Telecommuting Attitudes and the 'Big Five' Personality Dimensions

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Telecommuting and virtual work are modifying the traditional work arrangement. This exploratory research examined the relationships between personality and telecommuting attitudes. We hypothesized that individuals with personality traits that provide a good fit with the typical demands of a telecommuting environment would have more favorable telecommuting attitudes. In Study 1, we developed an internally-consistent scale for measuring telecommuting attitudes. In Study 2, we explored relationships between the Big Five personality dimensions and telecommuting attitudes among a sample (N=333) of upper division business students. Agreeableness was positively related with telecommuting attitudes, whereas emotional stability was negatively related with telecommuting attitudes. Implications for future research and practice are discussed.

INTRODUCTION

Advances in technology are dramatically changing how work is structured and when, where, and how it is performed. As varied as work is today, so are the terms used to describe it. Jack Nilles is credited with coining the term "telecommuting" (Falk, 2006). Others refer to this mode of work as teleworking, home-working, working-at-a-distance, off-site workers, or virtual working (Golden, 2007). In this study, we modify a definition of telecommuting used by Golden (2007) and Nilles (1994) and define *telecommuting* as working a significant portion of time away from the conventional workplace, working from home or another location, and communicating by way of computer-based or other technology. Depending on the definition of telecommuting used, estimates of U.S. telecommuters approach 34 million (WorldatWork, 2009). Some predict that the growth in telecommuting will increase because of rising fuel prices, employee desires for flexibility, decreased overhead, and additional benefits for employers and society (Falk, 2006; Reason Foundation, 2005).

With the growth in telecommuting, it is important to determine who might be most receptive to telecommuting arrangements. However, prior research has focused mainly on situational factors that influence telecommuting decisions, as well as on the effects of telecommuting on performance, non-telecommuting workers, and other outcomes (e.g., Frank & Lowe, 2003; Golden, 2007; Hill, Miller, Weiner, & Colihan, 1998; Mokhtarian & Salomon, 1996; Munck, 2001; Rau & Hyland, 2002) rather than

on personality influences. In the current research, we sought to address this gap by directly examining relationships between the Big Five personality traits and telecommuting.

PRIOR RESEARCH ON PERSONALITY AND TELECOMMUTING ATTITUDES

Although most telecommuting research has focused on situational predictors of telecommuting and on the effects of telecommuting on various outcomes, some prior work has started to identify personality and individual difference variables that might influence telecommuting attitudes. Haines, St-Onge, and Archambault (2002) developed and tested a fit model positing that certain environmental factors (supervisor support, technical support, family support, commute time) would interact with specific individual characteristics (self-management and affiliation motivation) to produce different telecommuting outcomes. Surveying federal employee telecommuters, they found that telecommuters with stronger self-management orientations reported greater improvements in job performance and work/life quality. They also found that telecommuters with a low need for affiliation motivation reported greater improvements in work/life quality and higher levels of satisfaction with telecommuting.

Gainey and Clenney (2006) examined possible links between the Big Five and student perceptions of flextime and telecommuting programs. They found that openness, extraversion, and agreeableness were all positively associated with perceptions of flextime programs. However, only the openness findings extended to telecommuting. There were no significant relationships of either extraversion or agreeableness with perceptions of telecommuting programs. Gainey and Clenney suggested that flextime programs may be perceived as allowing workers to arrange non-work time to allow for frequent interaction, whereas telecommuting programs might not be perceived as offering that same flexibility.

There has also been discussion in the applied literature about the characteristics of the job, person, and organization needed for a successful telecommuting experience. A number of scholars have emphasized the importance of selection and have speculated that an effective telecommuter is likely to be self-motivated, self-disciplined, flexible, innovative, organized, a strong communicator, task-oriented, trustworthy, and have limited needs for face-to-face contact (Dinnocenzo, 1999; Mariani, 2000; Nilles, 1994; Piskurich, 1996). The identification of these traits as candidates suggests that the Big Five might be a good place to start the search for personality influences, as many of these specific traits are embodied within broader Big Five dimensions.

Regarding telecommuting attitudes, a number of studies have focused on predicting who will choose to telecommute (DeSanctis, 1984; Mokhtarian & Salomon, 1996). Another stream of research has focused on measuring the attitudes of workers toward telecommuting in Singapore (Lee & Pow, 1999; Teo & Lim, 1998) and Turkey (Iscan & Naktiyok, 2005). Both streams have identified some practical influences on telecommuting choices—such as demographic, situational, family, and lifestyle considerations—and have shown that it is important to consider employee reactions in addition to performance issues. However, these studies did not focus on personality influences on those telecommuting attitudes.

HYPOTHESIS DEVELOPMENT: THE BIG FIVE AND TELECOMMUTING ATTITUDES

Although research directly examining personality and telecommuting attitudes has been quite limited, the broader field of personality research does provide guidance about what types of individuals may be receptive to telecommuting. In the current research, we focused on the Big Five personality traits. We chose to start our exploration of personality influences on telecommuting with Big Five as it has gained converging support as a unifying basis for understanding personality (Digman, 1990). Indeed, the characterization of personality in terms of five factors is referred to by some as the most agreed upon normal personality framework, and the Big Five dimensions have been examined in literally hundreds of studies of a wide array of human judgments, attitudes, cognitions, and behaviors (Costa & McCrae, 1992; Goldberg, 1993; Zweig & Webster, 2004).

