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**AN EMPIRICAL LOOK AT THE RELATIONSHIP BETWEEN PERSONALITY  
TYPE AND THE CHALLENGES OF TELECOMMUTING**

By

Jacquelyn E. Brown

A Dissertation Submitted in  
Partial Fulfillment of the Degree  
Doctor of Philosophy  
University of San Diego

April 2010

Dissertation Committee

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## ABSTRACT

The concept of telecommuting dates to the early 1970s when Dr. Jack Nilles, who coined the phrase telecommuting, realized that many of the commuters contributing to rush-hour traffic congestion simply went to an office, sat at a desk and used a phone to conduct their business. Since then, telecommuting has become a viable alternative work arrangement for approximately 45 million individuals in the United States. Despite the popularity of this arrangement, there has been little empirical work done to investigate the advantages and challenges associated with telecommuters; to address this issue this dissertation used two survey instruments to electronically gather data from a sample of 137 telecommuters that described both the advantages and challenges associated with this type of work as well as the extent to which variation in these challenges could be explained by demographic measures and the individual's Myers-Briggs personality type.

Results from the surveys revealed that for this group of telecommuters the greatest advantages were flexibility/work life balance and increased productivity, while the greatest challenges were being offered promotional opportunities and feelings of isolation. Regression analysis also revealed the importance of organizational size, telecommuting intensity, and personality type in explaining variation in the challenges that telecommuters experienced; specifically, four personality types were associated with greater challenges. These Myers-Briggs types – ENFP, ESFP, INFJ, and INTP – were associated with increased challenges in several areas; for example, ENFP's experienced greater challenges in terms of being offered promotional opportunities and in relationships with their managers, while INFJ's struggled with increased challenges in the

areas of relationships with managers and co-workers and with feelings of isolation. In addition to personality type, telecommuting intensity and individuals from small organizations found telecommuting to be more challenging than others.

Taken together, the results of this research could impact both the formation and delivery of telecommuting policies and programs for many organizations. For example, knowing that four specific personality types experience greater challenges in some areas of telecommuting than others allows managers to more efficiently target assistance. In this manner, telecommuter training could be enhanced both for telecommuters and the managers of the virtual workforce.

## DEDICATION

I dedicate this dissertation to my sons, Parker and Griffin. May you grow into life long learners, continually challenging yourselves as you strive to reach your goals: always knowing I will be proud of you!

## ACKNOWLEDGEMENTS

I would like to thank Craig Veal, who encouraged me to embark on this journey. I thought I had finished my educational career until I met him! I appreciate him giving the gentle push I needed to realize my full potential.

To my husband Gary Brown, I am thankful for his unwavering support over the last seven years. Always reminding me how proud he was of me, kept me going when I was feeling overwhelmed. I am thankful for him being there for the boys while I was holed up at the coffee shop on the weekends writing the dissertation. I appreciate the sacrifices he had to make.

To my sons, Parker and Griffin Brown, I am thankful for them inspiring me. They have taught me so much about patience, discipline and compromise. I am a better person for having them in my life.

I am grateful to my parents, Paul and Leslie Gifford, for always supporting, encouraging and believing in me. They instilled in me the importance of education and stood by me every step of the way. I am truly blessed to have their love. I would also like to thank them for helping to care for Parker and Griffin so that I could focus and finish.

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## Background

The concept of telecommuting gained prominence in the 1970s in response to the negative impact of rush-hour drives caused during workers' daily commutes to and from work. During this period, the United States faced the 1973 Arab Oil Embargo, leading President Nixon to ask the nation to voluntarily ration oil and limit the amount of gas sold. Reducing the amount of cars on the road was of paramount importance. Dr. Jack Nilles, employed by the University of Southern California to look to eliminate rush-hour traffic congestion, coined the phrase telecommuting. He realized that many of the commuters contributing to the traffic problems went to an office, sat at a desk and used their phone to conduct their business (Mears, 2007, p. 27). Such activities could be accomplished from home, negating the petroleum consumption from the commute to work.

While telecommuting began as a way to alleviate traffic congestion and oil consumption, organizations have also found other distinct advantages. In terms of advantages, the most often noted are higher productivity, reduced operating costs and easier recruitment and retention. In the case of organizations, telecommuting has a direct positive affect on the bottom line. Therefore, when organizations invest in a telecommuting program, from a financial perspective they want their telecommuters to be satisfied with their telecommuting arrangement (Crandell & Gao, 2005; Gainey, Kelley, & Hill, 1999; Green, Lopez, Wysocki, & Kepner, 2003; Hartman, Stone, & Arora, 1992; Hill, Ferris, & Martinson, 2003; Manoochchri & Pinkerton, 2003).

Today it is difficult to quantify just how many people telecommute, due to the variety of telecommuting situations available and the lack of an agreed upon definition for telecommuting. According to The Telework Coalition (2008) web site, “the number of employed Americans who performed any kind of work from home, with a frequency range from as little as 1 day a year to full time, grew from 41.3 million in 2003 to 44.4 million in 2004, a 7.5% growth rate.” While this is a very broad definition of telecommuting based on the frequency range it encompasses, it provides a general understanding of the rise of the telecommuting population.

Researchers in the field note that all types of individuals participate in telecommuting, although the mainstream telecommuter is most likely a married, white male, ranging from his mid 30’s to his mid 50’s, with at least a four-year college degree (Belanger, 1999; Ruiz & Walling, 2005; Safirova & Wall, 2004; Van Horn & Storen, 2000; Worldatwork, 2007).

The literature to date has identified individual characteristics, mostly focused on personality traits that one should have if they want to telecommute (Belanger & Collins, 2001; Federal Government, 2000; Green, Lopez, Wysocki, Kepner 2003; Hartman, Stoner, & Aurora, 1992; Moss & Carey, 1994; Newman, 1989). Some of these characteristics include self-discipline, being a self-starter, self-sufficiency, reliability, self-motivation, the ability to work and solve problems independently, the ability to handle autonomy, and good planning and time management skills.

While these traits provide useful information, they are superficial, with many of the characteristics being skills that anyone can learn and employ. They infer that so long

as someone simply learns the requisite skills, they can telecommute. This seems reasonable in theory, yet just because an individual has mastered the skills needed as a telecommuter, they still face challenges associated with the unique demands and challenges of telecommuting. This is especially the case if there are certain innate traits, attributes, or preferences that either facilitate or inhibit one's telecommuting experience.

Research in the field of telecommuting has noted that there are certain identifiable advantages and challenges to telecommuting that effect the telecommuter's outlook on this alternative work arrangement. The most often cited challenges are a *sense of isolation* and *lack of promotional opportunities* (Crandell & Gao, 2005; Davenport & Pearlson, 1998; Hartman, Stoner & Arora, 1992; Manoochehri & Pinkerton, 2003; Reinsch, 1997). Additional challenges include *lack of structure in one's workday* (Raghuram, 2003) and *relationships with managers, co-workers and family*, specifically those family members living in the same home as the telecommuter (Davenport & Pearlson, 1998, Gajendran & Harrison, 2006). These challenges can cause some telecommuters to become dissatisfied and disillusioned, leading some to return to the traditional office environment. This departure from telecommuting can be costly for organizations that use telecommuting as a cost-cutting tactic. While we know these challenges affect telecommuters to varying degrees, what we don't know is why they affect some people and not others. Perhaps there is an association between challenges faced by telecommuters and personality type.

The theory of personality type suggests that "Each of us has a distinct personality, like an innate blueprint that stays with us for life" (Tieger & Barron, 2007, p. 9), and

while behavior may change based on certain circumstances, personality remains relatively constant. Personality type has been extensively researched. According to Tieger and Barron (2007), personality type is used to, “help managers motivate and communicate with their employees; teachers to reach very different types of students; work teams to understand their strengths and weaknesses and to communicate more productively; and of course, we’ve used it to train thousands of career counselors and outplacement consultants to help their clients make the best career choices” (p. xiii).

Personality type can be measured using personality assessments such as the Myers-Briggs Type Indicator (MBTI). The MBTI, based on the psychology of Carl Jung, provides insight into one’s individual preferences around four dimensions: the source of energy and general orientation to the outside world (extravert or introvert), perception style (sensing or intuition), decision style (thinking or feeling), and how one organizes to meet the demands of the world (judging or perceiving) (Myers, 1998). Within each dimension, there are dichotomous pairs, with individuals showing a preference for one aspect of the dimension or the other. Individuals complete a self-report questionnaire that when analyzed, provides a four-letter type that indicates the individuals preferences on the questions noted above. In all, there are 16 different types that emerge.

There are differing opinions as to the usefulness of the MBTI. McCaulley (2000) found the MBTI useful for counselors as they consult for organizations. She noted the MBTI’s usefulness in building mutual respect, better teamwork, problem solving, improved communication and higher productivity. Gardner and Martinko (1996) noted the prevalence with which the MBTI is used in organizations; over 3 million individuals

take the MBTI yearly, with large corporations administering 40% of them (p. 45).

Gardner and Martinko conducted a review of the research that has been done with the MBTI and managers. They found that much of the MBTI research lacks rigor, but the findings were significant enough to suggest that more rigorous designs should be conducted to support the claims (p. 78). Specifically they were concerned with the lack of reporting on reliability, validity and the absence of advanced statistical analysis. One interesting suggestion that came out of the paper was that while research surrounding the MBTI and managers might suggest that certain types are better suited for certain tasks or situations, “research should produce insights into the development and effectiveness of types across situations” (p. 78). The same concept might be considered when studying the MBTI and challenges telecommuters face. The findings should not suggest that certain types should or should not be telecommuters; instead it should produce awareness into how the different types can work to mitigate their challenges.

Pittenger (2005) also had reservations about the effectiveness of MBTI in determining personality type. The Pittenger article references McCaulley and suggests that while the MBTI is popular and widely used, the research may not “support the claims its promoters make” (p. 210). Pittenger focuses much of his discussion on the use of the dichotomous scoring. He claims, “presenting the data using the four-letter type formula rather than the scaled scores is a misrepresentation of the available evidence” (p. 219). As a result of this method, individuals who have a slight preference for one of the dichotomous pairs may be categorized incorrectly, showing significance where little exists. Additionally, test-retest reliability is often compromised for those individuals who



have slight preferences, as they are more likely to change. Gardner and Martinko also noted this point. The lack of consistency in the dichotomous scoring can lead to increased Type 1 errors (p. 213) and Pittenger quotes Tenopyr who suggest that the forced-choice instruments, with the MBTI following into that category, should not be used to “make important decision about individuals” (Pittenger in Teopyr (2005), p. 214). This again is an important point that would apply to the research on MBTI and telecommuting challenges. As noted previously, the results of this research should not qualify or disqualify an individual from telecommuting. The findings should provide another point of reference in identifying challenges associated with telecommuting arrangements.

Despite the criticisms of the MBTI, the instrument remains useful for the purposes of this research project. The sample population I targeted consisted of employees of organizations who are familiar with the assessment and its applicability to the business world. My research used appropriate statistical approaches, specifically regression analysis to explain the extent to which independent variables explained variation in the telecommuting challenges. In addition, the research stipulates that the findings should not be used to decide who should or should not telecommute. Instead, the research focused specifically on the challenges telecommuters face and their relationship to personality type. In addition, to mitigate the concern noted by Pittenger, along with an individual’s MBTI type, this research analyzed the extent to which an individual chose one preference over the other, using the preference clarity index. This index indicated the extent of one’s preference, ranging from slight to very clear.

A telecommuter's four-letter type could provide insight into the ease with which they telecommute; it might also provide insight into different challenges telecommuters face. It begs the question; do telecommuters with the same four-letter type experience similar challenges? Looking at it another way, do telecommuters with similarities among any of the eight preferences face comparable challenges? For example, do most extraverts, as defined by the MBTI, report common challenges?

In this research I used telecommuting characteristics and select demographic measures, specifically personality type, to explore individual telecommuters and the extent to which they experienced the following four telecommuting challenges: *feelings of isolation, lack of promotional opportunities, relationships with managers, co-workers and family, and lack of structure in the workday*. The research sought to uncover similarities among individual personality types and telecommuter challenges, topics that up until now have not been explored.

### Problem Statement

The opportunities for research surrounding telecommuting are vast. One area that is underdeveloped and could be insightful for employers, employees and managers, focuses on the relationships between telecommuting and personality type. The research already indicates that there are learned skills that can benefit a telecommuter, but it is evident that there is a gap in the field's knowledge regarding how one's innate personality type relates to telecommuting. This research could provide insight into challenges faced by telecommuters based on their personality type. Telecommuters face numerous challenges, such as *feelings of isolation, lack of promotional opportunities,*

*lack of structure in their workday and relationships with managers, co-workers and family* (Davenport and Pearlson 1998; Gajendran and Harrison 2006; Hartman et al. 1992; Manoochehri and Pinkerton 2003; Navarette, Iriberry & Pick, 2002; Raghuram, Wiesenfeld, & Garud, 2003; Reinsch 1997; Vega and Brennan 2000). What is not currently understood is why not all telecommuters experience these challenges, and for those that do, why they experience them to varying degrees. I suggested that this variance may be related to a telecommuter's MBTI personality type. While it shouldn't be assumed that certain types would be better telecommuters than others, this research investigated the extent to which the various MBTI personality types experience telecommuting challenges.

#### Significance of the Study

This research is important because the results of this study could impact organizations with telecommuting programs, managers of telecommuters as well as the telecommuters themselves. For example, the results of this study could be used to help companies create and refine their telecommuting policies and programs. In this manner, telecommuter training could be enhanced, both for telecommuters and the managers of the virtual workforce. In addition, this research could provide insight into the intricacies of telecommuting for current and prospective telecommuters, providing them with a better understanding of their personality type in relation to telecommuting and making explicit why adaptation to a particular telecommuting situation may be useful.

For instance, if a telecommuter was found to be an ESFP (see Appendix A for characteristics of the 16 types), there are certain considerations they could make to insure

that their needs were being met as a telecommuter. As an extrovert, the telecommuter may find that they are more productive spending part of their day at a local coffee shop or similar location where they can observe a lot of people and activity, than they would at home where they are by themselves. As an extrovert, the employee would know that they derive energy from being around others. Each dimension could be looked at this way and both the employee and manager could make accommodations to help provide a strong foundation for a successful telecommuting experience. This type of unique understanding could enhance the employee's job satisfaction, strengthen the employee/manager relationship and prove beneficial for employers, based on better attrition and more productivity from telecommuters. Further research on personality type could be useful for all concerned.

#### Purpose of the Study

The purpose of this study was to describe general characteristics of telecommuters and identify to what extent select demographic measures and personality type helped explain the challenges of telecommuting. This study used a sample of telecommuters who all telecommuted from home at least once a week. The independent variables focused on the demographics of telecommuters, generally defined as: gender, age, ethnicity, relationship status, education, number of children and MBTI personality type and telecommuting characteristics which included, organizational size, how long the participant had been a telecommuter, how many days a week they typically telecommuted, how many days a week they worked, how their telecommuting frequency was determined, and the perceived advantages of telecommuting. The dependent

variables consisted of various challenges that telecommuters face. The challenges were identified using research in the area of telecommuting and included, *isolation, lack of promotional opportunities, relationships with managers, co-workers, and family, and lack of structure*. Study participants were asked, on a survey, to rate their experiences with each of the challenges, using a 4-point Likert scale with 1 being “no challenge” and 4 being a “major challenge.”

The results of this study shed light on the relationship between the challenges telecommuters face and select demographic measures. While the focus was on personality type my research also uncovered relationships between telecommuter challenges and organizational size and telecommuting intensity.

