TRUST IN TEAM SETTINGS: A QUANTITATIVE ANALYSIS OF DIFFERENCES

BETWEEN VIRTUAL AND FACE-TO-FACE TEAMS

by

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Abstract

The purpose of this quantitative dissertation was to examine differences in the type of team (i.e. those meeting through face-to-face versus those meeting virtually) as it relates to their levels of trust. As an extension to this, the study looked at potential differences to trust as a result of generation and gender. Therefore, type of team, generation, and gender were the independent variables, while trust at the team level was the dependent variable. Costa and Anderson (2011) developed a survey measuring trust at the team level, and the instrument was utilized for the study. A stratified random sample of 252 members working in the United States was calculated as the appropriate sample size, which was divided into 126 members working in face-to-face environments and 126 members working in virtual (i.e. remote) environments. SurveyMonkey was utilized for the data collection. A three-way factorial analysis of variance (ANOVA) approach was utilized to test the hypotheses looking for statistically significant differences to trust. The three-way ANOVA contained various three-way, two-way, and one-way interactions that were tested to confirm or reject the hypotheses. After testing, one alternative hypothesis was accepted. The research found a statistically significant difference between group means in the level of trust based on type of team and gender. This two-way interaction was broken down into its components finding the simple main effect of type of team on trust for females statistically significant, and the simple main effect of gender on trust for face-to-face teams was also statistically significant. The results and connection to scholarly literature were thoroughly discussed, while directions for future research were provided to build on this research and advance the topic of team trust research.

Dedication

This dissertation is dedicated to a few key people that have helped create who I am. My mother and father – Maria and Michael – have given me everything in life. You were both present during those afternoon nights when I was working on homework and trying to finish the next school project during my childhood years. You were both present as I looked to make a decision on which colleges to apply to for undergrad, graduate school, and for this final step of the doctoral program. You traveled the world with me as I looked to attend college in Croatia, and you were supportive in helping me shape and carve out my own unique path. A path where I will continue taking one step after another to create a future that will hopefully allow me to change the world like you both still do to this day.

To my parents, I thank you both for everything. I understand that my journey thus far has taken 30 years of your time, and I promise to dedicate my future actions to continue making you both proud.

Lastly, to my grandfather, Petar Marin, this dissertation could not have happened without the character and values you taught. Whether it was in the home in Eastlake, on the porch in Bibinje, or anywhere your great life brought you, you had a monumental impact in shaping the man standing here today.

I dedicate this dissertation to all of you.

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There are many people that deserve acknowledgement for helping me on this journey. Those I dedicated the dissertation to instilled the strength in me to become a doctoral student and gave me confidence to finish the journey. The Capella staff and faculty has been very helpful in shaping my mindset to think on a higher level, as a scholar-practitioner that has grown so much from the MBA degree I came in with.

I would like to thank Dr. Edward Mason for being a terrific mentor. Dr. Mason was available to talk to me during each step of the process. The guidance and empowering words will never be forgotten. Starting the Capella journey, I knew that the mentor was an important piece of the doctoral puzzle. A mentor cannot do the work for the student, but the mentor can help create that bridge from the classroom's structured activities to the self-guided research a dissertation brings. Dr. Mason provided feedback along every step, and the final product is a dissertation I am very proud of. This process could not have happened without all of the assistance.

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CHAPTER 1. INTRODUCTION

The ability to understand the functioning of an office requires a manager to examine his or her staff, while also looking at key variables around the office. This dissertation focused on the organizational issues relating to trust and interactions in a team environment. Trust has been identified as a critical variable for team health and organizational sustainability (De Jong & Elfring, 2010; Braun, Peus, & Weisweiler, 2013; Lee, Gillespie, Mann, & Wearing, 2010; Wildman et al., 2012). Others have looked at differences in how team composition impacts the level of trust in a team (Crisp & Jarvenpaa, 2013; D'Souza & Colarelli, 2010; Penarroja, Orengo, Zornoza, & Hernandez, 2013; Rhoads, 2010). The dissertation looks to explain relationships between the dependent variable of trust and predictor variables of team type, generation, and gender.

The ability to understand trust in team settings was analyzed through the interplay between face-to-face and virtual teams. Virtual teams are teams consisting of individuals communicating through some computer-meditated method, and the structure of the team varies and is not confined to one geographical location (Townsend, DeMarie, & Hendrickson, 1998). The amount of research on virtual teams is still somewhat limited despite the teams being more and more used in the organizational environment. Gibson and Gibbs (2006) identified that 60% of employees work on some form of virtual team. The authors identified that 4.3% of the total workforce works solely in virtual environments with no face-to-face interaction. The number has grown by over two million since 2005. While the number has grown dramatically, the ability to explain how effective these teams are remains a challenge (Purvanova, 2014).

The background of the study introduces and explains the purpose of the research, leading to the statement of the research problem. The research problem leads to the research questions

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and hypotheses tested in the latter stages of this study. This dissertation provides information explaining the gap in the literature related to trust research, provides a comprehensive literature review, conducts a quantitative study testing various hypotheses, and analyzes the data to explain the scholarly and practical implications.

Background of the Study

Trust is a term that has been linked to many key organizational concepts, and it has been extensively studied. An absence of trust in the team setting reduces cooperation, productivity, and performance (Barczak, Lassk, & Mulki, 2010; Brahm & Kunze, 2012; Cheshin, Rafaeli, & Bos, 2011; Huang, Kahai, & Jestice, 2010; Mesmer-Magnus et al., 2011; Mockaitis et al., 2012; Sheng, Tian, & Chen, 2010; Tsai, Chi, Grandey, & Fung, 2012; Xue, Bradley, & Liang, 2011). Additionally, a lack of trust can cause poor performance, an increase in turnover, and higher levels of conflict (Ayoko, Konrad, & Boyle, 2012; Curseu & Schruijer, 2010; Gelfand et al., 2012; Han & Harms, 2010; Pazos, 2012). These measurable impacts are of critical importance, and a definition of trust is needed to explain how it can be measured.

Trust refers to the level with which team members live up to the expectations of their colleagues (Bradley et al., 2012; Braun et al., 2013; Tsai et al., 2012). Furthermore, it can be described as the likelihood an individual engages in some behavior, cooperates with colleagues, and believes that an action will be carried out successfully. Several recent and seminal authors have studied the term in the organizational context, linking trust as a key characteristic of successful team environments (Braun et al., 2013; Mach et al., 2010; Schaubroeck, Lam, & Peng, 2011; Verburg, Bosch-Sijtsema, & Vartiainen, 2013). With the rise of technology, authors have compared face-to-face teams to virtual teams (Crisp & Jarvenpaa, 2013; D'Souza & Colarelli, 2010; Penarroja et al., 2013; Rhoads, 2010). Face-to-face teams allow for visual cues

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(Cheshin et al., 2011; Martins, Gilson, & Maynard, 2004), relationship building (Rosen, Furst, & Blackburn, 2007), and immediate feedback (Mesmer-Magnus et al., 2011;). Furthermore, Polzer, Crisp, Jarvenpaa, and Kim (2006) and Daim et al. (2011) identified how the delegation of tasks and trust are harder to establish in virtual environments due to a lack of visual cues and timely feedback. Conversely, Berry (2011) Gressgard (2011), and Kimble (2011) found many benefits with virtual teams, such as helping to improve decision-making time, increasing collaboration, lowering facility costs, and allowing for a larger global reach in today's increasingly competitive environment. Despite the growing amount of literature relating to virtual teams, there has not been sufficient research to explain the impact technology and computer-mediated communications have on a team's ability to communicate and develop trust in one another (Olson & Olson, 2012; Palanski, Kahai, & Yammarino, 2011; Sarker, Ahuja, Sarker, & Kirkeby, 2011).

Recent studies have also examined gender and generational impacts to trust in a team setting. Specifically, Boiney (2001) found women to value and trust more than men, while men focused on status over communication in the organizational study. Furumo and Pearson (2007) found women thrive better in virtual teams and show higher levels of trust than males, and this built off of previous work that found men to focus on status over relationships and trust (Boiney, 2001). Similarly, generational differences can cause for differences in how teams function. Carver and Candela (2008) identified how four generations, Traditional, Baby Boomer, Generation X, and Generation Y, commonly used when the variable of age becomes categorical. Hahn (2011) identified Traditional and Baby Boomer generations prefer face-to-face interactions at the office to foster trust, while Generations X and Y contain a higher degree of flexibility in team structure. Consequently, these factors, along with the type of team (i.e. face-to-face or

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virtual), serve as variables in order to address and fill the gap that currently exists in identifying and quantifying the set of variables that interact with trust in the organizational setting.

Statement of the Problem

The study expands on current management theories relating to trust and team dynamics. Previous studies have primarily focused on student populations, whereas few studies look at specific employee differences inspiring trust and collaboration (Purvanova & Bono, 2009; Rack, Ellwart, Hertel, & Konradt, 2011; Sarker et al., 2011; Xue et al., 2011). The seminal research on virtual teams continues to be lacking due to the infancy of the topic and due to the untested assumptions that virtual teams operate in the same way as face-to-face teams (Rhoads, 2010). In summary, the research problem to be explored looked at differences in trust based on type of team (i.e. face-to-face or virtual); as an extension to this problem, the study explored interactions with generation and gender.

Purpose of the Research

The purpose of this study examined differences in the type of team (i.e. face-to-face and virtual teams) as it relates to their levels of trust. Specifically, the purpose identified the importance of trust in a team setting and quantified the differences between the two types of teams, while additionally examining interactions with gender and generation. The research focused on business organizations and addressed the area of currently lightly studied subjects and their effects on trust in different organizational group settings. Most prior studies looked at factors relating to team dynamics, such as demographics (e.g. gender or generation), but these studies occurred in a laboratory environment, as opposed to an organizational setting (Jarvenpaa, 1999; Purvanova & Bono, 2009; Rack et al., 2011; Sarker et al., 2011; Xue et al., 2011).

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Another objective of the study was to examine the capabilities and limitations of virtual teams. Specifically, Daim et al. (2012) and Purvanova (2014) found communication delays, time zone differences, and a lack of face-to-face contact to negatively impact the cohesiveness and trust amongst the team members. Chang et al., (2013) identified how communication and the coordination of tasks are more difficult in virtual environments versus face-to-face environments due to lower levels of trust and cognition-gained experiences. Rhoads (2010) identified how an absence of periodic face-to-face meetings negatively impacts the level of communication and trust in the team environment. Thus, the main objective and purpose of the study explored the differences between face-to-face and virtual teams, the levels of trust in these teams, and other factors that relate to the theoretical perspective of a team's social cognitive ability.

Rationale

Members in the team setting were surveyed to empirically test the effect the predictor (independent) variables have on the outcome variable of trust. The level of trust can positively or negatively impact a team's performance and productivity (Huang et al., 2010; Sheng et al., 2010). In a rapidly changing global environment, efficiency is important and conflict and poorly optimized team configurations can slow one's progress, which can negatively impact a firm's standing in the industry. The ability to understand trust with the team being the unit of analysis is a missing layer to the overall study of trust in organizations (Costa & Anderson, 2011; Serva et al., 2005). Variables interacting with trust in the team setting were examined to look at ways trust can be impacted in today's sociocultural and organizational environments.

The use of surveys was utilized to assess the impacts to trust helping to differentiate between the various constructs in the organizational environment. The trust instrument utilized in this study is based off the work of seminal authors who defined trust in the organizational setting

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(Cook & Wall, 1980; Dirks & Ferrin, 1999; McAllister, 1995). The validated instrument consists of 21 questions scored on a Likert scale. Each of the questions looks at one of the main components of trust aggregated into a team trust instrument. The high reliability and generalizability of the instrument allow for research to be conducted in similar organizational team environments (Costa & Anderson, 2011).

Research Questions

The scholarly information currently available on trust in team settings offers gaps for the researcher. The measurable variable of trust was examined by shedding light on potential interactions with three predictor variables - type of team (face-to-face or virtual), generation, and gender. The research questions below summarize the key issues the dissertation addressed. Following the creation of the research question, hypotheses were tested.

Omnibus Research Question: What is the effect on the level of trust based on the type of team setting, generation, and gender?

Subquestions:

    1. What is the effect on the level of trust based on the type of team setting and generation?

    2. What is the effect on the level of trust based on the type of team setting and gender?

    3. What is the effect on the level of trust based on generation and gender?

    4. What is the effect on the level of trust based on the type of team setting?

    5. What is the effect on the level of trust based on generation?

    6. What is the effect on the level of trust based on gender?

Significance of the Study

The proposed study adds to the emerging field of research focusing on trust in teams. An understanding of the value of face-to-face meetings for trust development, along with the ability

to foster relationships in asynchronous environments, helps scholars and practitioners gain a better understanding of organizational theory dealing with one's group setting. The targeted population provides organizational relevance into trust theory and social cognitive theory, which deals with the social environment shaping one's experiences and future thought processes. This fills a gap in studying actual organizational teams to test dynamics between team members located outside of a laboratory (i.e. student) setting (Purvanova & Bono, 2009; Rack et al., 2011; Sarker et al., 2011; Xue et al., 2011).

The study looks to expand on prior research, fill a gap in the literature relating to trust in different groups, and make a contribution to the body of knowledge in the specialization of General Business Management. The growth of web-based communication networks and virtual team use across organizations provides researchers with an opportunity to examine the most effective strategy for the environment. The study extends the prior research relating to the lack of social cues in the virtual team setting (Cheshin et al., 2011) and the scholarly implications of how this can increase conflict and miscommunication (Ayoko et al., 2012; Curseu & Schruijer, 2010; Gelfand et al., 2012; Han & Harms, 2010; Pazos, 2012). This emphasis on technology and technology-driven processes, together with impacts on group trust, was the essence of this study.

Definition of Terms

The data collection instrument examines the variable of team trust (Costa & Anderson, 2011). Trust was defined as the "general willingness to trust others" (Costa & Anderson, 2011, p. 124), consisting of perceived trustworthiness, cooperative behaviors, and monitoring behaviors. Perceived trustworthiness is determined when others act according to their stated word and remain honest in their interactions, while cooperative behaviors describe the ability to engage with others and rely on them to accomplish an action. Costa and Anderson (2011) identified this

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reliance to include communicating openly and allowing one to be vulnerable to be influenced by another. Monitoring behaviors differ from the above quality because it describes a surveillance behavior (Costa & Anderson, 2011). The authors identified how this variable is commonly tied to a lack of trust.

The nominal variable of type of team consisted of two choices: face-to-face team or virtual team. Townsend et al. (1998) defined virtual teams as, "groups of geographically and/or organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task" (p. 17). Face-to-face teams consist of a group of members meeting on a periodic basis, in one location. These team structures have been around since the inception of organizational research and remain the most common type of team in organizational structures (Jarvenpaa & Leidner, 1999; Rhoads, 2010). Face-to-face teams consist of co-located members having worked together before. Crisp & Jarvenpaa (2013) and Purvanova & Bono (2009) looked at the differences between the types of teams. This classification is utilized due to the large amount of studies comparing face-to-face and virtual teams (D'Souza & Colarelli, 2010; Penarroja et al., 2013; Rhoads, 2010).

Carver and Candela (2008) broke down the age construct to four categories. Traditional, Baby Boomer, Generation X, and Generation Y are most commonly utilized as the four main age (i.e. generational) categories. Carver and Candela (2008) classified the veteran (i.e. traditional) generation as the classification for those born from 1925 to 1942, but for the purposes of this dissertation, the category was not utilized due to the sample including only individuals aged 18 to 64. For the purposes of the study, three generational categories were utilized due to the sampling criteria utilized in the study and age groups available in the SurveyMonkey set. For the

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purposes of the study, the three age groups of 18 to 29, 30 to 44, and 45 to 64 were utilized for the study. These age groups closely represent the Generation Y, Generation X, and Baby Boomer categorical age taxonomies. Therefore, the ordinal variable of generation is a categorical variable consisting of three categories.

The nominal variable of gender was examined as differences between males and females (Boiney, 2001).

<center>**Assumptions and Limitations**</center>

There are three main categories of assumptions. Theoretical and philosophical assumptions deal with the selected management theory chosen for the study. Topics assumptions relate to the approved topic area of trust and virtual team research. Finally, methodological assumptions describe the specific research design assumptions unique to the dissertation and chosen approach. Each assumption – theoretical, topical, and methodological – will be examined in detail below.

Theoretical and Philosophical Assumptions

The theoretical assumptions for the dissertation follow the objectivist lens. The structure of the study follows the key epistemological assumptions that explain knowledge as being objective, while also being quantifiable. Furthermore, the assumption is that the work is to test and expand scientific theory. For the study, various hypotheses were tested and theory was advanced. Through a quantitative method, there are many theoretical assumptions associated with social cognitive theory and trust. Hoover, Giambatista, and Belkin (2012) identified five main assumptions with the theory, stating: people learn by interacting and observing others, learning does not necessarily result in a change in behavior, behavior becomes self-regulated, and reinforcement and punishment have indirect influences on one's behavior and learning

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ability. These build off the seminal work of Bandura (1986). The lens through which the study occurs followed with the theoretical assumptions of social cognitive theory. The instrument chosen for this study to monitor the trust variable is assumed to test for trust in team settings, which occur through social cognitive observations members make on one another. The validated instrument showed high construct validity, reliability, and generalizability to test for predictors to trust across multiple organizational settings (Costa & Anderson, 2011).

Topical Assumptions

The topical assumptions are also referred to as specialization assumptions. These refer to Capella University's policies regarding what is acceptable for the dissertation. During the colloquia, guidelines were provided on acceptable topics for learners' specializations. Virtual teams were an approved topic area for the learner's specialization. Similarly, the approved theories consisted of a listing of applicable management theories, and social cognitive theory was chosen as it best matched the topic and goals of the study. The topical criteria were carefully selected through advice from mentor, faculty, and research.

Methodological Assumptions

The methodological assumptions relate to the quantitative criteria utilized throughout the study. These relate to the specific validated questionnaire chosen for the dissertation and assumptions of the model chosen for the dissertation. Costa and Anderson (2011) developed a 21-item trust instrument that looked at trust at the team level. The assumptions are that the instrument utilized to test for interactions on trust in the chosen sample (i.e. team members) is applicable for the sample. For the dissertation, face-to-face team members and virtual team members are the selected sample members. The trust instrument has been validated and utilized in both face-to-face and virtual environments.

Further methodological assumptions relate to the order of data for the dependent variable, normality, homogeneity of variance, and no multicollinearity. For the specific study, the sample size was calculated utilizing the G*Power software. A random sample was utilized, and measurement order of the variables follows the recommendations and requirements for a factorial ANOVA study. The factorial ANOVA is the best methodological approach to test for the many interactions and factors that influence trust in a team setting (Mayer, Davis, and Schoorman, 1995).

Limitations

The dissertation contains several limitations that are a function of the research design and study's constraints on the resources available. This includes a limitation related to other variables that could impact trust levels in the organization. Examples of these variables include cultural and geographical differences that could impact the trust variable. However, due to the cost and accessibility of such a sample, the choice to address a slightly more targeted sample was made through the SurveyMonkey service. Furthermore, the study's choice to include participants in the SurveyMonkey database limits the filters that can be placed to pinpoint industry-level considerations due to a too small of a sample being available. Lastly, the team members that have been selected for the survey are those located in the United States.

Other limitations relate to time and methodological approach. Authors have found differences in trust levels through different phases of a team's life. It was outside of the dissertation's scope to follow teams for an extended period of time. Moreover, qualitative methods or a mixed-method study could test for behavioral and attitudinal observations that employees would make on perceptions of trust. The quantitative method chosen for the study

was chosen strategically to better portray generalizability, but a qualitative approach could prove useful given ample resources and research questions that warrant such an approach.

Theoretical Framework

The theoretical framework used for the study is social cognitive theory. Social cognitive theory describes the change in behavior that occurs due to one's interaction with peers and observations they make in their surroundings. Bandura (1986) was the first author to name the theory that contains deep psychological roots, and social cognitive theory has since been used in the study of management and team settings. Bandura has used the theory to explain motivation and organizational behavior. The author found a person's behavior to be shaped by the interactions with their social network, and if the outcome expectations are poor, this negatively impacts the cognitive forces driving one's behavior. Moreover, Mesmer-Magnus et al. (2011) found trust as a key factor in team settings that creates an atmosphere for knowledge sharing. Kauppila, Rajala, and Jyrama (2011) found knowledge sharing to be a more difficult activity to achieve in virtual environments than face-to-face environments.

A key component of social cognitive theory is the power of relationships. Bandura (1986) identified social cognitive theory as a triadic reciprocal relationship between person, environment, and behavior. The personal component of this is where efficacy comes into play, and one of the author's key findings was that collective cognition was more influential than any individual abilities. This refers to the team's collective ability to move an idea forward. The ability to share in a team environment was described as a key component of how well the team performed. Bandura (1986) found communication and trust as key components of a team's collective strength. Therefore, the role of social cognitive theory in the team was explored to examine differences between the social environments members work and communicate in.

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For the past three decades, social cognitive theory has been looked at as new organizational structures are formed. One of these structures is the emergence of virtual teams. Social cognitive theory has been utilized to help examine the differences in virtual teams to the more traditional face-to-face environment (Staples & Webster, 2007). Social cognitive theory focuses on how one's observations are valuable to help team members learn about the environment. The concern for virtual team researchers is that a lack of physical presence does not allow team member to make the same fruitful observations as in the face-to-face environment (Purvanova, 2014). A lack of understanding (i.e. termed cognition) can impact how individuals act in the environment, choose to engage in risk-taking behaviors, and develop trust. Social cognitive theory was utilized to understand how interactions and team formations potentially interact with trust in groups.

Organization for the Remainder of the Study

The dissertation is broken up into a few key components. First, information relating to the background of knowledge that outlines the purpose and research problem was examined, along with a rationale as to why this organizational issue contains a need to be addressed. A detailed literature review follows looking at the foundation of research relating to trust, trust in team settings, and other variables that may have an impact in changing trust levels in different team environments. The literature review examines the lens of social cognitive theory, a theory through which the study is examined. The theory explains how one's observations and cognitive understandings explain one's actions (Staples & Webster, 2007). Aside from the theoretical definitions and analysis of information, key studies were examined to show how the research on trust and type of teams has evolved in the past few decades.

Following the literature review, the research design was structured to answer key research questions outlined from the research problem on inconsistencies in explaining trust levels in a

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team setting. The dissertation focused on utilizing quantitative methods to test for interactions on the trust variable. Quantitative methods were selected based on the seminal literature and objectivist perspective where the ability to generalize to other settings is possible if the study possesses sufficient external validity and sufficiently advances theory. A sample of virtual and face-to-face employees aged 18 to 64 were surveyed through SurveyMonkey. A questionnaire was utilized that tests for levels of trust; the validated instrument consists of 21 questions (Costa & Anderson, 2011). Given the study is looking at potential interactions to the level of trust, a factorial analysis was utilized. Specifically, a three-way ANOVA was selected to test for difference from group means between the independent and dependent variables. Factorial analysis is useful for testing each factor's effects on the dependent variable, while also simultaneously testing for interactions between individual factors (i.e. interactions between the independent variables).

The dissertation concludes with key findings and implications and suggested avenues for future research. The ability for the study to advance scientific theory can move the needle on trust and virtual team literature. A gap exists in studies failing to adequately measure effects in organizational settings, meaning that many studies utilize students in laboratory settings as the primary focus. This limits the generalizability and applicability to the organizational environment (Purvanova, 2014). The dissertation focuses on adding to existing theory, while providing a specific focus in testing for interactions in an actual organizational environment. A detailed literature review follows in Chapter 2.

