants (45 female, 8 male) completed the online assessments. Teams that were missing online assessment data from one random participant were resolved by using the means from the total data set (MUT Total M = 153.83, BEF/IMPAF Total = 694.58, AOF Score M = 51.77, where N = 53), a common statistical data structure process which allows a constant characteristic to not vary or influence the remaining data (Gravetter & Wallnau, 2007).

Teams that were missing two or more participant's data were removed from the study. This resulted in a total of 20 teams (60 participants) that were considered in the study. The 60 participants (51 female, 9 male) were comprised of three participants per team. Data used to measure time was recoded into three categories (e.g. Fast, Average, and Slow). Coding the data into categories resolved any concerns for data outliers by making extended or shortened time score irrelevant since they fell into time quadrants. Using the time collected from all participants who completed the mission with M = 2.45,

SD = 1.36, N = 81 and a minimum time = 0.54 and maximum time = 7.50, the time categories were created using +/-50 seconds where fast ≤ 1.94, average was between ≥ 1.95 and ≤ 2.95, and slow ≥ 2.96. Using the data collected from the 60 participants in the study, a representative sample of the population of interest, I conducted data analysis.

Treatment and/or Intervention Fidelity

The research design was executed as described in Chapter 3 with no changes made to the demographic questionnaire, the team mission exercise, or the online assessments. Attrition was as expected. During one of the team mission exercises I intervened with three participants in the study by stopping the participants from completing their team mission when I observed that the participants appeared to lose sight of their team objective.

Results

The quantitative study included 114 student participants. After the data was cleaned and invalid data was removed 60 participants (20 teams) remained for consideration in the analysis. Using SPSS software as described in Chapter 3 the data collected from the 60 participants was analyzed as illustrated in Table 1 and Table 2.

Table 1

Descriptive Statistics of PSI Scores

	N	Mean	Std. deviation
MUT total	60	153.70	23.92
BEF/IMPAF total	60	691.62	71.17
AOF score	60	51.35	9.48

Table 2

Descriptive Statistics of Team Time Categories

	N	Frequency
Average	81	24
Fast	81	30
Slow	81	27

The research answers two hypothesized questions: Will individuals with specific functional characteristics influence their team's ability to successfully complete an assigned mission? Will individuals with specific functional characteristics influence the time it takes for their team to successfully complete a mission? To answer these questions I evaluated the data by individual team members using correlation and regression analysis. However, no significant results were identified using these statistical measures. Therefore, ANOVA was applied in consideration of the data with findings outlined below.

Research Question 1

Will individuals with specific functional characteristics influence their team's ability to successfully complete an assigned mission?

IBC

$H_0 1$*:* IBC does not influence a team's ability to successfully complete an assigned mission.

$H_1$1: IBC does influence a team's ability to successfully complete an assigned mission.

Test of between-subjects effects did not show any statistical significance with main effect for IBC and team outcomes, F(1, 58) = .058, p = 0.811. Teams who successfully completed their mission did not show significant changes in scores (M = 695.02, SD = 60.05) than teams who did not successfully complete their mission (M = 690.16, SD = 76.06). Therefore, I failed to reject the null hypothesis. There is not sufficient evidence to support the hypothesis that IBC influences a team's ability to successfully complete an assigned mission.

IM and EM

$H_0$2: IM and EM does not influence a team's ability to successfully complete an assigned mission.

$H_1$2: IM and EM does influence a team's ability to successfully complete an assigned mission.

Test of between-subjects effects did not show any statistical significance with main effect for IM/EM combinations and team outcomes, F(1, 58) = .054, p = 0.817. Teams who successfully completed their mission did not show significant changes in scores (M = 154.85, SD = 24.97) than teams who did not successfully complete their mission (M = 153.25, SD = 23.78). Therefore, I failed to reject the null hypothesis. There is not sufficient evidence to support the hypothesis that IM/EM combinations influence a team's ability to successfully complete an assigned mission.

Action or State Orientation

$H_0$3*:* Action or State orientation does not influence a team's ability to successfully complete an assigned mission.

$H_1$3*:* Action or State orientation does influence a team's ability to successfully complete an assigned mission.

Test of between-subjects effects did not show any statistical significance with main effect for action or state orientation and mission outcome, $F(1, 58) = .86$, $p = 0.357$. Teams who successfully completed their mission did not show higher action or state orientation scores ($M = 52.10$, $SD = 9.63$) than teams who did not successfully complete their mission ($M = 49.62$, $SD = 9.14$). Therefore, I failed to reject the null hypothesis. There is not sufficient evidence to support the hypothesis that action or state orientation combinations influence a team's ability to successfully complete an assigned mission.

Summary Research Question 1

Tests of between-subjects effects did not show any significant influence on a team's ability to successfully complete an assigned mission. This suggests that regardless of a team's functional characteristic of IBC, IM/EM or Action/State orientation, the team's ability to complete a mission is not affected.

Research Question 2

Will individuals with specific functional characteristics influence the time it takes for their team to successfully complete a mission?

IBC

$H_0$4: IBC does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$4: IBC does influence the time it takes for a team to successfully complete an assigned mission.

The test of between-subjects effects did not show any statistical significance with main effect for IBC and the time it takes to complete a mission, F(2, 57) = .282, p = .756. Teams that were faster at completing a mission did not show significantly higher IBC scores (M = 700.95, SD = 92.80) than teams with the slowest time at completing their mission with IBC scores (M = 691.10, SD = 71.66) or teams with average time at completing their mission with IBC scores (M = 682.96, SD = 42.96). Therefore, I failed to reject the null hypothesis. There is not sufficient evidence to support the hypothesis that IBC influences the time it takes for a team to successfully complete an assigned mission.

IM and EM

$H_0$5*:* IM and EM does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$5*:* IM and EM does influence the time it takes for a team to successfully complete an assigned mission.