#### Research Questions

1. What are the telecommuting characteristics and demographics of the telecommuters who participated in the study?
2. What are the leading challenges faced by this sample of telecommuters?
3. To what extent do personality type, telecommuting characteristics and select demographic measures explain variation in the challenges these telecommuters face?

## Telecommuting and Personality Type

This literature review covers only part of the expansive amount of research available on the subjects of telecommuting and personality type. For the purposes of this research, the review focused on the following five topics, (a) history of telecommuting, (b) definitions and statistics of telecommuting, (c) advantages and challenges of telecommuting, (d) characteristics of telecommuters, and (e) instruments to assess personality type. These five areas help to uncover the current research surrounding the concepts of telecommuting and personality. Additionally, the review exposes gaps in the current body of literature, providing opportunities for further research.

### History of Telecommuting

Flexible work arrangements have grown in prominence in the last three decades. In 1973, Dr. Jack Nilles coined the phrases “telecommuting” and “teleworking” as he was looking for ways to alleviate traffic congestion, much of which was created by individuals commuting to and from work. In a recent article, Jack Nilles looked back on what led him to start thinking about telecommuting and where he sees its future. When looking at traffic problems in the 1970’s, he realized that there were many knowledge workers who drove to an office and used the phone to do their work. He asked the question, “What’s the point? Why do they have to get in their car and drive someplace to do this?” (Mears, 2007, p. 27). Now, with advancements in technology, just about anywhere imaginable can become a possible work site. As for the future of this phenomenon, Nilles says, “What I expect to see is the terms “telecommuting” and “telework” sort of disappear over the next few years. It will just be the way companies do business” (p. 27).

While Nilles initiated the concept of telecommuting, there has also been legislation that has helped further its spread. The Clean Air Act of 1990 gave individuals the option of telecommuting as a way to help with clean air compliance and traffic congestion goals (Van Horn & Storen, 2000, p. 10). In addition, more recently the Federal Emergency Management Agency (FEMA) has recommended that government agencies use telecommuting in their Continuity of Operations plans (COOP) as a way for the government to continue running during times of emergency (United States Office of Personnel Management, 2007, p. 11).

#### Definitions and Statistics

In a broad sense the phenomenon of telecommuting is understood; however, an accepted definition of the word for research purposes is non-existent. As a result, researchers craft their own definitions based on their focus of interest in the concept (Mokhtarian, Salomon, & Choo, 2005, p. 426). For example, Hartman, Stoner, & Arora (1992) described telecommuting as, “a work arrangement where organizational employees regularly work at home or at a remote site one or more complete workdays a week in lieu of working in the office” (p. 36). Kurland and Egan (1999) noted that telecommuting, “is the act of working outside the conventional workplace, e.g., at home, and communicating with the conventional workplace by way of computer-based technology” (p. 501). Yet another definition states, “a telecommuter is someone who relies on communications technology to do much of his or her work at home, from the car, airplane, or even a hotel room. The distinguishing characteristic is that the work

process involves the use of telephone line and related communications equipment from the home or nontraditional worksite” (Moss & Carey, 1994, p. 18).

The Telework Coalition, an association for teleworkers, goes one step further in its definition and breaks down the distinction between telecommuting and telework, which is often blurred in much of the research. According to The Telework Coalition’s (2007) web site, telecommuting “uses telecommunications to avoid the use of transportation to travel to and from the traditional workplace” (§ 2). In contrast, telework, “is using telecommunications to change the geography of where we work. Telework additionally, includes working from anywhere as the opportunity to do so presents itself - your car, an airport lounge, a teleworkcenter or branch or satellite office, a client's office, a café or a hotel room.” (§ 2 & 3). Interestingly, the telework definition is very similar to the telecommuting definition provided by Moss and Carey. It is evident from these definitions that there are inconsistencies in how telecommuting is both defined and understood.

The lack of consistency among these definitions makes it difficult to quantify how many people actually participate in this non-traditional work arrangement. Four factors that can skew measurement are, (a) technology used, (b) how often one telecommutes, (c) telecommuting location, and (d) employment relationship (Navarette, Iriberry, & Pick, 2002, p. 188). As technology has advanced, the definitions describing technology have also broadened. When Jack Nilles first coined the phrase, he focused on the telephone as the main form of technology (Myers, 2007, p. 27), yet currently definitions are also incorporating computer-based technology. The ranges for how often one telecommutes



are broad, from once a year to everyday. In addition, based on the definitions stated above, telecommuting can take place from a home, a remote work site, a car, an airplane or a hotel. Coupled with frequency, there could be a vast difference in those individuals who telecommute from home or a remote work site and those that telecommute from an airplane. Lastly, some of the research includes both those who have outside employment and those that are self-employed workers, while other research omits self-employed telecommuters (Hartman, Stoner, & Arora, 1992; Van Horn & Storen, 2000).

What does this mean in terms of quantifying how many individuals actually telecommute? Unfortunately, the current research has not created a unifying definition based on the many facets of telecommuting that researchers are approaching the problem from. Ideally, researchers will begin to craft their definitions utilizing the four factors surrounding how to identify aspects of telecommuting. The four factors will situate the research and allow for comparisons among research to be made.

#### Advantages and Challenges to Telecommuting

The advantages and challenges of telecommuting can be categorized into three areas: individual, organizational and society (Crandell & Gao, 2005, p. 30). Crandell and Gao provided a helpful table (Table 1) that clearly presents this information.

Table 1

## Benefits and Limitations of Telecommuting

	Benefits (probable)	Limitations (potential)
Individual	<p>Higher job satisfaction</p> <p>Higher organizational commitment</p> <p>Less pressure</p> <p>Better time management</p> <p>Reduced travel time</p> <p>Balance work and home life</p> <p>Distraction free environment</p> <p>Less involvement in office politics</p> <p>Suitable for homebound employees</p>	<p>Feelings of isolation from the work culture</p> <p>Lack of promotional opportunities</p> <p>Lose out on the assignment of good projects</p> <p>Dissatisfaction with peer relationships</p> <p>Less influence over the people and events at work</p> <p>Work/family conflict</p> <p>Harder to take a sick day</p>
Organizational	<p>Increase productivity</p> <p>Lower costs</p> <p>Less office space needed</p> <p>Reduced absenteeism</p> <p>Lower turnover</p> <p>Do not have to have all employees in one location (a terrorist consideration)</p> <p>Increased recruitment options</p> <p>Able to adapt to the virtual organization</p>	<p>More difficult to supervise</p> <p>Assessment concerns</p> <p>Special logistics requirements</p> <p>Sensitive information could be compromised</p> <p>Goes against the concept of teamwork</p> <p>Control over health and safety</p> <p>Lack of infrastructure support (secretary, etc.)</p>
Society	<p>Less traffic</p> <p>Less pollution</p> <p>Supports the local and rural communities</p>	<p>Individualistic mentality</p> <p>Fewer face-to-face relationships</p>

This section of the review presents the findings specifically from the individual perspective, while the next section of the review discusses the characteristics of individuals who telecommute.

### *Individual Advantages*

Enhanced job satisfaction is one potential advantage to telecommuting (Manoochehri & Pinkerton, 2003). Manoochehri and Pinkerton noted, “Schedule flexibility, ability to balance the family needs and work requirements, and elimination of time and cost associated with commuting all lead to higher employee satisfaction” (p. 10). Flexibility and balance were also mentioned by Potter (2003): “of the 21.6 million wage and salary workers found by the Bureau of Labor Statistics to have worked at home on their personal job in 1997, nearly one-quarter (5.2 million) do so in order to coordinate their work schedule with family and personal needs” (p. 77). The absence of office politics and interruptions are other advantages for individuals who telecommute (Crandell & Gao, 2005; Manoochehri & Pinkerton, 2003). Without those distractions, employees are more productive and may be subjected to less stress. In addition, Moss and Carey (1994) found costs savings to be fairly significant for telecommuters in their study on telecommuters noting, “Telecommuters saved an average of \$11.92 per day or \$44.10 per month (based upon an average of 3.7 telecommuting days per month) due to lower costs for food, gasoline, subway fares, dry cleaning, and other costs associated with work” (p. 22).

### *Individual Challenges*

There are numerous challenges that telecommuters face, but for the purposes of this research the following four will be highlighted: *feelings of isolation, lack of promotional opportunities, relationships with managers, co-workers and family* and lastly, *lack of structure in one's workday*. These challenges were cited most often in the research and should therefore have wider applicability to the sample population.

In regards to isolation, Manoochehri and Pinkerton (2003) suggest telecommuters, "no longer have a place away from home where they can talk with their peers and leave the work at the end of the day" (p. 13). In Reinsch's (1997) study of telecommuters at several large companies on the East Coast, he found that of the 63 respondents, 35% said there were no disadvantages, while 29% said they felt isolated. Of the different types of telecommuting, home offices, in which an employee works from home exclusively or at least when they are away from the central office, tended to be the most isolating.

Davenport and Pearlson (1998) surveyed 100 Fortune 500 firms and then conducted follow up interviews with managers and employees from ten firms who had established effective virtual office programs. They found that employees who worked at home exclusively had a harder time adjusting than those that worked at home occasionally, "...home offices are popular for a year or two, but often fall from favor after that. Managers speculate that after that time, home workers become disconnected from their jobs and co-workers" (p. 54). It would be interesting to know more about individual telecommuters personality types, i.e. Myers-Briggs Type Indicator (MBTI) or a similar assessment, and their propensity for *feelings of isolation*. It could be hypothesized that

extroverts may have a more difficult time telecommuting than introverts, given extroverts' need to be around other people and things to help keep them energized and focused.

Hartman et al. (1992), in their empirical study of telecommuters found that, "Most telecommuters felt that their career advancement had been hurt by telecommuting. At best, it seems that the career is temporarily plateaued. In the worst case scenario, career movement may be inhibited over time" (p. 40). The researchers sent out questionnaires to measure respondent satisfaction in areas ranging from the job itself to supervisory support and performance evaluations. The findings gave several reasons to account for these feelings by the telecommuter: (a) telecommuters have less visibility and exposure, (b) telecommuters may be given less opportune assignments, and (c) telecommuters feel their evaluations are less favorable due to the fact that they telecommute. Solutions to these limitations seem to lie with the employee-manager relationship, which is discussed in much of the literature. In a meta-analysis study by Gajendran and Harrison (2006), one of their hypotheses centered on career advancement, "telecommuting is negatively related to prospects for career advancement" (p. 3). Using research from 38 papers, consisting of 40 samples, the researchers found their hypothesis was not supported based on the findings. The lack of consensus on this topic in the literature suggests further research is needed.

Relationships in general can be a challenge facing some telecommuters (Davenport & Pearlson, 1998, Gajendran & Harrison, 2006). Maintaining healthy relationships is difficult under the best of circumstances, but telecommuters face unique

challenges with *managers, co-workers and family members that live in the same household.*

As noted in Davenport and Pearlson (1998), “When people no longer see one another, everyday socialization and relationship-building can be lost” (p. 57). Many employees build social networks at work; their fellow employees become friends and confidants. When an individual telecommutes, it is harder to initiate or maintain those relationships. Davenport and Pearlson noted in their article that IBM actually addresses this issue by encouraging telecommuters whose social interactions are focused on the office to find social outlets outside of the organization (p. 58).

The manager-telecommuter relationship can be difficult for many reasons. Lack of communications and unclear expectations are definitely heightened in this alternative work arrangement. This can lead to misunderstanding and unnecessary tension. Vega and Brennan (2000) noted that in their study, “Managing telecommuting in the Federal Government,” some managers are concerned that managing a telecommuter will result in more work for them, while others have concerns around trust. Some managers have a lack of trust in their employees that manifests itself in this new alternative working environment; if they cannot see their employee, how will they know they are working (p. 16). This lack of interest and trust in the telecommuting process can lead to strains on the manager-telecommuter relationship.

Similarly, the relationship between the telecommuter and co-workers can also break down. Gajendran and Harrison (2006) noted that decreased interaction between co-workers and telecommuters can leave the telecommuter feeling isolated. They also

noted that some co-workers question the telecommuters' contributions to the team and resent the telecommuters' freedom and flexibility. These negative feelings on the part of co-workers can affect the mutual relationship. Interestingly, when Gajendran and Harrison looked at telecommuter relationship quality with managers and co-workers, their own meta-analysis findings using the existing research did not support relationship strains. Here again the findings are contradictory and seem to vary by researcher.

Telecommuters who have family that live in the same household could also find relationship hardships. There have been noted work-family conflicts as the telecommuter tries to separate work and family time. Some telecommuters feel pulled in two directions as they struggle to find balance. Additionally, some telecommuters feel pressure from family members to take care of household responsibilities during the day since they are at home (Gajendran & Harrison, 2006, Navarette, Iriberry & Pick, 2002).

The final challenge, *lack of structure*, pertains to the flexibility inherent in most telecommuting situations. In most typical office environments, everyone is co-located; with cubicles or offices so employees can easily access each other. Additionally, there are formal and informal meeting locations such as copy rooms, lunchrooms, and the boardroom. Also, the presence of managers and co-workers help focus the employees on the goals and tasks they are expected to accomplish. In stark contrast, all of that is missing for the telecommuter. There is no one looking over their shoulder to make sure they are focused; it is their responsibility to stay on task. In order for the telecommuter to be able to walk into a co-workers office, they have to travel to the office, where they will most likely not have their own office to work in. Additionally, most of the meetings

telecommuters participate in are over the phone and computer, where they miss out on the face-to-face interaction (Raghuram, Wiesenfeld, & Garud, 2003).

### *Understanding the Advantages and Challenges of Telecommuting*

Based on existing research, while it's clear that telecommuters do face potential difficulties, there still seem to be many advantages to telecommuting. In addition, the extent to which these challenges affect telecommuters may vary depending on the individual and the circumstances. Based on the telecommuting situation, *feelings of isolation, lack of promotional opportunity, relationships and lack of structure* do not need to end a telecommuting opportunity. Instead, more research should be conducted to better understand the extent to which telecommuters experience challenges and what variable account for the variation.

### Characteristics of Telecommuters

While it is clear there are both advantages and challenges associated with telecommuting, it is also important to understand the basic demographics of telecommuters to build perspective and provide insights into who is participating in this alternative work arrangement. While research surrounding the number of telecommuters lacks consistency, for those telecommuters who have been identified the research has uncovered some common characteristics of the population.

### *Gender*

Research has shown that more men than women telecommute (Belanger, 1999; Ruiz & Walling, 2005; Safirova & Wall, 2004; Van Horn & Storen, 2000;



Worldatwork, 2007). The Worldatwork data shows that men outnumber women in telecommuting 60% to 40%, with Ruiz and Walling publishing numbers as high as 65% to 35%. Safirova and Walls noted that the predominance of men in telecommuting was somewhat surprising considering telecommuting offers work-life balance flexibility that is most often a benefit for women who are the primary care givers (p. 5). This could be explained in a couple of ways, (a) most telecommuting positions are higher level, managerial, in the professional, technical and skilled trades (Ruiz & Walling, 2005, p. 422) and there are a larger number of men in those positions, and (b) as Tremblay, Paquet, & Najem (2006) noted, individuals telecommute based on the requirements of the job or the employer, rather than the needs or wants of the employee (p. 721).