CHAPTER 2. LITERATURE REVIEW

The concepts outlined in this literature review present an analysis and presentation of the seminal and recent literature on the topic of trust in team settings. The review synthesizes findings from authors, outline the avenues taken in existing research, and describe the foundation for the study. Interactions to and with trust are the focus of the dissertation. Research first looked at the seminal and recent studies examining trust in the organization environment. After the theoretical foundation of trust is explored, the research examined whether interactions exist with the type of team selected and trust, and subsequent interactions examine the role generation and gender may have. The theoretical perspective of social cognitive theory was utilized to examine the motivations and lens through which team members make decisions.

Trust in the Organizational Environment

Trust is an important variable in organizational studies tied to many positive outcomes. Trust has been tied directly to cooperation in a variety of studies spanning many functional areas (Chang, Chuang, & Chao, 2011; Costa & Anderson, 2011; Crisp & Jarvenpaa, 2013; Jarvenpaa & Leidner, 1999; Lewis & Weigert, 1985; Pinjani & Palvia, 2013; Purvanova, 2014; Purvanova & Bono, 2009). Trust has been shown to improve learning and team communication in various group settings (Barczak et al., 2010; Brahm & Kunze, 2012; Cheshin et al., 2011; Mockaitis et al., 2012). The level of trust in the organization encompasses the relationships being had across various functional areas. Similarly, the level of trust in the leader can make the employees more motivated and trigger higher sales and lower turnover (Purvanova & Bono, 2009). Trust increases information-sharing activities (Mesmer-Magnus et al., 2011; Tsai et al., 2012; Xue et al., 2011) and increases chances for performance (Braun et al., 2013; Schaubroeck et al., 2011; Verburg et al., 2013).

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Organizations are more flexible and dynamic than they have ever been. Competition and globalization have forced organizations to abandon standard work structures and to explore a more flexible, dynamic, and modern structure. Virtual teams are now being used in place of face-to-face teams (Berry, 2011; Gressgard, 2011; Kimble, 2011; Maynard, Mathieu, Rapp, & Gilson, 2012; Verburg et al., 2013), while individuals are being trained less and expected to jump across functional areas (Purvanova, 2014). The emergence of cross-cultural teams and negotiations has added new considerations for the firm. Robertson, Gockel, and Brauner, (2012) found trust to help facilitate negotiations and bargaining. This is important in a changing global marketplace where compromises might be needed and/or differences exist. The role that trust can play in facilitating the communication between parties can help an organization more efficiently and effectively reach an outcomes that is suitable to their interests and to the interests of their counterparts. One of the biggest barriers to team effectiveness is a lack of trust (Costa & Anderson, 2011).

A lack of trust reduces communication and transparency. Without effective communication and transparency, a company is less inclined to respond to changing market conditions (Crisp & Jarvenpaa, 2013). A lower level of trust can increase costs for the firm due to new talent acquisition, slow a firm's competitive advantage, and lower overall morale (Barnwell et al., 2014; Braun et al., 2013; Fulmer & Gelfand, 2012; He, 2012).

The concept of trust is a generic term utilized throughout life situations and organizational situations. The term was narrowed here to properly describe organizational trust that occurs between members in a team setting. Kramer (1999) has called the goal of defining trust an elusive goal. However, the seminal research that has been conducted to properly define trust has provided themes on the key constructs included in the multidimensional variable. The origins of

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trust are defined below, and its implication toward businesses and importance are examined through a comprehensive review of the literature.

Defining Trust

Defining trust is difficult because the term spans many areas in the lexicon. Trust is a noun and a verb, a belief (Lindskold, 1978), and a personality trait (Rotter, 1980). However, the concept of trust has been described as a multidimensional variable by many authors (Costa & Anderson, 2011). Authors differ in how they define the variable, but these differences do share common threads helping to explain the term. The main dimensions of the variable refer to the psychological, social, and cognitive elements of the term (Lewis & Weigert, 1985). Psychological elements refer to the propensity to trust (Costa & Anderson, 2011), benevolence, and overall feelings. The cognitive elements refer to the dependability and predictability that can be assessed through past history.

One of the first authors to define trust looked at the potential for positive and negative outcomes associated with the term. Trust can be looked at as a behavior occurring when a positive or negative consequence can occur that depends on the actions of another individual. Lewis and Weigert (1984) defined trust as an "undertaking of a risky course of action on the confident expectation that all persons involved in the action will act competently and dutifully" (p. 971). Moreover, the authors noticed negative outcomes have a more profound impact on the situation than do positive ones. Similarly, Pinjani & Palvia (2013) describe trust as an expectation held by one or more individuals in which a statement can be relied on. Moreover, Clark et al. (2010) defines trust as the expectation groups of people or individuals whom one is in contact with will act in a way positively related to one's well being. Simply, it is a faith or

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positive expectation individuals have in one another or about a process in which they are actively participating (Cook & Wall, 1980).

The concept of trust in one another is a newer way to look at one critical aspect of trust in organizational settings. There are various ways to examine trust in the organizational setting, such as organizational trust (i.e. trust in the organization), intra-organizational trust (i.e. trust in other organizations), or interpersonal trust (Hsu & Chang, 2014). Interpersonal trust is a concept that explains how members interact with one another. For the purposes of this study where the unit of analysis is the group, the study of interpersonal trust focused on the levels of trust in the team. Interpersonal trust was initially identified as a series of considerations based on face-to-face communications (Muethel, Siebdrat, & Hoegl, 2012). However, the emergence of technology-facilitated teams has transformed the way individuals interact. Crisp and Jarvenpaa (2013) and others authors focused on virtual teams examined the role of trust between teams and how employees view one another in an environment where face-to-face interactions might not be possible.

The conceptualization of interpersonal trust between groups is the focus in this dissertation, given the trust that was examined is the trust that occurs between parties. Dirks (1999) defined interpersonal trust "as a belief about the dependability of the partner and the extent to which the partner cares about the group's interests" (p. 4). The ability to function in a team setting is important given the interplay between members and functions that need to be accomplished. An absence of interpersonal trust means a distrust and lack of dependability toward the group's interests.

Trust was chosen as the key variable for the study due to its complex relationship with the optimal functioning of a team. In order for a team to operate effectively, a presence of trust helps

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garner respect, confidence, cooperation, and helps to increase competency (Brahm & Kunze, 2012; Cheshin et al., 2011; Mockaitis et al., 2012). Costa and Anderson (2011) stated trust between team members can be conceptualized as a latent construct based on the individual's own propensity to trust others and on the perceived trustworthiness of the other team members, which then leads to behaviors of cooperation and monitoring between team members" (p. 123). Each factor is briefly described below on its contribution to trust and how the factors begin to help explain trust in team settings.

Propensity to Trust

Propensity to trust can be referred to as the general willingness to trust others. Chang et al. (2011) and Mayer et al. (1995) identified that people from different demographic backgrounds, cultural experiences, and personalities will differ in their general propensity to trust. The authors first described the propensity to trust. The authors identified this factor of trust (i.e. the general willingness to trust) as a personality-based form that can more quickly explain trust, as opposed to trust that is garnered over the history of past experiences.

The willingness to trust is a situation seen in organizations that are dynamic. Chiu & Ng (2015) identified that the propensity to trust is the most relevant trust factor in situations where individuals are not too familiar with each other. This can explain trust in situations in new settings, such as new team settings or scenarios that involve fast-moving and changing landscapes. The authors identified that the propensity to trust is most important in cross-functional teams and reorganizations of team structures. Costa and Anderson (2011) utilized the propensity to trust as one of the key factors in the trust instrument utilized in this study.

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Perceived Trustworthiness

Lewis and Weigert (1985) explained trustworthiness as a cognitive process where individuals choose who will be trusted "in which respects and under which circumstances, and we based the choice on what we take to be good reasons, constituting evidence of trustworthiness" (p. 970). Braun, Peus, and Weisweiler and (2013) found that trustworthiness inspires trust and is central to understanding the term. Trustworthiness helps describe the probability that the trustee possesses the skills needed to act in a desired fashion.

The other two components of trust that make up the term include cooperative behaviors and monitoring behaviors. Cooperative behaviors refer to the overall willingness to be vulnerable to others, despite not being able to control their actions. Cooperative behaviors include relying on others, being open with communication, and acting in a collaborative and cooperative way (Costa & Anderson, 2011). Monitoring behaviors include surveillance and checking to exert a level of control over an individual or group of individuals. Both of these factors are important in comprehensively conceptualizing trust and helping establish the proper causes to the variable.

Importance and Effects of Trust

Trust has been shown to be a cause and effect type of variable (Seppanen, Blomqvist, & Sundqvist, 2007). Moreover, there are variables that have been shown to predict trust, and trust is also a predictor for various outcomes. Typical outcomes seen with the presence of trust have been shown to be a reduction in risk, increased performance, increased cooperation, and a reduction in transaction costs (Chang, Chuang, & Chao, 2011; Schaubroeck et al., 2011).

Understanding the effect trust can have on the team and individual is important for understanding the importance of the variable. The ability to understand its cause is of great importance for the firm. Some of the most common predictors of trust have been shown to be

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type of team (Crisp & Jarvenpaa, 2013; Jarvenpaa & Leidner, 1999; Purvanova & Bono, 2009), generational differences (Anantatmula & Shrivastav, 2012; Hahn, 2011; Twenge & Campbell, 2008), gender (Boiney, 2001), familiarity with past behavior (Gulati & Sytch, 2008), leadership styles (Purvanova & Bono, 2009), team size (Jarvenpaa & Leidner, 1999; Purvanova & Bono, 2009), and culture (Daim et al., 2012; Pinjani & Palvaia, 2013). For this study, the focus was to examine the type of team members engage in (i.e. face-to-face or virtual teams) and to then analyze additional interactions that may exist between generation and gender.

Effects of Trust

Trust has been shown to impact attitudes (e.g. satisfaction), behaviors (e.g. cooperation), and outcomes (e.g. performance) in the workplace (Braun et al., 2013; Mach et al., 2010; Schaubroeck et al., 2011; Verburg et al., 2013). These are just some of the effects trust has on the individual and/or firm.

A high level of trust has been shown to positively impact job satisfaction. The term job satisfaction refers to the attitude and extent to which people favorably or unfavorably view their job (Barnwell et al., 2014). This attitudinal response to one's organization can explain how happy individuals are at their job. Dirks and Ferrin (2001) found that trust has a direct positive impact on job satisfaction, and the authors followed up with a subsequent paper to analyze 34 additional studies finding the same impact trust has on job satisfaction (Dirks & Ferrin, 2002). Seminal authors first introduced the concept of linking trust to increased job satisfaction. Rich (1997) surveyed 183 employee-manager groups, and the author found a significant correlation between the level of trust an employee has and the level of job satisfaction.

Trust is a lubricant to increase the level of communication between individuals, teams, and firms. One of the early effects of trust studied by authors was the direct link to increased

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cooperation Chang, Chuang, and Chao (2011) showed trust increasing the cooperation between individuals. Berry (2011) and Kimble (2011) recently examined the link trust has in teams that are forming due to the rapids changes caused by increased technology. The dynamic global marketplace brings with it teams that are built for shorter durations. Gulati and Sytch (2008) found that familiarity is a component for building trust.

Open communication is another result when trust levels are high. This open communication leads to information-sharing activities. By effectively sharing information with colleagues, individuals can more efficiently accomplish tasks, transfer knowledge to one another, and problem solve to reach a desired outcome (Chang, Chuang, & Chao, 2011). In team settings, delegation of tasks often requires that individuals work independently on their individual parts and then come together to help one another put together a project, proposal, or strategy on how to proceed. A low level of information sharing creates a level of distrust that is not conducive to overall team performance and cooperation (Tsai et al., 2012).

Loyalty employees possess towards the company can take many forms. One form is termed organizational commitment. Top, Tarcan, Tekingunduz, and Hikmet (2013) found trust to positively impact one's level of organizational commitment. In a rapidly changing environment with more unknowns, a high turnover creates additional managerial concerns and can stall the progress seen in individual and team tasks. A greater commitment to the organization brings with it positive factors, such as stability and reduced conflict.

Trust has been shown to be a critical factor in team performance Mesmer-Magnus et al. (2011) found that information sharing leads to better group performance. Similarly, Brahm and Kunze (2012) found trust to circumvent a lack of communication that would limit the amount of productive ideas and opinions leading to innovation and productivity. Aside from the ideas, a

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lower level of trust negatively impacts the collaborative ability team members show towards one another (Cheshin et al., 2011; Lewis & Weigert, 1985; Mockaitis et al., 2012).

There are two types of performance that can be tied to trust. The first is a team performance classification that refers to trust leading to a positive outcome (De Jong & Elfring, 2010). The next is a more individualized classification of performance that can explain one's sales and job performance. Various seminal studies have found an increase in team performance due to a high level of trust (Dirks, 1999; Dirks & Ferrin, 2001; Jarvenpaa & Leidner, 1999). The consensus between these authors was that trust within the team had a positive impact on the level of team performance. The inconclusive findings exist when discussing how to best raise the level of trust in organizations within team environments.

Formation of Trust in Organizational Settings

Trust is not consistent across all organizational settings. Better stated, trust is not a homogenous variable that is equal across groups of individuals and teams (Crisp & Jarvenpaa, 2013; Gulati & Sytch, 2008; Tienari and Piekkari, 2011). Gulati & Sytch (2008) explained that despite an increasing amount of literature related to trust in organizational settings, there remains a gap in explaining how trust is formed. Simply put, authors are still struggling to figure out and prove through research where trust comes from.

Recent studies have also started to examine virtual team effectiveness and trust impacts based on team composition and demographic considerations. Gender, race, personality, and generation have all been utilized to test for interactions these variables might have (Martins & Shalley, 2011; Mockaitis, Rose, & Zettinig, 2012). Other authors looked at team history (Bierly, Stark, & Kessler, 2009). Purvanova and Bono (2009) examined the role of transformational leadership on how effective teams are at performing and collaborating. Aside from the effects of

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leadership, the impacts of culture on trust have also been studied to test how culture impacts an individual's experience in an organizational setting. Lowry, Zhang, Zhou, and Fu (2010) examined diverse teams consisting of members from the United States and China versus less diverse (i.e. homogenous teams) and found no significant differences in trust formation between these types of teams. Others author found virtual teams to create a more collectivistic culture where team member opinions are valued more than during typical face-to-face discussions (Au & Marks, 2012).

While leadership, culture, and other demographic considerations are importance and of interest, the focus of this dissertation explores three potential predictors of trust and how they interact with one another. The literature on virtual teams, generational differences, and gender was analyzed as to how authors have positioned the variables to describe potential differences on their level of trust. Each of these topics is now explored with a presentation of seminal literature, recent studies, and relationship to trust.

Virtual and Face-to-Face Teams

The origins and implications of trust were discussed in great detail, and one of the potential variables that interact and cause variations in trust levels is the type of team. The type of team an individual chooses in this dissertation refers to either traditional (i.e. face-to-face) or virtual teams. Compared to 10 years ago when 27% of the workforce utilized virtual teams, 71% utilizes these technology-assisted structures now (Purvanova, 2014). The rise of virtual teams is important to understand because it has opened up the possibilities for how companies structure their workforce. The shift away from solely using face-to-face teams occurs for a variety of reasons. Griffith, Sawyer, and Neale (2003) discussed how competitive global markets require a more adaptive structure to be utilized. Townsend et al. (1998) discussed how a geographically

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diverse team that is can communicate through computer-mediated methods is better equipped to meet the demands of today's economy. Given the cost savings seen with virtual teams and trends in the global marketplace, their use continues to grow (Pinjani & Palvia, 2013). Given this, it is important to understand the key differences between face-to-face and virtual teams and their ability to impact the level of trust.

Defining Face-to-Face and Virtual Teams

The two main types of teams differ in their meaning, composition, and ways of getting the task accomplished. Face-to-face teams consist of individuals that meet on a periodic basis, in one location, at the same time. This has been the most common type of team in organizational structures (Jarvenpaa & Leidner, 1999). Face-to-face teams consist of co-located members that have worked together before. The communication between members happens instantaneously and consists of verbal and nonverbal cues.

Alternatively, virtual teams utilize any combination of information technologies and telecommunications to accomplish tasks with other individuals working on a shared purpose not dependent on space or time. Duarte and Snyder (2005) defined them by stating, "virtual teams, unlike traditional ones, however, must accomplish this by working across distance, time, and/or organizational boundaries and by using technology to facilitate communication and collaboration" (p. 5). The use of technology and computer-mediated communications is the main difference in how these teams are structured (Purvanova, 2014). The rise of technology in the organizational space has innovated and transformed how common business practices are carried out. Rhoads (2010) identified telecommuting as one of the first ways employees were able to break the mold and help form non-traditional organizations. Virtual teams allow employees to

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work together where their office is not confined to a particular geographical space (Crisp & Jarvenpaa, 2013; D'Souza & Colarelli, 2010; Townsend et al., 1998).

As opposed to face-to-face teams, members in virtual environments have usually not worked together before, and the course of a project consists of more task-oriented communications and behaviors versus the social component seen in face-to-face teams (D'Souza & Colarelli, 2010; Penarroja et al., 2013; Rhoads, 2010). Gressgard (2011) identified that organizations are moving away from individualized tasks and more towards team-based structures. The group dynamics associated with this move and resulting interpersonal characteristics and their implications to trust are of concern to managers (Costa & Anderson, 2011). Katzenback and Smith (1993) identified teams as a basic unit of performance that brings together the experience, insights, and skills of various individuals. The various insights can bring powerful conclusions that help shape a new finding, and teams can be comprised of individuals from around the world. However, Jarvenpaa, Knoll, and Leidner (1998) identified conflict and issues that might arise in teams that needs to be managed in order for a team to continue in a positive direction. Tienari and Piekkari (2011) found teams with differences can perform at the highest levels, but a key indicator required for this to happen is a key level of trust. The duration of a relationship and team structure have been hypothesized to lead to higher levels of trust in a team setting (Gulati & Sytch, 2008). Each of these factors is important to analyze and can impact trust and team health in a variety of ways.

Benefits of Virtual Teams

These new computer-mediated or virtual teams have transformed the way employees work in many companies across the globe. Virtual teams allow companies and employees to reap benefits when such teams are utilized. However, various drawbacks are associated with virtual

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teams making them unattractive to companies. Yahoo was a company that believed their workforce was more valuable when meeting in the face-to-face setting, so CEO Marissa Mayer disbanded virtual teams in 2013 (Schrage, 2013). Conversely, other companies have seen great success relying on their use of virtual teams. "For example, Boeing's SLICE rocket engine was created by a virtual team. Only five members of this team met face-to-face, and did this only once; all other communication between Boeing's experts and outside experts contracted to work on this project was carries out entirely virtually" (Purvanova, 2014, p. 5). The reasons why some companies disband the teams, while others embrace the teams varies and is analyzed through a review of the recent and seminal literature below, starting with various benefits - flexibility, cultural talent pool, enhanced productivity, cost savings and meeting efficiency.

Many employees in today's workforce require a more flexible lifestyle. Some individuals may be required to live in areas preventing them from relocating to a corporate headquarters. Others may have obligations with children and family (Boiney, 2001). Generational differences, such as those seen in the millennial generation, bring with it a different outlook in what was the standard nine-to-five work schedule. Each of these factors makes virtual teams more flexible and a better fit for the employee pool that may otherwise be unavailable to the firm.

A company that has global operations but only parent-country staffing may limit itself from understanding local market conditions as fully as competitors. Gibson and Cohen (2003) identified the benefit such diversity brings to executing on local information, resources, and contacts that can help a firm gain a competitive advantage and save on cost. The ability to harness local employees also enables a company to market its brand more efficiently as a friendly employer to the local market, which is important in some developing parts of the world (Purvanova, 2014). Companies, including Hewlett-Packard, Best Buy, and Cisco, have expanded

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their talent pool to tap into creativity outside of their home office base of employees and have seen benefits in implementing virtual teams into various functional areas.

Virtual teams are utilized for a variety of reasons. One of these reasons is to enhance productivity. Purvanova (2014) explained how IBM reported a 25% increase in productivity through its shift to virtual teams, whereas Century Link reported a 40% productivity increase. Without the need for cross-continent travel and time zone coordination, a more rapid response to taking action can occur, allowing individuals to work and stay productive. Executives from across the globe can meet through video conferencing, conference calls, or simply through written messages with the click of a button to stay on task.

Cost savings can typically be seen when utilizing virtual teams. There is a reduction in travel expenses, duplication costs, and various other logistical expenditures (Robbins & Judge, 2007). However, cost-cutting software packages to facilitate communication can oftentimes be substandard to that is needed for effective communication. Berry (2011) identified specific technologies as a potential area for advantage, but also concern, in virtual teams depending on the system meeting the needs for the client. However, the ability to more easily and quickly compete on a global scale does bring with it cost savings.

Drawbacks to Virtual Teams

The above-mentioned benefits to virtual teams tell half of the story. Drawbacks to virtual teams make some companies, such as Yahoo, shift away from the virtual world into a more typical nine-to-five setting. The reasons why problems can occur are plenty, such as: conflict, diversity, acceptance of technology, and lack of trust.

When individuals do not see each other face-to-face on a daily basis, it becomes paramount for the message to be understood clearly. Daim et al. (2012) identified problems due to simple

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miscues in communication could more easily be solved in the face-to-face environment than virtual environment. Ambiguous tasks can create misunderstandings, and a team that runs with misunderstandings can go down a time-wasting path to nowhere (Curseu & Schruijer, 2010). The authors found virtual teams better at defined projects with little ambiguity, whereas uncertain goals and unclear direction was better structured for face-to-face environments due to the collaborative ability to pivot when necessary.

A lack of social cues and nonverbal communication is a major drawback to some virtual teams. While the video conferencing systems are more sophisticated now than in the inception of virtual teams (Pinjani & Palvia, 2013), the ability to observe dynamics in a face-to-face setting throughout the course of a meeting or day can give valuable insight on how reliable a person is or what he or she really means. The lack of personal touch during a given conversation or after a meeting makes for a colder communication approach that is not welcomed by everybody. Changes or criticism given in written form versus a polite personal touch can have a different impact on an employee, and this is a key factor for leadership styles that work best in virtual environments (Purvanova & Bono, 2009).

Diversity in teams can relate to various differences. Some of these differences are culture, generation, and gender. The ability to communicate frequently may be limited in situations where language barriers exist (Tenzer et al., 2013). Mancini (2010) found teams separated by large distances to have more sensitive levels of trust that are harder to earn. Daim et al. (2012) and Kauppila et al. (2011) described the negative impacts diversity can bring, such as misunderstandings, increased conflict, lower trust, and a lack of communication. All of these factors can lower the trust members have in one another and in the team.

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Aside from culture, employees can struggle with perceptions against different generational groups, such as stereotyping the millennial and traditional generations, which can negatively impact the dynamics of the team (Hahn, 2011). The author also found a history of communication to aid in the level of trust, further aided by reciprocity and shared experiences. Some studies have shown differences in how males and females view virtual teams. For example, males typically exert dominance in face-to-face settings, but this quality is less seen in the virtual environment (Bryant, Albring, & Murthy, 2009). Similarly, in an environment where communication needs to occur, females have been found to communication more frequently and effectively in virtual environments.

The type of technology and ability to accept technology are considerations a firm must consider when implementing new communication systems. Generational differences play a role in the acceptance of technology (Anantatmula and Shrivastav, 2012; Hahn, 2011). Moreover, Twenge and Campbell (2008) identified how team members simply differ in how well they process new computer-mediated technology. Clear and MacDonnell (2011) identified that the acceptance of one technology over the other takes time, both for the employee and for the firm. Rushing into a system can bring great cost, in terms of human capital that is devoted to the training and financial capital that is wasted on inefficient technologies. In a rapidly moving environment, companies do not have time or money to waste (Mancini, 2010).