We used the general logic of organizational fit theory (e.g., Ryan & Kristof-Brown, 2003) to make predictions about relationships between the Big Five personality factors and telecommuting attitudes. As

Judge and Cable (1997, p. 364) have stated, "Personality researchers … have argued that individuals seek out situations that are congruent with their personalities, and empirical research supports this basic tenet of interactional psychology." Consistent with that logic, we reasoned that individuals are more likely to have favorable attitudes toward telecommuting when they have personality characteristics that provide a good behavioral fit with the demands of a telecommuting arrangement. Thus, we used prior research on the Big Five and other aspects of organizational behavior to draw conclusions about the degree to each Big Five dimensions was likely to provide a good fit with the demands of a telecommuting arrangement.

Agreeableness

Individuals high in agreeableness are characterized as cooperative, amicable, helpful, honest, decent, and trustworthy (Goldberg, 1990; McCrae & Costa, 1991). Mount, Barrick, and Stewart (1998) produced meta-analytic evidence that agreeableness was positively related to job performance in jobs involving interpersonal interaction. Pratt (2000) found that being able to trust others was very important to virtual team work reasoning that virtual workers must trust each other and collaborate to get work done without the benefit of much face-to-face communication. Because of the need for trust and ability to get along, as well as their general cooperativeness, we predicted that individuals high in agreeableness possess many of the qualities needed for a successful telecommuting experience and would have more favorable attitudes toward telecommuting.

> *H1. Agreeableness will be positively related with favorable attitudes toward telecommuting.*

Extraversion

People high in extraversion are described as being sociable, assertive, talkative, and active (Barrick & Mount, 1991) and prefer environments that are highly stimulating and where social interaction is possible and common (Eysenck, 1967). Haines et al. (2002) found a significant negative relationship between the need for affiliation and reported work/life quality and telecommuting satisfaction. They urged those with greater needs for affiliation to recognize this quality about themselves and avoid a telecommuting arrangement (see also Mokhtarian & Salomon, 1994; Wright & Oldford, 1993).

Although it is possible that extraverts could use telecommuting strategically to design offsite environments that allow them to spend more time with family and friends, we reasoned that most traditional work settings provide an especially potent environment for offering social interactions with a large number of people. We therefore predicted that individuals high in extraversion would desire to be around people and perceive that telecommuting may decrease opportunities for interaction, leading to negative attitudes toward telecommuting.

> *H2. Extraversion will be negatively related with favorable attitudes toward telecommuting.*

Conscientiousness

Conscientious individuals are described as careful, thorough, responsible, organized, self-disciplined, scrupulous, hard-working, purposeful, efficient, and precise (Barrick & Mount, 1991; McCrae & Costa, 2003). Of the Big Five factors, the trait of conscientiousness has been found to be the best predictor of job performance (Barrick & Mount, 1991). The characteristics of an individual high in conscientiousness have also been often cited as needed for a successful telecommuter. Researchers have reasoned that telecommuters need to establish a work routine and be able to work independently (Haddon & Lewis, 1994), be ambitious, self-disciplined, and conscientious (Pratt, 1984), and be direct, discipline their own performance, and manage their time well (Haddon & Lewis, 1994; Haines et al., 2002). Thus, we predicted that conscientiousness would be related with more favorable telecommuting attitudes.

H3. Conscientiousness will be positively related with favorable attitudes toward telecommuting.

Emotional Stability

Emotional stability is often discussed in terms of its opposite – neuroticism. Neuroticism is associated with insecurity, fear, instability, and emotionality (Goldberg, 1990). Neuroticism is also described as being anxious, worried, and depressed (McCrae & Costa, 2003). Based on these descriptions, it is likely in some cases that a neurotic individual may prefer to work offsite to avoid unpleasant contact with others. If so, emotional stability may actually be inversely related with telecommuting attitudes.

However, neuroticism could also lead to difficulties in coping with a telecommuting arrangement by creating difficulties with managing boundaries or reducing willingness to consider an innovative work structure. Rau and Hyland (2002) found that role conflict was negatively associated with the desirability of a telecommuting job among job seekers. In another study of job-seekers, Judge and Cable (1997) found that neuroticism was negatively related with attraction to innovative, rewards-based cultures. Based on Judge and Cable's (1997) finding and the need for telecommuters to manage boundaries, we predicted that individuals with a high level of neuroticism would have more negative attitudes toward telecommuting. Stated in terms of emotional stability, individuals high in emotional stability would have more favorable attitudes toward telecommuting.

H4. Emotional Stability will be positively related with favorable attitudes toward telecommuting.