### *Age*

Telecommuters are represented in all working age groups, but the majority of telecommuters range somewhere between 35-54 (Ruiz & Walling, 2005; Van Horn & Storen, 2000; Worldatwork 2007). Belanger (1999) was more specific, saying the average age was 40.7 years (p. 145). This age range does include some Baby Boomers born from 1946-1960, which according to Martin and Tulgan, also consists of cuspers on either end of the spectrum, making the Baby Boomer cohort cover the years from 1943-1964. Telecommuters, predominantly encompasses Generation X, those born between 1965-1977, which is an entrepreneurial and technically savvy group (Martin & Tulgan, 2002, pp. 3-6). It is not surprising then that they would gravitate to a working environment that gives them more independence and freedom while still relying on the most up-to-date technology available. Additionally, those individuals in that age group

have the experience and seniority to be working in the skilled careers most often associated with telecommuting.

As Generation Y individuals, born between 1978-1985, make a greater presence in the workforce over the coming years, it could be assumed they will become a large contingent of telecommuters. “This ‘Digital Generation’ is ready to learn anywhere, anytime” (Martin & Tulgan, 2002, p. 10). These individuals look for flexibility in all aspects of their work, including their schedules and work location (Martin & Tulgan, 2001, p. 57).

### *Ethnicity*

Research on the ethnicity of telecommuters is not as often mentioned in the research. Van Horn and Storen (2000) noted that results from two Work Trend surveys conducted in 2000, with a sample size of 164, found 76% of telecommuters were white, 5% were African-American and 7% were Hispanic (p. 12). Safirova and Walls (2002) had similar findings, although they identified additional ethnicities in their research, including Asians, American Indians and other. Again this could be attributed to the fact that telecommuting lends itself to professional occupations and ethnic minorities are underrepresented in these fields. Since there is limited research on telecommuting and ethnicity, this would be another opportunity for further research. Are ethnic minorities not working in the fields that lend themselves to telecommuting or are they hesitant to telecommute because it has been identified that telecommuting can lead to a lack of promotional opportunities, further affecting their chances of career growth?

### *Relationship Status*

Based on the average age of telecommuters, it is not surprising that a majority of them are married or living with someone. Worldatwork (2007) found that 79% fell into this category (p. 8). Similarly, Moss and Carey (1994) noted that 76% of their study participants were also married (p. 3).

### *Education*

Since occupations that lend themselves to telecommuting are higher level and skilled, it is expected that most telecommuters would have at least a four-year college degree. Although the percentages of exactly how many have a college education or higher differs, it seems to range from 30% to 80% (Moss & Carey, 1994; Safirova & Walls, 2002; Van Horn & Storen, 2000; Worldatwork 2007). Safirova and Walls went on to note that a higher percentage of telecommuters attained a four-year college degree than non-telecommuters, 36.74% as compared to 26.75% (p. 6).

### *Who Telecommutes?*

The current research shows that all types of individuals participate in telecommuting, although there seem to be some trends in terms of the typical telecommuter. The mainstream telecommuter is most likely a married, white male, ranging from his mid 30's to his mid 50's, with at least a four-year college degree. With more women graduating from college and the "Digital Generation," joining the workforce, it will be interesting to see how the make-up of the typical telecommuter changes in the next decade. While there is research to support the demographics of

telecommuters, one area that is still relatively unknown is the relationship between personality type and telecommuting.

### *Personality Type*

Personality type has not gotten as much attention as some of the other characteristics of telecommuters. It would be helpful to know if certain personality types self-select into telecommuting. Additionally, based on personality type, are there certain challenges that those personality types face as telecommuters? One study looked specifically at Utah women telecommuters and personality type. Staker (1991) used the MBTI to examine personality in her subjects and she looked at three research questions: (a) is there a predominant type of Utah woman telecommuter, (b) are there differences in personality preferences in Utah women telecommuters and a normative sample regarding job satisfaction, and (c) are there different job motivations for the personality profiles of Utah women telecommuters (pp. iv-v). One interesting finding was that of the 98 respondents, 57% were either ESFJ (Extravert, Sensing, Feeling, Judging) or ISFJ (Introvert, Sensing, Feeling, Judging), which is not indicative of the larger population of women taking the MBTI. Additionally, she found that two other types were completely absent, ENTJ (Extravert, Intuitive, Thinking, Judging) and ESTP (Extravert, Sensing, Thinking, Perceiving), also not representative of the larger population of women taking the MBTI (see Appendix A for characteristics of the 16 types). Because Staker only looked at women living in Utah working in data entry for mostly the same company, and most (89%) also happened to be from the same religious background, her study has low external validity. While this research adds to the larger body of knowledge, its narrow

scope cannot be applied to the vast population of telecommuters. In fact, based on the homogeneity of the sample, the researcher was ignoring other factors such as religion, sex, upbringing, or job choice that may contribute to the personality preferences of the Utah women other than the fact that they happen to telecommute.

Research to this point has examined the individual characteristics of telecommuter, and offered general attributes that should make telecommuters successful on the job. For example, self-discipline was included in several articles when describing important characteristics of telecommuters (Belanger & Collins, 2001; Hartman et al., 1992; Moss & Carey, 1994; Federal Government, 2000). This can be tied to being a self-starter (Green, Lopez, Wysocki, & Kepner 2003) and handling autonomy (Newman, 1989). Belanger and Collins went on to suggest the following additional characteristics: self-sufficient, reliable, self-motivated, work and solve problems independently, and good planning and time management skills (p. 145). While these are important characteristics for a telecommuter to possess, it would be interesting to investigate if there is a relationship between telecommuting and personality type. Perhaps there are certain challenges they face as a telecommuter that are somehow related to relatively stable personality attributes.

#### Instruments to Assess Personality Type

There are many instruments available to assess personality; these include, but are not limited to:

- California Psychological Inventory
- DiSC
- Eysenck Personality Questionnaire
- Five Factor Model

- Hogan Personality Inventory
- Jackson Personality Inventory
- Millon Index of Personality Styles
- Minnesota Multiphasic Personality Inventory
- Multidimensional Personality Questionnaire
- Myers-Briggs Type Indicator (MBTI)
- NEO Personality Inventory
- Personality Styles Inventory

These instruments can be divided into two broad categories: those that identify normal personality and those that uncover psychological disorders. However, in terms of studying telecommuters, the instruments that detect psychological disorders are not applicable. The focus on this research is on individuals with normal personalities. When considering normal personality there are many assessment options to choose from. For the purposes of this paper, four of the more popular personality assessments used in the business world were examined. These four were chosen because they are often used in the Consulting and Organizational Development fields and they have wide applicability to many other facets of business including: coaching, leadership, team building, feedback, communication and conflict.

### *DiSC*

The DiSC assessment, is unlike the MBTI because, it “does not reveal core personality type. Instead it reveals how your personality is responding to your environment” (Straw, 2002, p.18). DiSC, which looks at normal personality and behavior, uses a four dimensional model to identify how individuals respond to situations. Based on information from the DiSC Profile web site (2007), the four dimensions include:

- **Dominance** – Individuals who score a high D like to deal with problems. They are also demanding, forceful, egocentric, strong-willed, driving, determined and ambitious.
- **Influence** – Individuals who score a high I are influential and emotional. They are also convincing, magnetic, enthusiastic, persuasive, trusting and optimistic.
- **Steadiness** – Individuals who score a high S are adverse to change and value security. They are also calm, patient, relaxed, deliberate, stable and consistent.
- **Conscientiousness** – Individuals who score a high C are focused on quality work and adhere to rules and structure. They are also careful, cautious, exacting, accurate and tactful.

The DiSC profile consists of 28 questions that provide scores purporting to uncover the degree to which individuals use each dimension. Each question has four adjectives and individuals are asked to choose the one adjective that most describes them and the one adjective that least describes them. Of course, individuals are a composite of all four dimensions, with one or more dimensions playing a stronger role in how individuals respond to their environment.

Over 50 million individuals throughout the years have taken the DiSC profile (DiSC Profile, 2007). It is important to note that the DiSC results show little if any variation across culture, age or gender. The test-retest reliability for all four dimensions at one week (N=142), 5-7 months (N=174), and 10-14 months (N=138) had coefficients ranging from .71 (10-14 months out) to .89 (one week out). In terms of internal consistency, DiSC has been found to be highly reliable. Using Cronbach's Alpha to measure reliability, all four dimensions had an alpha of .85 or higher with a sample size of 812. In terms of validity, factor analysis was used to measure whether or not one factor would correlate highly between i and C and another factor would correlate highly with D and C

as the DiSC profile asserts. There were 7,038 respondents in the study and the findings supported the DiSC claims (Inscape Publishing, Inc., 2005). Both the reliability and validity of the DiSC profile are strong enough to be considered statistically sound if used in a wide-scale research study.

### *Hogan Personality Inventory*

According to the Hogan Assessments (2007) web site, the Hogan Personality Inventory is based on the Five-Factor Model (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience) and evaluates individuals on seven categories, looking specifically at individuals performing at their best. The seven categories are:

- Adjustment – how pressure affects self-confidence, composure and self-esteem
- Ambition – degree to which individual seeks/values status, leadership and achievement
- Sociability –need for social interaction
- Interpersonal sensitivity - ability to maintain relationships and be in tune with others
- Prudence – how self-disciplined, conscientious and responsible
- Inquisitive – imagination, curiosity, creativity
- Learning approach – enjoyment in academic activities and being a life-long learner

The Hogan Personality Inventory is comprised of true/false questions that don't pose a bias for race/ethnicity or gender. The inventory takes 15-20 minutes to complete and only requires a 4<sup>th</sup> grade reading level. The test-retest reliability for the Hogan Personality Inventory ranges from .74 to .86, although the Hogan Assessment (2007) web site did not disclose how often or at what time frames the retests were given. Lack of key information such as re-test time frames makes it hard to compare the Hogan Inventory to other assessments that do disclose this information.



### *MBTI*

MBTI, developed by Isabel Briggs Myers and Katherine Briggs, uses the concept of psychological type first developed by Carl Jung, to make the theory understandable and applicable to everyday life. The Myers-Briggs Foundation (2007) web site noted that each year more than 2 million people take the MBTI worldwide.

The MBTI is a self-evaluation tool that asks questions surrounding four dimensions of human personality preference. Each dimension is dichotomous, with an individual showing a preference for one aspect of the dimension or the other. Purveyors of the MBTI emphasize that none of the eight preferences are inherently any better than another. They are merely different. The instrument provides 16 different four-letter types that identify an individual's preference for each of the four dimensions, such as ENTJ (Extrovert, Intuitive, Thinking, Judging). Myers (1998) notes the four dimensions focus on:

- How are you energized?
  - Gain energy through interactions with others and participating in activities (Extrovert)
  - Gain energy through solitude, quiet, reflection (Introvert)
- How do you take in information?
  - Take in information using the five senses (Sensing)
  - Take in information using the sixth sense– inferences, insights, making connections (Intuitive)
- How do you make decisions?
  - Make decisions based on how the decision would affect others, your values and harmony (Feeling)
  - Make decisions based on facts, logic and truth (Thinking)

- How do you organize your world?
  - Your life is very structured, organized, and goal-oriented (Judging)
  - Your life is more care-free, flexible and spontaneous (Perceiving)

The MBTI Manual (Myers, McCaulley, Quenk & Hammer, 1998) is a guide to how the MBTI was developed and how to interpret and use the indicator. Reliability, as in the case of DiSC, was looked at in two different ways, (a) test-retest correlations, and (b) internal consistency. In each case, research was gathered using Form M, the newest version of the test, which consists of 93 questions and takes 15-25 minutes to answer. The minimum reading level needed for Form M is 7<sup>th</sup> grade and there are no age or gender differences associated with the results. The test-retest correlations were sampled using three different groups, ranging in size from 50 to 258. Each sample was re-tested at four weeks and reliability was assessed using the Pearson correlation coefficient. Looking at the largest sample, from a Public Utilities Company, the reliability scores were: (a) E-I .93 (b) S-N .89, (c) T-F .87, and (d) J-P .93. The internal consistency scores, which used Cronbach's Alpha, assessed the consistency of results of the dichotomous pairs. The same sample was used (N=240, a slightly smaller number on this measure), and the reliability was found to be, (a) E-I .95, (b) S-N .95, (c) T-F .93, and (d) J-P .94. In both cases, the reliability scores were extremely high and comparable to the other personality assessments measured in this paper. Confirmatory factor analysis was also conducted on Form M to check for validity. The research data used a national sample (N=3,036) and the adjusted goodness of fit was .94 and the nonnormed fit index was .96. Both showed the four-factor model to measure what it espouses.

### *Personality Styles Inventory*

The Personality Styles Inventory (PSI) is very similar to the MBTI, using Jung's psychological type theory and providing the individual taking the assessment with a four-letter type that corresponds to the exact same four dimension preferences as the MBTI. The difference lies with what it is measuring. The MBTI attempts to measure how a person believes they usually act and the PSI attempts to measure how a person would prefer to act (Champagne & Hogan, 2002, p. 34). The inventory consists of 32 questions and it takes approximately 25 minutes to complete and score.

In terms of reliability and validity the Facilitator Guide, designed for those individuals facilitating the inventory and accompanying training, provides some interesting statistics. For example, the authors of the guide, Champagne and Hogan, disclose they had found the reliability coefficients for the PSI to range between .71 and .90. What they fail to identify is any of their procedures, what type of validity they were measuring, the sample size, or when the study took place. In the same paragraph they compare their reliability scores to those of another researcher who sampled 148 principals and 255 teachers. Using Cronbach's Alpha, the second researcher found the reliability for the principals to be .83 and the reliability for teachers to be .70. Based on the use of Cronbach's Alpha it could be assumed that both studies were measuring internal consistency, but in each case it was not explicitly noted. In a separate study, test-retest reliability was done across all four dimensions with a coefficient of .67. Again important data was not disclosed: sample size, frequency and time frame of retests. In yet another study presented at a conference in 1986, the PSI and the MBTI/AV (Abbreviated

Version) were compared to measure the PSI's concurrent validity. The researchers found the average correlation to be .46. They went on to note, "this value is reasonably good, considering the reliability of these two instruments" (Champagne & Hogan, 2002, p. 32). That statement is not consistent with the validity measurements associated with the MBTI Form M described in the previous section. Although, it should be noted the MBTI/AV was created in 1983 and the Form M was created in 1998, after extensive redevelopment (Myers et al., 1998, pp. 130 & 139).

### Conclusions

This literature review explored the concept of telecommuting, specifically its history, the many definitions of telecommuting, advantages and challenges to telecommuting, and numerous characteristics of telecommuters. While the research on telecommuter characteristics is vast, this review noted that one characteristic that has not been systematically explored is telecommuters' personality type. To better understand the complexities of personality type, this review examined four business focused personality type assessments in terms of the basic structure of the assessment and their reliability and validity.

## Survey Design

To restate, the purpose of this research was to survey a sample of telecommuters to help uncover the relationship among challenges telecommuters face, telecommuting characteristics, and select demographic measures, specifically personality type, of the sample. The data was collected using two on-line, self-administered surveys. This provided for ease of accessibility, both on the part of the participant and the researcher. The surveys were cross-sectional, taking place at a single point in time. I chose to use surveys because the sample population is comfortable with technology, based on the requirements of being a telecommuter. Surveys also do not require a large time commitment from the participants, which helped with rate of return. In addition, survey data collection was relatively quick and manageable to analyze.

## The Population and Sample

As noted in the literature review, it is difficult to identify the size of the telecommuting population. This ambiguity is a result of lack of consistency in definitions of telecommuters. According to The Telework Coalition (2008) web site, “the number of employed Americans who performed any kind of work from home, with a frequency range from as little as 1 day a year to full time, grew from 41.3 million in 2003 to 44.4 million in 2004, a 7.5% growth rate.” Based on the four factors that Navarette, Iriberry, & Pick (2002) suggest should be included to describe telecommuting, this definition is still somewhat vague. It does not address the technology used or the type of employment, as well as whether an individual is employed by an organization or self-employed. In addition, the frequency with which one telecommutes varies across the population.