Test of between-subjects effect did not show any statistical significance with main effect for IM/EM combinations and the time it takes to complete a mission, F(2, 57) = 1.305, p = 0.279. Teams that were faster at completing a mission did not show significantly higher IM/EM combination scores (M = 158.98, SD = 24.30) than teams that were the slowest

time at completing their mission with IM/EM scores (M = 154.92, SD = 25.46) or teams that were average time at completing their mission with IM/EM scores (M = 146.57, SD = 20.86). Therefore, I failed to reject the null hypothesis. There is not sufficient evidence to support the hypothesis that IM/EM combinations influence the time it takes for a team to successfully complete an assigned mission.

Action or State Orientation

$H_0$6*:* Action or State orientation does not influence the time it takes for a team to successfully complete an assigned mission.

$H_1$6*:* Action or State orientation does influence the time it takes for a team to successfully complete an assigned mission.

Test of between-subjects effect shows statistical significance with main effect for action orientation and the time it takes to complete a mission, $F(2, 57) = 3.24$, $p = 0.047$. As predicted, individuals with higher action oriented scores (M = 55.92, SD = 11.43) influenced their team's ability to successfully complete an assigned mission in less time than teams with lower scores (M = 49.11, SD = 8.13) or teams with average scores (M = 49.78, SD = 7.73), effect size = .10 or 10% with alpha at .05 and observed power = .595. Therefore, I reject the null hypothesis. There is sufficient evidence to support the hypothesis that action or state orientations do influence the time it takes for a team to successfully complete an assigned mission.

Summary Research Question 2

Tests of between-subjects effects shows a significant influence on the time it takes for a team to successfully complete an assigned mission as seen in Table 3 with Levene's

test for equality of variances satisfied $F(2,57) = 3.132$, $p = .051$. This supports known research that a team's functional characteristic make-up, in relation to action-orientations, has a significantly positive correlation with the time it takes a team to complete a mission. The findings show that the higher the action-orientated individual scores on a team the faster the team will perform their tasks.

Table 3

Descriptive Statistics of Comparison of Team Time Categories and PSI Scores

Multiple Comparisons: Post-Hoc

Dependent Variable: AOF Scores LSD

					95% Confidence Interval	
		Mean Diff.	Std. Error	Sig.	Lower	Upper
Average	Fast	-6.14*	3.045	.049	-12.23	-.04
	Slow	0.67	2.849	.814	-5.03	6.38
Fast	Average	6.14*	3.045	.049	0.04	12.23
	Slow	6.81*	2.849	.020	1.11	12.51
Slow	Average	-0.67	2.849	.814	-6.38	5.03
	Fast	-6.81*	2.849	.020	-12.51	-1.11

* The mean difference is significant at the .05 level.

Post-hoc Analyses

Additional statistical analysis of the hypothesis were evaluated. I applied analysis of variance to different combinations of independent variables and dependent variables to evaluate if there was any significant effects when a combination of the variables were

considered. The analysis did not identify any significant findings to warrant further inquiry. I did not find any emerging patterns of statistical significance.

Summary

The research attempted to answer two questions: Will individuals with specific functional characteristics influence their team's ability to successfully complete an assigned mission? and Will individuals with specific functional characteristics influence the time it takes for their team to successfully complete a mission? Based on data analysis, findings for the first question were not sufficient to support the hypothesis that functional characteristics influence a team's ability to successfully complete an assigned mission. However, findings for the second question were sufficient to support the hypothesis. Data analysis revealed that individuals with specific functional characteristics influenced the time it took for their team to successfully complete their mission.

Chapter 5 will discuss prescriptive material including interpretation of the findings, its contribution to the knowledge of science, limitations, and recommendations for further research, implications, and conclusion.

Chapter 5: Discussion, Conclusions, Recommendations

Introduction

The purpose of this research was to identify whether individual functional characteristics within a team could influence a team's ability to complete a mission or influence the time it took to complete a mission. It was hypothesized that functional characteristics could play a significant role. Using an experimental design, the PSI assessments were applied to explore three functional characteristics in order to determine whether one or more stood out among the others and whether there was a significant relationship with any of the characteristics influencing team outcomes. The three independent variables included- IBC, IM and EM (evaluated as one system), and action/state orientation. The measurement tools used for the independent variables included BEF/IMPAF, MUT, and AOF respectively. The two dependent variables were team outcome and the time it took to complete the mission.

This research answered two questions: whether individual functional characteristics within a team design could influence a team's ability to complete a mission or whether individual functional characteristics could influence the time it takes a team to complete a mission. It was hypothesized that specific functional characteristics play a significant role in predicting or influencing a team's ability to successfully complete a mission or its duration. Applying a quantitative experimental research design, using PSI as the theoretical framework and analysis of variance (ANOVA) to evaluate the hypotheses, an independent measure analyzed 114 participants to explore team functional characteristics.

Based on data analysis, findings for the first question were not sufficient to support the hypothesis that functional characteristics influence a team's ability to successfully complete an assigned mission. However, findings for the second question were sufficient to support the hypothesis that teams identified as having specific functional characteristics influenced the time it took for their team to successfully complete a mission.

This chapter will interpret the findings of the research, limitations of the study, recommendations, implications, and conclude with the overall impact of the research.

Interpretation of the Findings

It was anticipated that IM and EM systems would explain the primary influence of team outcomes. Since PSI's theoretical framework focuses on the cognitive-emotional system, known to guide behavior (Alsleben & Kuhl, 2010; Kuhl, 2000), it was anticipated that the intentions of individuals would play a significant role in how a team would interact, ultimately steering the direction of the team. However, data analysis revealed that the results did not support the assumption that IM and EM systems influenced team mission outcomes.