Openness

A person high in openness seeks variety and intellectual stimulation, is creative, and grasps new ideas well (Goldberg, 1990; McCrae & Costa, 2003), and may also have more favorable attitudes toward learning (Barrick & Mount, 1991). Telecommuting for many organizations and individuals requires adapting to a new work environment and new communication methods (Haines et al, 2002; Kowalski & Swanson, 2005). Gainey and Clenney (2006) also reported a positive relationship between openness to experience and perceptions of flextime and telecommuting programs. For these reasons, we predicted that individuals high in openness would view telecommuting more favorably.

H5. Openness will be positively related with favorable attitudes toward telecommuting.

STUDY 1

We conducted two studies to examine the relationships between the Big Five personality traits and telecommuting attitudes. In Study 1, we developed a scale to assess telecommuting attitudes. In Study 2, we examined relationships between the Big Five personality dimensions and telecommuting attitudes.

Method

We sought to develop an instrument capable of assessing overall telecommuting attitudes representing multiple key aspects of telecommuting that may be influenced by personality. Although a number of studies have examined factors that may be relevant to telecommuting attitudes (e.g., Albion, 2004; DeSanctis, 1984; Iscan & Naktiyok, 2005; Lee & Pow, 1999; Lim & Teo, 2000; Teo & Lim, 1998; Yap & Tang, 1990), these prior measures all have one or more significant limitations, such as little or no validation, lack of validation on United States samples, widely varying response scales, a limited number of items on each factor, or a focus on perceived costs and benefits rather than overall telecommuting attitudes. The goal of Study 1 was to develop an instrument that reflected both general attitudes toward telecommuting, and that included core components of those attitudes in a way that was coherent, internally-consistent, and used a common response format, while still being relevant to modern United States samples.

We reviewed previously published scales for strengths, weaknesses, and prominent themes or aspects of telecommuting arrangements. We identified prominent themes to help ensure that our general attitude scale did not overlook key aspects of telecommuting perceptions that might be viewed as important by most respondents. Our review suggested that dimensions prominent in the literature focused on flexibility/freedom, career issues/visibility, interaction with others/social issues, productivity/efficiency, stress/hassles, and overall attitudes. We incorporated some items from prior scales, modifying as needed for clarification or simplicity. Although the questionnaire was grounded on previous work, most of the items were new. Items were written with the intent of being as face-valid as possible and presented in a manner that respondents could complete efficiently.

Participants were members of junior and senior level business courses at a large, public Southeastern university. A total of 379 individuals (231 men and 148 women) completed the questionnaire as a short exercise at the beginning of a class. The sample had a good amount of work experience, with 96% having had at least some work experience, 72.6% currently employed (25.3% full-time), 39.5% with at least one year of managerial experience, and 18.8% having had experience with a job that involved telecommuting. Regarding other demographics 9.6% were married, 8% had at least one child, and 75% commuted five or more miles to campus (with 16.8% traveling more than thirty miles).

Results and Discussion

We used principal components analysis with varimax rotation to reduce our original 60-item telecommuting attitudes scale into meaningful components (Hair et al., 1998). The latent root criterion test revealed thirteen factors with eigenvalues greater than one. The scree plot showed a notable elbow after four factors. We examined the factor loadings for solutions containing 3, 4, 5 and 6 factors. We found that a four factor solution accounting for 44.3% of the variance provided the most coherent and interpretable set of factors. We retained items that produced a minimum factor loading of .40 and at least a .10 difference between the two highest loading factors. Based on those criteria, we deleted ten items that did not load significantly or that cross-loaded onto more than one factor, leaving us with a 50-item scale. Appendix 1 provides the factor loadings and coefficient alphas for each factor. The overall scale had a coefficient alpha of .94, suggesting excellent internal consistency. Subscale alphas ranged from.85 to .89, suggesting very good levels of internal consistency. An examination of the items within each factor suggested the following labels: Work Preferences, Flexibility, Challenges, and Benefits.

STUDY 2

The purpose of Study 2 was to examine relationships between the Big Five personality dimensions and telecommuting attitudes and test Hypotheses 1-5. We used the scale developed in Study 1 to assess telecommuting attitudes.

Method

Participants were 333 junior and senior level business students (213 men and 120 women) enrolled in one of several classes at a large public university in the Midwest, who received course extra credit in return for participating. The sample of 333 students was greater than the minimum 250 needed to detect a fairly small R^2 (4-6 percent) with up to 10 independent variables and a significance level of $p<.05$ (Hair et al., 1998). Participants again had a good amount of work experience, with 93.6% having had at least some work experience, 64.9% currently employed (6.9% full-time), 35.8% with at least one year of managerial experience, and 16.8% with experience in a job that involved telecommuting. In addition, 6.3% were married, 3.6% had at least one child, and 48.7% commuted five or more miles to campus (with 6% traveling more than thirty miles).

To measure personality, we used the International Personality Item Pool (Goldberg, 1999; Goldberg et al., 2006). The IPIP is in the public domain and is part of an effort to encourage researchers to collaborate in the creation and use of scales. We used the 100 item version, for which IPIP reports a total coefficient alpha of .90 and subscale alphas ranging from .88 to .91 (Goldberg, 1999).