Although the definition does do an adequate job of identifying telecommuting location, stating this definition only measures those who telecommute from home, rather than those who work in satellite offices, airplanes, cars or hotels.

The sample for my research would have ideally come from a prominent telecommuting association. Unfortunately, I was unable to gain access. Instead, my sample of telecommuters came from three different sources. The first source was a large telecommunications organization that has a substantial telecommuting program with over 10,000 telecommuters. I was able to share my research ideas and ask for participants via their internal social networking site created solely for telecommuters. Secondly, I posted a message on a telecommuting web site whose focus is to promote telecommuting as a way to eliminate gridlock. Lastly, I wrote a blog for another web site that provides tips, reviews and opinions about the world of web commuting. In total, I had 149 telecommuters submit to participate in my survey, with around 90% completing both surveys; enough to make the research generalizable. I was also able to ensure the participants' confidentiality.

I had access to each participant's MBTI type and the results of the researcher-designed survey, so I was able to link up responses from both survey instruments. While I had access to individual participant's information, I did not share anyone's name or corresponding information in my research or with anyone else. I am, however, open to sharing more in depth information about an individual's MBTI type with the individual participants if they request that information. I worked with a non-probability sample because participants self-selected into the study and they had to meet my definition of

telecommuting, which prevented them from being randomized. As a result, my research was able to discuss how aspects of the research related to the larger population, but was not able to make claims regarding causality.

For the purpose of this research, I created my own definition: “A telecommuter is someone who is employed by an outside organization and uses a phone and computer to perform their work at least once per week from their home.” This definition was created using the four factors suggested by Navarette, Iribeeri and Pick (2002), 1) employment relationship, 2) technology used, 3) how often one telecommutes, and 4) location. Specifically, I wanted to focus on individuals who work for an organization, since their experience with the challenges identified in the research would be different from those individuals who are self-employed and work from home. In addition, I wanted to look at individuals who work from home at least once per week, because anyone who telecommutes less than that may not relate to the challenges that the literature has uncovered. This definition guided the research and allows it to be compared and referenced in the larger body of literature. I considered stratification, but decided it was not applicable in the case of my research because of my focused definition of telecommuting. Stratification would have required me to divide the population into homogeneous groups and then choose a sample from the groups. Since I was unaware of who would see my postings, there was no way for me to create homogeneous groups.

#### Instrumentation

As noted above, I used two survey instruments to gather information on my sample. I created the first survey instrument, which inquired about telecommuting characteristics,

telecommuting challenges, and demographic information. The first seven questions surrounded telecommuting characteristics and included open-ended, multiple choice and ranking options. Next the participants were asked to what extent they have experienced the six challenges identified in the literature, using a 4-point Likert scale ranging from no challenge to a major challenge. For those individuals who wanted to share more about their challenges, they had the chance to explain with an open-ended option. The last six demographic measures were open-ended and multiple-choice. The second survey was the on-line MBTI Form M. It consisted of 93 questions, which took approximately 15 minutes to complete. Everyone who completed the MBTI received an in-depth report on his or her type. In addition they had the opportunity to speak directly with me to discuss their specific four-letter type.

After looking at the research on the four personality instruments noted in the review of the literature, it was clear that personality could be assessed in different ways. While all of the assessments could provide insight into personality, the MBTI was chosen to examine the complexities of personality type and telecommuting for numerous reasons. First, in the areas of length of assessment, reliability and validity, all instruments were relatively similar, although several of the studies didn't disclose key details that in turn made it hard to construct intelligent comparisons across all assessments. In addition, the MBTI did have the strongest numbers in terms of reliability and validity. Secondly, the DiSC profile is broad in its scope, providing only four dimensions. The MBTI on the other hand allows for 16 different types, providing a more specific and unique personality profile. Thirdly, the Hogan Personality Inventory



uses seven categories that were based more on occupational success rather than true personality typing. The categories are more representative of the personality characteristics that the telecommuting research had already identified. Lastly, the Personality Styles Inventory, although similar to the MBTI, assesses an individual based on how they would like to act, which could offer a skewed version of ones personality. MBTI is also well known and respected in the business world, providing confidence and a strong research backing for the results that it might provide.

An important point to note regarding the investigation into personality type and telecommuting challenges involves the point in time in which the surveys were taken. While personality is relatively constant, it can vary over time based on life events, stress, and the environment, similarly, the extent to which an telecommuter experiences the challenges could also vary based on the length of time telecommuting and their particular telecommuting situation. The findings that result from this research should be seen as a snapshot in time.

I field tested the researcher-designed survey with five telecommuters from a Fortune 500 construction company, the organization where I am employed as a telecommuter. The telecommuters were asked to complete the on-line survey and then come together in an on-line webinar to debrief the survey in its entirety. The follow-up webinar took approximately one hour and took place the same day that they completed the survey so the ideas were fresh in the their minds. Their suggestions and changes were used to enhance the effectiveness of the survey instrument.

All survey participants had at least one month to complete both surveys. I followed a four-step process to administer the surveys. First I sent posts to the telecommunication organizations telecommuting internal social networking site and the two telecommuting web sites. The postings asked those telecommuters who were interested in participating and who telecommuted at least once per week to email me. This allowed telecommuters to self-select into the study. Upon receiving their emails, I replied, thanking them for their participation and provided the two survey links. If participants had not finished the surveys within one week, I sent them a reminder email. If they still had not completed the surveys after two weeks, I sent a final follow-up email, in an effort to get a high rate of return.

#### Variables in the Survey

The first research question, “*What are the telecommuting characteristics and demographics of the telecommuters who participated in this study?*”, addressed the following independent variables, organization size, how long the participant has been a telecommuter, how many days a week they typically commute, how many days a week they work, how their telecommuting frequency is determined, if anyone else in their household telecommutes, and the perceived advantages of telecommuting, in addition to the independent variables of age, sex, ethnicity, education, relationship status and number of children. In the researcher-designed survey, items 1-7 and 14-19 revealed the samples telecommuting characteristics and demographic measures. The second research question, “*What are the leading challenges faced by this sample of telecommuters?*”, gathered data for the dependent variables, the challenges telecommuters face. The challenges

addressed in this research include, *feelings of isolation, lack of promotional opportunities, relationships with manager, co-workers, and family (that live in the same household), and lack of structure in one's workday*. Using a 4-point Likert scale, participants were asked, in survey items 8-13, to what extent have they faced these challenges as telecommuters? There was an open-ended question which asked the telecommuters to elaborate on any of the challenges. The final research question, "*To what extent does personality type, telecommuting characteristics and select demographic measures explain variation in the challenges telecommuters face?*", was explored using both the independent and dependent variables. Table 2 breaks down each of the variables, the three research questions and how they connected with each item on the telecommuting survey. A copy of the Telecommuting Survey can be found in Appendix B.

Table 2

## Variables, Research Questions and Survey Items

Variable name	Research question	Survey item
<p>Independent variables:</p> <p>Telecommuting Characteristics:</p> <p>Organizational size</p> <p>Length of time telecommuting</p> <p>Frequency of telecommuting</p> <p>Number of days a week worked</p> <p>How the frequency of telecommuting is decided</p> <p>Does anyone else in your household telecommute</p> <p>Perceived advantages to telecommuting</p> <p>Demographics:</p> <p>Age</p> <p>Sex</p> <p>Ethnicity</p> <p>Education</p> <p>Relationship status</p> <p>Number of children</p>	<p>1. What are the telecommuting characteristics and demographics of telecommuters who participated in this study?</p>	<p>Organizational size #1</p> <p>Length of time telecommuting #2</p> <p>Frequency of telecommuting #3</p> <p>Number of days a week worked #4</p> <p>How the frequency of telecommuting is decided #5</p> <p>Does anyone else in your household telecommute? #6</p> <p>Perceived advantages to telecommuting #7</p> <p>Age - #14</p> <p>Sex - #15</p> <p>Ethnicity - #16</p> <p>Education - #17</p> <p>Relationship status - #18</p> <p>Number of children #19</p>



Ideally, participants that did meet the definition criteria would complete both the researcher-designed survey and the MBTI assessment. A handful of participants only completed the researcher-designed survey. That information was used to answer research questions #1 and #2. However, they also needed to answer all of the challenge questions and most of the telecommuting characteristics and demographic questions in order to be included in the study. Participants had to complete all of the MBTI to find out their type, which was then compared with the challenges and other demographic measures.

Finally, using the Statistical Package for Social Science software (SPSS), I conducted descriptive analysis, which uncovered the mean, standard deviation and range of scores for the telecommuting characteristics, demographics and the challenges, answering research questions #1 and #2. Independent samples T-Tests were also conducted to compare means among the different variables. Lastly, I used multiple regression analysis to answer research question #3. Specifically, this involved regressing telecommuting characteristics, demographics and personality type against the six challenges faced by telecommuters to explain the extent to which these independent variables explained variation in the telecommuting challenges.

#### Limitations

There were numerous limitations to this research. The first limitation involved the creation of a definition for telecommuting. While I strongly believed creating a definition was important, because my definition was different from many other definitions found in the larger body of literature, there can be fewer comparisons across studies and with the larger population of telecommuters.

The second limitation involved the sample of telecommuters for the study. Individuals who actively participated in organization internal networking sites, those who visited telecommuting websites and who then self-selected to participate in my study may not be typical of the larger telecommuting population. These individuals are active in making their telecommuting arrangement positive and as a result they may have fewer challenges or may experience the challenges to a lesser extent than telecommuters not part of a telecommuting association.

The third limitation focused on the implications regarding the point in time the telecommuters completed the surveys. If this study were to be replicated again at another point in time, the results could be different, as the telecommuter's personality type and experience with the challenges could vary over time, based on circumstance. While many in the psychological community feel that type is innate, biological and stays with one for life (Myers, I.B., McCaulley, M., Quenk, N., & Hammer, A., 1998; Tieger & Barron, 2007), Hirsch and Kise (2001) in their training program, Using the MBTI tool in organizations, do mention that certain factors can affect the self-reporting of type. Those factors include: change or growth phase for middle-age individuals, stress or change, and demands from environment (pg. 20).

The fourth limitation centered around the MBTI and response bias. In an ideal situation, I would have been able to speak with each participant before they took the MBTI and reminded them to answer the questions based on their preferences, not how they have to act based on circumstances. Participants could have confused the two perspectives and not answered the questions through the preference lens. As a result,

when I looked at the Preference Clarity Index (PCI), most of the participants had slight or moderate preferences for the eight dichotomous pairs. Armed with this knowledge, participants may have answered the MBTI assessment questions differently, resulting in different four-letter types. The change in the MBTI make-up of the sample could have affected my findings.

The last limitation involved my personal biases as an experienced telecommuter. As a telecommuter for the last eight years, I have experienced the challenges and managed to make this alternative work arrangement a positive experience.



## Introduction

As described earlier in the dissertation, the focus of my research study was to uncover telecommuters' experiences with telecommuting challenges and explore if there is a relationship between those challenges and such factors as one's Myers-Briggs (MBTI) personality type and other telecommuting characteristics and demographics.

Specifically, my study explored the following research questions:

1. What are the telecommuting characteristics and demographics of the telecommuters who participated in the study?
2. What are the leading challenges faced by this sample of telecommuters?
3. To what extent do personality type, telecommuting characteristics and select demographic measures explain variation in the challenges these telecommuters face?

Chapter four reveals the findings from my study that looked at the relationship between personality type and the challenges of telecommuting. First, I present the procedures used in data collection. Specifically, I will share the piloting process and how I gained access to the sample population. Then, I will disclose the findings as they pertain to each of the three research questions.

## Procedures

To obtain the information required to answer my three research questions, study participants were asked to complete two surveys; the Myers-Briggs Type Indicator (MBTI) and a telecommuting survey that I designed. The MBTI is a 93 question personality assessment that takes approximately 15 minutes to complete. The telecommuting survey is comprised of fewer than 20 questions and is broken up into

three brief sections, Telecommuting Characteristics, Telecommuting Challenges and Telecommuter Demographics.

### *Piloting*

The telecommuting survey was piloted using a two-part process. First, it was reviewed by students in a graduate Survey Research Methods course at the University of San Diego. Ten graduate students spent about an hour evaluating the survey and the introductory letter to participants. Changes were made to improve on clarity, flow and some of the multiple choice question options.

In the second phase, the revised telecommuting survey was piloted to five telecommuters at a Fortune 500 construction company that offers telecommuting, but does not have a formal telecommuting program. This organization was chosen largely by for convenience, because it is my employer and I could easily access the small group of telecommuters. The pilot took place on August 17, 2009. As part of the process, each telecommuter was asked to take the telecommuting survey and then attend a one-hour webinar that same day to discuss the individual survey questions and offer suggestions for improvement. Based on their feedback, one change was made. Two telecommuting advantages, *flexibility* and *work-life balance*, were combined into one advantage called *flexibility/work-life balance*. This change was made because the pilot participants felt the two advantages were too similar to rank separately.

### *Access*

The original plan to gain access to telecommuters was to contact several telecommuting associations and ask for a list of their membership. Unfortunately, the associations contacted were not willing to provide that information. However, one of the associations did provide the name of a prominent member who consults with organizations in creating telecommuting programs. After speaking with this consultant, he put me in touch with another telecommuting consultant who was able to help me gain access to a large, national telecommunications organization that offers a formal telecommuting program for its employees. The telecommunications organization has approximately 10,000 full-time and part-time telecommuters. In 2008 they created a new, re-vamped telecommuting program that required those who had telecommuted previously to be re-approved to telecommute and all telecommuters to participate in assessments and training. In October 2009, they also launched an internal social networking site for their telecommuters with several hundred members. I was able to create a posting for the site that shared my research ideas and asked for participants. The post attracted approximately half of the total research participants.

To diversify the sample, I was also able to post a request for participants on a telecommuting website, whose focus is to promote telecommuting as a way to eliminate gridlock. Additionally, I wrote a blog for another website that provides tips, reviews and opinions about the world of web commuting. In the blog I presented my research ideas and asked for participants and identified the research findings I would provide each

participant once the study was completed. These two website postings provided the other half of my participants.

The data was gathered from mid-October 2009 until early January 2010. This was several months longer than originally projected, but this was in an effort to gain a large enough sample to conduct sound statistical analysis. In total, 149 people asked to be part of the research and each person was sent two links, one for each survey. One hundred and thirty-seven participants completed the telecommuting survey and one hundred and thirty-two participants completed the MBTI. The sampling methodology prohibited calculating traditional response rates, because it was unclear how many telecommuters saw the information on the internal networking site or who viewed postings on the other telecommuting web sites; but I was able to ascertain completion rates, which indicates the individuals who emailed asking to participate versus those who actually completed the surveys. The completion rates for the surveys were 92% and 89%, respectively.

### Analysis of Data

The remainder of this chapter will discuss the study findings in relation to each of the 3 research questions.

*Research Question #1: What are the telecommuting characteristics and demographics of the telecommuters who participated in the study?*

*Sample Demographics and Telecommuting Characteristics.*

The first research question used descriptive statistics to determine the sample means and sample standard deviations for the telecommuting characteristics, telecommuter demographics and telecommuter Myers-Briggs type.

This information is presented in Table 3 and shows that exactly half of the participants are from an organization of 100,000+ employees, not surprising because the telecommunications organization where many of the participants came from has well over 100,000 employees. The next largest percentage was 0-100 employees, garnering 16% of the sample. Although based on this study, quite a few telecommuters work for small organizations, little is known about them in terms of telecommuting. Because of their size, I would suspect that they have less extensive policies and training, if they have any at all. The other 34% of the sample were employed by organizations ranging in size from 101 employees to 100,000 employees.