Nevertheless, previous research has illustrated, as described in Chapter 2, that action and state orientation plays a significant role in a team's ability to complete a task. The PSI assessments, known to measure state and action orientations, include the EOS (Alsleben & Kuhl, 2010; Kuhl & Kazen, 2006) were used to evaluate these relationships. It is known that action-oriented teams tend to perform better than state-oriented teams (Baumann & Kuhl, 2002; Ijzerman & Van Prooijen, 2008; Rudman & Spencer, 2007).

This research confirmed these findings by identifying specific functional characteristics related to action and state orientation scores and the time it takes a team to complete a task. The higher a team's action orientation the more quickly it can complete a task; and the lower the action orientation scores, the more slowly a team is able to complete a task. This is consistent with PSI's theoretical framework that the cognitive-emotional systems which guide behavior (Alsleben & Kuhl, 2010; Kuhl, 2000) do, in fact, play a significant role in influencing a team's behavior. For example, PSI describes emotions and coping behaviors as an ability to manage an individual's motives caused by motivational variables and self-regulation even during stressful situation (Kuhl, 2001; Kuhl et al., 2006).

The management of these systems influenced directional decisions made by individuals on a team which in turn influenced the entire team. As Halfhill, Nielsen, Sundstrom and Weilbaecher (2005) pointed out, group norms are known to impact team performance. Considering that a team is comprised of other individuals who influence their team members, the functional characteristics inherent in each team member is likely to trigger direct result of the external influences produced by the other team members. According to PSI theory, these global underlying systems, working together, were likely the cause of influence to other sub systems, such as positive and negative affect systems within the individual, which ultimately worked together to produce a total team behavioral response. In teams with higher action orientation scores the team approached their tasks in a manner that was better executed than teams whose orientation scores were more state oriented. This combination of team action orientation likely resulted in teams

that were more social resilient. Cacioppo, Reis, and Zautra,(2011) noted that social resilience is created by team members. Therefore, it is conceivable that team bonding developed more quickly with action oriented teams than state oriented teams. This could lend itself to the development of social niches among team members which, according to Dudley-Rowley, is believed to increase overall team member effectiveness. The self-reported diagnostic tools developed from PSI were able to assess functional characteristics of not only individuals, but it was also able to assess the entire functional characteristics of a team.

Further subjective analysis of the data revealed that if total team action orientation scores are too high the relationship between time and action orientation deteriorates. Essentially, much like a bell curve, there are optimal levels for which an action oriented team functions more efficiently. Further research could explore these levels in different team settings in order to identify if the results are transferable from one team environment to the next. Additionally, levels of IBC was not identified as having a significant influence in this research. Since IBC is responsible for control and decision making processes (Kuhl, 2001) further research may benefit from selectively assembling teams with low IBC scores and high IBC scores in order to identify if there exists a relationship between IBC and a team's abilities to complete tasks.

Limitations of the Study

There were limitations to this study. For example, the study did not consider the impact of life-threatening or other traumatic situations and how such events would influence participants. Although there was some minor discomfort during the experiment

as expected, severe events were not taken into consideration. Also, while participants did not report that there were limitations in their understanding of the online assessments, it was recently translated from a German to English language which could have affected participant interpretation and understanding of the assessments.

As anticipated in the expected attrition rate of the study, not all participants completed every aspect of the study. This resulted in my having to substitute the means of the data where random team member's data was missing assessment results from one participant. Also, the sample of participants in the study were predominantly female. Although this was expected in consideration of the population examined, future research could benefit from a proportional distribution of male and female participants. Lastly, though responses were coded by number to protect against participant bias responses and to protect the anonymity of their information, it is still possible that participants responded to the assessments in a manner that they felt was socially acceptable. These type of socially influenced responses could have provided me with information that was not a true measure of the individual's functional characteristics. Additionally, 33 participants did not complete all aspects of the study and their data was removed from analysis. This suggests a limitation that the process or steps of the study could have been more refined or simplified as to increase total participation rates.

Recommendations

The applications of this research could be applied to military, space exploration, or organizational teams seeking to increase the speed at which teams complete assigned tasks. It is recommended that further research apply the same design in each of these

settings to evaluate and compare specific group functional characteristic combinations within other environmental factors. The results could provide opportunities for operational management to better manage teams from within team design. This type of quantitative approach could enable management to better control team variables that are known to influence the total team instead of relying on chance itself.

Since this research did not control for assignment of team members, future research could consider assembling teams by first measuring each team member's functional characteristics across all levels and then assembling teams based on their assessment scores. By assembling teams based on PSI assessment scores in each independent category and evaluating their impact on team outcomes, research could identify whether or not extreme variable combinations could further influence team behavior. The comparison of specific groupings of individual functional characteristics could lead to identifying other combined team variables that were not identified in the findings of randomly assembled team combinations.

Implications

The feelings and need for social acceptance of an individual is known to impact an individual's loyalty to an organization, quality of life, and employment turnover. Observed implications of this study support known research that a team member who feels better about their ability to perform tasks can influence their contributions and have a positive impact on the total team. Social resilience develops within an individual based on the perception of others (Cacioppo, Reis, & Zautra, 2011). This research supports the development of social resilience as it identifies quantifiable levels of action orientation

that promotes positive team perceptions and overall team success. The implications of this research could impact positive social change by influencing the ways in which individuals feel about and contribute to their team, the organization, or the value they bring to organizational goals.