Results and Discussion

Before testing our hypotheses, we further refined our telecommuting attitudes scale. We used principal components analysis with varimax rotation to evaluate the consistency of the four factor solution found in Study 1. The latent root criterion showed eleven factors with eigenvalues greater than one. After examining the scree plot (which suggested a notable drop-off after 4 factors), as well as the item loadings for 3, 4, 5 and 6 factor solutions, the four factor solution again produced the cleanest and most coherent factor structure. Using a criterion of a minimum factor loading of .40 for each item, we deleted three items. We also deleted seven cross-loaded items that showed less than a .10 difference between the two highest loading factors. Finally, we compared the specific items in the four factors solutions found in the Study 1 and Study 2 data. All but two of the items loaded onto the same factor in both studies, and those two items were deleted. Thus, the final version of our Telecommuting Attitudes Scale consisted of the 38 items that loaded identically onto the same factors across two distinct samples.

The factor loadings, eigenvalues, variance explained, and reliability coefficients are provided in Appendix 2. The overall coefficient alpha for the 38 items was .91, representing excellent internal consistency. The coefficient alphas for each factor ranged from .81 to .85, representing very good internal consistency.

To determine the ability of the Big Five factors to explain additional variance over and above the demographic and situational variables, we conducted multiple regression analyses on our final 38-item telecommuting attitudes scale. Results are shown in Table 1. In Model 1, we examined the relationships between demographic variables and telecommuting attitudes. As shown by the R^2 of .036, demographic variables only explained 3.6% of the variance in telecommuting attitudes, and none of the individual predictors were significant within the model.

TABLE 1
TELECOMMUTING ATTITUDES AS A FUNCTION OF DEMOGRAPHIC VARIABLES AND PERSONALITY

Predictor or Statistic	Model 1: Control Model	Model 2: Controls + Big Five
Control Variables[a]:		
Gender	-.031	-.122†
Age	-.096	-.099
Employment Status	.043	.050
Managerial Experience	-.091	-.084
Telecommuting Experience	-.055	-.074
Independent Variables[a]:		
Agreeableness		.133*
Extraversion		.025
Conscientiousness		.055
Emotional Stability		-.144*
Openness		-.015
R^2	.036	.065
Adjusted R^2	.021	.036
F Value	2.405*	2.208*
Incremental R^2		.029[b]
Incremental F Value		1.975[b]†

[a]Standardized regression coefficients are shown.
[b]Model 2 versus the Control Model
*p<0.05, †p<0.10

In Model 2, we examined which of the Big Five dimensions were significant predictors of telecommuting attitudes, controlling for demographics, and also estimated the proportion of variance attributable to personality over and above demographics. Agreeableness showed a significant positive relationship with telecommuting attitudes. Thus, agreeable individuals tended to view telecommuting more favorably than disagreeable individuals, providing support for Hypothesis 1. Emotional stability showed a significant negative relationship with telecommuting attitudes. Thus, emotionally stable individuals had less favorable attitudes toward telecommuting. Stated differently, neurotic individuals actually viewed telecommuting more favorably than did emotionally stable individuals, opposite to our prediction in Hypothesis 4. None of the other three Big Five dimensions had significant relationships with telecommuting attitudes, thus failing to provide support for Hypotheses 2, 3, & 5. The R^2 for Model 2 (.065) was greater than for Model 1 (.036) indicating that Model 2 explained an additional 2.9% of the variance in telecommuting attitudes. However, this change in R^2 was only marginally significant (p=.082). Finally, among the demographic variables, gender had a marginally significant relationship with telecommuting attitudes (p=.06), such that women tended to view telecommuting slightly less favorably than men.

We also conducted a series of four two-model regressions (using the same Model 1 and Model 2 predictors previously run for total scores) on each of the four subscales of the telecommuting attitudes scale. The Model 2 analyses showed that: (a) Emotional stability was negatively related with the Work Preferences and Challenges subscales (ps<.05), such that neurotic individuals preferred telecommuting and perceived that it would produce fewer challenges than traditional work. (b) Conscientiousness had a strong, significant, positive relationship with Work Preferences (p<.01), with conscientious individuals preferring telecommuting. (c) Prior experience with telecommuting was negatively related with the Work Preferences, Challenges, and Benefits subscales (ps<.01), such that those who had actually telecommuted before perceived more challenges, fewer benefits, and reduced preferences for telecommuting compared with those who had not. (d) Age was negatively related with the Work Preferences and Challenges subscales (ps<.05), such that older individuals perceived more challenges with telecommuting and preferred it less. (e) Agreeableness showed positive, marginally significant relationships with Work Preferences and Flexibility (ps<.09), such that agreeable individuals preferred telecommuting and perceived that it created greater flexibility than traditional work. (f) Openness showed a positive, marginally significant relationship with Flexibility (p<.06). Finally, (g) Extraversion did not have any significant relationships with any of the four subscales.