The telecommuters from this sample have telecommuted from home at least one day a week for an average of 7.38 years. The years were reported in increments of .5 and only 3 participants had telecommuted for twenty years or more. This sample spends most of their time telecommuting, with a mean of 4.19 days per week and most work full-time, working a total of 5.02 days per week. This results in a telecommuting intensity, defined as the number of days per week telecommuting divided by total days worked in a week, of .84, with a standard deviation of .28.

The telecommuting sample was also asked how their telecommuting frequency was determined. The options they had to choose from were, I determine the frequency,

my organization determines the frequency, my job responsibilities determine the frequency or “other.” Results revealed that 34% of the telecommuters determined their own telecommuting frequency. The telecommuters’ organization determined their frequency in 24% of the cases, while 23% of the telecommuters had their job responsibilities determine for them. Only 18% of the telecommuters selected “other;” responses revealed that most of these individuals were full-time telecommuters, meaning there is no discussion of how frequency is determined because they always worked from home.

The last telecommuting characteristic question involved telecommuting advantages. Participants were asked to rank the telecommuting advantages from 1 to 7, with 1 being most important and 7 being least important. *Flexibility/work-life balance* and *increased productivity* ranked as the two most important advantages, with means of 2.16 and 2.88, respectively. *Reduced travel time*, with a mean of 3.18 was the third most important telecommuting advantage. Recall that lower means reflects greater importance. *Reduced interruptions, lower associated work costs* and *reduced stress* had means ranging from 4.40 to 4.97. The least important advantage was *reduced travel time* with a mean of 5.88.

Table 3

Sample Means and Standard Deviations Associated with Telecommuting Characteristics

Variable	Mean	Standard Deviation
<b>Size of organization:</b>		
0-100 employees	.16	.37
101-1000 employees	.10	.31
1001-10,000 employees	.08	.27
10,001-50,000 employees	.09	.28
50,001-100,000 employees	.07	.25
100,000+ employees	.50	.50
Years telecommuting	7.38	5.14
Days per week telecommute	4.19	1.42
Days per week work	5.02	.47
Telecommuting Intensity	.84	.28
<b>Frequency:</b>		
I determine	.34	.48
My job responsibilities determine	.24	.43
My organization determines	.23	.42
Other	.18	.38
<b>Advantages to telecommuting:</b>		
Flexibility/Work-life balance	2.16	1.59
Increased productivity	2.88	1.40
Reduced travel time	3.18	1.77
Reduced interruptions	4.40	1.65
Lower associated work costs	4.53	1.63
Reduced stress	4.97	1.63
Reduced office politics	5.88	1.49

*Telecommuting Characteristics Independent Samples T-Test.*

When independent sample t-tests were conducted on the advantages, there were four independent variables found to be significant; age, years telecommuting, frequency

and days per week telecommuting. Table 4 compares the sample means and level of significance for these independent variables.

Results revealed that participants 45 years or older (n=72) found *flexibility/work-life balance* to be less important than those under 45 years old (n= 60). This finding is not surprising since individuals 45 years and older are Baby Boomers (1943-1964), who tend to be more devoted to their work and less concerned with work-life balance. On the other hand, Generation X (1965-1977) and Generation Y (1978-1985) place a high value on *flexibility/work-life balance* (Martin & Tulgan, 2002). When it comes to *reduced stress*, participants 45 years and older found it to be a more important advantage than those younger than 45 years old. This is also supported by the literature where research has shown that individuals in early mid-life (45-54 years old) and late mid-life (55-64 years old) found work to be the single biggest problem related to stress. For example, Aldwin, Sutton, Chiara and Spiro (1996) found that those in early mid-life (n=74) reported it as a problem 43.2% of the time and late mid-life (n=377) reported it a problem 23.9% of the time.

Telecommuters who had been telecommuting for 15 years or longer (n=15) found *increased productivity* to be more important than those telecommuting for less than 15 years (n= 118). These individuals have been telecommuting nearly twice as long as the average telecommuter in this group and may be more adept at being efficient with their telecommuting time, based on how long they have been involved in telecommuting. The same group, those telecommuting 15 years or longer, also found *lower associated work costs* less important than those telecommuting for less than 15 years. This could be



explained by the fact that those in the workforce that long are making higher wages; therefore, money saved on gas, food and other work related expenses has less of an impact on their bottom-line.

How telecommuting frequency was determined impacted several of the advantages. For example, individuals who selected “other” for how their frequency was determined (n= 23) found *reduced interruptions* to be more important and *reduced travel time* to be less important, than those who selected one of the other three frequency options (n=110). Recalling those that chose “other” were primarily full-time telecommuters, it is understandable that they would value not being interrupted and why travel time is not important, since it is something they never have to encounter. In addition, participants who determined their own frequency (n=44), found *reduced office politics* to be less important than those choosing one of the other three frequency options (n= 87).

Lastly, individuals who telecommute 5 days or more (n=89) per week were found to view *reduced travel time* as less important than those who telecommute less than 5 days a week (n= 44). This is not surprising, given what I uncovered about full-time telecommuters when looking at frequency. For these telecommuters, travel time is probably not even a consideration. Unlike those that still commute into an office at least once a week, those who work solely at home are never impacted by travel time.

Table 4

Comparing Means: Telecommuting Advantages and Significant Independent Variables

Independent Variable	Flexibility/ work-life balance	Increased productivity	Lower associated work costs	Reduced interruptions	Reduced office politics	Reduced stress	Reduced travel time
Age ( $\geq 45$ )	2.53***/1.72					4.63**/5.83	
Years telecommuting:							
$\geq 15$		2.13*/2.97	5.33**/4.42				
$\geq 20$		1.00***/2.94					
Frequency:							
I determine					6.26*/5.68		
Other				3.74*/4.55			4.00**/3.01
Days per week telecommute:							
$\geq 5$							3.44*/2.66

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .00$

*Telecommuting Demographics.*

Table 5 presents means and standard deviations that describe the basic demographics of the telecommuter sample. Fortunately, the sample demographics were closely in line with the telecommuting demographics found in the literature. This is an interesting and potentially important finding because much of the literature uses loose definitions that describe how often a telecommuter telecommutes and this study required all participants to telecommute from home at least once a week. As discussed in the literature review, the mainstream telecommuter is most likely a married, white male, ranging from his mid 30's to his mid 50's, with at least a four-year college degree (Belanger, 1999; Ruiz & Walling, 2005; Safirova & Wall, 2004; Van Horn & Storen, 2000; Worldatwork, 2007), however in my sample the average telecommuter was a married, white female, with

children. Moreover, the average telecommuter's age was 45 years old and about 3 out of 4 respondents had a master's or four-year college degree. When comparing these groups, the major difference between the sample population and the literature findings was sex; my research participants were predominantly women. Intuitively, this makes sense, because women with children could benefit the most from a telecommuting opportunity. This finding may be a result of more women consistently telecommuting at least once a week, compared to men. Also, women may simply have been more interested in participating in this particular study. Because so little is known about the general telecommuting population, it is hard to identify or do more than speculate regarding the differences.

Table 5

Sample Means and Standard Deviations Associated with Telecommuter Demographics

Variable	Mean	Standard Deviation
Age	45.11	8.98
Sex:		
Male	.39	.49
Female	.61	
Race:		
White	.86	.35
Hispanic	.05	.22
Asian	.04	.19
Black	.03	.17
Other	.02	.15
Education :		
High School	.09	.29
Vocational School	.03	.17
2-year degree	.09	.28
4-year degree	.50	.50
Masters	.24	.43
Doctorate/Professional	.04	.21
Relationship Status:		
Single	.06	.24
Married	.72	.45
Divorced	.13	.34
Living with partner	.09	.28
Children:		
Yes	.75	.44
No	.25	
How many children are in the home during your typical telecommuting day?	.58	1.01

The final component of the first research question focuses on the distribution of personality types among the telecommuting participants. Table 6 compares the type percentage breakdowns for the sample with similar percentages for the US population. The Center for Applications of Psychological Type web site noted these US population frequency estimates were based on a review of several studies, totaling over 900,000 participants. The US population estimates were used because there has not been any large-scale research conducted on telecommuters and personality type. Within the sample of telecommuters, nearly 17% were ISTJ (Introvert, Sensing, Thinking, Judging), which also happens to be the type found most often in the US population, although it only represents 11-14% of the US population. The next highest percentages in the sample were INTP (Introvert, Intuitive, Thinking and Perceiving) and ENFJ (Extravert, Intuitive, Feeling, Judging), with 9.1% each. In comparison, the US population has only 3- 5% INTP's and 2-5% ENFJ's. The smallest percentages in the sample telecommuting population were INFJ (Introvert, Intuitive, Feeling, Judging, 1.5%) and ISFP (Introvert, Sensing, Feeling Perceiving, 1.5%). The US population has a similar percentage breakdown for the INFJ's (1-3%), but ISFP's are more prevalent in the US population, at 5-9%. It is not surprising that there are vast differences in the percentage breakdowns of the two groups, because the US breakdown encompasses individuals from diverse career fields, educational background, ethnicities and represents equalities in sex. The telecommuting sample, on the other hand, does come from different career fields, but they are more likely to be educated, white and female – potentially accounting for the disparity in my study.

As suggested in the methodology section, the Preference Clarity Index (PCI) for each dichotomous pair was examined. The PCI provides information regarding the extent of one's preference, ranging from slight to very clear. For this sample, the distribution was much higher for the slight to moderate preferences, with a much smaller proportion registering clear or very clear preferences. As a result, I included all types in my analysis, regardless of their preference, because there were not enough clear or very clear preferences to conduct sound statistical analysis.

Table 6

## MBTI Type Percentages: Sample Population v. US Population

<p style="text-align: center;">ISTJ Introvert Sensing Thinking Judging</p> <p>16.7%      11-14%</p>	<p style="text-align: center;">ISFJ Introvert Sensing Feeling Judging</p> <p>6.1%      9-14%</p>	<p style="text-align: center;">INFJ Introvert Intuitive Feeling Judging</p> <p>1.5%      1-3%</p>	<p style="text-align: center;">INTJ Introvert Intuitive Thinking Judging</p> <p>7.6%      2-4%</p>
<p style="text-align: center;">ISTP Introvert Sensing Thinking Perceiving</p> <p>3.8%      4-6%</p>	<p style="text-align: center;">ISFP Introvert Sensing Feeling Perceiving</p> <p>1.5%      5-9%</p>	<p style="text-align: center;">INFP Introvert Intuitive Feeling Perceiving</p> <p>7.6%      4-5%</p>	<p style="text-align: center;">INTP Introvert Intuitive Thinking Perceiving</p> <p>9.1%      3-5%</p>
<p style="text-align: center;">ESTP Extravert Sensing Thinking Perceiving</p> <p>3.8%      4-5%</p>	<p style="text-align: center;">ESFP Extravert Sensing Feeling Perceiving</p> <p>2.3%      4-9%</p>	<p style="text-align: center;">ENFP Extravert Intuitive Feeling Perceiving</p> <p>8.3%      6-8%</p>	<p style="text-align: center;">ENTP Extravert Intuitive Thinking Perceiving</p> <p>6.8%      2-5%</p>
<p style="text-align: center;">ESTJ Extravert Sensing Thinking Judging</p> <p>6.1%      8-12%</p>	<p style="text-align: center;">ESFJ Extravert Sensing Feeling Judging</p> <p>5.3%      9-13%</p>	<p style="text-align: center;">ENFJ Extravert Intuitive Feeling Judging</p> <p>9.1%      2-5%</p>	<p style="text-align: center;">ENTJ Extravert Intuitive Thinking Judging</p> <p>4.6%      2-5%</p>

In addition to looking at the percentages for the 16 different types, it was also interesting to look at the four dichotomous breakdowns for the two populations. Table 7 shows that there are similarities between the E/I and J/P pairings for both populations. In contrast, the telecommuting sample has far more N's (Intuitive), 55%, compared to 26-34% in the US population and slightly more T's (Thinking) 58% versus 40-50%. Again, this could be a result of the survey participants all being telecommuters, in addition to the fact that as a group they are not very diverse.

Table 7

MBTI Dichotomous Pairs Percentages: Sample Population v. US Population

E Extravert		I Introvert	
46%	45-53%	54%	47-55%
S Sensing		N Intuitive	
45%	66-74%	55%	26-34%
T Thinking		F Feeling	
58%	40-50%	42%	50-60%
J Judging		P Perceiving	
57%	54-60%	43%	40-46%



*Research Question #2: What are the leading challenges faced by this sample of telecommuters?*

This research question focused specifically on the extent to which telecommuters in the sample experienced the telecommuting challenges drawn from the literature. In the telecommuting survey itself, participants were asked to rate their experience with each challenge, using a 4-point scale, with 1 being no challenge, 2 a minor challenge, 3 a moderate challenge, and 4 a major challenge. With nearly everyone answering these questions, the means ranged from a high of 1.85, for *being offered promotional opportunities* to a low of 1.23, for *developing and maintaining relationships with family (that live in the same household)*. While I was surprised by the low overall means, (I anticipated they would have means of between 2 and 3 because the current literature focuses heavily on these challenges); I was not surprised by the ranking of the challenges, based on the literature findings and my personal experiences. A breakdown of the means and standard deviations for the challenges can be found in Table 8.

*Challenges Descriptive Statistics.*

*Being offered promotional opportunities* and *feelings of isolation* are referenced most often in the research (Crandell & Gao, 2005; Davenport & Pearlson, 1998; Hartman, Stoner & Arora, 1992; Manoochchri & Pinkerton, 2003; Reinsch, 1997) as two major drawbacks to telecommuting and based on the results of the survey, this sample telecommuting population agreed.

*Developing and maintaining relationships with co-workers and manager* ranked third and fourth, with means of 1.78 and 1.61, respectively. Relationships with co-workers can create resentment for those who don't participate in the telecommuting

arrangement. Non-telecommuters may see the telecommuting opportunity as a privilege and question how much work the telecommuter is really doing while at home. Strained co-worker relationships can in turn create further feelings of isolation. Relationships with managers can be impacted by numerous circumstances; most specifically, lack of interest in the telecommuting arrangement, poor communication, undefined expectations, and lack of trust (Gajendran & Harrison, 2006; Vega & Brennan, 2000).

It appears from this sample that any challenges associated with *developing and maintaining relationships with co-workers and managers* are minimal, with the mean responses lying between no challenge and a minor challenge. This is in line with research done by Gajendran and Harrison (2006), where they looked at telecommuter relationship quality with managers and co-workers using meta-analysis; importantly, their findings did not support any relationship strains. Yet, much of the literature still includes these two challenges as part of the disadvantages of telecommuting.

*Creating structure in your workday* came in as a close fifth challenge, with a mean of 1.60 on the 4-point scale. This challenge centered on the inherent flexibility that comes with telecommuting. An office environment has built-in structure and routine; there is usually a set start and end time to the day, there are convenient formal and informal meeting locations and having co-workers and managers co-located can help keep employees on task and working towards goals. Telecommuters do not have any of those office formalities. Yet, it appeared that this group of telecommuters has managed to minimize the challenge of *creating structure in the workday*.

*Developing and maintaining relationships with family (that live in the same household)*, was shown to be the least challenging, with a mean of 1.23. This was somewhat surprising, considering that 81% of the telecommuters were married or living with their partner. Since the mean age was 45 years old, it could also be assumed that most of the children are older and do not interfere with a typical telecommuting day.