Since individuals are seeking more ways to increase team collaboration (Canadian Medical Association, 2007 as cited in Diaz) and research has been seeking to identify different characteristics that develop motivational orientations (Tremblay, Blanchard, Taylor, Pelletier & Villeneuve, 2009) as well as team composition to directly impact team performance (Wang, Hu, & Cao, 2011) and ways to increase team member familiarity to support implicit communication (Espevik, Johnsen, & Eid, 2011) this research supports these needs by providing insight into ways to increase team collaboration by helping to align team members who are more inclined to develop positive work performance relations. When an individual knows the contributions they bring to a team or common goal they tend to perform better than those who are not clear on their individual contribution. By assembling a team based not only on the knowledge, skill sets, and abilities often conveyed in a resume, assessing PSI functional characteristics and combining those characteristics with others creates more optimal teams.

Since organizations are constantly looking for ways to improve the employee selection process, findings from this study could support opportunities to better quantify and identify individuals who could be a better fit for specific teams. In addition to identifying employees that can perform the duties asked of them, employers are looking

to identify and secure employees who are more likely to stay with the organization and promote overall employee loyalty. This research supports the direction of identifying individuals who are more likely to stay with an organization for longer periods of time, because it identifies qualities of each individual that are more beneficial to an entire team than just those qualities that impact individual job contributions. As explained in Chapter 2, research shows that individuals who know that they bring value to a team or organization are more likely to stay with the organization than individuals who do not know if they contribute to the total team or organization.

The value of the findings in this research could impact organizational costs in all areas of employee recruiting, reduce team training, and increase overall individual and team performance. In addition, one of many considerations and concerns in organizational human resource processes is the ability to identify employee talent in a manner that does not open the organization up to liability. Applying a quantitative employee screening process, which could be extrapolated from the process of this research, could reduce liability concerns by implementing a duplicable process supported by statistical reference and data analysis. Applying the theoretical constructs of PSI could identify candidates who are best fit for employment and because the screening process is supported by a foundation of empirical study, its measures are less likely to be subjected to discrimination or scrutiny.

Conclusion

The ability to identify quality candidates for military, space exploration, and other organizations plays an important role in team motivation, behavior, abilities, liability, and

human investment. This study identified an assessment process using a quantitative approach to identify human functional characteristic combinations that influence team outcomes. As illustrated in industry and research, this study has identified a more efficient approach to identifying and assemble teams that are more likely to develop social niches and team bonding than teams that are assembled on knowledge, skill sets, and abilities alone. This research has identified that a test of between-subjects effect shows statistical significance with main effect for action orientations and the time it takes to complete a team mission. This research has led to positive social change by increasing our understanding of human-to-human behavioral interactions and it has identified functional characteristics that influence the entire team. If the application of this research were applied in extreme environment situations such as what would be required in space exploration, it could serve to reduce financial investment, but most important decrease the cost of human resources by reducing the time needed to perform a task, ultimately saving lives.

References

Algoe, S. & Fredrickson, B. (2011). Emotional fitness and the movement of the affective science from lab to field. *American Psychologist*, *66*(1), 35-42. doi:10.1037/a0021720

Alsleben, P. & Kuhl, J. (2010). Touching a person's essence: Using implicit motives as personal resources in counseling. *Final Draft document e-mailed from Julius Kuhl*, 1-30.

Amiot, C., & Sansfacon, S. (2011). Motivations to identify with social groups: a look at their positive and negative consequences. *Group Dynamics: Theory, Research, and Practice, 15*(2), 105-127. doi:10.1037/a0023158

Army. (2013). Organization. Retrieved January 2, 2013 from http://www.army.mil/info/organization/

Baer, M., Oldham, G., Jacobsohn, G., & Hollingshead, A. (2008). The personality composition of teams and creativity: the moderating role of team creative confidence. *The Journal of Creative Behavior, 42*(4), 255-282.

Baumann, N., Kaschel, R. & Kuhl, J. (2005). Striving for unwanted goods: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology, 89*(5), 781-799. doi:10.1037/0022-3514.89.5.781

Baumann, N., Kaschel, R., & Kuhl, J. (2007). Affect sensitivity and affect regulation in dealing with positive and negative affect. *Journal of Research in Personality, 41*(1), 239–248. doi:10.1016/j.jrp.2006.05.002

Baumann, N. & Kuhl, J. (2002). Intuition, affect, and personality: Unconscious coherence judgments and self-regulation of negative affects. *Journal of Personality and Social Psychology, 83*(5), 1213-1223. doi:10.1037/0022.3514.83.5.1213

Baumann, N. & Kuhl, J. (2005). How to resist temptation: The effects of external control versus autonomy support on self-regulatory dynamics. *Journal of Personality, 73*(2), 444-470. doi:10.1111/j.1467-6494.2005.00315.x

Bermudez, J. (2006). Personality science, self-regulation, and health behavior. *Applied Psychology: An International Review, 55*(3), 386-396. doi:10.1111/j.1464-0597.2006.00259.x

Butina, A. (2001). Managing NASA's International Space Station logistics and maintenance program. *Space Technology and Applications International Forum-STAIF, 552*(1), 161.

Butler, C. & Zander, L. (2008). The business of teaching and learning through multicultural teams. *Journal of Teaching in International Business, 19*(2), 192-218. doi:10.1080/08975930802118903

Cacioppo, J., Reis, H. & Zautra, A. (2011). Social resilience: the value of social fitness with an application to the military. *American Psychologist*, 66(1), 43-51. doi:10.1037/a0021419

Caldwell, B. (2006). Group performance and space flight teams. Creating high-tech teams: Practical guidance on work performance and technology. Bowers, Clint; Salas, Eduardo; Jentsch, Florian. Washington, DC: *American Psychological Association.* 161-182.

Canadian Medical Association. (2007). Teamwork: It's not just for sports anymore. *MD Lounge,* 2-5.