DISCUSSION

Our results demonstrate that some of the Big Five dimensions have a significant relationship with attitudes toward telecommuting. Specifically, agreeableness was positively associated with telecommuting attitudes, whereas emotional stability was negatively associated with telecommuting attitudes. This finding of some relationships between personality and attitudes toward telecommuting supports the idea, frequently expressed in the popular press and applied literatures, that some people may be more receptive to telecommuting than others (Haines et al., 2002; Nilles, 1994).

Agreeableness was a significant predictor of overall telecommuting attitudes and also had marginally significant relationships with the Work Preferences and Flexibility subscales. This suggests that agreeable, rather than disagreeable, individuals may be more receptive to telecommuting and might also perceive it as offering greater flexibility. Agreeable individuals possess qualities that might often be rather adaptive for telecommuting, including being helpful, cooperative, and less competitive (Zweig and Webster, 2004), and also have the foundations of being able to trust others, an important characteristic for virtual work (Kowalski & Swanson, 2005). Individuals high in agreeableness also tend to try to please those around them, which may help them balance work and home demands.

Emotional stability was also a significant predictor of telecommuting attitudes; however, the relationship was in the opposite direction than predicted. Emotional stability was actually negatively associated with telecommuting attitudes, as well as with the Work Preferences and Challenges subscales.

Thus, neurotic individuals had more favorable attitudes toward telecommuting, preferred telecommuting to conventional work, and perceived telecommuting as presenting fewer challenges than did emotionally stable individuals.

Our hypothesis regarding emotional stability rested mainly on the potential for neurotic individual to perceive that telecommuting would create boundary problems from working in the home environment. However, we also realized that there was the potential for neurotic individuals—characterized as insecure, fearful, emotional, and unstable—to prefer to work offsite to avoid awkward or unpleasant social or public performance situations. The current results seem consistent with this latter possibility. Working from home could allow neurotic individuals to engage in non-normative behavior without fear of reprisals from others, and could also provide shelter from interpersonal anxieties that might be experienced in the traditional, face-to-face office environment.

For the remaining Big Five dimensions, extraversion, conscientiousness, and openness had no significant relationships with overall telecommuting attitudes, although conscientiousness was positively associated with the telecommuting Work Preferences subscale and openness was marginally related with the Flexibility subscale. The lack of additional relationships between the remaining Big Five personality dimensions and overall telecommuting attitudes is interesting, given that previous research has often found a link between these dimensions and various work variables in more traditional work environments (Barrick & Mount, 1991; Judge & Cable, 1997; Judge, Heller & Mount, 2002). For conscientiousness and openness, one reasonable explanation is that these variables may operate rather similarly across traditional and telecommuting contexts. That is, a conscientious individual might be expected to attend diligently to work responsibilities whether they are working at the office or offsite (although possibly preferring to telecommute if given the choice, as suggested by the significant relationship with the Work Preferences subscale), and open individuals might be fairly receptive to various work approaches whether they are experienced in a traditional or telecommuting environment.

Considering extraversion, it is possible that extraverts might readily see avenues for creating interaction with others whether their work is based at an office or a nontraditional work space. We based our prediction on the logic that extraverts might perceive a misfit between their personality and telecommuting. For example, highly extroverted individuals are warned on CareerBuilder.com that they may greatly miss the spontaneous and immediate social interaction provided in a conventional office if they telecommute. However, we also noted that some extraverts may view telecommuting as creating opportunities to increase their contacts with people outside of work. Thus, it is possible that extraverts may perceive that they will be able to fulfill their needs for social interaction whether their work is based in a traditional office or a telecommuting environment.

Regarding demographic variables, only gender showed a marginally significant relationship with overall telecommuting attitudes, with women viewing telecommuting slightly less favorably than men. However, there were some interesting relationships between demographic variables and specific subscales. Namely, previous telecommuting experience was associated with perceiving more challenges and fewer benefits to telecommuting, and older individuals preferred telecommuting less and perceived more challenges with it. Consistent with prior studies (DeSanctis, 1984; Teo & Lim, 1998), these findings suggest that demographic variables can indeed influence specific facets of telecommuting attitudes.

A major contribution of our research was the development of a comprehensive, multi-dimensional scale to measure telecommuting attitudes. The scale assesses multiple aspects of telecommuting attitudes and has internal consistencies ranging from very good to excellent. The scale can be administered easily using a five-point Likert-type response format, and each factor is measured with at least eight items. The scale could be used in a variety of ways. Employers could use it to assess employees' attitudes toward telecommuting as an aide in tailoring work assignments or identifying areas of perceptual differences. Researchers could use the scale to develop further understanding of what impacts attitudes toward telecommuting. In addition, with simple rewording of relevant items to direct respondents to a specific telecommuting initiative rather than to telecommuting in general, the scale could also be used as a program assessment tool.