Technology without proper training can introduce a variety of other problems. Cohen (1999) described a study conducted by British Petroleum where a group was given new equipment without any training due to the urgent need to act. This created an environment where individuals could not utilize and operate the technology provided to them. The authors also described how employees operating an unknown system could develop negativity and hatred

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about it, further lowering their motivation to change their method of work. Purvanova (2014) found that despite more modern ways of communication, the primary communication tool in virtual teams continues to be written email and instant messaging. The author identifies a lack simultaneity and comprehension as the main problems with this written method, both qualities not seen in the face-to-face environment.

<div align="center">**Trust in Team Settings**</div>

Trust is a complex and multidimensional organizational variable. In a team setting, trust refers to the confidence and reliability individuals have in each other, the process, and organization (Costa & Anderson, 2011). Daim et al. (2011) and Rhoads (2010) describe a lack of visibility and complex nature of virtual environments as a hurdle in trust development. However, aside from the barriers to trust in virtual teams, the widespread and growing use of virtual technologies have allowed for more research into whether these teams can help create trust between the group members.

Barriers to Trust in Virtual Teams

Several seminal and recent authors have identified concerns related to trust development in virtual environments. Haines (2014) examined how trust is the biggest obstacle faced by companies utilizing virtual teams. Given that virtual team members work on projects for a shorter period of time and move from team to team given the dynamic nature of these teams, virtual teams members tend to not have enough time to learn enough about coworkers to properly assess them and to determine trustworthiness (Kimble, 2011). Furthermore, Crisp and Jarvenpaa (2013) and Cheshin et al. (2011) identified how the missing cues that exist in the virtual environment limit the ability to employees to monitor how individuals are acting. The cooperative and monitoring behaviors frequently seen in face-to-face environments are not

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present in the same capacity in virtual environments (Brahm & Kunze, 2012). Virtual teams communicate across time and geographical constraints, but the asynchronous communication is slower than the more instantaneous communication seen in the face-to-face environment.

Building Trust in Virtual Teams

Given the benefits of trust for organizations, any association between trust and type of team is of interest to managers and the scientific community. Recently researchers have started looking at trust development that is tied to type of team (i.e. virtual or face-to-face), leadership style, and team structure. The type of team that is selected is not only judged on its effectiveness at accomplishing a task, but it can be judged on whether a level of trust exists in such teams (Costa & Anderson, 2011). Trust can be looked at through project-oriented trust, personality-based trust, cooperative behaviors, and trust volatility.

Virtual teams more often consist of those not having worked together before. This presents a challenge to trust, as familiarity and past history are seen as qualities that can create an instant baseline of trust (Gulati & Sytch, 2008). Haines (2014) found that the greater the familiarity, the more trust and positive outcomes that will likely follow. However, Crisp and Jarvenpaa (2013) identified that trust does not always need to be built over time before individuals are brought together to work on an assigned task. The authors introduced the concept of swift trust. This is a trust theory where trust is assumed initially in teams, and further experiences and evidence determine whether that level of trust will go up or down. Wildman et al. (2012) identified how swift trust will go up or down through actions taken in the joint task and through monitoring that occurs on how the task is being carried out. Without frequent interaction, however, this trust will dissipate and not be able to rise.

Another way to build trust is through the type of personality and social relationships that aid communication. Periodic face-to-face meetings have been shown to increase the level of trust in otherwise virtual teams (Ahuja, 2010). Virtual teams do not allow for as much social interaction given the constraints of the medium. Face-to-face teams develop trust more quickly than virtual teams due to an opportunity to increase trust based on one's personality, performance, and frequency of interactions (Crisp & Jarvenpaa, 2013). The periodic face-to-face meetings explained by Tannenbaum, Mathieu, Salas, and Cohen (2012) look at how to assist the early phases of a team where face-to-face interactions have been found to be important. The importance comes from coordination that is required and the familiarity that comes from knowing who one's colleagues are.

For projects where tasks are ambiguous or still to be determined, instantaneous (i.e. face-to-face) feedback proves to be more beneficial to work out the details. Algesheimer, Dholakia, and Gurau, (2011) identified the virtual medium's inability to replicate face-to-face communication in this regard. Authors have not fully agreed on the necessity of the face-to-face meetings to increase the effectiveness of the virtual team experience. For example, Brahm and Kunze (2012) found that trust should be established early on to enhance virtual team performance, and if the baseline of trust were established early on, face-to-face meetings would not be needed. This level of trust could be a result of a virtual team having worked together before, a familiarity with the project, team composition, or some other factor related to the member qualities in the team.

There is a consensus between most authors that periodic face-to-face meetings help to develop a foundation of trust early in a team's life, but maintenance of trust is equally important for team health. Kanawattanachai and Yoo (2002) stated, "managers need to be equipped with

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various conflict resolution strategies in order to alleviate conflict before it leads to degradation of trust among members" (p. 55). Trust in a team setting can fluctuate given the problems encountered on specific projects. Ahuja (2010) found periodic face-to-face interactions as most beneficial to strategize and develop remedies to problems encountered. When a task veers off the outlined and scripted path, the resulting series of events can cause uncertainty under the virtual setting. Moreover, the author found a face-to-face meeting to be beneficial and needed for correcting towards the desired level of performance in these situations. Through the research of literature, more authors have shown face-to-face meetings as being better equipped to predict and build trust than virtual teams.

Type of Team and its Interaction on Trust

The seminal research that has been conducted on trust and earliest research on virtual teams has provided a foundation of information from which recent authors can continue testing the interactions between various variables. The ability to test and advance theories is a goal that brings with it great importance, as studies need to carefully look for new gaps in research and ways to make contributions.

The justification for using virtual teams has been due performance-related outcome that can be achieved and relationship-based outcomes that impact the health of the team (Purvanova, 2014). Moreover, trust is a predictor for virtual team success (Furumo & Gelfand, 2012), and brings with it effective communication and dynamic responses needed in a fast-moving environment. Timmerman and Scott (2006) found high levels of trust between virtual team members. The authors surveyed individuals from 98 virtual teams across multiple industries. The authors found a positive correlation with the type of team chosen and information sharing that

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occurred. Other authors, such as Haines (2014), studied a virtual team over the course of ten tasks and found trust increased and the group developed into a stronger unit.

Problems in Establishing Trust

The amount of literature is growing to support virtual teams and their structure, but many authors are still finding issues in the team type's ability to create a trusting environment between members. Daim et al. (2012) found virtual teams to negatively influence accuracy and the ability for resolution, whereas a centralized and traditional communication network was better equipped to dealing with organizational issues. This built off of the findings of Jarman (2005) and Paul and McDaniel (2004). Jarman (2005) examined two different types of teams; one government agency team and one IT team were examined. The author found trust to be low for both teams. Information sharing was found to be low due to members lacking trust in their team members and confusion in the outline of what was expected in the project. Paul and McDaniel (2004) looked at interactions to trust in the health care industry and examined ten telemedicine teams. These virtual teams were unable to establish a high level of trust between the participants involved.

Baskerville and Nandhakumar (2007) examined five different virtual teams and found problems with the virtual team's ability to explain positive levels of trust. The authors found that the virtual teams were better suited to create trust based on shared task objectives and shared membership, but this process-oriented trust went away over time. The authors concluded that a lack of face-to-face interactions could not be made up for in the virtual system. However, the authors did find that managers tended to participate more in the virtual environment, as opposed to participating in the face-to-face environment. This increase in participation is made possible from being able to quickly jump from team to team, regardless of a team's specific location. Such

interactions can help with information sharing, and Golden and Raghuram (2010) found trust to be critical for knowledge sharing. The exchange of information could decrease over the life of a team when trust dissipated, as was seen in the virtual team study conducted by Baskerville and Nandhakumar (2007).

Other Predictors to Consider

Homophily is a term explaining social actors who choose to interact more with those with whom they share some type of quality (Ren, Gray, & Harrison, 2014). There are varieties of ways this can take place. Individuals of similar cultures and backgrounds often share a set of characteristics that makes their level of familiarity increase. There are more broad-level considerations, specifically relating to one's demographics, that are often utilized to describe the homophily term. Gender and generation are two important variables that have been shown to influence the level of trust in a team setting. Gender has been shown to vary with the level of communication and trust (Bryant, Albring, & Murthy, 2009), whereas, generational differences can vary in how they trust and best function in a type of team (Hahn, 2011). A foundation for the two variables is provided below.

Generational Differences

Authors have not focused on generational differences as a primary variable in organizational studies. Lowry et al. (2010) found that cultural and other diversity measures are often examined in studies relating to trust and team research. However, generational differences have rarely been utilized as a key variable and have instead just simply been controlled for. Given the differences generations have in their acceptance of technologies and preference for organizational structures (Morris & Venkatesh, 2000), the ability to effectively explain and advance a theory should look at the additional variables that could help explain the problem. The

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theoretical foundation for the study of generational differences (i.e. age category) can be explained by the root of the term. Generational differences describe similar locations in time and a collective consciousness that the historical position shaped one's experiences (Cogin, 2012). Authors examining generation theory refer to the shared experiences that come from one's generation as collective memories (Holdbrook & Schindler, 1989; Oh & Reeves, 2014). The authors gave an example of a younger-aged individual having gone through a major world event, and this individual was shaped by the event, while peers also share a similar memory and gather similar knowledge as a result. Schuman and Scott (1989) identified how World War II is one such event that can shape one's perspective.

Seminal research disagrees on defining the specific categories and age ranges falling under each generational category. For example, seminal authors Kunreuther (2003) identified Veterans, Baby Boomers, Generation X, and Generation Y as the four generations. However, authors disagree as to when each generation starts. For example, Chen and Choi (2008) identified Baby Boomers as falling between 1946 and 1961. Conversely, others have the category starting at 1943 (Lamm & Meeks, 2009). For the purposes of the study, three generational categories were utilized due to the sampling criteria utilized in the study and age groups available in the SurveyMonkey set. For the purposes of the study, the three age groups of 18 to 30, 30 to 44, and 45 to 64 were utilized for the study. These groups closely represent the Generation Y, Generation X, and Baby Boomer categorical age taxonomies. Given the study is only looking at those aged 18 to 64, those in the Veterans generation was not included in the survey sample set.

It is important to understand the composition of each generation and their overall contribution to today's workforce. Anantatmula and Shrivastav (2012) identified that Veterans and Baby Boomers are looking to retire and that 60% of the workforce is now composed of

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Generation X and Generation Y workers. Each category brings with it different perspectives and organizational challenges that need to be addressed (Martin & Tulgan, 2006). Anantatmula and Shrivastav (2012) identified the term generational competence to describe the tools required to minimize conflict and channel each generation's ability in today's diverse workforce.

The concept of generational differences is important to understand because many authors describe how these differences are directly associated to distrust and conflict (Anantatmula and Shrivastav, 2012; Byrne, 1971). Anantatmula and Shrivastav (2012) found conflict could be caused by generational differences due to their differences in values, acceptable of technology, and communication styles.

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Generational Differences and Their Interaction on Trust

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Trust is a key construct in determining the actions that will occur within group settings. Lauring and Selmer (2012) found demographic similarity to positive impact one's level of interpersonal trust. Makela, Andersson, and Seppala (2012) also examined this similarity and went a step further in describing how this demographic similarity will increase the willingness others have to trust. Costa and Anderson (2011) identified trust as an important quality for tasks that require frequent interactions and interdependent teamwork. The interactions on trust based on generation are examined below.

Several authors have identified problems relating to trust when groups have a wide span of diversity, as it relates to generational differences. Hertel, Thielgen, and Rauschenbach (2013) identified demographic differences as a precursor for lower levels of cooperation and overall project success. Along the same lines, Zenger and Lawrence (1989) found that an increased diversity in age to be negatively correlated to the amount of communication that occurs in a group.

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Research has shown that two qualities are negatively impacted by an age diverse team of individuals; values and ability are two qualities appearing to be hampered by an increase in age diversity. Dencker, Joshi, and Martocchio (2007) found generational differences, by their definition, bring with them a difference in values. An outlook for an individual growing up in the early part of the past century will differ from a millennial who is still developing their paradigm of society. Mayer et al. (1995) found shared values to determine what is right in teams, and without a reliable source of shared values, conflict can increase (Han & Harms, 2010; Pazos, 2012). Oh and Reeves (2014) identified that values are formed during one's formative years, and these values transcend into one's work life. Dose (1997) defined the concept of work values as standards relating to the work environment where individuals determine and evaluate what is right. Chu (2007) identified that one's work values directly correlate to one's overall experience, attitude, and satisfaction in the workplace. Similarly, Heslin, Bell, and Fletcher (2012) found distrust to form in situations where values were misaligned. Distrust can also reside due to an inability to accept one's ability as sufficient to perform the required task.

Generational Differences and Virtual Setting Interaction on Trust

The research pertaining to communication between team members in remote settings is growing due to the interest in understanding optimal team composition. The emergence of virtual teams has helped transform the way teams are structured and communication (Pinjani & Palvia, 2013). The composition of virtual teams varies depending on each situation, so specific considerations relating to generational differences can be considered when forming teams. Zenger and Lawrence (1989) found age similarity helps enhance cross-boundary communication.

Authors have found the value of face-to-face meetings as essential in trust formation, and this has implications across generational categories. Penarroja et al. (2013) found a lack of

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periodic face-to-face meetings to lower the overall trust a team has. However, Martins et al. (2004) identified that Generation Y employees can view these additional face-to-face meetings as an added burden. These employees prefer the virtual team experience to solve problems and their level of cooperation, collaboration, and trust is higher through the virtual medium (Myers & Sadaghiani, 2010). This interaction is complicated because it creates questions whether team choice influences trust, whether it is the interactions between one's generation (age category) that can move the needle on trust levels, or some combination of the factor. The dissertation examines these interactions fully, and a three-way ANOVA was utilized to look at these key differences.

Different generations can provide an explanation as to why some prefer specific organization structures or adapt new technologies quicker than others. Carless & Wintle (2007) examined the generational differences on various organizational outcomes, and found the younger generation (i.e. Generation Y) to most value work-life balance. The authors found the type of team (i.e. virtual or face-to-face) to also impact work-life balance, and the greater flexibility seen with virtual teams brings with considerations that the younger generations prefer. Gorman, Nelson, and Glassman (2004) identified the Generation Y members as the first generation that has been trained with computers from birth due to the relationship between when this new technology was first introduced and the emergence of Generation Y.

The recent studies examined the functioning of teams, development of trust, and presence of other interacting variables that could impact findings. The body of research is complete in the variables identified, but is incomplete in how much external validity each study contains. The studies as a whole lacked the ability to generalize to actual organizational settings, as most were conducted with student populations. Purvanova (2014) identified "this may be an important

reason why experimental studies often do not observe positive outcomes in virtual teams, whereas field studies largely report that virtual teams are quite successful at meeting and exceeding organizational objectives" (p. 22). The focus of the dissertation is to test differences between teams on trust on individuals in a variety of business settings, which give the study a greater degree of applicability in the real-world organizational setting. The first research on virtual teams occurred in the mid 1990s (Townsend et al., 1998), so given only two decades of seminal literature, there are still paths that need to be taken to advance the body of knowledge, while examining other significant factors that exist as well.

Gender Differences

The literature discussing gender differences has grown in recent years to look at the key differences that may exist between these groups. Gilson, Maynard and Young (2015) identified that gender research was not a focus in early organizational research. However, the research has noticeably increased in recent years. The findings from authors have been mixed, and research has shown differences in how gender can impact trust, risk-taking, and other decision-making factors (Diaz-Garcia & Jimenez-Moreno, 2010; Furumo & Pearson, 2007; Koellinger, Minniti, & Schade, 2007; Madichie & Gallant, 2012; Maxfield et al., 2010; Shinnar et al., 2012; Yordanova & Tarrazon, 2010). Authors have shown a connection between gender and trust (Chaudhuri & Gangadharan, 2013; Furumo & Pearson, 2007). Other authors have examined the link between gender and team composition (Hahn, 2011; Madichie & Gallant, 2012). Recent literature is analyzed to look at differences between males and females, focusing specifically on interactions to trust and team composition.

The seminal literature did not focus on gender differences to explain organizational issues. Swanson (1988) stated a lack of existing research on the body that is gender differences. Given

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dozens of articles examining gender differences in the past decades, there is now a conflict that exists in the literature on whether gender differences impact various organizational concepts, such as creativity and leadership capabilities, in different ways. Many recent authors point to statistically significant differences between men and women (Brindley, 2005; Diaz-Garcia & Jimenez-Moreno, 2010; Koellinger, Minniti, & Schade, 2007; Shinnar et al., 2012; Yordanova & Tarrazon, 2010). Conversely, others authors point to little to no differences between genders on their ability to create, lead, and engage (Madichie & Gallant, 2012; Maxfield et al., 2010). The organizational differences between males and females are examined below and how these differences lead to differences in the formation of trust.

Organizational Differences Between Males and Females

Seminal research points to differences in how males and females communicate. Martins & Shalley (2011) found gender, along with personality and generation, to be underutilized when testing for interactions in organizations studies. Often utilized simply as control variables, these variables still can have impact on a selected dependent variable and organizational issue. Authors have found differences in the level of cooperation, communication styles, and work flexibility (Edgell & Docka, 2007; Hoogendoorn & Oosterbeek, 2013). Each of these organizational differences has practical implications on the level of trust, and the ability to understand the relationship to trust and potential interactions was analyzed.

Authors found women to judge a situation as it develops, as opposed to bringing preconceived verdicts in their organizational situation. This relates to cooperation, where women have a tendency to choose cooperation over competition in the organizational environment, while men choose to be competitive (Nishii, 2013). Furthermore, the author found women to communicate with an intention of providing support and consensus with her counterparts.

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Hofstede (1980) was one of the first authors to classify men and women, and the word assertive was used to describe men and nurturing to describe women. These stereotypes are not an absolute and have changed over time due to the level of equality being increased in the workplace (Brescoll, 2012).

The ability for males to lead a conversation is reduced in a virtual setting (Furumo & Pearson, 2007). The authors found there is a lower degree of dominance in those seeking authoritative positions. Males have exhibited such behaviors in organizational environments where face-to-face interactions can create a degree of intimidation. The authors found how women prefer conversations where more than one individual contributes, whereas men like to exhibit a hierarchy of domination. This domination lowers the amount of time others have to communicate, thereby potentially monopolizing conversations (Brescoll, 2012).

Recent authors looking at interactions between virtual teams and gender have examined the inability for males to exert dominance in asynchronous settings. Furumo and Pearson (2007) stated, "males may have attempted to express dominance but found it difficult because of the asynchronous nature of the communications. This would certainly explain why such a high number of males became deadbeats" (p. 55). The authors concluded that since typical communication patterns were ineffective, men either stopped communicating or left the team altogether.

Women have been shown to be more flexible in the workforce and to be better at multitasking in general. The ability to adapt and accept new roles lends itself to a virtual team employee and functioning better in the virtual environment (Gerstel & Clawson, 2014). Similarly, the flexibility required due to being the head of the household requires some males or females to work from home, while balancing their other full-time job of raising children

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(Putnam, Myers, & Gailliard, 2014) This shift to engage in the workplace broke away from previous stereotypes of a women's role consisting of motherhood and housework. The recognition of ability has allowed for equal contribution in the workforce. While females are more risk-averse than males (Harris et al., 2006), their willingness to balance and change is an important consideration for their ability to act in teams.

Gender Differences and Their Interaction on Trust in Teams

The ability to study the differences between males and females on the variable of trust can help a manager better understand his or her team. Gender differences on trust have been looked at by authors examining trust as engaging in risk-taking behaviors in the organization. Byrnes et al. (1999) examined 150 studies where risk-taking behaviors were analyzed between males and females, and the authors found risk-taking was practiced more among males than females. This has been confirmed in subsequent studies by authors finding females are more risk averse, even if possessing the same level of experience (Dwyer et al., 2002; Harris et al., 2006; Powell & Ansic, 1997). Costa and Anderson (2011) found that risk-taking is an important consideration for developing trust. There needs to be a willingness to accept a degree of risk before trust can be established. Chaudhuri and Gangadharan (2003) found that the risk-aversion behaviors caused for lower levels of trust in women compared to the level of trust men have. Conversely, various authors have found higher levels of trust in females than males.

Furumo and Pearson (2007) found females scoring higher on a trust scale than males. Spector and Jones (2004) preceded the study, finding women to trust more going into a situation, as opposed to generalizing and forming a perception of distrust without evidence. Other authors found little to no difference between the ability to trust based solely on the interaction of gender (Golesorkhi, 2006).

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Gender Interactions in Team Settings

The interactions between males and females in the focus of this study, specifically as it relates on their ability to interact with trust. Putnam, Mysers, and Gailliard (2014) found women to be more satisfied with the virtual team experience than men, whereas women were found to be less satisfied with their experience in face-to-face teams than men. This verifies the point above discussing communication styles and an exertion of power that males have been found to have in the face-to-face environment. Furumo and Pearson (2007) found that given females' pursuit of cooperation between members over that of male-dominated groups, female-homogenous teams could be more effective than male-homogenous teams.

A group of authors specifically looked at the role gender has in the virtual team experience. Furumo et al. (2014) found that men and women interact differently in virtual teams. The authors tested four hypotheses looking at whether females would use a compromising management style in virtual teams, whether men would try to exert dominance, whether females would interact more socially in virtual teams than men, and whether male communication would primarily focus on task-oriented behaviors. The authors confirmed all four hypotheses, with the only exception being partial support for the first hypothesis. The limitation of the study was to include students as the primary group of interest, as student populations differ from organizational groups. Powell et al. (2004) identified that 90% of the articles utilize student teams as the sample, which can lower the generalizability and applicability for the study in other organizational settings.

The ability to test for differences in organizational settings can examine whether gender plays a role and interacts with trust. When combined with potential interactions between type of team and generation, the various interactions were examined to test predictors to trust. The lack

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of knowledge on predictors to trust, given trust's ability to enhance productivity and performance, while reducing transaction costs, provide an organizational problem ripe for research. The organizational dilemma explores and examines the role of one's social environment on trust and optimal team functioning. This social cognitive observation is explored in the theoretical perspective.

Social Cognitive Theory

The roles of trust, type of team, generation, and gender are tied together for this study attempting to explain the uncertainties related to trust formation in team settings. Utilizing social cognitive theory as the theoretical lens combines the scholarly literature with the practical implications for the organizational issues of trust and its predictors. This theory was first introduced by Albert Bandura (1977) and has its roots as social learning theory. Social cognitive theory can be defined as the learning and actions that occur in a social situation through reciprocal interactions of person, environment, and behavior (Bandura, 1977, 1986). The factor making social cognitive theory unique is the influence one's social environment has on his or her actions, and this adaptive structure of changing environmental impacts is unique (Lent & Brown, 2013; Tsai & Bagozzi, 2014). The theory is useful in understanding the reason why members in a team trust, how trust is formed, why they communicate the way that they do, and how these factors help to describe overall team health (Chang, Yen, Chiang, & Parolia, 2013). The theoretical perspective of social cognitive theory consists of six areas discussed in an extensive literature review below. Specifically, each of the personal, behavioral, and environmental factors are examined along with their connection to trust, type of team, generation, and gender.

The foundations of social cognitive theory come from the Bandura's work on social learning theory. Bandura (1977) first described the theory through his work with patients that

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had a phobia of snakes. Bandura found that his patients could effectively cure themselves of the phobia simply by observing other previously reluctant individuals that were handling snakes. These former patients that were handling snakes did not experience any harm, and the current patients doing the observing slowly processed this information to help develop a new behavior. When Bandura tried to handle the snakes himself, the same outcome was not observed, and patients much preferred to witness their peers handle the snakes. This example was useful is describing how observational learning and imitation influences one's internal thought process and helps change the resulting behavior. The most famous example of how social cognitive theory describes learning through observations occurred through Bandura's Bobo Doll experiments conducted in 1961 and 1963. These experiments showed an adult punishing and verbally abusing a toy doll, which resulted in children imitating the behavior after learning and observing the adult (Bandura, Ross, & Ross, 1963). Following his 1977 presentation of social learning theory, Bandura added that a relationship exists between the person, environment, and behavior; social cognitive theory was the name of the resulting theory, after this added external influence of the environment was added. Most recently, Bandura (2011) expanded the applicability of social cognitive theory to climate change. Through the lens of social cognitive theory, Bandura suggests having television dramas that show individuals acting in environmentally conscious as ways to influence others. Through continual interactions, individuals can learn and become more confident in their ability to accept the new behavior. To better understand this, it is useful to understand the components of social cognitive theory.