Carretta, T. (2011). Pilot candidate selection method. Still an effective predictor of US Air Force pilot training performance. *Aviation Psychology and Applied Human Factors, 1*(1), 3-8. doi:10.1027/2192-0923/a00002

Casey, G. (2011). Comprehensive soldier fitness. A vision for psychological resilience in the U.S. Army. *American psychology,* 66(1), 1-3. doi:10.1037/a0021930

Cervone, D. (2004). The architecture of personality. *Psychological Review, 111*(1), 183-204. doi:10.1037/0033-295x.111.1.183

Cervone, D. (2005). Personality architecture: With-in person structures and processes. *Annual Review of Psychology,* 56(1), 423-452. doi:10.1146/annurev.psych.56.091103.070133

Cheng, R., Shui-fong, L., & Chan, J. (2008). When high achievers and low achievers work in the same group: the roles of group heterogeneity and processes in project-based learning. *British Journal of Educational Psychology,* 78(2), 205-221.

Choi, C. (2009, July). NASA explains how humans would get to Mars. *Fox News*. Retrieved July 23, 2009, from http://www.foxnews.com/story/0,2933,534394,00.html

Diaz, E. (2010). *Identifying motivational and self-regulatory variables that improve team performance for candidates selected for isolated extreme environment missions.* (Thesis, Walden University).

Dominican University. (2013). Homepage. Retrieved November 5, 2013, from http://www.dominican.edu

Doyle, M., O'Neil, D., & Christensen, C. (2005). Advanced technology lifecycle analysis system (ATLAS) technology tool box (TTB). *Space Technology and Applications International Forum-STAIF, 746*(1), 1044-1050.

Dudley-Rowley, M. (2000). The effects of size and heterogeneity of crew and mission duration on the deviant behavior and performance of team personnel in space and analog polar environments: A pilot study; doctoral dissertation, University of South Carolina.

Dudley-Rowley, M., Gushin, V., & Gorry, T. (1999, July). A social states index for multi-national crews co-contained in the ISS Simulator, Moscow, Russia. Journal of *the Engineering Society for Advancing Mobility Land Sea Air and Space:* Warrendale, PA.

Dudley-Rowley, M., Okushi, J., Gangale, T., Flores, P., & Diaz, E. (2003). Design implications of latent challenges to the long-duration space mission. Journal of the *AIAA Space:* Long Beach, CA, 23-25.

Dudley-Rowley, M., Whitney, S., Bishop, S., Caldwell, B., & Nolan, P. (2001, July). Crew size, composition, and time: Implications for habitat and workplace design

in extreme environments. Journal of *the Engineering Society for Advancing Mobility Land Sea Air and Space:* Warrendale, PA.

Espevik, R., Johnsen, B., & Eid, J. (2011). Communication and performance in co-located and distributed teams: an issue of shared mental models of team members? *Military Psychology*, 23, 616-638. doi:10.1080/08995605.2011.616792

Gamero, N., Gonzalez-Roma, V., & Peiro, J. (2008). The influence of intra-team conflict on work teams affective climate: A longitudinal study. *Journal of Occupational and Organizational Psychology*, 81, 47-69.

Geert, P. (1998). A dynamic systems model of basic developmental mechanisms: Piaget, Vygotsky, and beyond. Psychological Review, *105*(4), 634-677.

Gravetter, F., & Wallnau, L. (2007). Data structures, research methods, and statistics. *Statistics for the behavioral sciences* (7th ed.)(pp.10-24). Belmont, CA: Thomson Wadsworth.

Halfhill, T., Nielsen, T., Sundstrom, E. & Weilbaecher, A. (2005). Group personality composition and performance in military teams. *Military Psychology, 17*(1), 41-54. doi:10.1207/s15327876mp1701_4

Hinghofer-Szalkay, H. (2005). Traveling space: Biological considerations, and the benefits for terrestrial medicine [Editorial]. *Current Pharmaceutical Biotechnology, 6*(3), 251.

Ijzerman, H. & Van Prooijen, J. (2008). Just world and the emotional defense of self. *Social Psychology*, 39(2), 117-120. doi:10.1027/1864-9335.39.2.117

Jones, M., Etherage, J., Harmon, C., & Okiishi, J. (2012). Acceptability and cost-effectiveness of military telehealth mental health screening. *Psychological Services*, 9(2), 132-143. doi:10.1037/a0026709

Kadzikowska-Wrzosek, R. (2012). Perceived stress, emotional ill-being and psychosomatic symptoms in high school students: the moderating effect of self-regulation competences. *Archives of Psychiatry and Psychotherapy,* 3, 25-33.

Kazen, M., Baumann, N. & Kuhl, J. (2003). Self-infiltration vs. self-compatibility checking in dealing with unattractive tasks: The moderating influence of state vs. action orientation. *Motivation and Emotion,* 27(3), 157-197.

Kazen, M. & Kuhl, J. (2005). Intention memory and achievement motivation: volitional facilitation and inhibition as a function of affective contents of need-related stimulit. *Journal of Personality and Social Psychology*, 89(3), 426-448. doi:10.1037/0022-3514.89.3..426

Klein, C., Stagl, K., Salas, E., Parker, C., & Van Eynde, D. (2007). Returning to flight: simulation-based training for the U.S. national aeronautics and space administration's space shuttle mission management team. *International Journal of Training and Development,* 11(2), 132-138.

Koole, S. & Kuhl, J. (2003). In search of the real self: A functional perspective on optimal self-esteem and authenticity. *Psychological Inquiry,* 14(1), 4388.

Kuhl, J. (2000). The volitional basis of Personality Systems Interaction Theory:: applications in learning and treatment contexts. *International Journal of Educational Research*, *33*(7–8), 665–703. doi:10.1016/S0883-0355(00)00045-8

Kuhl, J. (2001). *A functional-design approach to motivation and self-regulation: the dynamics of personality systems interactions*. Psychology Department, University of Osnabruck,Germany.

Kuhl, J., & Beckmann, J. (1994). *Volition and personality: Action versus state orientation*. Seattle/Göttingen: Hogrefe.