Table 8

Sample Means and Standard Deviations Associated with Telecommuting Challenges

Variable	Mean	Standard Deviation
Being offered promotional opportunities	1.85	1.02
Feelings of Isolation	1.80	.90
Developing and maintaining relationships with co-workers	1.78	.823
Developing and maintaining relationships with manager	1.61	.84
Creating structure in your workday	1.60	.83
Developing and maintaining relationships with family (that live in the same household)	1.23	.47

Note: Using a 4-point scale, with 1 being least challenging and 4 being most challenging, please rate your experience with each challenge.

### *Independent Samples T-Test.*

As the methodology suggested, independent sample t-tests were utilized to compare means for the challenges and the independent variables. In total, 11 variables were shown to be significant, many for more than one challenge. Because of the large quantity of significant variables, I broke the findings into two separate tables. Table 9 presents the comparison of means and level of significance for the first three variables, which focused on telecommuting characteristics; years telecommuting, days per week telecommuting and how telecommuting frequency is determined. Table 10 compares means and provides level of significance for the telecommuter demographics; age, sex, ethnicity, education, relationship status, having someone else in the home telecommute, having children and the number of children in the home during a typical telecommuting day, all focused on demographics. Each table provides the means for the variables along with the means for what they were compared against.

### *Telecommuting Characteristics.*

Based on the survey respondents, those telecommuting two years or more (n=119) found *creating structure in their workday* to be less of a challenges than those telecommuting less than two years (n=17). That same pattern was found when five years, seven years (the means for the sample population), ten years, fifteen years and twenty years were used to dichotomize telecommuters. In other words, as years telecommuting increased, the mean decreased. However, the importance of the two-year finding suggests that it takes telecommuters at least two years to be able to begin to successfully *create structure in their workday* and as a result, it becomes less of a challenge for them.

This research also found that those telecommuting two days or more a week (n= 122) felt that *being offered promotional opportunities* and *feelings of isolation* were more of a challenge than those telecommuting less than two days a week (n= 15). It was also significant for those telecommuting three, four, five days or more. In this case, as the number of days per week telecommuting increased, the mean increased. These findings suggests that telecommuting only one day a week does not affect *promotional opportunities* or *feelings of isolation*, whereas telecommuting more than one day a week does have an impact. In addition, those telecommuting five days a week or more (n= 92) found *relationships with family* less of a challenge than those telecommuting less than five days a week (n= 44).

Telecommuting frequency was significant when it came to the challenges involving *developing and maintaining relationships with co-workers, managers, and family that live in the same household*. Those individuals that determined their own telecommuting frequency (n= 47) found developing and maintaining relationships with their manager to be more of a challenge than those who chose one of the other frequencies (n= 90). This could be related to the lack of trust that many managers face when managing virtual employees, especially when they are not in control of the telecommuting situation.

Telecommuters who had their frequency determined by their organization (n= 32) found that *developing and maintaining relationships with co-workers, managers, and family that live in the same household*, all to be less of a challenge then those who chose the other three frequencies (n= 104). This leads one to believe that having a more

formalized plan for determining how often one telecommutes, set out by the organization, may help in relationship building.

Telecommuters who noted their frequency was determined by their job responsibilities (n= 34) were found to have more of a challenge *developing and maintaining relationships with co-workers and family that lived in the same household*, than those who chose the other frequencies (n= 102). For these individuals, with their constantly changing telecommuting schedule, this might create a strain on the telecommuter/co-worker relationship, with co-workers thinking the telecommuter might be abusing the flexibility, when they can't count on the telecommuter to be in the office when they need them and don't know the next time they may be returning to the office. Having the job determine the telecommuting frequency might also affect relationships with family for the same reason. The lack of regularity can diminish the work-life balance aspect of telecommuting.

Table 9

Comparing Means: Telecommuting Challenges and Significant Telecommuting Characteristics

Independent Variables	Being offered promotional opportunities	Feelings of Isolation	Relationships with co-workers	Relationships with manager	Creating structure in the workday	Relationships with family
Years telecommuting: >= 2					1.51*/2.18	
Days telecommuting >= 2	1.92***/1.29	1.87***/1.27				
>=5						1.51*/1.77
Frequency: I determine				1.81*/1.50		
My org.			1.48*/1.87	1.34**/1.69		1.06***/1.28
My job			2.03*/1.70			1.38*/1.17

Note: \*p<.05, \*\*p<.01, \*\*\* p<.00

*Telecommuter Demographics.*

Age had an impact on four of the challenges; *feelings of isolation, developing and maintaining relationships with co-workers, developing and maintaining relationships with managers, and creating structure in the workday*. In all cases, those telecommuters 45 years old or more (n= 74) found each of the challenges less difficult than those younger than 45 years old (n= 61). As a reminder, this information is presented in Table 10. It is difficult to postulate the reasons for these findings, based on the survey questions.

Sex was only found to be important when looking at the challenge of *developing and maintaining relationships with family that live in the same household*. Men, with a

mean of 1.34, found this to be more of a challenge than women, with a mean of 1.15. This is not a surprising finding when you consider women historically have been expected to negotiate the challenge of balancing family and work, whereas men have been socialized to focus on career outside the home, therefore giving them fewer opportunities to become adept at this challenge (Ferree, 1990).

Ethnicity was associated with significant differences on means for two challenges -- *creating structure in the workday* and *developing and maintaining relationships with family that live in the same household*. For instance, Hispanics (n= 7) found *creating structure* to be less of a challenge than the other ethnicities (n= 130), similarly blacks (n=4) found *developing and maintaining relationships with family that live in the same household* to be less of a challenge than the other ethnicities (n= 133). Although these findings were statistically significant, small sample size and little, if any research in the literature in this area strongly suggests that additional research would need to be conducted to come to any real conclusions about the results.

When looking at education, those whose highest degree was either high school or two-year degrees were associated with differences in mean scores for three of the challenges; *being offered promotional opportunities*, *developing and maintaining relationships with manger* and *creating structure in the workday*. Both high school graduates (n=13) and those with a two-year college degree (n= 11) found *being offered promotional opportunities* to be less of a challenge than those choosing the other degree categories (n= 123, n= 125). This finding may have to do with the types of job categories or careers these individuals belong to. They may have a promotion process based on



years of service versus output or visibility. Two-year college graduates (n=12) also found *developing and maintaining relationships with their manager* to be less of a challenge than the other educational options (n=125), while high school graduates found *creating structure in their workday* to be less of a challenge than the other educational categories. The findings highlight the fact that more research needs to be done on those telecommuters who possess degrees other than a four-year college degree or higher; in this sample these two groups made up 18% of the sample. Why do these individuals experience these challenges to a lesser extent? Again, it might have to do with the job categories or careers that lend themselves to these groups of telecommuters.

Relationship status, specifically for those telecommuters that were single, living with a partner or married, showed significance in four out of the six challenges. For example, single telecommuters (n= 8) found *developing and maintaining relationships with co-workers* to be less of a challenge than in other relationship categories (n= 127). This might be explained by the fact that single individuals might focus more on relationships with co-workers than married telecommuters, who might choose to focus more on relationships with their families. Telecommuters who live with a partner (n= 12) found *being offered promotional opportunities* to be less of a challenge than those that choose one of the other relationship options (n= 123), however, they felt *creating structure in the workday* to be more of a challenge than others. Based on the current literature, it is unclear why those living with a partner may feel this way. Again, this is another avenue for future research. Lastly, married telecommuters (n= 98) found

*developing and maintaining relationships with family that live in the same household* was more of a challenge than others (n= 38).

Telecommuters who also had other telecommuters living in their home (n= 25), found *being offered promotional opportunities* more of a challenge than those that did not have other telecommuters living with them (n= 111). Additional research would need to be conducted to understand this finding.

Telecommuters with children (n= 101) also found *being offered promotional opportunities* to be more of a challenge than those without kids (n= 35). It would be interesting to explore this further and find out if children were hindering promotional opportunities in general or if it was specific to the telecommuting arrangement. And if so, what is it about the children specifically that are impacting their advancement? One possible explanation is that it might be that because they have children they are in the telecommuting situation to gain more flexibility in their job, which in turn might be more limiting and not offer as many opportunities for advancement.

The number of children at home during a typical telecommuting day was the last significant variable in terms of the challenges. Telecommuters with one or more child (n= 22) versus those with no children (n=50) and those with three or more children (n=6) versus those with only two children (n=13), found *developing and maintaining relationships with co-workers* to be more difficult. Telecommuters with one or more child (n=22) also found *relationships with their manager* to be more difficult than those with no children at home. The final finding in terms of number of children centers on the challenge of *creating structure in the workday*. Telecommuters that had any number of

children at home with them on a typical telecommuting day all found it more difficult to *create structure in their workday*. This is not surprising considering children can be a distraction to your workday, no matter how much routine and focus you build into your day.

Table 10

## Comparing Means: Telecommuting Challenges and Significant Telecommuter Demographics

Independent Variables	Being offered promotional opportunities	Feelings of Isolation	Relationships with co-workers	Relationships with manager	Creating structure in the workday	Relationships with family
Age (>= 45)		1.61**/2.03	1.62**/1.98	1.46*/1.79	1.34***/1.92	
Sex (M)						1.34*/1.15
Ethnicity: Black Hispanic					1.00***/1.63	1.00***/1.23
Education: High school 2yr degree	1.46*/1.89 1.27**/1.90			1.17***/1.65	1.31*/1.63	
Relationship Status: Single Living w/partner Married	1.33***/1.89		1.13***/1.83		2.08*/1.55	1.28*/1.11
Does anyone else in your household telecommute?(Y)	2.28*/1.76					
Children (Y)	1.97**/1.51					
# of children: >= 1 >= 2 >= 3			2.10*/1.62 2.50*/1.69	1.95**/1.40	2.05**/1.34 2.23*/1.40 2.33**/1.48	

Note: \*p<.05, \*\*p<.01, \*\*\*p<.00

*The Qualitative Analysis.*

The telecommuting survey also asked an open-ended question regarding the challenges; specifically, participants were asked to share if they wanted to elaborate on any of their challenges. In total, 55 participants (40% of the sample) offered additional information. The four themes that emerged based on their explanations were: relationships, opportunities, working too many hours, and work-life balance. Table 11 provides a tag cloud to visually represent how often the themes occurred in the text. The larger the word in the cloud, the more often it was cited in the responses.

Regarding relationships, survey participants discussed both the positives and negatives of developing and maintaining relationships. One interesting insight that several participants mentioned was the fact that since their managers and co-workers were geographically dispersed, it didn't matter whether they telecommuted or not. Others mentioned going into the office more when they felt relationships were suffering. Another person also made the distinction between developing and maintaining relationships. This person noted that it was not a problem to maintain relationships with those that have been established for years, although developing new relationships while a telecommuter could be more difficult. As suspected, numerous participants mentioned family members having a hard time realizing that the telecommuter had to focus on work during work hours, rather than attend to the quotidian family needs.

Opportunities were the second most often cited theme in their responses. In general, the consensus was that telecommuting prevented or at least diminished promotional opportunities. To mitigate this, several individuals mentioned that to they

work from home less than they work in the office. Another participant said they accepted the lack of promotional opportunities as a trade-off for working at home. And still another person pointed out that nobody is getting promoted now, not even those in the office.

The last two themes identified were working too many hours and work-life balance. Only a few people mentioned working too many hours, but it seemed with telecommuting the days started earlier and ended later, resulting in working more hours than they would in the typical office. When work-life balance was mentioned, one individual loved being home with her kids, while the other two found it to be difficult. One woman who found it challenging, felt that while telecommuting should be a win/win for a mother with small children, she sensed she was not able to give her full attention to either job.

Table 11

Challenges Themes

# Relationships

Work-life balance

Too many hours

## Opportunities

*Research Question #3: To what extent do personality type, telecommuting characteristics and select demographic measures explain variation in the challenges these telecommuters face?*

In order to ascertain to what extent personality type, telecommuting characteristics and select demographic measures explain variation in the challenges this sample of telecommuter face, all of the independent variables were run in a stepwise regression analysis, against each of the six challenges. In total, 18 different variables were shown to be significant, although only 6 appeared significant for more than one challenge. The variables that were significant for only one challenge, and therefore not used for further analysis in the general model were: years telecommuting, if anyone else telecommutes in the household, frequency (I decide), age, sex, high school degree, vocational school degree, 2 year college degree, single, living with partner, having children and Feeling/Thinking.

*Regression Analysis.*

The remaining six independent variables, organizations with 0-100 employees, telecommuting intensity, ENFP (Extravert, Intuitive, Feeling, Perceiving), ESFP (Extravert, Intuitive, Feeling, Perceiving), INFJ (Introvert, Intuitive, Feeling, Judging), and INTP (Introvert, Intuitive, Thinking, Perceiving) were used to create a general model for explaining variation in the challenges experienced by telecommuters. A second round of regression analysis was conducted with this general model. Table 12 shows the  $R^2$ , defined as the percent of variation explained, for each of the challenges. They range from a low of 12% for *developing and maintaining relationships with family* to a high of 26% for *feelings of isolation*.

Table 12 also presents the effect sizes for the independent variables in the regression analysis. Specifically, it provides the estimated coefficients and level of significance produced in the final regression models. Based on the findings, my research suggests that the telecommuting challenges are a function of small organization size, telecommuting intensity and personality, specifically those with the personality types, ENFP, ESFP, INFJ, and INTP.

Small organizational size appeared most often, being significant in five out of the six challenges, with relatively small estimated coefficients that ranged from .37-.69. This suggests there is something about small organizations that makes telecommuting a more challenging experience, almost across the board. In addition, telecommuting intensity was significant for three of the challenges. The telecommuting intensity was a function of days per week telecommuting over total days worked and the intensity for this sample ranged from .17 to 1.0. Therefore, instead of a 1 point change, a .10 change in intensity corresponds to the coefficient increase for the noted challenges. For example, a 10% increase in intensity, corresponds to a 1/8 point increase in *being offered promotional opportunities*. This explains the sizably smaller coefficients. Yet, although slight, as telecommuting intensity increases, so does their experience with the challenges of *feelings of isolation, being offered promotional opportunities, and developing and maintaining relationships with their manager*.

When looking at the personality styles, INFJ's also were found to be significant for three of the challenges and more importantly, they had the highest coefficients of all the variables in the general model. They experienced the challenges of *isolation* and



*relationships with manger and co-workers* a full 1.4 to 1.8 points higher (on a 4-point scale) than others. ESFP's, although not occurring as often, also had large coefficients -- 1.12 for *relationships with manger* and 1.41 for *being offered promotional opportunities*. Two other styles, ENFP's and INTP's were also significant for two challenges; specifically, ENFP's had a coefficient of .85 for *feelings of isolation* and .53 for *relationships with mangers*, INTP's experienced challenges with *isolation* and *being offered promotional opportunities*, with coefficients of .50 and .60, respectively.

Table 12

R<sup>2</sup>, Estimated Coefficients and Level of Significance for the Variables in the Final Regression Models

	Being offered promotional opportunities	Feelings of Isolation	Relationships with co-workers	Relationships with manager	Creating structure in the workday	Relationships with family
Organization size:						
0-100		.62***	.40*	.43*	.69***	.37***
Telecommuting intensity	.12***	.10***		.06*		
ENFP		.85***		.53*		
ESFP	1.41**			1.12*		
INFJ		1.43**	1.82***	1.53**		
INTP	.60*	.51*				
R <sup>2</sup>	.17	.26	.12	.18	.15	.12

Note: \*p<.05, \*\*p<.01, \*\*\*p<.00

## Introduction

The final chapter of my dissertation pulls from the previous four chapters and synthesizes the research findings. It begins with a summary of the study, which includes a review of the research problem, the research questions and the type of data collected. The second section will report a summary of the important study findings and how they support, contradict, or simply add to the current body of literature. Next, I will explain the policy implications that stem from the research and finally, include suggestions for future research.