Components of Social Cognitive Theory

Social cognitive theory describes the personal development individuals make and the process how learning and decisions are made. Bandura (1986) stated, "what people think,

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believe, and feel affects how they behave" (p. 25). The theory describes how personal, environmental, and behavioral factors all contribute to how people act and perform in a given situation. One of the key points in Bandura's theory is that each factor in the triadic relationship relies on the other factors. They each influence actions by a certain degree, but they do not affect behavior directly (Bandura, 1986). The theory looks at the degree to which a person's motivation, belief system, and self-efficacy are changed.

A concept central to social cognitive theory is reciprocal determinism. Reciprocal determinism refers to how an individual's behavior impacts and is impacted by personal factors and the social environment (Bandura, 1986). Personal factors are those related to personality, morals, and learned experiences. The social environment consists of things external to the individual. This can include the setting they are found in, other people, and other social influences (Fan et al., 2013). Each factor impacts the other, so an individual's link to the environment they are in (e.g. geographical area, type of work team, or social environment) can cause for a different outcome on a selected variable. In the case of the dissertation, such interactions on trust will be examined between the type of team, generation, and gender.

Social cognitive theory is guided by how an individual's thought process, which is referred to as cognition, changes over the course of one's life. The way of thinking can change as individuals move from one setting to the other (Gilson, Maynard, Young, Vartiainen, & Hakonen, 2015). For example, when somebody migrates from one country to another, he or she learns new ways of acting that become a behavior change in order to function in the new society. Similarly, changing jobs often brings with it new ways of doing things, such as introductions of new technologies or new methods for communicating with peers (Lent & Brown, 2013). Each of these does not in itself create the behavioral change, and instead, social cognitive theorists state

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that individuals learn about the new environments and make a choice to change behavior through the reciprocal triadic relationship of person, environment, and behavior.

Personal Construct of Social Cognitive Theory

Personal factors that fall under social cognitive theory include one's perception about the ability to carry out a task. This is an internal assessment of how capable an individual thinks he or she is, which is referred to as self-efficacy. Bandura (1977) defined self-efficacy as "the belief in one's capabilities to organize and execute the course of action required to produce given attainments" (p. 3). A high level of self-efficacy translates to a greater belief to take action, engage in risk-taking behaviors, and complete an action. This is similar to the role trust plays in the organization (Lewis & Weigert, 2012).

Self-efficacy and trust have both been study alongside one another and have been found to aid in collaboration and team effectiveness. Hsu, Ju, Yen, and Chang, (2007) found self-efficacy and trust as significantly interrelated in maintaining harmony amongst team members, and a presence of sufficient self-efficacy and interpersonal trust limited the resignation of team members. The concept of self-efficacy is important to understand because it describes the motivations at the individual level (Bandura, 2011; Fan et al., 2013). In addition to the individual level, the group outcome is something that in the sphere of self-efficacy can be referred to as collective efficacy (Wang & Hwang, 2012). Bandura (1977) defined this as a group's shared belief to come up with and execute steps needed to reach a desired outcome. Collective efficacy is discussed in sports and project teams where teams use collective goals, actions, and experiences to work toward an end goal. These beliefs help create brainstorming activities (i.e. strategies) to increase group performance.

Self-efficacy is the center concept within social cognitive theory, and thus, there is value in exploring how to develop a strong sense of self-efficacy. Without a strong sense of self-efficacy, one's triadic pyramid is altered and behavioral change becomes more difficult (Bandura, 1986; Robert, Dennis, & Hung, 2009). There are four ways to increase one's level of self-efficacy, and these are through mastery, social modeling, one's emotional state, and social persuasion. Mastery of a task involves tackling obstacles on the path towards completing a desired objective. This can mean completing a complicated task, mastering a new language, or understanding and effectively embracing a change in environment. When individuals master a specific task, they are empowered to do more, and this confidence boost allows for reinforcement that they are on the right road. Through vicarious reinforcement, team members also benefit when others master their tasks. This ties to the concept of social modeling. When others are successful, people will want to imitate and replicate what was done to experience the same or similar level of success (Bandura, Ross, & Ross, 1963). Teams can do this by competing against more successful teams and trying to match the level of success that their colleagues have witnessed. In addition to the successful completing of a task, it is of paramount importance for individuals to cognitively understand their abilities in order to accurately improve their level of self-efficacy. This requires a higher degree of awareness and understanding that they truly are capable, possess the skills, and can accomplish a difficult task. Social modeling can aid in this to help those that are more apprehensive. Moreover, social persuasion also helps individuals develop more confidence by encouraging, empowering, and offering the support to help individuals take ownership of their abilities.

Environmental Construct of Social Cognitive Theory

One of the unique features of social cognitive theory is its focus on the environment and role this plays in the triadic relationship. The environment includes factors that are external to individuals but have an impact on behavior (Bandura, 1986; Robert et al., 2009). Social cognitive theory has its roots in psychology and health, so the environment spans many fields. Environment can mean social factors, such as family and friends. Moreover, it can mean physical factors, such as, location, surrounding, organizational structure, and so on.

The environment one is in can contain features that limit or enhance the ability to carry out a behavior. In the case of business environments, settings that limit communication and information sharing can negatively influence learning and collaboration between team members (Robert et al., 2009). Environments should also help increase one's level of self-efficacy given that higher rates of self-efficacy translate to higher rates of interest in creating the desired change (Lent, Miller, Smith, Watford, Hui, & Lim, 2015; Navarro, Flores, Lee, & Gonzalez, 2014). Environments that focus on making individuals more comfortable by increasing resources for support and increasing opportunities to learn are more conducive to raising self-efficacy (i.e. the belief in one's own ability), which can be predictive of increasing trust and change.

Behavioral Construct of Social Cognitive Theory

The behavioral component of social cognitive theory describes the resulting feedback garnered by performing a specific behavior. In those situations where behaviors were performed incorrectly, punishment can result. On the other hand, positive responses can encourage individuals to continue performing the same behavior in the future. Similar to the personal and environmental components of the theory, the behavioral response can influence an individual's self-efficacy (i.e. confidence to perform the action in the future). Bandura (2004) identified that

behavior is regulated by the social reactions evoked from an action. The resulting change in relationships one has with colleagues is an outcome that guides future action, while also being an outcome that changes the level of one's self-efficacy.

Triadic Interactions

In the model of social cognitive theory, the components of person, environment, and behavior cause various interactions to take place that collectively work to influence a person's thoughts and actions. The interaction between a person and their environment explains the mixture of beliefs and gathered knowledge that can be altered due to changing influences of one's environment. Some influences include a change in work structure, a change in one's surroundings, or some of other environmental factor external to the person (Bandura, Ross, & Ross, 1963; Tsai & Bagozzi, 2014; Wang, 2015). The second interaction explains the interaction between person and behavior. In this interaction, personal factors can determine the course of behavior (Bandura, 1986). The final interaction is that between the environment and behavior. The effect the social structures have can create changes in behavior. Each interaction can create a cognitive change in individuals' processing of situations (Hsu et al., 2007; Wang, 2015). Moreover, individuals can view similar situations differently based on different times, in different environments, or through slight differences in personal factors (Robert et al., 2009). Simply put, a similar stimulus does not spur a known action due to changing conditions of the person, environment, and behavior. For change to effectively happen, the subsequent five assumptions explain how social cognitive theory works.

Assumptions of Social Cognitive Theory

One of the goals of social cognitive theory is to explain how individuals act, but the theory specifically looks at learning as a function of observations made in the social environment. There

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are five assumptions of social cognitive theory that explain how the theory is utilized to guide behavior and how it is differentiated from other theories. These five assumptions are that people learn through observations, learning does not outwardly and directly cause a change in behavior, self-regulated behavior guides individuals to change and reinforce their habits, goal-oriented actions help create changes in behavior, and consequences are formed through punishment and reinforcement.

The first assumption deals with learning. Social cognitive theory has its foundation in social learning theory. Bandura (1986) built social cognitive theory as an extension to social learning theory by adding that various factors (i.e. personal, environmental, and behavioral) guide the acquisition and change of certain behaviors. Organizational learning refers to the observations made that help individuals create rules, form ideas, and develop courses of action that inspire behavior. Bandura (1986) called this behavior the modeling of behaviors. Individuals witnessing a behavior completed in a positive way can choose to replicate the action to reach a similar outcome. Capabilities, on the other hand, relate to an individual's skill set describing how well the individual can actually perform a task. Individuals put in new situations without knowledge or ability to perform the task (e.g. learn new technology) exhibit hesitation or lower levels of trust (Chang, Yen, Chiang, & Parolia, 2013).

Modeling behaviors under the observations that occur include four steps; attention, retention, reproduction, and motivation are the various steps that encompass observation (Bandura, 1986). Attention refers to the attention given to a situation, behavior, or individual. Attention is given to specific situations over others, often determined by their functional value, complexity, and reputable source from which the information is being gathered. After attention is given to a particular situation, the next step in observation is retaining the information. Under

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social cognitive theory, retention occurs through symbolism, where the observation is translated into a symbol that will dictate whether such an action brings with it positive or negative consequences (Van den Bossche, Gijselaers, Segers, Woltjer, & Kirshner, 2011). After attaining and retaining the observation, the subsequent step is to reproduce the behavior during an applicable time. In a business context, reproducing a behavior can take the shape of completing an organizational task. Following the reproduction of the behavior, the individual can monitor how the information was received and internally process how effective he or she was (Clark & Zimmerman, 2014). The final step is motivation, which means having a valid reason to reproduce a behavior. These motives can be based on cognitive observations of the past or those that one vicarious experiences.

Recent studies on the modeling of behaviors show how implementing mental models are tied to team effectiveness and trust. Van den Bossche et al. (2011) found that shared models help enhance learning for all team members, increase information sharing, and reduce conflict. Swift and Hwang (2013) found effective modeling helps individuals experience a higher level of trust. The higher levels of trust leads to greater organizational gains, so organizational learning through this multistage modeling approach should be utilized to increase positive organizational outcomes.

Vicarious reinforcement is another important element of social cognitive theory, explaining how observations are carried out in the real world. This is when other individuals directly experience an event, but the individual vicariously experiences the reward or punishment one might receive for a given action (Ruff & Fehr, 2014). Practically, vicarious reinforcement describes how individuals have a tendency to replicate actions where others have recently been rewarded (Bandura, Ross, & Ross, 1963; Hoover et al., 2012). In an organizational context, an

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individual may have completed a task by collaborating with team members and offering to do something above and beyond. When a supervisor notices such an act, the surrounding employees take notice and can increase their level of productivity. This is an effective learning tool in social cognitive theory and a managerial tool for increasing overall performance (Stary & Weichhart, 2012). While the approach of vicarious reinforcement is useful in understanding why behaviors are likely to be reproduced, the approach also leads to individuals being less likely to imitate the action if a positive outcome was not seen. For example, if colleagues had a negative outcome in a new environment (e.g. new job or new team structure), the individual vicariously experiencing the event will be less likely to imitate this and will instead search for more pleasurable outcomes.

Recent studies show vicarious learning as an effective tool to increase the experience that leads towards a change in behavior. Dierdorff and Ellington (2012) studied data from 64 teams and found the vicarious experiences help reaffirm a course of action and help individuals gain the knowledge on how to deal with other unknown situations. The experiences help individuals approach a situation, but once an individual is immersed in the activity, vicarious experiences shift towards self-regulation to continue displaying the desired action. Hoover et al. (2012) found vicarious observations as effective tools for increasing classroom performance in the educational field, while noting risk avoidance and cost savings as benefits in the business field.

Assumption two states that learning does not necessarily create a change in behavior. Learning is a process that takes time to understand and think through before the learned topic becomes reinforced (Clark & Zimmerman, 2014). In the previous assumption, it was discussed that learning occurs when information is attained, retained, and produced. Individuals must process this information between these steps, and the process of learning is not an instantaneous precursor to having a behavior changed. An example of this in the business setting is when

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individuals go through a training to use a new technology or tool, but these individuals fail to use the tool in their daily work life. This is an example where individuals learned the behavior, but the level of comfort may not have risen at appropriate levels to have the individual completely change the behavior. The third assumption deal with sustained learning. Individuals must overtime become comfortable with their level of expertise on a given topic (Lent & Brown, 2013). One approach is to applaud coworkers and offer constant reinforcement, but under social cognitive theory, individuals become their own coaches in that they continue observations to understand the model, continue learning, and continue making adjustments to fit within the model (Clark & Zimmerman, 2014; Tsai & Bagozzi, 2014). This level of self-regulated learning can help individuals monitor and alter the behavior appropriately.

The remaining two assumptions deal with goals and consequences. In social cognitive theory, goals guide action and goals help keep the motivation to hold behavior at a level needed to accomplish the task (Robert et al., 2009). Managers can create environments where individual goal setting can keep individuals operating at levels needed for success. Examples of these are sales goals and interoffice metrics. The initial assumptions addressed how situations are approached, how information is learned, and how behaviors can be carried out. Goals are tied to self-regulated behaviors because they create a benchmark that can be used to measure progress (Clark & Zimmerman, 2014).

The final assumption explains how an action can result in reward or punishment. These consequences of what a current action will cause for the future is the last key construct of social cognitive theory (Ruff & Fehr, 2014). Time off from work or not putting in the hours when working remotely can have severe consequences in the future, so people create an expectation

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that if such action was taken (e.g. slacking off), the future response would equate to punishment, which can prevent individuals from taking the action in the first place.

These assumptions of social cognitive theory describe how one goes about learning to acting. The interaction with the environment, including those around one's environment, can have a dramatic impact on how individuals learn and create behavior. In rapidly changing times or business settings where one's environment goes from a stable office setting to virtual environment, individuals will be forced to observe and learn in different ways while being expected to maintain the same behavior. These challenges relating to one's environment will now be addressed.

Social Cognitive Theory, Trust, and Different Team Environments

Social cognitive theory is an effective theoretical perspective describing the process behind a resulting action. For this dissertation, trust was examined through different interactions influencing it in a team environment. Numerous studies exist connecting social cognitive theory to trust (Daim et al., 2012; Lewis & Weigert, 2012; Posten & Mussweiler, 2013; Schilke & Cook, 2013; Wildman et al., 2012). The connection to social cognitive theory's triadic relationship of person, environment, and behavior guided the research on establishing empirical evidence on whether interactions to trust exist between type of team, generation, and gender. The literature behind social cognitive theory pertaining to each of these variables is presented below.

The ability to foster an environment of trust brings with it positive organizational outcomes. Many recent authors found trust is tied to higher productivity, greater cooperation, and less conflict (Barczak, Lassk, & Mulki, 2010; Brahm & Kunze, 2012; Cheshin, Rafaeli, & Bos, 2011; Huang, Kahai, & Jestice, 2010; Mesmer-Magnus et al., 2011; Mockaitis et al., 2012; Sheng, Tian, & Chen, 2010; Tsai, Chi, Grandey, & Fung, 2012; Xue, Bradley & Liang, 2011).

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Trust also facilitates the transfer of information in project teams, while decreasing the perceived level of risk individuals have against one another (Fett, Gromann, Giampietro, Shergill, & Krabbendam, 2014). The level of trust varies from situation to situation, and it is not a homogenous variable. The heterogeneity of trust is a function of changing environmental conditions, changing personal conditions, and changing behavioral actions. These three social cognitive functions impact the overall level of trust in a situation, and theoretical and managerial problems exist to determine the set of interactions that influence trust. For this dissertation, the interactions on trust are examined as a collective combination of environmental and personal factors that can influence the dependent variable. The type of team, generation, and gender differences each impact the dependent variable of trust in different ways. Under the theoretical lens of social cognitive theory, the environment and social structure of type of team bring factors influencing one's level of self-efficacy, ability to learn, and model behaviors.

The belief in self is a major component of social cognitive theory that helps explain the formation of trust and the level of trust one finds in a particular situation. The amount of self-efficacy an individual has is indicative of their subsequent level of willingness to perform in an activity (Hoch & Kozlowski, 2014). The level of self-efficacy varies from individual to individual across one setting to the other. Those with a higher level of perceived risk will have less belief in the ability to perform a new behavior or join a new environment, and this lowered level of self-efficacy can negatively influence an individual's level of comfort in a situation. This level of comfort can be likened to the level of trust (Hsu et al., 2007; Swift & Hwang, 2013), and it can vary across different work structures. Some work structures that would be associated with a lower amount of perceived risk would bring a higher level of self-efficacy for the individual,

and the level of trust would be directly proportional to the level of self-efficacy (Hsu et al., 2007).

Social Cognitive Theory and Trust

The ability to understand the foundations of trust in different interpersonal situations requires an understanding of how the theory is related to trust. Cognitive trust describes trust based on personal experiences between the parties and a trust based on past experiences (Mayer et al., 1995). Social cognitive theory helps to explain the functioning of individuals, and the ability to process and transform events to determine a level of trust in a given situation is one part of how social cognitive theory impacts action. One of the key concepts for social cognitive theory is evaluating the benchmark by which individuals determine their initial trust formation of a situation (i.e. their willingness to trust an individual or activity). Whether the action to be taken is to pursue with a task or trust a coworker, the initial formation of trust is impacted by the information (i.e. cognition) brought into the scenario (Wildman, et al., 2012). The authors identified this type of information as knowledge brought into a situation, preconceived notions about the job or team member, and other stereotypes occupying one's worldview. The concept explains how individuals having never worked together before can still start out on a team with a sufficiently high level of trust due to similar situations, settings, and individuals they have worked with. The behavioral and environmental similarities one might experience can help them move from situation to situation with ease.

Under social cognitive theory, trust can take many shapes. Robert et al. (2009) found how trust formation can be contradictory depending on the situation, and the authors found trust to be both a laborious process while also being readily available in situations where individuals have had no prior contact with one another. This readily available trust is known as swift trust

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(Wildman et al., 2012). Crisp and Jarvenpaa (2013) found that swift trust is dominated by trust in common project goals, the past history of similar situations, and preconceived notions about coworkers. Some of these characteristics can be stereotypes based on age, gender, or culture.

Cognitive trust consists of five dimensions that help individuals form initial trust judgments through their observations. Roberts et al. (2009) identified rule-based trust, role-based trust, category-based trust, dispositional-based trust, and third-party recommendation-based trust as the five cognitive forms of trust individuals come into a situation with that can dictate their initial ability to trust. Rule-based trust refers to the team structures employees find themselves in (e.g. project teams, virtual teams, etc.). With this type of trust comes a routine operating procedure about how specific structures typically operate. Therefore, individuals placed on specific types of teams, while in a new environment, do not need to negatively influence their level of self-efficacy. Role-based trust equates one's role within the unit as their primary function. For example, those who are specializing at marketing should excel at marketing tasks. Therefore, trust would be viewed as high at the onset of a project towards the individual that is the marketer or the group. The marketer's future behavior will be monitored through observational learning, which will potentially change the level of trust individuals have because they will be basing the trust on more concrete and present qualities. Category-based trust is most closely aligned with stereotyping (Posten & Mussweiler, 2013) because it lumps individuals into categories, and a trust judgment is formed based on what the trusting individual thinks about the category.

The disposition to trust guides the level of trust at the start of a process. It is the overall likelihood that an individual will trust others (Fulmer & Gelfand, 2012). Learned observations from the past mostly dictate one's disposition to trust, and these past experiences outweigh other

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trust factors when little information is available during the trust judgment. Lastly, if little information is available to help individuals form an assessment of trust, a third-party opinion of an individual can serve as a trusted source of information and cause individuals to accept the individual and engage with them (Schilke & Cook, 2013). Each of these factors of trust are useful in understanding some of the reasons why individuals trust given no prior experience, and it is also useful in understanding the reasons why trust differs from situation to situation and lacks homogeneity across organizational contexts.

Recent authors have found trust to be a function of sufficient social modeling and interaction. Lewis and Weigert (2012) found social interaction and demonstration of trust could be used as a pragmatic tool to help create an environment that shows trusting is safe and accepted. Similar to Bandura's earliest experiments that reinforced actions, such as his treatment of patients with a phobia of snakes, the demonstration that it is safe to trust can help strengthen the pillar of trust in a societal situation. Given social cognitive theory is an integrative theory bridging individuals, their own perspectives, and the role of the environment, trust is an applicable variable because of its transformative ability in situations (Lewis & Weigert, 2012). The authors found trust to be influenced by many factors, and these factors change depending on the environment one is in. Some of these factors, such as type of team, generation, and gender are the basis for this dissertation.

Social Cognitive Theory in Face-to-Face and Virtual Teams

Social cognitive theory has been examined since the early 1980s and has transformed with the development of new organizational structures. Mesmer-Magnus and DeChurch (2009) identified how companies are utilizing teams for projects and day-to-day tasks more than ever. Moreover, Herman, Dasborough, and Ashkanasy (2008) identified that these relationships

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between colleagues in the workforce require attention because their relationships create a new knowledge that impacts decisions and how individual experience a situation. On top of this, virtual team literature has become a growing interest for researchers (Chang et al., 2013; Gilson et al., 2015; Purvanova, 2014). Social cognitive theory has recently been studied alongside these new teams on how the theory can explain the differences between virtual and traditional (i.e. face-to-face) teams.

The rise in research related to social cognitive theory in virtual teams is due to the need for effective team structures and understanding of team dynamics. Higher levels of self-efficacy and collective-efficacy translate to performance, adaptability, and a propensity to accept remote work (Cogliser, Gardner, Gavin, & Broberg, 2012; Hoch & Kozlowski, 2014; Staples & Webster, 2007). The authors identified how information from peers in a team is oftentimes utilized more than information from leaders when debating on next steps. This creates an importance for the interactions members have amongst themselves, both as information sharers and information consumers.

The implication that social cognitive theory has on teams is that observations are valuable to help team members learn about the environment (Hoch & Kozlowski, 2014; Tsai & Bagozzi, 2014). This learning behavior along with the observations made help to shape future actions taken by the members. Given observations are harder to make in virtual environments than in traditional face-to-face teams, training and more specific descriptions may be needed to replicate the effect observations can have on enhancing the team experience and eventual team outcome (Staples & Webster, 2007). Social cognitive theory helps describe how individuals or situations can create stress or discomfort when uncertainty is high and trust is low, but the same theory

helps describe how collaboration and information-sharing activities should be structured in such a way to foster this trusting behavior.

The differences in frequency of communication between face-to-face and virtual teams are related to the social cognitive learning that takes place in a team environment. Cogliser et al. (2012) noted that teams consist of individuals interacting on a regular basis, and these members experience some type of social exchange that helps determine their cognitive state and how future situations will be processed. The authors found that if a team member experiences a low level of interaction and social exchange with colleague, they will ultimately have similar relationships with their other peers in the future. Under the concept of self-efficacy, employees use these same social experiences to evaluate themselves against others, which then can be used to gauge their own capabilities under the metric create through cognitive comparison in the social exchange relationships (Fan et al., 2012). Members also use these experiences to guide whether they prefer participation on the team or whether they would prefer other team structures where their level of comfort is higher.

The ability to form trust can differ depending on how long one has had to form a trust judgment in a given situation. Individuals form a trust assessment based on some factor, such as one's past behavior. Robert et al. (2009) stated, "trust develops gradually over time based on an individual's cognitive assessment of the other person's behavior. However, high levels of trust have been observed among members of virtual teams, who often have little prior history of working together" (pp. 241-242). The ability to understand why the foundational view of trust developing gradually over time as opposed to the swift trust that happens when there is no prior history is tied to the concept of cognitive trust described above.