Although our research makes strong contributions to an initial understanding of general telecommuting attitudes and personality influences on those attitudes, it also has some limitations that might be addressed in future research. First, some of the unexpected results in our study may be due to limited variability within the sample regarding age, marital status, and parental status. Individuals from older generations did not grow up with the technology that the students in our sample did. Students may view working remotely as rather ordinary whereas a sample of older adults may view it differently or have different preferences for communication modalities. Second, in addition to gathering the same data with a generationally diverse sample, we suggest that data on the level of work-family and family-work conflict might also be captured in future research. For example, in one study emotional stability was found to be a moderator of relationships between work-family conflict and job exhaustion and general well-being, and that agreeableness was a moderator of the relationship between family-work conflict and marital satisfaction (Kinnunen, Vermulst, Gerris & Mäkikangas, 2003). Third, an exploration of specific telecommuting situations that vary in their situational features may reveal some stronger personality relationships. Although it is valuable to understand personality and attitudes toward telecommuting in general, it would also be useful to identify the conditions under which specific Big Five dimensions are most and least likely to have an impact on telecommuting attitudes. For example, a telecommuting project that involves working alone on an individual task might be less appealing to many extraverts than working on a project in which they are required to collaborate electronically with teammates or to interact frequently with others outside of the office. Finally, it might also be interesting to study the personality of actual telecommuters in various arrangements and see if self-selection processes have created predictable differences across settings.

In conclusion, our research takes important first steps toward understanding the relationship between personality and attitudes toward telecommuting. Our results show that specific Big Five dimensions do have an influence on overall telecommuting attitudes, as well as on more specific dimensions of those attitudes, suggesting that personality does indeed play a role in telecommuting attitudes. The large amount of variability left unexplained in our findings also suggests the possibility that these personality-attitude relationships may well be complex and contextually-influenced. Advances in technology have evolved the work environment into one that will likely be at least partially virtual for most workers and completely virtual for others. It will be necessary to explore how current management principles apply in this new virtual work context. Our research suggests that successfully deploying telecommuting is not easy or automatic and that further research should aid our understand of the role that personality factors play in telecommuting.

REFERENCES

Albion, M. J. (2004). A measure of attitudes towards flexible work options. *Australian Journal of Management,* 29, 275-294.

Barrick, M. R. & Mount, M. K. (1991). The big-five personality dimensions and job performance: A meta-analysis. *Personnel Psychology,* 44, 1-26.

Costa, P. T., Jr. & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual.* Odessa, FL: Psychological Resources, Inc.

DeSanctis, G. (1984). Attitudes toward telecommuting: Implications for work-at-home programs. *Information and Management,* 7, 133-139.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology,* 41, 417-440.

Dinnocenzo, D. A. (1999). *101 Tips for Telecommuters.* San Francisco: Berrett-Koehler.

Eysenck, H. J. (1967). *The biological basis of personality.* Springfield, IL: Thomas.

Falk, W. (Ed.) (2006). When the office is home. *The Week,* 6, (241), 11.

Frank, E. F. & Lowe, D. J. (2003). An examination of alternative work arrangements in private accounting practice. *Accounting Horizons,* 17, 139-151.

Gainey, T. W. & Clenney, B. F. (2006). Flextime and telecommuting: Examining individual perceptions. *Southern Business Review*, 32, (1), 13-21.

Goldberg, L. R. (1990). An alternative description of personality: The big five factor structure. *Journal of Personality and Social Psychology,* 59, 1216-1229.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist,* 48, 26-34.

Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), Personality Psychology in Europe, Vol. 7 (pp. 7-28). Tilburg, The Netherlands: Tilburg University Press.

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain personality measures. Journal of Research in Personality, 40, 84-96.

Golden, T. (2007). Co-workers who telework and the impact on those in the office: Understanding the implications of virtual work for co-worker satisfaction and turnover intentions. *Human Relations*, 60, 1641-1667.

Haddon, L. & Lewis, A. (1994). The experience of teleworking: An annotated review. *International Journal of Human Resource Management,* 5, 193-223.

Haines, V. Y., St-Onge, S., & Archambault, M. (2002). Environmental and person antecedents of telecommuting outcomes. *Journal of End User Computing,* 14, (3), 32-50.

Hair, J. F., Jr., Anderson, R. E., Tatham, R. L. & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Singapore: Pearson Education, Inc.

Hill, E. J., Miller, B. C., Weiner, S.P., & Colihan, J. (1998). Influences of the virtual office on aspects of work and work/life balance. *Personnel Psychology,* 51, 667-683.

Iscan, O. F. & Naktiyok, A. (2005). Attitudes towards telecommuting: The Turkish case. *Journal of Information Technology,* 20, 52-63.

Judge, T. A. & Cable, D. M. (1997). Applicant personality, organizational culture, and organization attraction. *Personnel Psychology,* 50, 359-390.

Judge, T. A., Heller, D. & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology,* 87, 530-541.

Kinnunen, U., Vermulst, A., Gerris, J. & Mäkikangas, A. (2003). Work–family conflict and its relations to well-being: The role of personality as a moderating factor. *Personality and Individual Differences,* 35, 1669-1683.

Kowalski, K. B. & Swanson, J. A. (2005). Critical success factors in developing teleworking programs. *Benchmarking: An International Journal*, 12, 236-249.

Lee, J. S. K. & Pow, J. C. L. (1999). Human resource policies for women – a study in Singapore. *Journal of Management Development,* 18, 326-341.