Kuhl, J., Kazen, M., & Koole, S. L. (2006). Putting self-regulation theory into practice: A user's manual. *Applied psychology: An International Review*, 55(3), 408-418. doi:10.1111/j.1464-0597.2006.00260.x

Miles, J. & Kivlighan, D. (2008). Team cognition in group intervention: the relation between coleaders' shared mental models and group climate. *Group Dynamics: Theory, Research, and Practice,* 12(3), 191-209. doi:10.1037/1089-2699.12.3.191

NASA. (2005). *NASA's exploration systems architecture study.* Final Report No. Location: NASA.

Orbell, S. (2003). Personality systems interactions theory and the theory of planned behavior: Evidence that self-regulatory volitional components enhance enactment of studying behavior. *British Journal of Social Psychology,* 42(1), 95-112.

Peeters, M., Van Tuijl, H., Rutte, C. & Reymen, I. (2006). Personality and team performance: A meta-analysis. *European Journal of Personality*, 20, 377-396. doi:10.1002/per.588

Pelaccio, D., Rauwolf, G., Maggio, G., Patel, S., & Sorensen, K. (2002). An examination of emerging in-space propulsion concepts for one-year crewed Mars missions. *Space Technology and Applications International Forum-STAIF*, 608(1), 365, 9p.

Quirin, M., Bode, R., & Kuhl, J. (2011). Recovering from negative events by boosting implicit positive effect. *Cognition and Emotion,* 25(3), 559-570. doi:10.1080/02699931.2010.536418

Rudman, L. & Spencer, S. (2007). The implicit self. *Self and Identity*, 6, 57-100. doi:10.1080/15298860601128271

Ruef, M., Aldrich, H. & Carter, N. (2003). The structure of founding teams: Homophily, strong ties, and isolation among U.S. entrepreneurs. *American Psychological Review,* 68(2), 195-222.

Sebok, A. (2000). Team performance in process control: Influences of interface design and staffing levels. *Ergonomics,* 43(8), 1210-1236.

Schaffer, S., Xiaojun, C., Xiumei, Z. & Oakes, W. (2012). Self-efficacy for cross-disciplinary learning in project-based teams. *Journal of Engineering Education*, 101(1), 82-94.

Tambe, M. (1998, Mar). Implementing agent teams in dynamic multiagent environments. *Applied Artificial Intelligence,* 12(2/3), 189-210.

Tremblay, M., Blanchard, C., Taylor, S., Pelletier, L., & Villenueve, M. (2009). Work extrinsic and intrinsic motivation scale: its value for organizational psychology research. *Canadian Journal of Behavioral Sciences,* 41(4), 213-226. doi:10.1037/a0015167

Wang, H., Hu, Y., & Cao, S. (2011). Conversation analysis in cross-culture team communication. *Cross-Cultural Communication,* 7(4), 49-55. doi:10.3968/j.ccc.1923670020110704.190

White, R. & Averner, M. (2001). Humans in space. *Nature,* 409(6823), 161.

Wise, J. (2007). Testing a theory that explains how self-efficacy beliefs are formed: Predicting self-efficacy appraisals across recreation activities. *Journal of Social and Clinical Psychology*, 26(7), 841-848.

Wood, R. & Beckmann, N. (2006). Personality architecture and the FFM in organizational psychology. *Applied Psychology: An International Review,* 55(3), 453-469. doi:10.1111/j.1464-0597.2006.00263.x

Appendix A: Invitation Script Requesting Student Participation in the Study

Good Morning,

You are invited to participate in a research study focused on identifying functional characteristics that influence team mission outcomes. The research is inviting all Dominican University students who are currently enrolled in any university course.

This study is being conducted by researcher Eduardo Diaz, a doctoral student at Walden University. If you agree to be in this study, you will be asked to:

- Complete a demographic questionnaire that will take 1 to 2 minutes.
- Complete an online questionnaire that will identify functional characteristic strengths that you possess (approximately 25 minutes)
- Complete an assigned mission with two other randomly selected peers from your university that will take between 3 to 7 minutes.

This study is voluntary. Your decision to participate or not is entirely up to you. You will not be treated differently if you participate in the study or not. If you decide to participate in the study today, you can change your mind during the study or after the study to opt out. You can also stop participating in the study at any time.

Participation in this study involves some risk of minor discomfort that is generally encountered in daily life. For example, stress working with others or disappointment in personal expectations in completing an assigned task. Participation in this study will not cause any harm to your health or well-being.

The research will benefit the study of psychology by providing information that could aid in organizations improving work relations at the work place, assist the military in creating teams that are less likely to freeze up during missions, or assist space exploration by improving our understanding of other human characteristics that could improve the selection process for long-duration space missions.

Any information provided by you will be confidential. The research will not use any of your personal information for any purpose outside of this study. The research will not include your name or any information that could identify you in the study reports. Data will be protected and secure in a password protected database and kept for a period of 5 years as required by the university.

Participants who complete the online questionnaire and team mission exercise will receive a $5 gift card good at Peet's Coffee and a copy of the study results.

If you have any questions about the study you may ask them now.

If you would like to contact me later to ask questions please contact me on my cell phone at (707) 508-6970 or via e-mail at Eduardo.Diaz@Waldenu.edu. If you have questions regarding your rights as a participant please contact Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. You may also contact Dr. Martha Nelson at Dominican University. She is the Head of the Institutional Review Board at Dominican University who can also discuss questions about this research with you. Dr. Nelson's phone number is 415-482-3547.

Appendix B: Instructions on how to complete the Online Questionnaire

Sign in to the online questionnaire using any computer with internet and browser capabilities. The website address is www.impart-tests.com/ (Select English by clicking on the flag in the upper corner). Copy and paste the unique participant username and password number provided by the researcher. After you login, you will be asked to "begin test". Once you click "begin test" a series of questions will follow.