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Trust in virtual teams needs to be looked at carefully because of the complexity of the team structure and importance trust has for overall performance in the organization. Robert et al. (2009) identified that virtual team members rely more on category-based trust than individual-based trust. In other words, individuals place their colleagues into categories based on some characteristic (e.g. gender, generation, or role within the organization) viewed alongside their personal worldview. Given that there an insufficient past experiences to judge a person on, this category-based approach allows for an initial trust judgment (Chaiken, Maheswaran, & Darke, 1999). Social cognitive theory explains that the presumptive form of trust, known as swift trust, is useful in situations where members need to work together but have no past working relationships (Crisp & Jarvenpaa, 2013; Rusman, Van Bruggen, Sloep, & Valcke, 2013). Given that social cognitive theory is a function of personal, environmental, and behavioral factors, the level of trust is not uniform. For the case of virtual team members, once individuals have been working together for some time, there becomes a point when enough information is gathered to assess one's ability and further determine trustworthiness.

Some managers may not have the luxury of waiting until a team builds the sufficient amount of cohesion to cognitively observe and learn from one another. In a rapidly changing global environment, many teams are required to act quickly and without delay. Social cognitive theorists found that that for those with no prior history of working together, trustworthiness and collaboration can be created by sharing information with team members about their colleagues (Crisp & Jarvenpaa, 2013; Wildman et al., 2012). This helps team members understand and develop a baseline of information, which can help replicate some of the benefits of informal face-to-face interactions that help individuals introduce themselves to one another.

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Another component of how individuals judge their level of comfort with a given situation in their environment is through the amount of risk they will encounter, and this perceived level of risk is a determinant used to guide action. Kong, Dirks, and Ferrin (2014) identified that trust is compared to the level of perceived risk, and the higher the level of risk, the less likely members will be to engage in a specific behavior. Conversely, if the perceived risk is at a lower level, the likelihood of one to trust increases. Under social cognitive theory, perceived risk is tied to the setting and other environmental factors, such as communication medium. Virtual team members experience less shared experiences, casual communication, and ability for leaders to closely monitor feedback (Daim et al., 2012). Welsh and Ordonez (2014) found that the inability to monitor and supervisor the work being done in a team environment increases the level of risk for members involved in the team. The author found this to be true due to a lack of punishment and lack of controls in place to monitor activity. The lack of controls, thereby, can cause mistrust or hesitations to trust because individuals do not receive enough cognitive input to change their psyche and accept the new situation.

Social Cognitive Theory and Generational Differences

From a social cognitive point of view, there are generational differences in how individuals process a situation. However, the difference in ability between various generations has been found to be minimal or non-existent by many researchers (Costanza, Fraser, Badger, Severt, & Gade, 2012; Giancola, 2006; Parry & Urwin, 2010). Moreover, Parry and Urwin (2010) did not find valid reasons for pointing out differences between members of different generations and their ability to accomplish a task in the workplace. However, recent studies found some generational categories more prone to utilize effective learning tools in the work environment, helping to create and attain goals based primarily on the social connectedness with peers. Shiota

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and Levenson (2009) found, "with increasing physical and cognitive constraints, older adults may encounter more difficulties in completing some challenging tasks by themselves, and other people's assistance may become necessary in such circumstances" (p. 348). The adults that experience more trust would be more inclined to ask for help and show their vulnerability towards others.

One's ability can be judged in a variety of ways. A perceived lack of knowledge, such as an assumption that one age group may be incapable of accepting new technologies or another generation's inability to pay attention to detail can lower trust to get the job done. The historical perceptions of a group's ability to perform also can impact how teams are actually formed. For example, Voyles, Finkelstein, and King (2014) identified how social categorization occurs through the stereotypes that exist with each generation. Conversely, Heslin, Bell, and Fletcher (2012) identified that negative comments pertaining to one's age can bring those individuals affected by such comments closer together. Similar to gender stereotypes, when looking at one's age, these stereotypes can occur in terms of how people are grouped. Robert et al. (2009) identified that in order for a team to operate at the start of a task or project, team members often group factors by category. Individuals can be grouped by category where judgments will be made on how trustworthy the person might be. Over the course of a project, individuals will learn more about one another and can readjust their observational learning to cognitively change their view, but the initial trust judgment occurs due to some categorical grouping of the team they are on, task they are working on, or individual they need to work with (Martin, Hutchison, Slessor, Urquhart, Cunningham, & Smith, 2014).

Social cognitive theory looks at learning through observations that can change over time. The new behaviors can be shaped by one's personal growth, influence of peers, and/or by

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environmental conditions that change. Some environmental conditions that can influence behavior are the time period that individuals are currently in (Lent & Brown, 2013). Economic conditions impacting nations can create different ways of thinking, as can war and other events. The author also found that while time period could impact behavior, it was hard to distinguish the impact of whether time period or one's age and ability was the variable doing the influencing. Moreover, it becomes hard for researchers to separate the specific effect one's generation has on an outcome. Costanza et al. (2012) found that the results of situations where specific differences exist that are caused by the categorical variable of age are minimal. While authors argue the danger in stereotyping (Deemer, Thoman, Chase, & Smith, 2014; Rice, Lopez, Richardson, & Stinson, 2013), the social cognitive feature of forming judgments can initially revert back to stereotypes, but history has shown that knowledge and learning help overcome stereotypes by explaining how individuals operate at the same level, and as many authors found, differences between generational and other groups are not as pronounced as originally thought. The interaction between these variables can cause a different outcome, but variables acting alone have been shown to cause minimal impact.

Some researchers found that generational differences bring with it historical ties to self-efficacy beliefs. For example, the youngest generations (i.e. Generation Y workers) have been found to have strong confidence in their abilities (Lyons & Kuron, 2014). Furthermore, members of this generation feel more confident in accomplishing their goals, and they tend to strive for more growth and recognition. Social cognitive theorists explain that these individuals were raised in a time that brought great technological innovations, embraced diversity, and has been dominated by globalization (Treuren & Anderson, 2010). The impact this environmental condition has had in shaping the worldview varies from person to person, but the generation

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grew up outside of financial turmoil, war, and societal insecurity. Similarly, members in Generation X categories, who value the family influences and grew up witnessing long hours and hard work as the norm can be influenced to make job decisions based on that (Twenge, Campbell, Hoffman, & Lance, 2010). There are some categorical age differences between these groups of individuals based on the perceptions individuals carry into a situation. These can cause for differences at the onset of a work task due to the categorical views individuals have about using a new technology, working with a demographically diverse group of peers, or entrusting a part of one's project to a colleague for successful completion. The literature above did not talk about specific differences in abilities from workers across different generations. The main consensus of the literature is in how differences exist due to people's personal view on their abilities and on their environment. These social cognitive factors mean that decisions will be reached at different rates based on the person's ability to observationally learn and modify behavior.

Social Cognitive Theory and Gender

The individual (i.e. personal) social cognitive factors that determine behavior change are driven by one's level of individual confidence and shape of one's environment that is conducive to offering the right amount of support that would lead to behavior change. The research problem explores additional interactions to trust in addition to the type of team. Generation and gender are additional considerations on how these variables can interact on the trust variable. Regarding gender, early studies created a perception that dictated how individuals learned and where they specialized. Differences were found with how boys and girls grew up with the comfort towards technology and other disciplines where societal customs dictated preference (Hong, Hwang, Wong, Lin, & Yau, 2012). Moreover, recent authors identified technology has historically been a

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masculine discipline (Huffman, Whetten, & Huffman, 2013). The authors found how masculinity was a predictor for the level of technological self-efficacy, while self-efficacy was also a predictor to the amount of perceived risk one has in a situation. However, Neuschmidt, Barth, and Hastedt (2008) found much less pronounced gender differences in how females scored against males on the above-mentioned metrics, and the authors posited that perceptions about gender roles that were created by society contributed to the placement of gender roles when it came to the introduction of technology. Thus, as society realized equal and greater competence displayed by females, the risk aversion has lowered (Swida & Reichard, 2013).

Gender roles are tied to countless stereotypes. These stereotypes shaped a lot of the societal views that existed. Kray et al. (2004) found the stereotypes impact those being stereotyped. Conversely, Eagly and Karau (2002) found those doing the stereotyping had their views reaffirmed by doing the stereotyping. Several recent authors have examined the danger of stereotyping. These authors call stereotype threat the perceptions that exist, which make vulnerable groups less likely to select the stereotyped area or task (Deemer, Thoman, Chase, & Smith, 2014; Rice, Lopez, Richardson, & Stinson, 2013). Swida and Reichard (2013) identified that due to the societal stereotypes, women tend to have a lower sense of self-efficacy and do not automatically verge into uncertain waters due to a fear of whether they are capable of carrying out the task, even though they are more than capable.

Given social cognitive theory looks at information peers learn in their current environment, these environments and one's personal self-efficacy can change over time as society transforms. Swida and Reichard (2013) stated, "even though women entrepreneurs acknowledge that discrimination is an issue and a barrier, high-growth women entrepreneurs seem to neutralize the effects of gender stereotyping by viewing these barriers as challenges to be conquered" (p. 297).

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The authors found intention, goal setting, and collaboration can increase the self-efficacy in these cases. This is in line with social cognitive theory's assumption that goal-setting behaviors give individuals something to strive for, which helps overcome fear of the past.

Social cognitive theory describes the connected role between the individual and the environment. The reasons why individuals are more comfortable in one setting over another are one part of social cognitive theory. The connection to trust describes how perceived risk and a confidence in one's ability can influence decision-making behaviors in the work environment. The focus of the dissertation was to test for statistically significant findings on interactions to trust in changing team environments, which was guided by social cognitive theory, explaining how each variable has been shown to impact self-efficacy, goal setting, and trust.

Organization for the Remainder of the Dissertation

For the remainder of the dissertation, the focus shifts to the research design where the dependent variable of trust is examined against the independent variables of type of team, generation, and gender. Based off of the gaps in the literature, the research problem is twofold; the problem looks at differences in trust based on type of team (i.e. face-to-face or virtual), while also exploring interactions with generation and gender. The literature review provided a strong foundation justifying the importance of trust in the organization setting, and the study tested variables for their interactions on trust in the changing social environments within organizations.

CHAPTER 3. METHODOLOGY

This dissertation examined the topic of trust in team settings and its research problem through quantitative methods. Several seminal (Aiken & Hage, 1966; Cook & Wall, 1980; Jarvenpaa & Leidner, 1999; Sarker et al., 2003) and recent authors (Furumo, 2009; Golden & Raghuram, 2010; Jarman, 2005; Lowry et al., 2010; Paul & McDaniel, 2004; Purvanova, 2014; Timmerman & Scott, 2006) have studied key organizational variables in a team setting utilizing quantitative methods and examining potential impacts on trust. The research problem to be explored looked at differences in trust based on type of team (i.e. face-to-face or virtual), and as an extension to this problem, the study tested for statistically significant interactions with generation and gender. The use of surveys quantified and tested through a factorial analysis was the choice for the quantitative study. A validated instrument from Costa and Anderson (2011) was utilized to test trust in the team setting. The instrument tested with high reliability scores and has been used in various team configurations. The survey examined team trust through a self-reported questionnaire, which looked to confirm or reject the hypotheses and address the research problem of trust in team settings.

The ability to expand on seminal literature can advance the topic of trust in different organizational settings. Many researchers have explored trust in team settings (Chiaburu & Baker, 2006; Dirks & Ferrin, 1999; Jarvenpaa & Leidner, 1999; Krishnan, Martin, & Noorderhaven, 2006; Mayer & Davis, 1999). However, few studies have explored trust with the team being the unit of analysis (Costa & Anderson, 2011; Serva, Fuller, & Mayer, 2005). The study tests a sample of face-to-face (i.e. those working and communicating in person) and virtual team employees (i.e. working remotely and/or through computer-mediated methods) located in

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the United States. The specific medium for testing the employees was performed through the SurveyMonkey pool of candidates, which delivered the validated questionnaire to the sample.

The survey was used to study trust in team settings, specifically focusing on gender, generation, and team setting. Subsequently, the survey instrument examined trust through questioning relating to trustworthiness, cooperation, and overall propensity to trust, which were all formulated in a team trust variable. The Cronbach's alpha for the instrument was 0.81 (Costa & Anderson, 2011). Similarly, the construct-related validity showed good fit throughout the confirmatory factor analysis tests (Costa & Anderson, 2011). A five-point Likert scale was utilized for each of the 21 questions.

Each of the independent variables has been shown to influence trust in a team setting, but the results were not uniform and remain inconclusive. Furumo and Pearson (2007) and Boiney (2001) contributed to the impacts of gender on the variable of trust, while Hahn (2011) examined the role of generational differences against the same variable. However, the ability to compare the interactions against each other in the emerging field of virtual teams has not yet been explored.

The statistical approach utilized was a three-way factorial ANOVA. A non-experimental quantitative approach examined multiple factors in the study of trust in team settings. Through the lens of objectivism, the study accessed differences in trust levels across groups. The associations between variables, referred to as interactions in a factorial study, were analyzed. The research questions are focused on the effects independent variables have on trust (i.e. the dependent variable). Moreover, addressing the differences in means with one dependent variable when multiple independent variables exist is a key factor in a one-way, two-way, or three-way ANOVA. The three-way ANOVA tested for the individual interactions each of the independent

variables have on the trust variable. Additionally, the three-way ANOVA tests for the interactions between the three independent variables themselves.

The unit of analysis for the study was at the team level. Individuals were surveyed to ascertain a group outcome, which adheres to the requirements of the General Management specialization. The goal for the study was to understand the population of employees in different types of team settings, and through a quantitative approach, the individuals surveyed addressed key research questions based on unique group responses to the variable of trust. Mierlo, Vermunt, and Rutte (2008) specifically looked at studies composing group-level conclusions from individual-level data. The authors found group-level phenomena to be of great interest to researchers, and they found items (i.e. questions) referring to the group in question as one approach in proceeding to obtain team-level outcomes. In this dissertation, each of the questions referred to the team, and each response was focusing on how the team operates. The instrument was specifically developed for test for trust at the team level. The reason this was critical is examined below with the overview of the population.

<div align="center">**Sample**</div>

Population

The study's population included individuals from the United States who work in a team environment (i.e. face-to-face or virtual team) in their organizations. Individuals ranging in age from 18 to 64 were included to catch generational differences identified in the research questions. The ability to evaluate the team members through the study contributes to the body of knowledge that is still emerging on impacts to trust in these new team structures (Crisp & Jarvenpaa, 2013; Purvanova, 2014). The population of virtual team members has increased greatly in recent years. Gibson and Gibbs (2006) identified that 60% of employees work on some

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form of virtual team. Lee (2013) identified that 4.3% of the total workforce works solely in virtual environments with no face-to-face interaction, but many more individuals may work mostly virtual or, at the very least, work with some degree of virtuality where their face-to-face presence is limited. The number of strictly virtual employees has grown by over two million since 2005.

The population of virtual and face-to-face teams focused on employees located in the United States. Additionally, while industry considerations are discussed in the limitations section of the study, the dissertation focused on all industries in order to obtain a sufficient sample from the SurveyMonkey pool of candidates.

Sample Frame and Sample

The sample frame was chosen from the larger population of team employees who were accessible through the SurveyMonkey overall audience. The SurveyMonkey database has a large collection of members fitting the generational age criteria and geographical region selected for the study. The inclusion criteria included two factors; individuals working in the United States and those aged 18 to 64 in the organization were targeted. The type of team criteria was determined through members self-identifying the type of team environment they work in, and individuals identified whether they work in traditional (face-to-face) environments or remote (i.e. virtual) environments.

The exclusion criteria for the study included both team-specific and participant-specific criteria that eliminated individuals as potential candidates for participation. The choice to utilize SurveyMonkey limited the overall population that was available to those in the SurveyMonkey database. Individuals outside of the age bracket of 18 to 64 were excluded, as were those outside of the United States.

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Sampling Procedures

The sampling procedures included recruiting, selecting, and assigning-to-groups. SurveyMonkey was utilized to recruit the participants, which was determined by the inclusion and exclusion criteria identified above. Once a large pool of potential subjects was identified, a stratified random sample was selected from that pool. Stratified random sampling refers to splitting groups into segments, and the primary focus of comparisons between the type of team allowed the research to create an analysis between equal groups, which are discussed in the sample size section below.

Sample Size

The sample size for the dissertation was computed through the G*Power software version 3.1.9.2. The sample size for the study was calculated to be 251. This was calculated utilizing an effect size of 0.25, alpha of 0.05, and Power of 0.95. The results are provided in Table 1 below.

Table 1. Sample Size Calculation

Input	N	Output	N
Effect Size	0.25	Noncentrality parameter	15.6875
α err prob	0.05	Critical F	3.033598
Power (1-β err prob)	0.95	Denominator df	239
Numerator df	2	Total Sample Size	251
Number of Groups	12	Actual Power	0.9506

The research questions accessed the differences between various groups and populations of team members. The ability to see interactions required that the correct methodological approach was chosen and an adequate sample size is utilized. A small effect size of 0.25 structured the study to monitor small effects and changes. An adequate sample size that was randomized through the SurveyMonkey data service allowed the study to meet key methodological

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assumptions related to normality and allow for better generalizability than a purposive sample (Mardia & Kent, 1979). With the calculated effect size and chosen power, a sample size of 251 was calculated.

A stratified random sample was utilized to split the population into two groups or segments. The group consisted of half of the total sample size being face-to-face team members and half virtual team members. This broke down to 126 face-to-face and 126 virtual team members. Stratified random sampling is an alterative to simple random sampling and works to more accurately describe large-scale surveys and samples (Olofsson, Foody, Stehman, & Woodcock, 2013).

Setting

The research design consisted of surveys sampling a group of adults in the United States. The subjects of the study were adults working in one of the two types of teams in a variety of business settings, where all sampled adults were housed in the SurveyMonkey pool of available candidates. SurveyMonkey was utilized for the data collection where a stratified random sample was chosen from the overall criteria of adults aged 18 to 64 working in the United States on either face-to-face or virtual teams. The participants completed their survey online through the SurveyMonkey online portal, and about a third of the responses were filled out on a mobile device, while the remaining response were filled out on the computer. Furthermore, through the online system, the responses were recorded, and the data analyzed through an analysis of variance (ANOVA) approach. Participant information, identifiable information relating to companies involved, and other sensitive data was protected through the use of the SurveyMonkey setting specializing in data collection and eliminating the identifiable information released.

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The dissertation's data collection instrument utilized a validated trust questionnaire. Costa and Anderson (2011) developed a 21-item instrument measuring trust at the team level. Measuring trust as a group-level factor has been a lacking avenue of research for existing organizational studies looking at the interactions on trust (Costa & Anderson, 2011; Serva et al., 2005). The survey provided statements pertaining to an individual's team, and the 21 questions were aggregated to develop an overall representation of team trust. With a Cronbach's alpha score of 0.81, the instrument showed acceptable levels of reliability and construct validity that are discussed in greater detail later.

Measures

Trust was defined as the ability to work together, delegate tasks to team members, and the perceived trustworthiness in one another that leads to cooperation (Cook & Wall, 1980; McAllister, 1995). McAllister (1995) identified trust as likelihood an individual will act based on the words or actions of another. This definition built off the definition of Cook and Wall (1980) examining the confidence in the ability of others and confidence in the intentions of others as the two key components of trust. The authors found a focus on ability and intention helps conceptualize what trust means in the organization. For an individual to make himself or herself vulnerable to another by delegating a task or implementing feedback, one must trust that the intentions are good (Mayer, Davis, & Schoorman, 1995). Costa and Anderson (2011) constructed a validated instrument testing trust in team settings, and this instrument was utilized to test for interactions between the independent variables on trust. The authors defined trust by looking at the variable as a group-level variable consisting of cooperative behaviors, perceived trustworthiness, and the overall propensity to trust. The definition and instrument were built off

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of the work of McAllister (1995), Cook and Wall (1980), and other seminal others looking at trust in the organizational environment.

The type of team environment one works in was a construct the study focused on to examine potential interactions to the levels of trust within the organization. For the purposes of the study, traditional teams (i.e. those meeting face-to-face) and virtual teams were the two types of teams, and the total sample was divided equally between these two groups (i.e. strata). Research shows the face-to-face environment allowing for better visual cues (Martins, Gilson, & Maynard, 2004; Storper & Venables, 2004), relationship building (Rosen, Furst, & Blackburn, 2007), and immediate feedback (Duke, 2001). As it relates to the trust construct, Polzer, Crisp, Jarvenpaa, and Kim (2006) and Martins et al. (2004) found delegation of tasks and development of trust are harder to establish in virtual environments due to a lack of these visual cues and timely feedback. However, Purvanova (2014) found most organizations utilize virtual teams in today's age due to a variety of factors that contribute to efficiency. Duarte and Snyder (2001) found virtual teams help to improve decision-making time, increase collaboration, lower facility costs, and allow for a larger global reach in today's increasingly competitive environment.

Age was also examined as a categorical variable. Kupperschmidt (2000) identified Generation Y, Generation X, Baby Boomers, and Traditional as the four main generations. Conceptually, the differences in the ability to create a trusting environment will help address the research questions. Previous research showed how Traditional and Generation X individuals prefer the face-to-face environment (Hahn, 2011). As more companies explore the cost advantages of virtual teams (Purvanova, 2014), it remains critical to understand whether these differences impact the overall ability to create trust, which impacts a team's overall performance. Crisp and Jarvenpaa (2013) identified that frequent interactions help reduce uncertainty, and

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given a move toward more team-based structures (Mathieu, Marks, & Zaccaro, 2001; Purvanova, 2014), potential generational differences are important to understand.

Lastly, gender was utilized to test for differences between male and female population. The composition of a team is dependent on many issues, but the ability to understand key gender differences can help researchers and managers better structure the team. Boiney (2001) found differences in how male and female team members act in virtual environments, which were expanded on in this research design.

Operational Definitions

Trust was operationally defined as the general willingness to trust others, along with the vulnerability an individual has towards the actions of the others (Mayer, Davis, & Schoorman, 1995). Furthermore, trust is defined as a set of expectations (e.g. reliability and honesty) that seek to lower the risk in an environment that contains a degree of vulnerability (Costa & Anderson, 2011).

There were two types of teams identified for the categorical variable of type of team. Those classified as face-to-face included members meeting in the same physical location, relying on in-person communication as the medium for collaboration and information-sharing activities. Virtual teams consist of geographically dispersed individuals utilizing technology to complete their organizational task (Jarvenpaa & Leidner, 1999). Operationally, virtual team members are those working remotely or through computer-mediated technologies without face-to-face interaction. Lipnack and Stamps (1997) identified the difference in classification between in the type of team variable, identifying virtual team members as those that perform interdependent tasks across organizational boundary, space, and time.

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Carver & Candela (2008) operationalized age into categories, each spanning a range of years to group the ages. Carver and Candela (2008) classified the veteran generation as the classification for those born from 1925 to 1942, but for the purposes of this dissertation, the category was not utilized due to the sample including only individuals aged 18 to 64. For the purposes of the study, three generational categories were utilized due to the sampling criteria utilized in the study and age groups available in the SurveyMonkey set. Therefore, the three age groups of 18 to 29, 30 to 44, and 45 to 64 were utilized for the study. These age groups closely represent the Generation Y, Generation X, and Baby Boomer categorical age taxonomies. Gender was evaluated as the difference between males and females, which has shown differences in levels of trust and performance in team settings (Hahn, 2011).

Research Questions

The research questions are derived from the development and synthesis of the research problem. For this study, trust was used as the dependent variable, while three independent variables – type of team, gender, and generation – were selected. The methodological approach chosen to test the interactions each independent variable has on the dependent variable was a factorial analysis of variance (ANOVA). This approach is most useful to test for differences between group means on each factor (i.e. variable). Each factor's interaction against the dependent variable was tested for, as well as each factor's interaction against each fellow independent variable to satisfy the criteria of a three-way ANOVA. The research questions are listed below:

Omnibus research question: What is the effect on the level of trust based on the type of team setting, generation, and gender?