## Summary of the Study

### *The Problem*

The current research surrounding telecommuting identifies characteristics that can benefit a telecommuter, but they center on learned skills that anyone can attain and apply. Yet, even with these learned skills, telecommuters face certain challenges, although to varying degrees. These challenges include, *feelings of isolation*, feeling as though they are missing *being offered promotional opportunities*, *poor relationships with managers, co-workers and family* and lastly, *creating structure in the workday*. It is evident there is a gap in the field's knowledge regarding how one's innate personality type affects telecommuting. Specifically, might personality help us uncover why telecommuters experience challenges to different extents? My research looked specifically at a telecommuter's MBTI personality type to see if it accounted for some of the variance in the experience with the challenges, in addition to indentifying the telecommuting characteristics and telecommuter demographics of the sample.

### *Research Questions*

Three research questions helped focus my study.

1. What are the telecommuting characteristics and demographics of the telecommuters who participated in the study?
2. What are the leading challenges faced by this sample of telecommuters?
3. To what extent do personality type, telecommuting characteristics and select demographic measures explain variation in the challenges these telecommuters face?

### *Data Collection*

My research was gathered using two on-line survey instruments over a four month period from mid-October 2009 until early January 2010. The first survey, which I created, focused on telecommuting characteristics, telecommuting challenges and telecommuter demographics. It was a parsimonious survey, consisting of less than 20 questions. The second instrument was the larger MBTI assessment (with 93 questions) that assesses personality. Individuals who take the MBTI were then provided with a four-letter type that describes their personality. There are 16 personality types in all.

The actual sample of telecommuters was gathered in three ways. First, I gained access to telecommuters at a large telecommunications organization, via their internal telecommuter social networking site. I placed a post on their site that explained my research idea and called for participants. Secondly, I put a posting on a telecommuting web site whose focus is to eliminate gridlock. Lastly, I wrote a blog for another web site that promotes web commuting and provides readers with tips, reviews and opinions.

In all, I had 149 telecommuters email me and ask to be part of my study. I then sent them links to both survey instruments and got back completion rates, defined as the percentage of individuals that started and completed the survey instrument, of 92% for the telecommuting survey and 89% for the MBTI.

### Key Findings

My key findings are broken up into three sections, 1) telecommuting characteristics and telecommuter demographics, 2) telecommuting challenges and, 3) explanation of variation in the challenges. Connections to the literature will be interspersed throughout the discussion.

#### *Telecommuting Characteristics*

The telecommuting characteristics that were identified in my research certainly add to the current body of literature surrounding telecommuting. As noted in the literature review, since the field lacks an all encompassing definition of telecommuting, researchers bring their own definition to their work. As a result, it is often difficult to compare the results of various studies. For this research, I created my own definition for telecommuting, so that “A telecommuter is someone who is employed by an outside organization and uses a phone and computer to perform their work at least once per week from their home.” This definition was guided by the work of Navarette, Iribeeri and Pick (2002), who suggested that four factors be included in telecommuting definitions, 1) employment relationship, 2) technology used, 3) how often one telecommuters, and 4) location. My definition was very specific and excluded those that telecommute from satellite offices, hotels and the like. In addition, I did not capture individuals who were

self-employed, because they would have a separate set of challenges based on their experiences. Furthermore, while I was looking specifically at telecommuting challenges, I also felt it was imperative that telecommuters work from home at least once a week in order to truly experience the challenges.

Based on my findings, the average telecommuter has been involved in this alternative arrangement for just over seven years and half were employed by an organization with over 100,000 employees. These telecommuters work from home on average about four days a week and have a telecommuting intensity, defined as number of days telecommuting per week divided by total days worked per week, of 84%. In other words, this sample of telecommuters spend most of their work week at home, a far cry from those telecommuters mentioned in other research that might telecommute as infrequently as once a year. Telecommuters' frequency was addressed in the telecommuter survey. For this sample, 34% reported that "I determine the frequency," 24% reported that "My organization determines the frequency," 23% reported that "My job responsibilities determine the frequency," and 18% were in the "other" category. For those that marked "other," they were asked to explain what "other" meant for them. In most cases, those that chose "other" were full-time telecommuters, so there was no determination of frequency.

The last of the telecommuting characteristics focused on advantages to telecommuting. These advantages included, *flexibility/work-life balance, increased productivity, lower associated work costs, reduced interruptions, reduced office politics, reduced stress, and reduced travel time*. The telecommuters were asked to rank the list of

telecommuting advantages in order of importance. The list of advantages was gathered from research in the field, although up until this point, telecommuters had not been asked to rank the advantages in terms of importance (Crandell & Gao, 2005; Manoochehri & Pink, 2003; Moss & Carey, 1994; Potter, 2003). The most important advantage for this group was *flexibility/work-life balance*, with a mean of 2.16, followed by increased productivity with a mean of 2.88.

Independent samples t-tests were conducted on the telecommuting advantages, which produced some interesting findings. For example, I found that telecommuters 45 years or older found *flexibility/work-life balance* to be less important than those younger than 45 years old. This finding is somewhat intuitive when considering the differences among the generations. Baby Boomers (1943-1964), for example, tend to prioritize their job and careers, putting work before other things in their lives, whereas Generations X and Y, born from 1965-1977 and 1978-1985 respectively, look for jobs and careers that offer the freedom and flexibility that they value in their lives (Martin & Tulgan, 2002). This finding may also stem from Baby Boomers being less encumbered with child care issues and therefore able to focus more on their jobs and careers.

Individuals who telecommuted for 15 years or more found *increased productivity* to be more important than those telecommuting less than 15 years. This finding suggests that experienced telecommuters value the higher productivity that telecommuting affords them. While increased productivity might not be important to all telecommuters, research on telecommuters posits that they find working at home increases their productivity. For example, in their empirical study of telecommuters, Hartman et al.

(1992), found that 84% reported higher productivity while working at home. The researchers noted that because these were self-reported perceptions, they could be biased; however, the researchers went on to point out that these findings were in line with other research in the field, specifically Moody (1987) and Hamilton (1987).

### *Telecommuter Demographics*

There were some similarities between my sample and what the literature found regarding telecommuter demographics. The mainstream telecommuter is most likely a married, white male, ranging from his mid 30's to his mid 50's, with at least a four-year college degree (Belanger, 1999; Moss & Carey, 1994; Ruiz & Walling, 2005; Safirova & Walls, 2002; Van Horn & Storen, 2000; Worldatwork 2007). My typical telecommuter was white and married, although my sample included more females. The average age was 45 years old and 79% of the telecommuters had a 4 year college degree or higher. The main difference between my typical telecommuter and that of the general telecommuting population was my sample had more female telecommuters. It is unclear why this occurred. Are more women telecommuting now? Do women telecommuters frequent the telecommuting web sites more often than men and therefore saw my call for telecommuting participants? Do large organizations (100,000+), where 50% of my population came from, employ more women telecommuters? Do more women telecommute at least once week? As research continues to grow in the field, it will be interesting to see if this finding was specific to my research or if the typical telecommuter is changing overtime.

I also measured MBTI personality type. ISTJ's (Introvert, Sensing, Thinking, Judging), were the most prevalent type of telecommuters at 16.7% of the sample population. According to the MBTI Manual (1998), ISTJ's are "Quiet, serious, earn success by thoroughness and dependability. Practical, matter-of-fact, realistic, and responsible. Decide logically what should be done and work toward it steadily, regardless of distractions. Take pleasure in making everything orderly and organized – their work, their home, their life. Value traditions and loyalty" (Myers, I.B., McCaulley, M., Quenk, N., & Hammer, A., 1998, p. 13). It makes sense that there were quite a few ISTJ's in the sample, considering their dependability, and their focus on being practical, realistic and responsible. In addition, telecommuting also allows them to maintain order and organization in all aspects of their lives. Incidentally, this type is also the one found most often in the US population, according to the Center for Applications of Psychological Type web site.

The two types found least often in the sample were INFJ's (Introvert, Intuitive, Feeling, Judging) and ISFP's (Introvert, Sensing, Feeling, Perceiving), each consisting of 1.5% of the population. INFJ's, "Seek meaning and connection in ideas, relationships, and material possessions. Want to understand what motivates people and are insightful about others. Conscientious and committed to their firm values. Develop a clear vision about how best to serve the common good. Organized and decisive in implementing vision" (Myers, I.B., McCaulley, M., Quenk, N., & Hammer, A., 1998, p. 13) and represent a similar percentage in the US population, 1-3%. INFJ's need for a connection to people could be seen as a disconnect when it comes to telecommuting. It is not



surprising that they are a rarity in the sample. ISFP's on the other hand are found more often in the US population, 5-9% and are, "Quiet, friendly, sensitive, and kind. Enjoy the present moment, what's going on around them. Like to have their own space and to work within their own time frame. Loyal and committed to their values and to people who are important to them. Dislike disagreements and conflicts, do not force their opinions or values on others" (Myers, I.B., McCaulley, M., Quenk, N., & Hammer, A., 1998, p. 13). Looking at the description of the ISFP's, specifically their need for their own space and preferring to work within their own timeframe, it would appear they would be great candidates for telecommuting. It could be that the telecommuting environment is not stimulating enough considering their enjoyment of what is going on around them.

#### *Telecommuting Challenges*

Telecommuters were asked to rate their experience with each challenge, using a 4-point scale, with 1 being no challenge, 2 a minor challenge, 3 a moderate challenge, and 4 a major challenge. The biggest challenge was *being offered promotional opportunities* with a mean of 1.85. *Feelings of isolation* was a close second with a mean of 1.80. It was not surprising that telecommuters experienced these challenges to a greater degree than the others, as they were also the two challenges referred to most often in the literature (Crandell & Gao, 2005; Davenport & Pearlson, 1998; Hartman, Stoner & Arora, 1992; Manoochchri & Pinkerton, 2003; Reinsch, 1997). *Developing and maintaining relationships with family (living in the same household)* was the least challenging, with a mean of 1.23. Since most of the telecommuters in the sample were

married with children, this was an intriguing finding. Unfortunately, the open-ended question asking for elaboration on the challenges did not provide any insight in this area.

Independent samples t-tests were also conducted on the challenges and the independent variables. There were three significant telecommuting characteristics and three significant demographics that were worthy of note and add to and support the research in this area.

Those telecommuters who telecommuted for two or more years found *creating structure in the workday* to be less of a challenge than those telecommuting for less than two years. This finding suggests that after two years, telecommuters may begin to more naturally and successfully create the routine and structure in their telecommuting day.

The number of days telecommuting was also important in terms of the challenges. Telecommuting two or more days a week resulted in greater challenges with *being offered promotional opportunities* and *feelings of isolation*. For each additional day telecommuted per week, the mean increased. This finding supports the empirical research of Hartman et al. (1992), who asked telecommuters how they felt their career advancement had been impacted by telecommuting. Their findings showed that most felt their career growth had been hindered by telecommuting; some felt it was stagnant (p. 40). Kurland and Cooper (2002) looked at career advancement in terms of professional isolation. When they interviewed telecommuters they found that the more frequently they telecommuted, the more professionally isolated they felt (p. 122). *Isolation* has also been referenced in the literature often; for example Manooshehri and Pinkerton (2003)

noted that in some cases the intense *feelings of isolation* can overshadow the benefits of working from home (p. 13).

Lastly, those telecommuting five days a week or more found *relationships with family* less of a challenge. This may be because as a full-time telecommuter, they have established guidelines and boundaries in terms of the telecommuting arrangement.

In terms of the demographic variables, age had an impact of four out of the six challenges. Telecommuters 45 years or older found *feelings of isolation, relationships with manager* and *co-workers*, and *creating structure in the workday* to be less challenging than those younger than 45 years. These individuals have also been working longer and as a result may bring their experiences and expertise from working in offices to the telecommuting environment. Men were found to have a greater challenge with *relationships with family* than women. When you consider that men historically have worked primarily outside the home while women historically have had to balance both career and family, it is not surprising that men may have a harder time negotiating the balance between work and relationships with family.

Lastly, the number of children made *creating structure in the workday* more difficult. Telecommuters with one or more children had higher means for that challenge than those with one child. As the number of children at home during a typical telecommuting day increased, so did the extent of the challenge. This makes sense when you consider the distractions that children can create and also the impact they have when they are sick or on vacation and as a result, are at home more than usual.

### *Explanation of Variation in the Challenges*

In order to explain the variation in these challenges, regression analysis was conducted on all of the independent variables and the six challenges, using the Stepwise method. In total, 18 independent variables were shown to be significant, but only six were identified as significant for more than one challenge. These six variables -- organizational size of 0-100 employees, telecommuting intensity, ENFP (Extravert, Intuitive, Feeling, Perceiving), ESFP (Extravert, Intuitive, Feeling, Perceiving), INFJ (Introvert, Intuitive, Feeling, Judging), and INTP (Introvert, Intuitive, Thinking, Perceiving) -- were identified for use in specifying a general model for explaining variation in the challenges experienced by telecommuters. This model suggests that the telecommuting challenges are a function of small organization size, telecommuting intensity and personality, specifically those with the personality types, ENFP, ESFP, INFJ, and INTP. These variables were then regressed against the challenges, with  $R^2$  ranging from a low of 12% for *developing and maintaining relationships with family* to a high of 26% for *feelings of isolation*.

Organizations with 0-100 employees were significant for five out of the six challenges, suggesting there is something about small organizations that make telecommuting more difficult. The only challenge that was not significant for this variable was *being offered promotional opportunities*. This could be because there are so few employees; they have more direct influence on leadership. As to why the other challenges are so problematic, it could be for a number of reasons, although the current body of literature in the field does not provide insight. One reason could be that small

organizations do not have the time or money to invest in formal telecommuting policies/programs or training, making the telecommuting experience more of a sink or swim nature. Therefore, the telecommuters from small organizations feel a more heightened awareness of these challenges.

Telecommuting intensity was significant for three challenges, *being offered promotional opportunities, feelings of isolation, and relationships with manager*. These findings are intuitive, since the more someone is away from the office, the more they will feel isolated, the less promotional opportunities they will receive and the more difficult it would be to develop or maintain a relationship with their direct manager. Davenport and Pearlson (1998) surveyed 100 Fortune 500 firms and then conducted follow up interviews with managers and employees from 10 firms who had established effective virtual office programs. The study found that employees who worked at home full-time had a harder time adjusting than those that worked at home occasionally, "...home offices are popular for a year or two, but often fall from favor after that. Managers speculate that after that time, home workers become disconnected from their jobs and co-workers" (p. 54). Yet, a meta-analysis by Gajendran and Harrison (2006), that also looked at telecommuting intensity and relationships with supervisors and prospects for career advancement found relationships with supervisors actually became better as telecommuting intensity rose and career advancement was not worsened by increased intensity. This contradiction could certainly have something to do with the different definitions used by researchers when identifying exactly who telecommutes.

Among the four different personality types, the INFJ's experienced the most challenges; specifically, *feelings of isolation* and *relationships with manager and co-workers*. The fact that INFJ's had *feelings of isolation* was surprising for two reasons. First they are introverts, meaning they gain energy from solitude, quiet and reflection. And secondly, as described by Tieger and Barron (2007), they look for careers in which they can work independently. Telecommuting meets these expectations. Yet, INFJ's also like having the opportunity to share their work and ideas with others on a one-on-one basis. So, it may be that this group of INFJ's does not feel that they have sufficient opportunity to share with the managers and co-workers. In addition, they like friendly, tension-free work environments (p. 124-125). It is also known (from the literature) that some managers don't support telecommuting arrangements or don't trust their telecommuting employees as well as co-workers may feel resentment and are suspicious of their telecommuting co-workers (Gajendran & Harrison, 2006; Vega Brennan, 2000). This would result in unfriendly, tension-ridden work situations. The INFJ's in my sample could be experiencing these circumstances.