Lim, V. K. G. & Teo, T. S. H. (2000). To work or not to work at home: An empirical investigation of factors affecting attitudes toward teleworking. *Journal of Managerial Psychology,* 15, 560-586.

Mariani, M. (2000). Telecommuters. *Occupational Outlook Quarterly*, Fall, 10-17.

McCrae, R. R. & Costa, P. T., Jr. (1991). Adding *liebe und arbeit*: The full five-factor model and well-being. *Personality and Social Psychology Bulletin,* 17, 227-232.

McCrae, R. R. & Costa, P. T. (2003). *Personality in Adulthood: A Five-Factor Theory Perspective* (2nd ed). New York: Guildford Press.

Mokhtarian, P. L. & Salomon, I. (1994). Modeling the choice of telecommuting: Setting the context. *Environment and Planning A,* 26, 749-766.

Mokhtarian, P. L. & Salomon, I. (1996). Modeling the choice of telecommuting: A case of the preferred impossible alternative. *Environment and Planning A*, 28, 1859-1876.

Mount, M. K., Barrick, M. R., & Stewart, G. L. (1998). Five-Factor model of personality and performance in jobs involving interpersonal interactions. *Human Performance,* 11, 145-166.

Munck, B. (2001). Changing a culture of face time. *Harvard Business Review*, 79, (10), 125-131.

Nilles, J. M. (1994). *Making telecommuting happen.* New York: Van Nostrand Reinhold.

Piskurich, G. M. (1996). Traits of successful telecommuters. *Training & Development,* 50, 25.

Pratt, J. (1984). Home telecommuting: A study of its pioneers. *Technological Forecasting and Social Change,* 25, 1-14.

Rau, B. L. & Hyland, M. H. (2002). Role conflict and flexible work arrangements: The effects on applicant attraction. *Personnel Psychology,* 55, 111-136.

Reason Foundation. (2005). *The quiet success: Telecommuting's impact on transportation and beyond* (Policy Study 338). Los Angeles, CA: T. Balaker.

Ryan, A. M. & Kristof-Brown, A. (2003). Focusing on personality in person-organization fit research: Unaddressed issues. In M. R. Barrick & A. M. Ryan (Eds.), *Personality and Work: Reconsidering the role of personality in organizations* (pp. 262-288). San Francisco, CA: Wiley.

Teo, T. S. H. & Lim, V. K. G. (1998). Factorial dimensions and differential effects of gender on perceptions of teleworking. *Women in Management Review,* 13, 253-263.

WorldatWork. (2009). *Telework Trendlines 2009: A Survey Brief by WorldatWork (data collected by The Dieringer Research Group, Inc.).* Scottsdale, AZ: R. M. Johnson.

Wright, P. C. & Oldford, A. (1995). Telecommuting and employee effectiveness: Career and managerial issues. *International Journal of Career Management,* 5, (1), 4-9.

Yap, C. S. & Tng, H. (1990). Factors associated with attitudes towards telecommuting. *Information and Management,* 19, 227-235.

Zweig, D. & Webster, J. (2004). What are we measuring? An examination of the relationships between the big-five personality traits, goal orientation, and performance intentions. *Personality and Individual Differences,* 36, 1693-1708.

APPENDIX 1
PRINCIPAL COMPONENT ANALYSIS OF TELECOMMUTING ATTITUDES SCALE (STUDY 1)

Item	Work Pref. Factor 1	Flex. Factor 2	Chall. Factor 3	Benef. Factor 4
I think I would be most productive in a traditional office setting.*	**.75**	.11	.17	.20
I like working in a well-structured office environment.*	**.70**	.05	-.02	-.06
I work best in a standard office environment in which all resources are readily available to me.*	**.67**	.16	.38	.20
I would prefer to come into the office, get my work done, and go home.*	**.67**	.10	.32	.19
I prefer the traditional workplace over telecommuting.*	**.66**	.31	.32	.28
I enjoy working in an environment where clear direction is provided about what to do and when.*	**.65**	-.01	.15	-.04
In general, I prefer the social interaction found at the conventional workplace.*	**.63**	.12	.21	.22
A standard office setting provides the most efficient workplace.*	**.63**	.12	.39	.18
I work better away from the traditional office.	**.60**	.24	.15	.28
I like to have my work routine decided and laid out for me by others.*	**.43**	.10	.29	.02
When telecommuting, I would miss out on social interactions in the office.*	**.42**	-.17	.28	.21
I work better in the presence of others than on my own.*	**.40**	.07	.20	.14
Telecommuting would allow me to do more of what I want to do.	-.01	**.69**	.09	.09
I would have a more relaxed work atmosphere when telecommuting.	.09	**.68**	.11	-.04
Telecommuting would allow me to work the way I want to.	.04	**.65**	.13	.23
Telecommuting would make it easier for me to pursue personal interests.	.10	**.65**	-.05	.05
When telecommuting, I can do a better job taking care of non-work demands.	-.03	**.62**	-.08	.02
Telecommuting would cause me to be isolated from my peers at work.*	-.10	**.58**	.22	.27
I would welcome the flexible work hours that telecommuting offers.	.10	**.55**	.31	.07
Telecommuting would provide me with less freedom to work on projects that interest me.*	.01	**.55**	.41	-.09
Telecommuting is a good work arrangement.	.21	**.52**	.31	.31
Telecommuting would certainly reduce my stress level.	.30	**.51**	-.06	.32
Telecommuting would allow me to avoid time-wasting office distractions.	.21	**.51**	.09	.29
Telecommuting would allow me to work with disagreeable coworkers.	-.04	**.49**	-.25	-.01
Telecommuting would give me less flexibility.*	.12	**.48**	.20	-.24
My stress level would be reduced if I telecommute.	.36	**.47**	-.05	.30