Part 1: Demographic Information

Please provide your age and gender. If you wish, you can provide your degree, job, and living situation or leave them as "not specified". Click the "go on" button to continue.

Part 2: Select the best response

You will be asked to select the best response to the statements provided. In the upper right corner you can see the number of questions answered and the number of questions remaining.

There are five sections. At the end of each section you will be provided an opportunity to take a break. Click "begin test" each time you're ready to continue to the next section.

Finished

When all sections are complete the last screen will display "The test has been successfully saved and finished. You can log out. Thanks!"

Appendix C: Team Mission Instructions

Mission Description

The team mission is to build a tower using one-half inch by three-quarter inch by three inch wood blocks provided by the researcher. There are four sets of colored blocks, with 12 blocks in each color set. There are a total of 48 blocks. There are enough blocks to assemble 16 levels to form a tower of blocks. When building the tower each level must use the same color of blocks and only three (3) blocks for each level. The color of blocks used for each floor must repeat every fifth floor. The first level of blocks should start with yellow blocks, followed by red blocks, green blocks, then blue blocks and repeat.

Scenario

A room is set up with three tables having the same height. The tables are organized the same distance from each other forming the shape of an equilateral triangle. An equal number of blocks are placed on two of the tables. The colored blocks are divided equally among two tables. One table does not have any blocks.

Instructions

A team of three participants open a door to enter a room with the scenario of three tables and blocks as outlined in the scenario. The moment the door opens the researcher will start a timer. The room door remains open as the team members decide among themselves who will organize and stack the blocks on the empty table and which team members will organize and manage the tables containing the blocks.

Once all the members are in position to their respective tables the team member responsible for stacking the blocks will call out the color blocks as needed. Each team member will pick up one color block as indicated and hand the one block to the team member stacking the blocks. The team member stacking the blocks will place the block in the appropriate location on the table to build the tower. If the color block received from a team member is not the correct color the team member must return the block and ask for the correct color block. The team works together stacking one block at a time. At no time can any of the team members leave their assigned table to help another team member. Once all the blocks are stacked on the table forming a tower the team member responsible for stacking the blocks needs to inform the other members that they are finished with the task.

Once the announcement is made that the task is complete, each member of the team will exit the room. When the last team member exits the room and closes the door the timer will stop.

End of Mission

This concludes the team mission.

Appendix D: Demographic Questionnaire

1. Are you male or female?
2. Do you have any disability that would prevent you from completing the Team Mission as outlined in the instructions?
3. Please circle which age category that best describes you:
    a. Under 18 years of age
    b. 18 to 21
    c. 22 to 30
    d. 31 or older

Appendix E: Permission to use PSI Questionnaire

Agreement on Research Utilisation

between _____

Address of University and researcher:

WALDEN UNIVERSITY

650 S Exeter St, Baltimore, MD 21202

EDUARDO DIAZ

P.O. Box 4031, San Rafael, California 94913 USA

-hereinafter called "Designated User"-

and

Impart GmbH
c/o Universität Osnabrück
CUT Sedanstr. 61
D-49076 Osnabrück

-hereinafter called IMPART-

§1 Purpose

The Designated User is planning to implement the following TOP-Test module: PSI, PCSI

within the framework of the research project: Identifying Functional Characteristics that Influence Team Mission Outcomes research

at the Walden University

Objectives of the Research: Dissertation

The above-mentioned test procedures are based on the TOP/EOS methods and the Personality-System Interactive (PSI) Theory developed by Prof. Kuhl. The Designated User thus gains detailed insight into the construction as well as into the application, analysis and the interpretation of the functional scales and items, which form the basis of this procedure.

All the programmes and questionnaires, resp. the scale descriptions and test-relevant statistical data placed at the disposal of the Designated User, irrespective of whether in the form of a file, CD, online or hard copy, are purely for the implementation of the above-mentioned project and for his/her personal familiarisation pertaining to the project. It is NOT permitted to use the data for commercial purposes.

§2 Non-disclosure

In return, The Designated User pledges to implement the programmes, questionnaires, test-CDs and other TOP-documents **exclusively** for the above-mentioned project. Disclosure or authorisation for application by a third party as well as any type of commercial usage is therefore prohibited. If this agreement regarding the implementation of the documents purely for academic purposes is violated, the Designated User will immediately pay a contract penalty of 5.000 Euro in order to compensate IMPART for any economic damage it may incur. IMPART is entitled to claim for further damages. This agreement is valid beyond the stipulated framework of the research project.

The non-disclosure agreement also covers the test-person's personal data disclosed during the project and remains in force on completion of the research project.

In particular, it is prohibited for the undersigned to pass the data and the evaluation key as a hard copy, via any electronic data processing medium or online to a third party or to implement the data commercially.

(Place, Date)

21 May 2013

Designated User

IMPART GmbH
c/o Universität Osnabrück
Seminarstr. 20
D-49074 Osnabrück

Osnabrück 24.5.2013

IMPART GmbH
G. Fitz-Schulte, Managing Director

Appendix F: Research Participant's Bill of Rights

DOMINICAN UNIVERSITY of CALIFORNIA
RESEARCH PARTICIPANT'S BILL OF RIGHTS

Every person who is asked to be in a research study has the following rights:

To be told what the study is trying to find out;

To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice;

To be told about important risks, side effects or discomforts of the things that will happen to her/him;

To be told if s/he can expect any benefit from participating and, if so, what the benefits might be;

To be told what other choices s/he has and how they may be better or worse than being in the study;

To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study;

To be told what sort of medical treatment is available if any complications arise;

To refuse to participate at all before or after the study is stated without any adverse effects. If such a decision is made, it will not affect h/her rights to receive the care or privileges expected if s/he were not in the study.