Interestingly, another group of introverts – INTP's – were also challenged by *feelings of isolation* and *being offered promotional opportunities*. According to Tieger and Barron (2007), INTP's like to work independently with plenty of quiet. They also prefer a flexible, non-structured environment (p. 219). Again, these are all characteristics of telecommuting arrangements. Yet, INTP's also want opportunities to increase their competence and power and want to be able to interact with powerful and successful people (p. 219). This conflict may help explain why these individuals are experiencing

these challenges, in that they want the quiet and flexibility that telecommuting offers, but they also want to grow their power and be around other powerful individuals, something that does not necessarily lend itself to telecommuting.

ENFP's like to work at their own pace and choose their schedule, spend time with people, create deep personal relationships and be in front of, or part of a group. They find creative brainstorming to be energizing and want freedom in their work (Tieger & Barron, 2007, p. 143). Again we see how aspects of telecommuting fit perfectly with what they want out of a career in terms of freedom and working at their own pace, yet being around individuals and groups of people is obviously lacking in the telecommuting environment. Therefore, it is not surprising that ENFP's experienced challenges with *feelings of isolation* and *relationships with their manager*. The absence of people, the very thing that energizes them as extraverts, can create feelings of isolation and because they don't see their manager often, they may not feel they are creating the deep personal relationships they so crave.

The last personality type, ESFP's, faced challenges with *being offered promotional opportunities* and *relationships with manager*. ESFP's like to work with lots of people and are active participants in life. They value recognition and thanks, which could explain what makes aspects of telecommuting difficult for them (Tieger & Barron, 2007, p. 315-316). Their need for recognition and thanks from their manager as well as opportunities for promotions may not come as often as they would like. In addition, smaller achievements may go unnoticed because they are not in the office. Taken together, could result in them feeling both unappreciated and less-connected.

## Policy Implications

Based on my findings, there are two main policy implications that would be helpful for organizations that offer or are considering offering telecommuting to their employees: a formal telecommuting policy/program and training.

### *Telecommuting policy/program*

When creating a telecommuting policy/program, it is important to consider the six challenges and how they might be mitigated. My research noted that when comparing means, telecommuters who telecommuted two or more days a week experienced greater challenges with *feelings of isolation* and *being offered promotional opportunities* than those who telecommuted one day a week. When regression was used, a similar finding occurred. Telecommuting intensity, days telecommuting per week divided by days worked per week, was significant for those two challenges as well as *relationships with manager*, suggesting that the more someone telecommutes, the greater the challenges they face. Organizations should consider these findings when creating policy around telecommuting frequency.

There were three challenges focused on *developing and maintaining relationships*. While organizations can't offer much help with families, they can provide guidance in terms of fostering relationships with managers and co-workers. Scheduling face-to-face meetings with managers and co-workers on a regular basis would be important in *maintaining relationships* and *overcoming feelings of isolation*. If these meetings were also held in the company offices, they could serve an additional purpose, letting the telecommuters be seen by upper management, thereby assisting with the



challenge of *being offered promotional opportunities*. I also commend creating internal social networking sites for employees. While the large telecommunications organization's social networking site was specifically for telecommuters, which could help with *feelings of isolation* and *maintaining relationships with managers/co-workers* who also telecommute, I feel a social networking site open to all employees could be beneficial. This option would allow telecommuters and non-telecommuters to connect and hopefully dispel feeling of resentment and in the process, build trust. In addition, telecommuters could also form a group, much like they do on public social networking sites, where they could commiserate and share tips and ideas based on their unique circumstances.

Part of the telecommuting policy/program should also focus on how performance is measured. Because managers don't see their telecommuters' everyday, they need to make sure the performance management system is centered on such things as quality of work and meeting deadlines, essentially, the end product. Without this type of measurement, the telecommuter will never be able to meet expectations. Having these policies in place will make *being offered promotional opportunities* more attainable.

Lastly, when *creating structure in your workday*, my research noted that those telecommuters who had been telecommuting for two years or more had less of a challenge creating structure than those telecommuting less than two years, suggesting that this seems to be a learned behavior. Having said that, there are still tips and suggestions organizations can provide their telecommuters to help shorten the learning curve, much of it based on the telecommuting characteristics mentioned often in the literature, such as

time management, planning skills, and self-motivation. This is best addressed in the form of training, which should also be an integral part of the telecommuting policy/program.

### *Telecommuting training*

Telecommuting training is not just for the telecommuter, but also the managers of the virtual workers. Ideally, the training would be two-fold. The first part of the training would combine both groups and would center on the MBTI. After taking the online assessment, participants would learn about the MBTI, and then delve into understanding themselves and others in terms of personality type. Once the groundwork is set, there would be modules on communication, conflict management, motivation and how to build trust. Three to six months out, additional team building training should also be offered. After that initial training, there would be manager and employee-specific training.

Managers would receive additional training on managing virtual teams, designing effective performance management, creating environments for motivation and coaching. If managers also happened to be telecommuters, they would also attend the employee training. This training would include setting up the virtual office, suggestions for developing and maintaining relationships, tips for creating structure in their workday, personality specific adaptations for the telecommuting arrangement, and lastly, it would pair up new telecommuters. These telecommuter “buddies” could share their experiences, frustrations and successes as they embark on this alternative work arrangement. Telecommuter “buddies” would stay paired after the training and become a support network for each other. If possible, it would also be helpful to have long-term telecommuters, those telecommuting more than two years, to be mentors for groups of

telecommuter “buddies.” Telecommuting for more than two years was chosen because my research identified the two year mark as the point that telecommuters find creating structure in your day less of a challenge. In addition to their manager, these mentors would be there to guide the new telecommuter through the transition process. The “buddies” and the mentor would work to help the new telecommuters address all of the challenges.

#### Future Research

My research highlighted four personality types that experience greater challenges than others, but its more important contribution to the field was making the case that a connection in fact does exist between personality type and telecommuting experiences. My research opens the door for further research on this topic, with much larger sample sizes, helping to tease out other nuances that were not able to be identified with my sample size.

Another area that could be explored is the connections among organizational size, telecommuting policies/programs and telecommuter challenges. My research noted those telecommuters from organizations with 100 people or less experienced difficulty with five out of the six challenges. None of the other organizational sizes had any significant issues with the challenges. I suggested it might be because they don’t have as extensive telecommuting policies/programs, or any policies/programs, simply because they don’t have the manpower or money to create them. It would insightful to look at companies that did and did not have policies/programs, broken down by size and then find out how their telecommuters rate the telecommuting challenges.

Lastly, it would be interesting to take a closer look at those less represented groups of telecommuters, specifically minorities and those with less than a four-year college degree. It would be helpful to understand why minorities are so under represented in the telecommuting population. And more importantly, what measures need to be taken to give them access to telecommuting opportunities. It would also be intriguing to better understand those telecommuters with less than a four-year college degree. Telecommuting, for the most part, lends itself to knowledge workers, those with four-year and advanced college degrees. What types of organizations and job categories are these telecommuters finding? And as we look to grow telecommuting, how can organizations offer more of these telecommuting positions?

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## Appendix A

## Characteristics Frequently Associated with Each Type

## Sensing Types

## Intuitive Types

ISTJ	ISFJ	INFJ	INTJ
<p>Quiet, serious, earn success by thoroughness and dependability. Practical, matter-of-fact, realistic, and responsible. Decide logically what should be done and work toward it steadily, regardless of distractions. Take pleasure in making everything orderly and organized – their work, their home, their life. Value traditions and loyalty.</p>	<p>Quiet, friendly, responsible, and conscientious. Committed and steady in meeting their obligations. Thorough, painstaking, and accurate. Loyal, considerate, notice and remember specifics about people who are important to them, concerned with how others feel. Strive to create an orderly and harmonious environment at work and at home.</p>	<p>Seek meaning and connection in ideas, relationships, and material possessions. Want to understand what motivates people and are insightful about others. Conscientious and committed to their firm values. Develop a clear vision about how best to serve the common good. Organized and decisive in implementing vision.</p>	<p>Have original minds and great drive for implementing their ideas and achieving their goals. Quickly see patterns in external events and develop long-range explanatory perspectives. When committed, organize a job and carry it through. Skeptical and independent, have high standards of competence and performance – for themselves and others.</p>
<p>ISTP</p> <p>Tolerant and flexible, quiet observers until a problem appears, then act quickly to find workable solutions. Analyze what makes things work and readily get through large amounts of data to isolate the core of practical problems. Interested in cause and effect, organize facts using logical principles, value efficiency.</p>	<p>ISFP</p> <p>Quiet, friendly, sensitive, and kind. Enjoy the present moment, what's going on around them. Like to have their own space and to work within their own time frame. Loyal and committed to their values and to people who are important to them. Dislike disagreements and conflicts, do not force their opinions or values on others.</p>	<p>INFP</p> <p>Idealistic, loyal to their values and to people who are important to them. Want an external life that is congruent with their values. Curious, quick to see possibilities, can be catalysts for implementing ideas. Seek to understand people and to help them fulfill their potential. Adaptable, flexible, and accepting unless a value is threatened.</p>	<p>INTP</p> <p>Seek to develop logical explanations for everything that interests them. Theoretical and abstract, interested more in ideas than in social interaction. Quiet, contained, flexible, and adaptable. Have unusual ability to focus in depth to solve problems in their area of interest. Skeptical, sometimes critical, always analytical.</p>

## Appendix A

## Characteristics Frequently Associated with Each Type

## Sensing Types

## Intuitive Types

<p><b>ESTP</b> Flexible and tolerant, they take a pragmatic approach focused on immediate results. Theories and conceptual explanations bore them – they want to act energetically to solve the problem. Focus on the here-and-now, spontaneous, enjoy each moment that they can be active with others. Enjoy material comforts and style. Learn best through doing.</p>	<p><b>ESFP</b> Outgoing, friendly, and accepting. Exuberant lovers of life, people, and material comforts. Enjoy working with others to make things happen. Bring common sense and a realistic approach to their work, and make work fun. Flexible and spontaneous, adapt readily to new people and environments. Learn best by trying a new skill with other people.</p>	<p><b>ENFP</b> Warmly enthusiastic and imaginative. See life as full of possibilities. Make connections between events and information very quickly, and confidently proceed based on the patterns they see. Want a lot of affirmation from others, and readily give appreciation and support. Spontaneous and flexible, often rely on their ability to improvise and their verbal fluency.</p>	<p><b>ENTP</b> Quick, ingenious, stimulating, alert, and outspoken. Resourceful in solving new and challenging problems. Adept at generating conceptual possibilities and then analyzing them strategically. Good at reading other people. Bored by routine, will seldom do the same thing the same way, apt to turn to one new interest after another.</p>
<p><b>ESTJ</b> Practical, realistic, matter-of-fact. Decisive, quickly move to implement decisions. Organize projects and people to get things done, focus on getting results in the most efficient way possible. Take care of routine details. Have a clear set of logical standards, systematically follow them and want others to also. Forceful in implementing their plans.</p>	<p><b>ESFJ</b> Warmhearted, conscientious, and cooperative. Want harmony in their environment; work with determination to establish it. Like to work with others to complete tasks accurately and on time. Loyal, follow through even in small matters. Notice what others need in their day-to-day lives and try to provide it. Want to be appreciated for who they are and for what they contribute.</p>	<p><b>ENFJ</b> Warm, empathetic, responsive, and responsible. Highly attuned to the emotions, needs and motivations of others. Find potential in everyone, want to help other fulfill their potential. May act as a catalysts for individual and group growth. Loyal, responsive to praise and criticism. Sociable, facilitate others in group, and provide inspiring leadership.</p>	<p><b>ENTJ</b> Frank, decisive, assume leadership readily. Quickly see illogical and inefficient procedures and policies, develop and implement comprehensive systems to solve organizational problems. Enjoy long-term planning and goal setting. Usually well informed, well read, enjoy expanding their knowledge and passing it on to others. Forceful in presenting their ideas.</p>

(Myers, 1998, p.13)

## Appendix B

### Telecommuting Survey

I agree to participate in this study that investigates the relationships between telecommuting characteristics, select demographic measures, and telecommuting challenges. In addition, I agree that as an employee of an organization, I telecommute from home using a phone and computer at least one day per week.

As mentioned in the initial email I received, I understand the information pertaining to this research will remain confidential and will be kept in a password-protected computer. At any time while completing this survey or the Myers-Briggs Type Indicator (MBTI), I may withdraw my participation for any reason. In addition, if the survey questions or results of the MBTI cause me any distress, I may contact the National Mental Health Association at 800-969-6642.

If I have any questions regarding this research, I may contact Jacquelyn Brown or Dr. Fred Galloway.

Y/N

#### TELECOMMUTING CHARACTERISTICS

1. How many employees does your organization employ?

- 0-100
- 101-1000
- 1001-10,000
- 10,001-50,000
- 50,001-100,000
- 100,000+

2. How many years have you been a telecommuter? Remember, a telecommuter is defined as an employee who works from home using a phone and computer at least once a week. (Open-ended)

3. How many days per week do you typically telecommute? (Open-ended)

4. How many days per week do you work? (Open-ended)

5. How is your telecommuting frequency determined?

- I decide how many days a week I telecommute.
- My organization decides how many days a week I telecommute.
- My job responsibilities determine how many days a week I telecommute.
- Other (please explain)

6. Does anyone else in your household telecommute?

- Yes (Skip logic)
- No

6b. What is your relationship with that person? (Open-ended)

7. Rate the following advantages to telecommuting in order of importance to you (1 being most important and 8 being least important)

- Flexibility / Work-life balance
- Increased productivity
- Lower associated work costs (food, gasoline, dry cleaning, etc.)
- Reduced travel time
- Reduced interruptions
- Reduced office politics
- Reduced stress

#### TELECOMMUTING CHALLENGES

Below is a list of 6 challenges telecommuters face. Using a 4-point scale, with 1 being least challenging and 4 being most challenging, please rate your experience with each challenge.

	1 – No challenge	2 – Minor challenge	3 – Moderate challenge	4 – Major challenge
8. Dealing with feelings of isolation	1	2	3	4
9. Being offered promotional opportunities	1	2	3	4
10. Developing and maintaining relationships with manager	1	2	3	4
11. Developing and maintaining relationships with co-workers	1	2	3	4
12. Developing and maintaining relationships with family (that live in the same household)	1	2	3	4
13. Creating structure in your workday	1	2	3	4

If you would like to elaborate on any of your challenges, please share.

## DEMOGRAPHICS

14. What is your age? (Open-ended)

15. What is your sex?

- Male
- Female

16. What race or ethnicity do you most identify with?

- White
- Hispanic or Latino origin (of any race)
- Black or African American
- Asian
- American Indian
- Native Hawaiian or other Pacific Islander
- Other (Please explain)

17. What is your highest educational degree achieved?

- High School
- Vocational School
- Two-year College Degree
- Four-year College Degree
- Masters Degree
- Doctorate/Professional

18. Which of the following best describes your relationship status?

- Single
- Married
- Divorced
- Separated
- Widowed
- Living with partner

19. Do you have children?

- Yes (Skip-logic)
- No

19b. How many children are in the home during your typical telecommuting day? (Open-ended)