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Subquestions:

Question 1: What is the effect on the level of trust based on the type of team setting and generation?

Question 2: What is the effect on the level of trust based on the type of team setting and gender?

Question 3: What is the effect on the level of trust based on generation and gender?

Question 4: What is the effect on the level of trust based on the type of team setting?

Question 5: What is the effect on the level of trust based on generation?

Question 6: What is the effect on the level of trust based on gender?

Hypotheses

The six research questions identified concerns for the topic of trust and shaped the foundation for the hypothesis generation. In the following section, the main omnibus hypothesis and other hypotheses are addressed. A null hypothesis is provided and an alternative hypothesis accompany each null hypothesis, where the alternative hypothesis stated a value that is less than or greater than the null hypothesis. Each hypothesis later is tested in the data analysis, testing trust through the factorial analysis of the validated trust instrument prepared by Costa and Anderson (2011). Each hypothesis is presented below, along with its rationale.

H_0: There is no statistically significance difference between group means in the level of trust based on the type of team setting, generation, and gender.

H_A: There is a statistically significance difference between group means in the level of trust based on the type of team setting, generation, and gender.

The next three hypotheses are two-way interaction hypotheses that look at variations between group means in the level of trust based on the interactions between the independent

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variables. The independent variables being examined are type of team, generation, and gender. A three-way factorial ANOVA was utilized, which is the method chosen when attempting to analyze means between variables. In an ANOVA there are main effects and interactions effects. The three two-way interactions effects are stated first, followed by a more detailed explanation and justification for why the three independent variables (i.e. main effects) were chosen. Moreover, the interaction effect describes the potential effect one factor has on another factor. For this dissertation, the interaction effects tested for statistically significant effects between the factors of type of team on generation, type of team on gender, and generation on gender.

$H1_0$: There is no statistically significance difference between group means in the level of trust based on the type of team setting and generation.

$H1_A$: There is a statistically significance difference between group means in the level of trust based on the type of team setting and generation.

$H2_0$: There is no statistically significance difference between group means in the level of trust based on the type of team setting and gender.

$H2_A$: There is a statistically significance difference between group means in the level of trust based on the type of team setting and gender.

$H3_0$: There is no statistically significance difference between group means in the level of trust based on generation and gender.

$H3_A$: There is a statistically significance difference between group means in the level of trust based on generation and gender.

The use of teams has been a long-used organizational tool. Mathieu, Marks, and Zaccaro (2001) described the increased use of virtual teams due to savings, efficiencies, and globalization. The team structure is replacing traditional teams, but implications for this new

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team structure is still being examined (Purvanova, 2014). The interpersonal and group considerations relating to conflict, communication, and varying levels of trust between the type of team chosen are of interest to managers (Costa & Anderson, 2011). Peters and Manz (2007) are two authors who identified the difficulty virtual teams have in replicating face-to-face communication in their ability to positively influence trust.

Given virtual team literature has only been a focus for the past two decades, there is not a large enough body of research to address common organizational issues. Piccoli and Ives (2003) found trust was the biggest obstacle faced by organizations utilizing virtual teams. The authors identified that the lack of visibility and dynamic nature of virtual teams as a hurdle in trust development. Other authors found trust to be more easily garnered in virtual environments (Crisp & Jarvenpaa, 2013; Purvanova, 2014). There is no consensus in the literature on which type of team is more effective in greater influencing levels of trust. Therefore, the hypothesis aimed to test for an interaction on the dependent variable.

$H4_0$: There is no statistically significance difference between group means in the level of trust based on type of team setting.

$H4_A$: There is a statistically significance difference between group means in the level of trust based on type of team setting.

Aside from the type of team, generation (i.e. age category) can play a role in the level of trust and acceptance of technology (Hahn, 2011). Chatman and Spataro (2001) found demographic differences as a precursor for lower levels of trust, cooperation, and project success. Recently, authors found that generation and gender are two variables often bypassed in research, although they can be cause an impact on a selected dependent variable (Martins & Shalley, 2011; Mockaitis, Rose, & Zettinig, 2012). The formation of a team and its demographic

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composition was tested for on the specific basis of categorical age differences, broken down into those aged 18 to 29, 30 to 44, and 45 to 64. The second main effect hypothesis set up to test whether a statistically significant effect exists between generation and trust.

$H5_0$: There is no statistically significance difference between group means in the level of trust based on generation.

$H5_A$: There is a statistically significance difference between group means in the level of trust based on generation.

Aside from the demographic consideration of generation, gender is a variable often controlled for and not tested in organizational team research (Martins & Shalley, 2011; Mockaitis, Rose, & Zettinig, 2012). Gender has been found to impact trust in different and inconsistent ways (Brindley, 2005; Diaz-Garcia & Jimenez-Moreno, 2010; Furumo & Pearson, 2007; Koellinger, Minniti, & Schade, 2007; Madichie & Gallant, 2012; Maxfield et al., 2010; Shinnar et al., 2012; Yordanova & Tarrazon, 2010). Furumo and Pearson (2007) found a connection between gender and trust, while the interaction is not conclusive and has not been heavily tested in organizational settings. Therefore, the last independent variable was tested through the final hypothesis.

$H6_0$: There is no statistically significance difference between group means in the level of trust based on gender.

$H6_A$: There is a statistically significance difference between group means in the level of trust based on gender.

Data Collection Procedures

The data collection for the study took place through an online service called SurveyMonkey. The instrument was examined, evaluated, and loaded into the SurveyMonkey

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system, and the survey was distributed. To explain the procedure more thoroughly, an account was created in the SurveyMonkey service that allowed the researcher to analyze the data and complete the data collection. Once the instrument was loaded in the system, an audience selection needed to occur. SurveyMonkey allows researchers to target their audience according to common demographic options, such as generation, gender, and location, etc. There are more options, but for this dissertation, the targeting procedures were sufficient. Where the targeting procedures were lacking were in the type of team targeting options. The data collection approach for this criterion included a qualifying question where members self-identified the type of team environment they work in. This allowed the researcher to create a stratified random sample based on type of team.

SurveyMonkey surveyed the identified sample size that met the inclusion criteria identified by the researcher. The sample consisted of employees across multiple industries that are on a face-to-face or virtual team. Individuals aged 18 to 64 were selected for the study to test for any differences between group means relating to the levels of trust against the three independent variables. Once the targeting criteria were created, completed responses are received by purchasing the targeted amount of responses one's study would need. SurveyMonkey proceeds to collect the responses, and the system continues until the requested responses are received. One exception to this is if the survey receives an abandonment rate over 40%. The survey for this dissertation was designed sufficiently to avoid such an abandonment rate and completed responses were received.

There was one questionnaire utilized for the study looking at the precursors to trust in a team setting (Costa & Anderson, 2011). Before a participant filled out his or her questionnaire, the individuals received a detailed consent form explaining any potential harm they might

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encounter. The consent forms provided for participants to read over the key information of the study, and participants needed to agree to the consent form before being eligible to engage in the survey.

The participants' anonymity and confidentiality was preserved throughout the handling of participant information. Identifiable information, such as name or company, has not been used in this study. Moreover, the researcher did not see any identifiable information throughout the process. Lastly, information was kept in a secure location, protected through secure mechanisms (i.e. password-protected and locked files).

Data Analysis

An ANOVA focuses on variances with group means, which are associated with responses to the research questions. The research questions ask about the changes in the level of the dependent variable, which a structured model tested to see whether a result of these changes was due to changes brought about by the independent variables. The advantage of a three-way ANOVA over multiple one-way ANOVAs or other approaches is that the interactions between the various independent variables can be tested for in the model.

This dissertation's approach looked at a study with three independent (predictor) variables and one continuous dependent variable. For this dissertation, the independent variables are type of team (i.e. face-to-face or virtual team), gender, and generation. The dependent (outcome) variable was trust. Specifically, in the ANOVA approach, the approach is to start by looking for three-way interactions. This is the interaction with all three independent variables together. Following the three-way interaction test, three two-way interactions are examined for any statistically significant values. If no statistically significant two-way interactions are found, three main effects are examined. This is seen in the figure below.

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Possible Interactions for Three-Way ANOVA
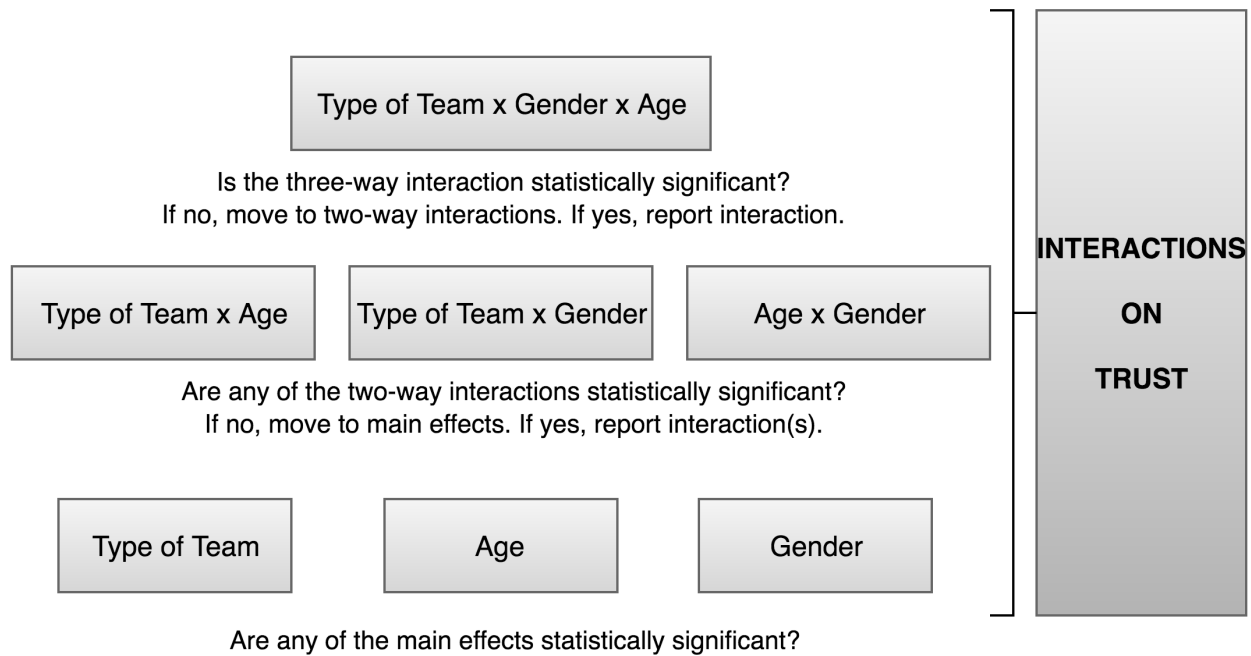
Figure 1. Interactions in ANOVA

Assumptions in ANOVA

The exploratory data analysis procedures occurred before the study's data analysis was performed. There are several assumptions that should be tested for, including tests for the variables being utilized, normality, homogeneity of variance, and multicollinearity. The first assumption explains how the dependent variable, which for this dissertation was trust, needed to be at the interval or ratio level. The trust variable was measured at an interval scale, which met the assumption. Another assumption required the three independent variables to be some type of categorical variable. Each variable – type of team, generation, and gender – was a categorical variable consisting of at least two groups. Next, normality was examined, which can be checked via through a Shapiro-Wilk test. The Shapiro-Wilk test provides a test for normality in tabular form. Transformations can occur if the normality is violated. Modified F-tests and other tests

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considered to be non-parametric (e.g. Kruskal-Wallis test) can be utilized for any cases needing attention (Mardia & Kent, 1979). The assumption dealing with homogeneity of variance was assessed through the Levene's Test, which looked at the overall variability in the dependent variable. The last assumption states, no multicollinearity between the predictor variables. A factor analysis can group variables violating multicollinearity, if such a situation presented itself. This was not the case in this dissertation; therefore, further data analysis through a factorial analysis could be pursued.

Performing Data Analysis

IBM SPSS Statistics Version 24 was utilized for the statistical analysis. The software was powerful to analyze and produce insights about the research, starting with the assumptions. This included testing the dependent variable of trust, the three independent variables, normality tests, and a test for homogeneity of variance. If the model's assumptions do not hold, transformations can be made, as suggested above. Non-ANOVA tests or weighted ANOVAs are options if the assumptions do not hold (Mardia & Kent, 1979). An alternative model would be to include nonparametric tests, which differ and do not make the same assumptions of the normal-theory-based tests. However, as described in Chapter 4, the assumptions were met and the resulting factorial procedures were carried out to test each of the individual hypotheses.

After verifying assumptions met the standards for an ANOVA approach, data analysis could be performed. As seen in Figure 1 above, the three-way ANOVA has multiple steps in accessing whether statistically significant results exist. The figure discussed that researchers start with an examination of whether a three-way interaction existed. When the results are computed in SPSS, multiple tables are presented. These tables are provided in Chapter 4, but the starting point is to examine whether any statistically significant values exist in the ANOVA output table.

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From the generated tables, the p-value (i.e. significance) was examined. Values greater than the significant value of .05 meant no statistically significant result, while values below .05 indicated statistical significant. Moving on, if there is no statistically significant three-way interaction, the research can proceed to test for two-way interactions. However, if a statistically significant three-way interaction exists, the approach in ANOVA requires researchers to stop and report the findings of the three-way interaction. The dissertation did not find a statistically significant three-way interaction and proceeded to test the three two-way interactions and found statistical significance in the two-way interaction of type of team and gender, which is discussed in detail in Chapters 4 and 5.

Validity and Reliability

For a study to make a contribution in the scientific community, the methodological approach should meet key criteria relating to reliability and validity. As far as reliability, the Cronbach's alpha score of 0.81 is an aggregate of four subscales. Being greater than 0.70 and through additional testing, the authors indicated acceptable levels of reliability and homogeneity for the instrument (Costa & Anderson, 2011). The authors conducted a preanalysis test to determine the suitability for the instrument to be utilized for factor analysis, and the Kaiser-Mayer-Olkin (KMO) was 0.83. The score indicated factorial procedures could be pursued.

The construct validity was assessed through multiple tests showing good model fit. As shown by the Cronbach alpha scores above, the reliability and internal homogeneity are at acceptable levels. The authors identified trust as a complex variable needing to be understood due to its impact on the performance and effectiveness of an organization (Costa & Anderson, 2011). The authors suggested testing the variable in different organizational configurations to better understand trust in team settings.

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Ethical Considerations

For this dissertation, there was no harm to the individuals who engaged in the study. The reasoning for this can be addressed through the data collection method and topic. SurveyMonkey randomly selected the individuals for the study and maintained participant privacy throughout the process. The topic of trust in team settings did not expose participants to undue harm. The choice of quantitative methods, utilization of SurveyMonkey to randomize the larger population, and lack of punishment for what answers are provided meant a minimal risk to participants for the study.

The Belmont Principle of Respect for Persons was a requirement and key ethical consideration. The participants were required to give informed consent. In addition, the safety of the participants was protected through the anonymity ensured through SurveyMonkey. Lastly, the researcher kept the data collected in a secure location.

The confidentiality, data collection and storing of information, and informed consent are three ethical challenges that needed to be monitored (Howe & Eisenhart, 1990). The ability for the researcher to answer questions, prepare in advance for proper handling of the information, and respect the rights of the participants also helped address the challenges.

The researcher was not in direct contact with the participants, but the need for confidentiality remained. The confidentiality, anonymity, and security of the information kept participants' information private to only the individual and researcher. The company name, participants' name, and other identifiable information were not provided (e.g. first and last name fields in the data export are completely blank). SurveyMonkey securely stored the data.

Equity and respect for persons, two factors of the Belmont principle are important ethical considerations. For this dissertation, there was a selective choice to utilize the SurveyMonkey

database and a targeted geographical area. Respect for persons included the full disclosure about the purpose of the study, availability for participants to ask questions of the researcher, ability to withdraw without any harm or penalty to the participant (The Belmont report, n.d.). The participant was informed of the study upon first contact, and through the SurveyMonkey system. Any risks to the participants could be addressed with participants being free to exit the study at any time, and an exit button was available to them for such a purpose.

Summary of Research Design

The focus of this research design was to examine trust at the team level utilizing a validated instrument to quantitatively measure the effect and interactions predictor variables have on one another and on the formation of trust. Costa and Anderson (2011) developed a 21-item questionnaire testing for trust in team settings, which allowed for the testing of the hypotheses looking for potentially statistically significant interactions in the factorial research design. Following an explanation of the methodology, the three-way ANOVA was selected as the best approach to test hypotheses on whether interactions exist between the three independent variables (i.e. type of team, gender, and generation) against the dependent variable of trust. Following the identification of the sampling criteria and calculation of the sample size, the questionnaire was distributed through the SurveyMonkey service. A detailed data analysis followed, which are addressed in the next chapter where the results are also presented. The results are compared to the hypotheses, and hypotheses either can be accepted or rejected based on the data.

CHAPTER 4. RESULTS

This chapter provides a thorough data analysis and proceeds to confirm or reject the hypotheses addressed in prior chapters. The goal for this research was to examine the differences in trust utilizing three independent categorical variables. Specifically, the study examined interactions on trust in team settings, which differed from the previous studies on those working in face-to-face environments versus those working in virtual team environments lacking to find conclusive findings on the effectiveness and differences teams have on trust (Purvanova, 2014). Research identified differences on trust based on the type of team setting, and inconclusive findings showed differences in how other variables (e.g. gender and generation) influence trust (Martins & Shalley, 2011; Mockaitis, Rose, & Zettinig, 2012).

The study's research problem looked at differences in trust based on type of team (i.e. face-to-face or virtual); as an extension to this problem, the study explored interactions with generation and gender. Specifically the research questions stated:

Omnibus research question: What is the effect on the level of trust based on the type of team setting, generation, and gender?

Subquestions:

Question 1: What is the effect on the level of trust based on the type of team setting and generation?

Question 2: What is the effect on the level of trust based on the type of team setting and gender?

Question 3: What is the effect on the level of trust based on generation and gender?

Question 4: What is the effect on the level of trust based on the type of team setting?

Question 5: What is the effect on the level of trust based on generation?

Question 6: What is the effect on the level of trust based on gender?

Each of these questions helped generate an omnibus hypothesis and six additional hypotheses looking to test for statistically significant differences on group means between the dependent variable of trust and independent variables of type of team, generation, and gender.

The initial chapters described the research problem relating to a lack of trust. The importance of trust is accepted by organizations due to the correlation seen to more successful work environments with higher levels of collaboration and productivity (Braun et al., 2013; Mach et al., 2010; Schaubroeck et al., 2011; Verburg et al., 2013). Given the importance of the variable, the research design in Chapter 3 discussed the non-experimental quantitative approach that would be utilized. This approach consisted of a 21-item survey developed to test for trust in team settings. The data collection was outlined to show a sample of 251 team members calculated through G*Power software and that a stratified random sample would be utilized to group the type of team into two strata: face-to-face (i.e. those meeting and communicating in person) and virtual (i.e. those communicating remotely and through computer-mediated technologies) team members. After sending out the survey, the analysis of the results and methodological approach of analysis of variance becomes the focus of this chapter.

The organization of this chapter is as follows: the population and sample are discussed, the assumptions pertaining to analysis of variance tested, descriptive statistics are presented, and inferential statistics provided to test the study's hypotheses.

Description of the Sample

The literature relating to virtual teams describes the approximate size of this population. Gibson and Gibbs (2006) identified that 60% of employees work on some form of remote team. Lee (2013) found that 4.3% of the total workforce works solely in virtual environments with no

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face-to-face interaction. The number has grown by over two million since 2005. The population has grown in recent years, and the comparisons between the groups are a major focus for this study and tie to the study's purpose and research problem. Utilizing G*Power version 3.1, the sample size for the study was calculated to be 251. This was calculated utilizing an effect size of 0.25, alpha of 0.05, and power of 0.95. As described in the sampling section in Chapter 3, this sample size was utilized through a stratified random sampling approach.

SurveyMonkey was utilized for the collection of data. The key criteria utilized for SurveyMonkey was to sample working adults 18 to 64 located in the United States. A stratified random sample was utilized to divide the population of surveyed adults into equal groupings of face-to-face and virtual team employees.

Targeting 126 virtual team employees and 126 face-to-face employees, SurveyMonkey was utilized to obtain the proper amount of responses. The survey was sent out to 614 respondents, and participants were given an option to opt out and had a qualifying question to enter the survey. Some respondents abandoned the survey after starting, but 398 completed surveys were received. Of these 398 completed responses, 126 responses were from virtual team members. The remaining were face-to-face members.

The approach was to end up with two equal groups for the analysis. It has been found that virtual team members are less present in the overall population of employees compared to those working face-to-face (Purvanova, 2014). Therefore, the survey was distributed to get a sufficient amount of the smaller strata (i.e. virtual team employees) in order to get 126 responses from this group and be able to conduct scholarly statistical analysis. Given the study was structured as a stratified random sample comparing groups, the first 126 face-to-face responses were utilized for

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the 252-person sample, making two equal groups of 126. The collected amount meets the sample size calculated through G*Power.

<h2 style="text-align:center">Data Transformations</h2>

The final step before proceeding to test the assumptions and presenting the analysis was to address reverse scoring. There were four questions on the 21-question survey that needed to be reversed (Costa & Anderson, 2011). Meaning, a score of 1 gets transformed into a 5, a 2 into a 4, a 4 into a 2, and a 5 into a 1. This was completed in SPSS through a calculation to satisfy the requirements of the survey and make sure the dependent variable was measured accurately. The four questions that were reversed scored are listed below:

Q11. There are some hidden agendas in this team.

Q12. Some people in this team often try to get out of previous commitments.

Q17. Some people hold back relevant information in this team.

Q18. In this team, people minimize what they tell about themselves.

<h2 style="text-align:center">Testing Assumptions</h2>

With three independent variables and one dependent variable, the statistical approach that was pursued was a three-way analysis of variance (ANOVA). Given the research questions and hypotheses looked to test for effects (i.e. interactions), ANOVA is a robust methodological approach that tests for statistically significant differences between variables (Schmider, Ziegler, Danay, & Beyer, 2010). Before an ANOVA, in this case a three-way ANOVA, can be used, there are multiple assumptions the study needs to meet before proceeding. The initial three assumptions address the basic requirements before pursuing ANOVA, while the remaining three examine how well the data fits the model. The following section discusses the six assumptions addressing the study design of ANOVA.

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Dependent Variable Measured at Interval Level

The first three of these assumptions deal with the methodological approach of ANOVA, and these need to be met before the analysis can be pursued. The first assumption of the three-way ANOVA is that the dependent variable, trust, be measured at a continuous level. This means the variable is an interval or ratio variable. Team trust is being measured at an interval scale, which meets the assumption.

Independent Variables Consisting of Categorical Groups

The second assumption required each of the three independent variables to consist of at least two independent groups. These independent groups must be categorical. For this dissertation, type of team consists of two categorical groups, gender consists of two groups, and generation consists of three groups. This assumption has been met with each of the independent variables satisfying the requirement.

Independence of Observations

The third assumption states that the study should be independence of observations. This assumption requires there to be no relationships between the individual observations in each variable. A simpler way to state this is that each response the study obtained was not related. Given the study utilized SurveyMonkey and a randomized sample from around the country, the observations were independent and the assumption was met.

Normality for Trust Variable

The remaining assumptions of normality, outliers, and homogeneity of variance were looked at after the results of the ANOVA were computed because those assumptions are analyzed by looking at outputted data and tests. These assumptions show how well the presented data fit in the study's choice to utilize a three-way ANOVA approach. The first assumption of

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normality was witnessed through the testing. The Shapiro-Wilk test was utilized to access

normality. The Shapiro-Wilk test can be seen below in Table 2 below.