To receive a copy of the signed and dated consent form;

To be free of pressure when considering whether s/he wishes to be in the study.

If you have questions about the research you may contact me at Eduardo.Diaz@Waldenu.edu. If you have further questions you may contact my research supervisor, Kizzy.Parks@Waldenu.edu or the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), which is concerned with protection of volunteers in research projects. You may reach the IRBPHS Office by calling (415) 257-1389 and leaving a voice-mail message, or FAX at (415) 257-0165, or by writing to IRBPHS, Office of Associate Vice President for Academic Affairs, Dominican University of California, 50 Acacia Avenue, San Rafael, CA 94901

Appendix G: E-mail Request to Dominican Faculty

DOMINICAN UNIVERSITY of CALIFORNIA
PRESENTATION REQUEST TO DOMINICAN FACULTY

RE: REQUEST FOR RESEARCH PRESENTATION

Mr. Eduardo Diaz, a doctoral student in Psychology at Walden University, has obtained approval from the Dominican Institutional Review Board for the Protection of Human Subjects to recruit Dominican students to participate in his dissertation research. The title of his study is *Identifying Functional Characteristics that Influence Team Mission Outcomes.* He is requesting the opportunity to conduct brief classroom presentations in order to provide students with information about his project.

Please contact Mr. Diaz at Eduardo.diaz@waldenu.edu if you are willing to allow him to present to your classes or if you would like more information about his study.

Appendix H: E-mail Request for Student Participation

DOMINICAN UNIVERSITY of CALIFORNIA
E-MAIL REQUEST FOR STUDENT PARTICIPATION

Attention Dominican University Students,

You are invited to participate in a research study focused on identifying functional characteristics that influence team mission outcomes. The research is inviting all Dominican University students who are currently enrolled in any university course.

This study is being conducted by researcher Eduardo Diaz, a doctoral student at Walden University. If you agree to be in this study, you will be asked to:

- Complete a demographic questionnaire that will take 1 to 2 minutes.
- Complete an online questionnaire that will identify functional characteristic strengths that you possess (approximately 25 minutes)
- Complete an assigned mission with two other randomly selected peers from your university that will take between 3 to 7 minutes.

This study is voluntary. Your decision to participate or not is entirely up to you.

Compensation:

Participants who complete the online questionnaire and team mission exercise will receive a $5 gift card good at Peet's Coffee and a copy of the study results.

For information go to: www.TeamCharacteristics.com or contact Eduardo Diaz on his cell phone at (707) 508-6970 or via e-mail at Eduardo.Diaz@Waldenu.edu.

If you have questions regarding your rights as a participant please contact Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. You may also contact Dr. Martha Nelson at Dominican University. She is the Head of the Institutional Review Board at Dominican University who can also discuss questions about this research with you. Dr. Nelson's phone number is 415-482-3547.

Appendix I: Bulletin Board Notice for Student Participation

DOMINICAN UNIVERSITY of CALIFORNIA
BULLETIN BOARD NOTICE FOR STUDENT PARTICIPATION

Attention Dominican University Students;

You are invited to participate in a research study focused on identifying functional characteristics that influence team mission outcomes. The research is inviting all Dominican University students who are currently enrolled in any university course. This study is being conducted by researcher Eduardo Diaz, a doctoral student at Walden University. If you agree to be in this study, you will be asked to:

- Complete a demographic questionnaire that will take 1 to 2 minutes.
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For information go to: www.TeamCharacteristics.com or contact Eduardo Diaz on his cell phone at (707) 508-6970 or via e-mail at Eduardo.Diaz@Waldenu.edu.

If you have questions regarding your rights as a participant please contact Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. You may also contact Dr. Martha Nelson at Dominican University. She is the Head of the Institutional Review Board at Dominican University who can also discuss questions about this research with you. Dr. Nelson's phone number is 415-482-3547.

Appendix J: Letter of Permission: Dominican Faculty

DOMINICAN UNIVERSITY of CALIFORNIA
LETTER OF PERMISSION TO DOMINICAN FACULTY

RE: PRESENTATION OF RESEARCH PROJECT

Dear Professor:

This letter confirms that you have read a brief description of my research project that examines student functional characteristics related to team mission outcomes and that I have your permission to recruit participants for this project from your class at a date and time convenient for you. I would only need 5-7 minutes of class time to summarize my project, ask for volunteers, and leave my materials.

This project is an important part of my doctoral research requirements as a Psychology major at Walden University. Dr. Kizzy Parks, Ph.D., Professor of Organizational Psychology, is supervising my research. If you have questions about the project you may contact me at 707-508-6970. If you have further questions you may contact Dr. Parks, at 321-795-1908, or the Institutional Review Board for the Protection of Human Subjects at (415) 485-3278.

Shortly after completion of my study, I will send you a brief summary of relevant findings and conclusions by e-mail.

If my request to contact the students in your class meets with your approval, please sign this letter on the line provided below, date, and return this letter to me as soon as possible. I will then contact you to arrange a convenient time for visiting your class.

Thanks for your assistance.

Sincerely,

Eduardo D. Diaz
PO Box 4031, San Rafael, CA 94913
Psychology Student Research, Walden University approval 12-06-13-0062638
Dominican University approval IRBPHP 10229

I agree with the above request

Signature: Date: E-mail:

Appendix K: Debriefing Script

1. Read the following statement to the participant:
    a. The team mission outcome was a success as a result of the data collected.
2. Read the script from Appendix A.
3. Hand the participant a $5 gift card to Peet's Coffee or Starbucks.
4. Read the following statement to the participant:
    a. Thank you for your contribution to the field of psychological inquiry.
    b. A summary of the findings will be sent to the e-mail address you provided on the consent form.