Table 2. Tests for Normality

Type of Team	Generation	Gender	Variable	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
				Statistic	*df*	*Sig.*	Statistic	*df*	*Sig.*
Face-to-Face	18-29	Female	TrustAvg	.203	33	.001	.921	33	.020
		Male	TrustAvg	.341	8	.007	.852	8	.099
	30-44	Female	TrustAvg	.087	30	.200*	.972	30	.602
		Male	TrustAvg	.237	10	.117	.851	10	.060
	45-64	Female	TrustAvg	.128	35	.158	.939	35	.051
		Male	TrustAvg	.231	10	.138	.821	10	.026
Virtual	18-29	Female	TrustAvg	.148	30	.093	.963	30	.370
		Male	TrustAvg	.180	9	.200*	.906	9	.292
	30-44	Female	TrustAvg	.149	32	.070	.959	32	.253
		Male	TrustAvg	.121	20	.200*	.968	20	.710
	45-64	Female	TrustAvg	.143	19	.200*	.944	19	.310
		Male	TrustAvg	.127	16	.200*	.963	16	0

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The table above showed the assumption was satisfied at $p > .05$ for all but two groups.

Previous studies found ANOVA to be robust to violations when it comes to the normality

assumption of the model (Keselman, Algina, Lix, Wilcox, & Deering, 2008; Schmider et al.,

2010). The authors found type I and type II errors to remain unchanged in situations where the

assumption was in question. The analysis can move forward.

Outliers

The next assumption looked at whether there were outliers in the data. Outliers can occur

due to measurement error, respondent error, or by random chance. These explain data

inconsistencies or extreme values that do not fit with the data. They can be addressed through

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non-parametric tests and are examined in SPSS by generating plots to look for extreme values. Through testing boxplots in SPSS, no outliers were found in the dataset and the assumption was met. The assumption of homogeneity of variance is analyzed below.

Homogeneity of Variance

The final assumption of ANOVA refers to homogeneity of variance. This can be assessed using Levene's test for equality of variances. The results are seen in Table 3 below.

Table 3. Levene's Test for Equality of Variances[a]

F	*df*1	*df*2	*Sig.*
1.235	11	240	.264

Tests the null hypothesis that the error variance of the dependent variable is equal across groups
a. Design: Intercept + TEAMTYPE + GENERATION + GENDER + TEAMTYPE * GENERATION + TEAMTYPE * GENDER + GENERATION * GENDER + TEAMTYPE * GENERATION * GENDER

Interpreting the significance column, the value in the Levene's test is greater than .05. This means the result is not statistically significant. Therefore, there was homogeneity of variances for trust for all group combinations of type of team, generation, and gender, as examined by Levene's test for equality of variances, *p* = .264. The descriptive statistics are presented below, concluding with the hypothesis testing and other inferential statistics.

Descriptive Statistics

From the 252 completed responses, a total of 179 females completed the survey and a total of 73 males completed the survey. In Table 4, the frequencies can be seen on the total number of respondents per team type, generation, and gender.

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Table 4. Frequencies of Sample

		Value Label	N
Type of Team	1.00	Face-to-Face	126
	2.00	Virtual	126
Generation	1.00	18-29	80
	2.00	30-44	92
	3.00	45-64	80
What is your gender?	1.00	Female	179
	2.00	Male	73

There were five age groups in the SurveyMonkey question pertaining to the generation variable. The service asked respondents whether they were less than 18, 18 to 29, 30 to 44, 45 to 60, and greater than 60. Given the inclusion criteria for the study was to survey adults aged 18 to 64, the less than 18 age group contained 0 participants, and 60 plus category was combined with the 45 to 60 category to make 3 age group categories that most closely resemble the Generation Y, Generation X, and Baby Boomer generations discussed in the literature review. The generational range of 18 to 29 contained 80 respondents, 30 to 44 contained 92 respondents, and 45 to 64 contained 80 respondents.

The descriptive statistics also show the average trust levels for each independent variable. The frequency of males and females in either team type, along with an average level of trust, are shown. The discussion of these results happens in the following section on inferential statistics and in Chapter 5. However, in Table 5, the mean trust scores, standard deviations, and frequencies for each group and independent variable are provided.

Table 5. Average Levels of Trust Across Groups

Type of Team	Generation	What is your gender?	Mean	Std. Deviation	N
Face-to-Face	18-29	Female	3.9365	.45436	33
		Male	3.4940	.33762	8
		Total	3.8502	.46542	41
	30-44	Female	3.6524	.59780	30
		Male	3.3429	.61180	10
		Total	3.5750	.60871	40
	45-64	Female	3.6190	.65220	35
		Male	3.4571	.88040	10
		Total	3.5831	.70134	45
	Total	Female	3.7362	.58721	98
		Male	3.4269	.64574	28
		Total	3.6674	.61181	126
Virtual	18-29	Female	3.5984	.56782	30
		Male	3.7619	.60609	9
		Total	3.6361	.57294	39
	30-44	Female	3.4301	.50908	32
		Male	3.5429	.63464	20
		Total	3.4734	.55736	52
	45-64	Female	3.3960	.53923	19
		Male	3.5387	.52330	16
		Total	3.4612	.52910	35
	Total	Female	3.4844	.53911	81
		Male	3.5852	.58486	45
		Total	3.5204	.55566	126

Table 5. Average Levels of Trust Across Groups (continued)

Type of Team	Generation	What is your gender?	Mean	Std. Deviation	N
Total	18-29	Female	3.7755	.53510	63
		Male	3.6359	.50253	17
		Total	3.7458	.52836	80
	30-44	Female	3.5376	.56049	62
		Male	3.4762	.62389	30
		Total	3.5176	.57919	92
	45-64	Female	3.5406	.61902	54
		Male	3.5073	.66707	26
		Total	3.5298	.63098	80
	Total	Female	3.6222	.57820	179
		Male	3.5245	.60943	73
		Total	3.5939	.58788	252

Key points from the table below show females had trust scores higher in face-to-face environments across all generational categories. Also, females showed mean trust scores highest for the youngest generation (i.e. 18 to 29), followed by the next group (i.e. 30 to 44), and lowest for the age group consisting of individuals 45 to 64.

The tables above do not address the significance of the results. The tables provided a presentation of the results that can be analyzed for their statistical contribution. Moreover, the statistical significance and hypothesis testing are covered below in the inferential statistics section.

Inferential Statistics

After looking at the descriptive statistics, interpreting the results allows for confirming or rejecting the hypotheses and establishing whether there is statistical significance. In a three-way ANOVA, the first step in interpreting the results is to examine whether a three-way interaction

exists. A three-way interaction collectively looks at type of team, generation, and gender and whether these variables interact on trust. Following a three-way interaction, two-way interactions and main interactions are tested in the analysis. The following section presents the results of the data analysis, confirm or reject the hypotheses, and briefly explain the interactions found in the study.

Presentation of Results and Hypothesis Testing

The first step in ANOVA is to examine whether a three-way interaction exists. This relates to the study's main hypothesis (i.e. omnibus hypothesis). By looking at the results in Table 6, it can be established whether a three-way interaction exists. If the significance is p < .05, there is a statistically significance difference.

Table 6. Tests of Between-Subjects Interactions and Significance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.854[a]	11	.623	1.872	.044
Intercept	2413.170	1	2413.170	7249.334	.000
TEAMTYPE	.072	1	.072	.217	.642
GENERATION	1.561	2	.780	2.345	.098
GENDER	.323	1	.323	.971	.326
TEAMTYPE * GENERATION	.031	2	.016	.047	.954
TEAMTYPE * GENDER	2.344	1	2.344	7.040	.009
GENERATION * GENDER	.135	2	.067	.203	.817
TEAMTYPE * GENERATION * GENDER	.168	2	.084	.252	.777
Error	79.892	240	.333		
Total	3341.635	252			
Corrected Total	86.746	251			

a. R Squared = .079 (Adjusted R Squared = .037)

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The null omnibus hypothesis (H_0) stated that *there is no statistically significant difference between group means in the level of trust based on the type of team setting, generation, and gender*. This three-way interaction can be found in Table 6 below where it says TEAMTYPE * GENERATION * GENDER under the Source column. The table shows a p-value greater than .05. Therefore, there was no statistically significant three-way interaction between type of team, generation, and gender, $F(2, 240) = .252$, $p = .777$. Based on the results, the null omnibus hypothesis (H_0) is accepted.

Given no statistically significant three-way interaction, the analysis and evaluation of group means listed in Table 7 for the three-way interaction do not show a statistically significant difference. This table shows the mean trust level for each predictor variable. These results are thoroughly expanded on in Chapter 5, highlighting higher mean trust levels for females in face-to-face environments across all age groups.

On the next page, in Table 7, the mean difference for females in face-to-face environments was .443 in the age group of those 18 to 29, .309 in those aged 30 to 44, and .162 in those aged 45 to 64. It can also be noted that mean trust levels trended higher for younger age groups. For example, in face-to-face environments, mean trust for females aged 18 to 29 was 3.937, 3.652 for those aged 30 to 44, and 3.619 for those aged 45 to 64. A detailed discussion of these results occurs in Chapter 5.

Table 7. Average Trust Level for Three-way Interaction

Type of Team	Generation	Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Face-to-Face	18-29	Female	3.937	.100	3.739	4.134
		Male	3.494	.204	3.092	3.896
	30-44	Female	3.652	.105	3.445	3.860
		Male	3.343	.182	2.983	3.702
	45-64	Female	3.619	.098	3.427	3.811
		Male	3.457	.182	3.098	3.817
Virtual	18-29	Female	3.598	.105	3.391	3.806
		Male	3.762	.192	3.383	4.141
	30-44	Female	3.430	.102	3.229	3.631
		Male	3.543	.129	3.289	3.797
	45-64	Female	3.396	.132	3.135	3.657
		Male	3.539	.144	3.255	3.823

Given there was no statistically significant difference, tests were performed to examine the three two-way interactions. The three two-way interactions for this study are type of team and generation, type of team and gender, and generation and gender. This interaction takes two independent variables, ignoring the third variable, to examine whether a statistically significant interaction exists. Lastly, if there are no statistically significant two-way interactions, the main interactions can be examined. These are called main effects and are when each independent variable is looked at directly against trust. The results of all interactions are seen in Table 6 above. Hypotheses 1 through 3 examine the two-way interactions and the results are provided below.

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The first two-way interaction looked at the two-way interaction of type of team setting and generation. Hypothesis 1 predicted that *there is a statistically significant difference between group means in the level of trust based on the type of team setting and generation.* Based on the results of Table 6 above, there was no statistically significant two-way interaction between type of team and generation, $F(2, 240) = .047$, $p = .954$. Having found $p > .05$ for this interaction, the null hypothesis ($H1_0$) is accepted and the alternative hypothesis above ($H1_A$) is rejected.

The second two-way interaction looked at the two-way interaction of type of team setting and generation. Hypothesis 2 predicted that *there is a statistically significant difference between group means in the level of trust based on the type of team setting and gender*. Based on the results of Table 6 above, there was a statistically significant two-way interaction between type of team and gender, $F(1, 240) = 7.040$, $p = .009$. Null Hypothesis 2 ($H2_0$) is, therefore, rejected.

The last two-way interaction looked at the two-way interaction of type of generation and gender. Hypothesis 3 predicted that *there is a statistically significant difference between group means in the level of trust based on generation and gender*. Based on the results of Table 6 above, there was no statistically significant two-way interaction between type of team and generation, $F(2, 240) = .203$, $p = .817$. The results above mean null Hypothesis 1 ($H1_0$) and null Hypothesis 3 ($H3_0$) are accepted based on the results not being significant at $p < .05$.

Hypothesis 4 predicted that *there is a statistically significant difference between group means in the level of trust based on type of team setting*. Based on the results of Table 6, there was no statistically significant interaction in trust based on type of team, $F(1, 240) = .217$, $p = .642$. Null Hypothesis 4 ($H4_0$) was accepted and the alternative hypothesis ($H4_A$) rejected.

Hypothesis 5 predicted that *there is a statistically significant difference between group means in the level of trust based on generation*. There was no statistically significant main

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interaction in trust based on type of team, $F(2, 240) = 2.345$, $p = .098$. With a $p > .05$, null

Hypothesis 5 ($H5_0$) was accepted and the alternative hypothesis ($H5_A$) was rejected.

Hypothesis 6 predicted that *there is a statistically significant difference between group means in the level of trust based on gender*. There was no statistically significant main interaction in trust based on gender, $F(1, 240) = .971$, $p = .326$. As with the other main effects, null Hypothesis 6 ($H6_0$) was accepted and the alternative hypothesis ($H6_A$) was rejected.

From these hypotheses, only Hypothesis 2 showed a statistically significant two-way interaction between type of team and gender, $F(1, 240) = 7.040$, $p = .009$. Therefore, Hypothesis 2 is the only hypothesis where the null was rejected and where the alternative was accepted. Given there was a two-way interaction, this interaction is broken down further into its individual components, which are called simple main effects. The presentation of these results follows.

Simple Main Effects from Statistically Significant Interaction

Given a two-way interaction was found to be statistically significant between type of team and gender, the next step is to analyze whether simple main effects exist. The simple main effects are broken down into simple main effects of type of team and simple main effects of gender. Results of the simple main effect for type of team are located in Table 8 and Table 9.

Table 8. Univariate Tests for Simple Main Effect for Type of Team

Type of Team		Sum of Squares	*df*	Mean Square	*F*	*Sig.*
Face-to-Face	Contrast	2.002	1	2.002	6.014	.015
	Error	79.892	240	.333		
Virtual	Contrast	.515	1	.515	1.547	.215
	Error	79.892	240	.333		

Each *F* tests the simple effects of What is your gender? within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

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Table 9. Estimates and Mean Trust for Simple Main Effect for Type of Team

Type of Team	What is your gender?	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Face-to-Face	Female	3.736	.058	3.621	3.851
	Male	3.431	.110	3.215	3.647
Virtual	Female	3.475	.066	3.345	3.605
	Male	3.614	.091	3.435	3.794

The simple main effects for type of team are the effects of type of team at each gender. Looking at the estimates table above, the mean values can be seen at each level of type of team. To determine whether these results are statistically significant, the univariate test shows whether the p-value is significant at each gender. The p-value for the simple main effect of type of team for female is .003. This value is statistically significant. Moreover, the p-value for males was .200 and, therefore, not statistically significant.

Therefore, the simple main effect of type of team on trust for females was statistically significant $F(1, 240) = 8.805$, $p = .003$), but not for males, $F(1, 240) = 1.653$, $p = .200$.

After running the tests for the simple main effects, additional testing was conducted for simple comparisons. Table 10 shows the pairwise comparisons table computed in SPSS and made for females with a Bonferroni adjustment.

These simple comparisons from the table above answer the question where the differences between types of team lie for gender. The statistically significant p-value of .003 for females was found to be statistically significant. Mean trust was 3.736 for face-to-face teams, a mean difference of .261 over virtual teams.

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Table 10. Pairwise Comparisons Simple Main Effect of Type of Team

What is your gender?	(I) Type of Team	(J) Type of Team	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Female	Face-to-Face	Virtual	.261[*]	.088	.003	.088	.435
	Virtual	Face-to-Face	-.261[*]	.088	.003	-.435	-.088
Male	Face-to-Face	Virtual	-.183	.142	.200	-.464	.097
	Virtual	Face-to-Face	.183	.142	.200	-.097	.464

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

After examining the simple main effects for type of team, the same procedure was conducted for the simple main effect for gender. The simple main effects for gender are the effects of gender at each type of team. The univariate test showed a statistically significant value for face-to-face team, which can be seen in Table 11 below.

Table 11. Univariate Tests for Simple Main Effect for Type of Team

Type of Team		Sum of Squares	df	Mean Square	F	Sig.
Face-to-Face	Contrast	2.002	1	2.002	6.014	.015
	Error	79.892	240	.333		
Virtual	Contrast	.515	1	.515	1.547	.215
	Error	79.892	240	.333		

Each F tests the simple effects of What is your gender? within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

Looking at Table 12, which is the estimates table, the mean values can be seen at each gender. Means values are higher for females in face-to-face environments than that of males. Similarly, mean values of trust for females are higher than in virtual environments.

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Table 12. Estimates and Mean Trust for Simple Main Effect for Type of Team

What is your gender?	Type of Team	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Female	Face-to-Face	3.736	.058	3.621	3.851
	Virtual	3.475	.066	3.345	3.605
Male	Face-to-Face	3.431	.110	3.215	3.647
	Virtual	3.614	.091	3.435	3.794

The simple main effect of gender on trust for face-to-face teams was statistically significant $F(1, 240) = 6.014$, $p = .015$), but not for virtual teams, $F(1, 240) = 1.547$, $p = .215$.

As examined for the simple main effects of type of team, a simple comparison was conducted for gender. The table below shows the pairwise comparisons table computed in SPSS and made for face-to-face teams.

Table 13. Pairwise Comparisons for Simple Main Effect of Gender

Type of Team	(I) What is your gender?	(J) What is your gender?	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Face-to-Face	Female	Male	.305[*]	.124	.015	.060	.549
	Male	Female	-.305[*]	.124	.015	-.549	-.060
Virtual	Female	Male	-.140	.112	.215	-.361	.082
	Male	Female	.140	.112	.215	-.082	.361

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

The mean difference can be found from the table above subtracting 3.475 from 3.736. This yields the result, indicating trust was 3.736 for females, a mean difference of .305 over males.

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Summary of Results

A three-way ANOVA was conducted to determine the effects of type of team setting, generation and gender on the level of trust. Testing for key assumptions, trust was normally distributed ($p > .05$) and was assessed by Shapiro-Wilk's test of normality. There were no outliers in the sample. There was homogeneity of variances, as assessed by Levene's test for equality of variances, $p = .264$. There was no statistically significant three-way interaction between type of team, generation and gender, $F(2, 240) = .252$, $p = .777$. There was no statistically significant two-way interaction between type of team and generation, $F(2, 240) = .047$, $p = .954$. Similarly, there was no statistically significant two-way interaction between generation and gender, $F(2, 240) = .203$, $p = .817$.

There was a statistically significant two-way interaction between type of team and gender, $F(1, 240) = 7.040$, $p = .009$. The simple main effect of type of team on trust for females was statistically significant $F(1, 240) = 8.805$, $p = .003$), but not for males, $F(1, 240) = 1.653$, $p = .200$. Also, the simple main effect of gender on trust for face-to-face teams was statistically significant $F(1, 240) = 6.014$, $p = .015$), but not for virtual teams, $F(1, 240) = 1.547$, $p = .215$. From these results, each of the seven hypotheses is summarized below.

The omnibus hypothesis did not show a statistically significant difference between group means in the level of trust based on the type of team setting, generation, and gender.

Hypothesis 1 did not show a statistically significant difference between group means in the level of trust based on the type of team setting and generation.

Hypothesis 2 did show a statistically significant difference between group means in the level of trust based on the type of team setting and gender.

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Hypothesis 3 did not show a statistically significant difference between group means in the level of trust based on generation and gender.

Hypothesis 4 did not show a statistically significant difference between group means in the level of trust based on the type of team setting.

Hypothesis 5 did not show a statistically significant difference between group means in the level of trust based on generation.

Hypothesis 6 did not show a statistically significant difference between group means in the level of trust based on gender.

Conclusion

This analysis examined 252 survey responses testing for trust in team settings. Both face-to-face and virtual team members in the United States were surveyed to test for potential interactions between the dependent variable of trust and independent variables of type of team, generation, and gender. The study consisted of 179 females and a total of 73 males who completed the survey. Three generational categories were utilized (18 to 29, 30 to 44, and 45 to 64) and each group contained 80, 92, and 80 individuals, respectively.

Six out of seven of the null hypotheses were accepted, while only Hypothesis 2 showed a statistically significance difference between group means in the level of trust based on the type of team setting and gender (i.e. the alternative hypothesis was accepted). The simple main effects showed statistical significance in the univariate tests for females, not males; the other simple main effect showed statistical significance for face-to-face teams, not virtual teams. The average of group means for trust was higher for males in virtual teams across all age groups, while the average of group means for trust in females was higher in face-to-face settings. These results cannot be discussed in detail due to the effect of the three-way interaction not containing

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statistical significance. The main effects of type of team on trust, generation on trust, and gender on trust were all found not to be statistically significant.

The combination of the statistically significant two-way interaction of females and face-to-face teams on trust is discussed more in Chapter 5. The remaining chapter of the dissertation provides a discussion of the results, while addressing what has been learned from the study. The implications for scholars are addressed through the interpretation of what was found. Moreover, limitations and directions for future research are given to help future researchers advance the topic and research conducted.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This final chapter addresses the summary of the results, provide a more detailed discussion by interpreting the results, and conclude with directions for future research. The study focused on type of team setting (face-to-face or virtual), generation, and gender as the primary independent variables, with trust at the team level being the dependent variable of interest. Given the lack of consistency in the levels of trust in different grouping of individuals, the variable lacks homogeneity and its volatility can impact organizational outcomes in positive and negative ways (Crisp & Jarvenpaa, 2013; Gulati & Sytch, 2008; Tienari and Piekkari, 2011). This dissertation examined interactions to trust and found statistically significant results with the two-way interaction of type of team and gender on trust.

In the introductory chapters, the topic was presented, a research problem was given, and hypotheses were posed. Trust has been positively tied to impact cooperation, productivity, and performance (Barczak et al., 2010; Brahm & Kunze, 2012; Cheshin et al., 2011; Huang et al., 2010; Mesmer-Magnus et al., 2011; Mockaitis et al., 2012; Sheng et al., 2010; Tsai et al., 2012; Xue et al., 2011). The study extended the prior research relating to barriers of trust in virtual team settings (Cheshin et al., 2011). Some of these barriers include a lack of face-to-face cues, and the scholarly implications of a lack of trust in team settings pinpoint conflict and operational inefficiencies happening if trust cannot be garnered (Ayoko et al., 2012; Curseu & Schruijer, 2010; Gelfand et al., 2012; Han & Harms, 2010; Pazos, 2012). The purpose of the dissertation was to examine differences in the type of team, as it relates to their levels of trust. Specifically, the purpose proceeded to identify interactions to trust in a team setting, quantifying the differences between the two types of teams, while additionally examining interactions with gender and generation.

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The lack of homogeneity in trust research hints that different variables impact trust in different ways, and the research problem needed to address this through the posed hypotheses, testing for interactions on each independent variable against the dependent variable of trust. In addition, the hypotheses also tested for three-way and two-way interactions between multiple independent variables on trust as well. This comprehensive data analysis was carried out in the previous chapter, and the results, along with an interpretation, follows.

Summary of Results

The seminal research on virtual teams is limited due to a lack of research and brief period that these teams have been in existence (Rhoads, 2010). The research problem explored differences in trust based on type of team (i.e. face-to-face or virtual); as an extension to this problem, the study explored interactions with generation and gender. Seven hypotheses examined whether statistically significant differences exist on the variable of trust. Of the seven hypotheses, Hypotheses 2 was found to be statistically significant. This hypothesis predicted that:

$H2_A$: There is a statistically significant difference between group means in the level of trust based on the type of team setting and gender.

Before interpreting the accepted alternative hypothesis, it is important to understand who participated in the survey and what type of survey they filled out. Overall, 252 completed responses were utilized in a stratified random sample that consisted of 126 members classified as face-to-face employees and 126 employees working on virtual teams. Of this 252, 179 females and 73 males completed the survey. Individuals employed in the United States and aged 18 to 64 were targeted. Of those aged 18 to 64, three generational categories were utilized in the analysis – 18 to 29, 30 to 44, and 45 to 64. These groups had 80, 92, and 80 individuals, respectively.

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The results of this study were structured to examine the interactions between variables in this way: the three-way interaction (omnibus hypothesis) was tested first, the three two-way interactions (Hypotheses 1 to 3) were tested next, and the three main effects were tested last (Hypotheses 4 to 6). The rationale for this approach was due to the methodological methods utilized for the study. A three-way factorial analysis of variance (ANOVA) was performed to test hypotheses relating to significant changes on group means with the level of trust in team settings.

The three-way ANOVA requires researchers to first look whether any statistically significant differences exist between the first level of interaction (i.e. three-way interaction). For this study there was no statistically significant three-way interaction between type of team, generation and gender, $F(2, 240) = .252$, $p = .777$. The value of $p = .777$ was higher than .05. The research did not indicate significant findings on whether type of team, generation, and gender interact on trust.

After the three-way interaction, additional interactions were tested: gender and generation on trust, type of team and generation on trust, and type of team and gender on trust. These are called two-way interactions and correspond to the next three hypotheses (Hypotheses 1 to 3). The approach in ANOVA is to stop if a three-way interaction exists and report the findings. However, given no three-way interaction existed, the three two-way interactions were examined.

In testing the three two-way interactions, the interactions between type of team and generation was not found to be statistically significant, while the interaction between generation and gender was also not statistically significant. Null Hypothesis 1 ($H1_0$) and null Hypothesis 3 ($H3_0$) were accepted. The only statistically significant two-way interaction was between type of team setting and gender, $F(1, 240) = 7.040$, $p = .009$. The detailed discussion of these results follows.

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Discussion of Results

The results of this dissertation add to the body of knowledge relating to team dynamics, gender research, and computer-mediated teams. This research also contributed to the study of gender in organizational studies, which is often neglected in research and simply controlled for (Martins & Shalley, 2011; Mockaitis, Rose, & Zettinig, 2012). The statistically significant results highlight the two-way interaction of type of team combined with gender as an indicator for changes to the levels of trust. This can be utilized as a managerial tool, while simultaneously posing future questions on how to best structure teams in today's rapidly moving environment. In this section, each of the study's hypotheses are addressed below to break down the results into what they meant in answering the research questions posed, while concluding with how these results tie to seminal and recent literature on the topic of trust and study of team composition.

Omnibus Research Question and Hypothesis

The dissertation focused on teams and the level of trust seen in team settings. Costa and Anderson (2011) identified that the ability to understand trust with the team being the main unit of analysis has not been a focus in trust research. Secondly, one of the major focuses of this dissertation was to examine the differences between those working in traditional (i.e. face-to-face environments) versus those members working on virtual teams. The omnibus research question asked, *what is the effect on the level of trust based on the type of team setting, generation, and gender*?

Based on the results discussed in Chapter 4, there was no statistically significant three-way interaction between type of team, generation, and gender, $F(2, 240) = .252$, $p = .777$. The interest in including these three independent variables while excluding other potential variables that would cause an interaction can be considered a limitation of the study. However, for feasibility

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and due to the sampling service available, this approach was chosen to test for gaps in the research in explaining interactions to trust in team settings. After not finding the three-way interaction to be statistically significant, the remaining hypotheses were explored. The remaining six hypotheses were broken down into three two-way interactions (Hypotheses 1 to 3) and three main effects (Hypotheses 4 to 6).

Hypotheses of Two-Way Interactions

This dissertation had three independent variables that formed three two-way interactions for the ANOVA model. The study was designed to test for a two-way interaction of type of team and generation on trust (Hypothesis 1), type of team and gender on trust (Hypothesis 2), and generation and gender on trust (Hypothesis 3). Hypothesis 1 predicted that *there is a statistically significant difference between group means in the level of trust based on the type of team setting and generation.* For Hypothesis 1, there was no statistically significant two-way interaction between type of team and generation, $F(2, 240) = .047$, $p = .954$. Similarly, Hypothesis 3 predicted that *there is a statistically significant difference between group means in the level of trust based on generation and gender*. Based on the results, there was no statistically significant two-way interaction between type of team and generation, $F(2, 240) = .203$, $p = .817$. The results indicated that null Hypothesis 1 ($H1_0$) and null Hypothesis 3 ($H3_0$) were accepted based on the results not being significant at $p < .05$.

There was a statistically significant two-way interaction, which looked at the two-way interaction of type of team setting and generation. Hypothesis 2 predicted that *there is a statistically significant difference between group means in the level of trust based on the type of team setting and gender*. The data analysis found there was a statistically significant two-way interaction between type of team and gender, $F(1, 240) = 7.040$, $p = .009$. The statistically

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significant interaction of type of team and gender allows this research to reject null Hypothesis 2 ($H2_0$) and accept the alternative hypothesis ($H2_A$) above. Previous studies showed face-to-face teams as being better equipped to handle the complexities of conflict, communication, and group dynamics (Daim et al., 2012; Purvanova, 2014). However, findings also showed conflicting results on how virtual teams may be more effective in changing environments needed in today's global environment and can function at a higher level (Gibson & Cohen, 2003). While the results of type of team can show both benefits and drawbacks to a specific team type on trust, the combination of team type with gender was found to be statistically significant and helps explain an interaction on trust in team settings. While gender studied alone was not statistically significant on trust and showed inconclusive findings in the literature (Furumo & Pearson, 2007), the gender variable combined with type of team was the key statistically significant finding of this study. This two-way interaction was then further analyzed.

The statistically significant two-way interaction between type of team setting and gender was the only statistically significant finding from the tested interactions between the three independent variables. This two-way interaction result requires the researcher to report out what these findings mean, while also breaking down the two-way interaction into its simple main effects. Breaking this interaction into simple main effects, the simple main effect of type of team on trust for females was statistically significant $F(1, 240) = 8.805$, $p = .003$), but not for males, $F(1, 240) = 1.653$, $p = .200$. Also, the simple main effect of gender on trust for face-to-face teams was statistically significant $F(1, 240) = 6.014$, $p = .015$), but not for virtual teams, $F(1, 240) = 1.547$, $p = .215$.

The literature strongly suggests males prefer an environment where dominance can be exerted (Furumo & Pearson, 2007). However, this study found, conversely, how mean scores for

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males were higher in virtual environments than that of females. This can potentially be attributed to females being more risk averse (Shinnar et al., 2010). Nishii (2013) identified how observations that tie cooperation and support are components females choose in environments, which ties to the social cognitive ability. The author's results tie to these results showing females preferring a face-to-face environment versus the more remote team structure.

The descriptive statistics provided additional results that tie to the findings in the accepted two-way interaction. Specifically, out of the 179 females completing the survey, 98 were face-to-face team members and 81 were virtual team members. While, out of the 73 males completing the survey, 45 were virtual team members and 28 were face-to-face team members. The frequency shows 61.64% of males in the sample of 252 self-reported themselves on virtual teams, while only 45.25% of females identified themselves as virtual team members. For face-to-face teams, 54.75% of females reported they are face-to-face members, while only 38.36% of males did so. Along this point, mean trust levels for males was higher in virtual teams, while mean trust levels for females were higher in face-to-face teams across all age groups when compared to males.

Expanding on the descriptive statistics, it should also be noted that females had a higher mean score of trust across every age group in face-to-face teams, while males had a higher mean score of trust at each of the three age groups (i.e. 18 to 29, 30 to 44, and 45 to 64) in virtual teams. Specifically, mean trust was 3.9365, 3.6524, and 3.6190 for females in face-to-face teams; for males, mean trust was 3.4940, 3.3429, and 3.4571 in the face-to-face category. Conversely, for those that were virtual respondents, mean trust was 3.5984, 3.4301, and 3.3960 for females; for males, mean trust was 3.7619, 3.5429, and 3.5387. While the results of the simple main effects of type of team on trust for males and the simple main effects of gender on trust for

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virtual teams were not statistically significant, the findings show patterns where mean trust is higher for males in virtual teams over males in face-to-face teams. These results relate to recent literature discussing the ability of team members to experience higher levels of trust in specific environments, which can be impacted by an environment's ability to provide effective collaboration or some other quality that is viewed as important (Nishii, 2013). More ties to the theory and literature are explored in the discussion of the conclusions section below. Discussions of the remaining three hypotheses are briefly explored before discussing the conclusions and relation to the field.

Hypotheses of Main Effects

The remaining three hypotheses were rejected that tested the main effects. These hypotheses posed predictions on the interactions of type of team on trust, generation on trust, and gender on trust. Specifically, Hypothesis 4 predicted *there is a statistically significant difference between group means in the level of trust based on type of team setting*. This was found not to be statistically significant, $F(1, 240) = .217$, $p = .642$. The research could not reject null Hypothesis 4 ($H4_0$). In the previous section, the accepted hypothesis was discussed where the effects of type of team and gender were combined to form a two-way interaction. However, as a main effect, the results for type of team were not statistically significant.

Hypothesis 5 predicted *there is a statistically significant difference between group means in the level of trust based on generation*. The main effect of generation on trust was not statistically significant, $F(2, 240) = 2.345$, $p = .098$. Null Hypothesis 5 ($H5_0$) was also accepted. Daim et al. (2012) and Kauppila et al. (2011) found negative impacts diversity often brings in team settings, such as lower levels of trust. Similarly, Hahn (2011) found stereotyping generational differences contributes in creating perceptions about trustworthiness that dictate

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how willing one is to trust and engage in cooperative behaviors in a team setting. However, for this study, there was not a statistically significant finding on the main effect interaction of generation on trust. Similarly, any two-way interaction or three-way interaction involving the generational differences variable was not found to be statistically significant. However, it was interesting to note that mean trust scores were higher in the younger age groups for females in both types of team environments, and the mean trust level was higher for males in younger age groups in virtual environments. Specifically for females, the mean levels of trust were 3.937 (18 to 29 age group), 3.652 (30 to 44 age group), and 3.619 (45 to 64 age group) in face-to-face environments. Conversely, mean trust for virtual team females was 3.598 (18 to 29 age group), 3.430 (30 to 44 age group), and 3.396 (45 to 64 age group). For males, the mean trust value was 3.494 in the face-to-face environment and 3.762 in the virtual environment. Males also saw the same trend with higher mean values of trust in younger age groups in virtual team environments, with values going from 3.762 (18 to 29 age group), 3.543 (30 to 44 age group), and 3.539 (45 to 64 age group). While the results are not statistically significant, the trend that the younger age groups scored higher in trust may be of interest to researchers in the future to try and prove.

The expected findings for the main effect of gender on trust were inconclusive in the seminal literature. For this study, the main effect of gender on trust was found not to be statistically significant, $F(1, 240) = .971$, $p = .326$. Therefore, null Hypothesis 6 ($H6_0$) was accepted. Conversely, the alternative hypothesis ($H6_A$) was rejected, stating *there was no statistically significant difference between group means in the level of trust based on gender*. The findings from seminal and recent authors found differences in how gender influences trust and engaging in risk-taking behaviors (Diaz-Garcia & Jimenez-Moreno, 2010; Shinnar et al., 2012; Yordanova & Tarrazon, 2010). The literature does find consensus in that women are more

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closely tied to cooperative behaviors than males (Nishii, 2013). This means that females prefer an environment of cooperation and providing support, which was seen when the effect of gender was combined with type of team to look at this two-way interaction on trust.

Discussion of the Conclusions

The discussion of the results explained what the results mean and how they came to be for this analysis. The discussion of the conclusions dive deeper to examine what the results mean for the field. This study examined three levels of interaction (i.e. three-way, two-way, and main interactions) between the variables on trust in team settings. Statistically significant results contribute to the body of research examining virtual teams, team composition, and gender differences. The following discussion looks at each variable, compare recent studies to the findings presented in this study, and tie the conclusions to the existing body of work.

As it relates to type of team and trust, the existing research suggests a greater probability for conflict and miscues in communication in virtual team environments (Daim et al., 2012), which could be seen in Hypothesis 2 as it related to trust scores for females in face-to-face environments. These teams can struggle with a lack of nonverbal cues, lack of personal touch, and increased language barriers requiring greater clarification that is more difficult to accomplish without face-to-face interactions (Purvanova, 2014). As it relates to recent findings, some companies have completely disbanded their virtual teams, with Yahoo being the prime example. Schrage (2013) identified Yahoo's rationale was that their teams were more valuable and productive through face-to-face interactions. Conversely, Purvanova (2014) identified other companies, such as IBM and Century Link, finding productivity increases when shifting to virtual teams. The inconsistencies with the findings offered a gap to explain just how does a team structure influence a key variance like trust.

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The statistically significant results of this dissertation follow the course of previous studies looking at trust across different team settings. The concern for virtual team scholars is that virtual teams do not allow for the same level of social cognitive ability (i.e. understanding through observations and accumulation of experiences) when compared to face-to-face teams. Staples and Webster (2007) examined the differences between the level of social cognitive behavior within these types of teams, noting how observations in one's social environment can help individual learn and be more accepting to engage in risk-taking behaviors. The perceptions are that face-to-face environments allow for a greater level of observation than a virtual environment lacking a physical presence and in-person cues, while simultaneously offering more opportunity for relationship-building activities and communication (Crisp & Jarvenpaa, 2013). Research has found females prefer environments where collaboration is at a high level, and they feel more comfortable engaging in information-sharing activities in a social environment (Porter, Donthu, & Baker, 2012). As the level of comfort for an individual was to increase, one's level of risk aversion becomes less (Swida & Reichard, 2013). For this dissertation, the results point to females reporting a higher mean trust score in face-to-face environments, which corresponds to the self-efficacy literature (Staples & Webster, 2007). When comparing the previous literature on type of team and gender, the statistically significant findings combine the variables, finding a two-way interaction influencing the level of trust in a team setting. Hypothesis 2 identified a statistically significant interaction in trust based on type of team and gender. The results of this statistically significant two-way interaction showed higher mean levels of trust for females in face-to-face environments.

The literature provides some explanation, albeit inconclusive, on how females on a specific type of team environment interact with trust. On the one hand, Gerstel and Clawson (2014)

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found females to accept new roles better and show more flexibility than males in work environments. Those findings hint at females being better equipped to respond to the flexible nature of virtual teams. However, many seminal authors on gender differences focus on females being more risk averse than males (Chaudhuri & Gangadharan, 2003) These findings were confirmed by several other authors in the literature, finding that females are more risk averse, even if possessing the same level of experience and doing the same job than males (Dwyer et al., 2002; Harris et al., 2006; Powell & Ansic, 1997). The simple main effect of gender on trust for face-to-face teams was statistically significant $F(1, 240) = 6.014$, $p = .015$), but not for virtual teams, $F(1, 240) = 1.547$, $p = .215$. Staples and Webster (2007) found one's social cognitive ability to be influenced by the environment, and this can dictate how one learns or trusts, and this dissertation shows similarity with the seminal research on risk aversion and influence of one's work environment influencing trust. In addition to risk aversion, environments where individuals can build personal relationships have been shown to be preferred more highly by females than males (Porter et al., 2012). The authors found females to have a focus on building common bonds to aid trust, which may require more communication than available in typical virtual settings. This dissertation confirmed those previous findings on gender and team type as they relate to trust. Simply put, in this case, women show higher levels of trust on face-to-face teams than virtual teams.

While not related to the accepted hypothesis above, generation was the final independent variable explored for its potential interaction on trust. The descriptive statistics relating to the 252 respondents showed slightly different results than one might expect in terms of frequencies within each category. For example, Gorman, Nelson, and Glassman (2004) identified Generation Y (i.e. those contained in the 18 to 29) age group as the first generation trained with computers

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from childhood and a generation more willing to engage in virtual teams. The study did not test for their preference of one team over the other, but the study did pool 252 respondents finding no significant difference between their types of team. For those individuals ages 18 to 29, 51.25% identified as face-to-face team members, while 48.74% identified as virtual. While more individuals from the ages of 18 to 29 identified themselves as virtual compared to 30 to 44, a higher percentage (56.25%) of those aged 45 to 64 identified as virtual. Myers and Sadaghiana (2010) found Generation Y employees to prefer the virtual team experience to solve problems, but this dissertation cannot provide additional statistically significant information on generations. As it relates to the theory on social cognitive behavior, Lent and Brown (2013) found career behavior to transform as one progresses through their life. However, mean trust scores were found to be higher for the youngest age group for females in face-to-face environments, while for males, the mean trust scores were highest for virtual teams in the youngest age group.

Overall, the results pertaining to generational differences were not significant for the study. Costanza et al. (2012) identified differences on a dependent variables that are caused by the categorical variable of age are minimal. This was also seen in numerous recent studies looking at ability against different generational categories, finding no significant differences in abilities (Costanza, Fraser, Badger, Severt, & Gade, 2012; Giancola, 2006; Parry & Urwin, 2010). This study did not find statistically significant differences with generational differences. While initial differences in technology acceptance caused for changes in self-efficacy, the emergence of team structures and accompaniment of technology has become commonplace (Purvanova, 2014), so while recent studies have cautioned stereotyping (Deemer, Thoman, Chase, & Smith, 2014; Rice, Lopez, Richardson, & Stinson, 2013), the collective cognitive ability for team structure did not seem to vary across generations. The two-way interaction found to be statistically significant

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excluded generation, and this study could have potentially included more age groups to better

segment the sample or additional control variables to better expose additional interactions.

Additional limitations of the dissertation are discussed below.

Limitations of the Study

The dissertation carefully conducted an analysis between different variables with the goal

to advance scientific theory, but limitations of the study need to be identified to help future

researchers and potentially improve the quality of the findings. One limitation of the study was

the ability to properly pool virtual team employees. At the time of data collection, the criteria did

not exist to target by team type within SurveyMonkey and individuals were left to self-identify

whether they were virtual or face-to-face employees. This was satisfactory, but a more targeted

criterion would remove the self-identification element for that variable. Another limitation

related to the trust instrument utilized for the study. It was originally created on a seven-point

Likert scale, but a five-point scale was utilized for the study. Colman, Norris, and Preston (1997)

found minor differences that did not greatly change the quality of the data if five-point scales are

utilized over seven-point scales. SurveyMonkey as an avenue to fill out the survey had 35% of

the respondents filling out the survey on their mobile device, and the survey was at risk of being

abandoned with people not completing the survey if the answer choices were confusing or too

long.

Lastly, in the direction for future research section, additional variables are mentioned that

could potentially interact on trust. Controlling for some of the additional variables present in the

organizational environment could allow the interactions tested for to have greater significance.

This study did not control for team size, team tenure, and other characteristics. The ability to find

more pronounced effects could be aided by this.

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Recommendations for Future Research

This study examined the potential interactions on trust in team settings, with the focus of the study also being to examine differences in how the type of team can impact the level of trust observed at the team level. A statistically significant difference was found between type of team and gender on the variable of trust. This is an important finding, but future studies can help advance the theory by examining other factors and other avenues of research. This section addresses directions for future study on the topic of team trust.

This dissertation found type of team and gender to have an effect on trust, but the study only tested three independent variables. Additional variables would be beneficial to explore. Moreover, the study was focused on a very broad sample of all industries, which meant no specific industry or industries were targeted. This criterion was chosen due to the limited pool of virtual team employees in the SurveyMonkey database. However, it would be useful to narrow the subject to a few specific industries, such as the tech industry versus manufacturing. Some companies favor virtual teams while others do not utilize the team structure (Schrage, 2013). Aside from the type of industry, it would be interesting to examine other team composition criteria. Some examples include team size, team history, project duration, or role of the leader. These additional variables could help explain and advance whether trust occurs as projects progress or whether interactions on trust occur based on different sizes and traits.

Given that the study was testing for differences between face-to-face and virtual teams, a more targeted pool of virtual team employees could be targeted. This dissertation was confined to individuals self-identifying on whether they were virtual team members, but the study did not look at the degrees of virtuality. Some individuals work remotely 100% of the time, while others may work remotely 50% of the time, 33% of the time, and so on. With the rise in technology, a

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degree of virtuality variable could better reflect the type of team an employee is truly on. This was not possible for this study in SurveyMonkey due to the pool of employees and targeting criteria available.

In addition to variables, the structure of the study could be altered to more closely monitor trust and the team. Individuals could be tested at specific time periods to see if their trust was different at different periods of time (i.e. start versus end of a project). Crisp and Jarvenpaa (2013) studied the concept of swift trust that examined how trust is initially formed during the start of project due to individuals having a common objective and basing trust on that. However, as the project progress, trust can increase or decrease. All of these recommendations for research are suggestions on how to advance the relatively new topic of trust in computer-mediated settings. This research was unique in applying a twist in the analysis by testing for interactions with multiple variables against trust, and future research can hopefully continue testing to find the approach giving scholars and managers insight into optimizing their team mix to foster higher levels of trust in their team setting.

Conclusion

This dissertation expanded on the topic of trust in the organizational setting through a quantitative analysis of those team members working in a face-to-face environment versus those working virtually. Trust ties to cooperation and performance (Brahm & Kunze, 2012; Cheshin et al., 2011; Mesmer-Magnus et al., 2011). This study examined how to interact on trust based on common variables in today's organizational environment, and the dissertation was examined utilizing social cognitive theory. Social cognitive theory describes how the external influences of environment combine with personal factors to guide behavior. For this dissertation, the ability to examine gender and categorical age differences helped explain common team composition

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concerns on how they impact trust (Crisp & Jarvenpaa, 2013; Penarroja et al., 2013; Rhoads, 2010). Through a factorial ANOVA, this dissertation tested one three-way interaction, three two-way interactions, and three main effects on the ability to interact with trust.

There was a statistically significant difference between group means in the level of trust based on type of team and gender. The results of this two-way interaction allowed the alternative hypothesis to be accepted for Hypothesis 2, while the analysis was finalized by breaking down the two-way interaction into its simple main effects. The simple main effect of type of team on trust for females was statistically significant, but not for males. Also, the simple main effect of gender on trust for face-to-face teams was statistically significant, but not for virtual teams. The findings can be tied to the existing research that shows trends in risk aversion (Harris et al., 2006) and collaboration (Nishii, 2013) tied to gender, which could explain why females' mean trust level was higher at each age group in face-to-face environments than virtual environments.

The nulls for the remaining six hypotheses were not rejected for this dissertation. Each was found to have a p-value greater than .05. Notable results indicated males had a higher mean level of trust in virtual environments, while females had a higher mean level of trust in face-to-face environments. In addition, the youngest age group (i.e. those aged 18 to 29) showed the highest level of mean trust in both types of team environments. However, these results were not found to be statistically significant and the respective alternative hypotheses were rejected.

Future studies can expand on this finding by looking at specific interactions of gender and type of team on trust. This grouping was found to be statistically significant, and a more clear definition of virtual team could better highlight the differences seen in this study. This dissertation also saw mean trust scores highest for females on both types of teams at the youngest age group of 18 to 29, followed by 30 to 44, and lowest trust levels were found in those aged 45

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to 64. Future studies should not discard the generation (i.e. age category) variable, and potentially a modified design could expose significant interactions.

The population of virtual teams is skyrocketing with the innovations taking place in technology. More individuals are working remotely, studying remotely, and interacting in their personal lives through remote tools. The ability to understand this virtual environment remains a concern for the researcher, for the manager, for governments, and for individuals around the world. Social cognitive theory describes how each situation brings with it unique concerns that vary based on the environment and social structures present at any given time. The introduction of virtual teams brings new concerns where managers look to shape behavior and create a collaborative environment, and this dissertation was a small step in explaining how many factors can potentially impact the way trust is calculated. The researcher found statistically significant findings relating to the type of team and gender on trust, which is a unique finding in the literature that helps to advance the topic. There remains an interest to explain the effectiveness of virtual teams, how to best structure this type of team, and how they compare to their face-to-face counterpart. This research made strides in comparing the types of teams as they relate to their level of trust. A gap still exists in explaining virtual teams' overall effectiveness compared to face-to-face teams. This study aimed to narrow the focus of comparison specifically to the level of trust, while taking the angle of exploring various interactions combined together to influence a dependent variable. Future studies will hopefully advance the topic more and work towards building a body of seminal literature on the topic of trust in team settings.

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