Continued on Next Page

APPENDIX 1 Continued

Item	Work Pref. Factor 1	Flex. Factor 2	Chall. Factor 3	Benef. Factor 4
By telecommuting, I can avoid interruptions that occur at work.	.06	**.46**	-.07	.17
Telecommuting would allow me to work in the manner that is most effective for me.	.28	**.46**	.27	.22
Telecommuting usually leads to negative consequences.*	.16	.27	**.63**	.03
I may miss important work events or communications if I telecommute.*	.17	.08	**.62**	.14
It would be difficult to feel part of the work team while telecommuting.*	.34	.05	**.60**	.19
It is a mistake to telecommute.*	.15	.35	**.58**	.12
Telecommuting would make me less visible to company management.*	.17	-.32	**.54**	.30
Telecommuting would make it hard to find the right materials and information when needed.*	.11	-.00	**.53**	.05
My supervisor may pass me over at promotion time if I telecommute.*	.11	-.20	**.53**	.24
Telecommuting should be avoided if at all possible.*	.21	.34	**.51**	.09
I believe you have to be seen at the office to be taken seriously.*	.30	.06	**.51**	.10
Telecommuting would cause me to be isolated from my peers at work.*	.35	-.10	**.49**	.25
When telecommuting, it would be difficult to share experiences with coworkers.*	.23	-.18	**.48**	.19
Others may have difficulty reaching me if I telecommute.*	.09	.21	**.46**	.13
I fear I would be lonely if I telecommute.*	.27	.05	**.45**	.07
My work efforts will be better rewarded if I telecommute.	.18	.10	.09	**.70**
Telecommuting would enhance my ability to get promoted.	.09	.08	.19	**.66**
Management will view me more positively if I telecommute.	.01	.23	.06	**.65**
Telecommuting would enhance my career development.	.20	.22	.25	**.63**
Telecommuting would allow me to enhance my social ties with others.	.07	.09	.33	**.61**
If I telecommute, others would believe that I am more committed to my job.	.04	.09	.08	**.60**
Telecommuting would actually increase my social stimulation.	.18	-.02	.22	**.59**
Telecommuting would make it easier to coordinate my work with others.	.07	.17	.21	**.55**
I would feel more connected to my work when telecommuting.	.25	.09	.14	**.53**
I would be the most productive while telecommuting.	.35	.25	.22	**.47**
Coefficient alpha for subscale	0.89	0.87	0.85	0.86
Eigenvalue for factor	12.90	4.40	2.80	2.10
Variance accounted for by factor	25.80%	8.80%	5.50%	4.30%
Overall coefficient alpha for entire scale (50 items)		0.94		
Cumulative Variance accounted for by entire scale		44.3%		

Note: Items are grouped to show patterns of factor loadings. The items were placed in random order during the assessment.

* indicates that the item was reverse-scored.

APPENDIX 2
PRINCIPAL COMPONENT ANALYSIS
OF TELECOMMUTING ATTITUDES SCALE (STUDY 2)

Item	Flex. Factor 1	Chall. Factor 2	Work Pref. Factor 3	Benef. Factor 4
Telecommuting would allow me to do more of what I want to do.	**.71**	.03	.03	.17
Telecommuting would allow me to work the way I want to.	**.68**	.11	.09	.06
Telecommuting would make it easier for me to pursue personal interests.	**.63**	.04	.08	.16
When telecommuting, I can do a better job taking care of non-work demands.	**.62**	-.04	.03	.01
I would welcome the flexible work hours that telecommuting offers.	**.61**	.12	.14	.06
I would have a more relaxed work atmosphere when telecommuting.	**.60**	-.07	-.02	-.07
Telecommuting would allow me to work in the manner that is most effective for me.	**.58**	.14	.32	.20
Telecommuting would give me less flexibility.*	**.53**	.21	.12	-.21
Telecommuting would allow me to avoid time-wasting office distractions.	**.48**	-.02	.17	.27
Telecommuting would provide me with less freedom to work on projects that interest me.*	**.43**	.25	-.10	-.32
My supervisor may pass me over at promotion time if I telecommute.*	-.12	**.64**	-.01	.19
Telecommuting would cause me to be isolated from my peers at work.*	-.10	**.58**	.22	.27
Telecommuting usually leads to negative consequences.*	.32	**.57**	.03	.02
I fear I would be lonely if I telecommute.*	.02	**.57**	.34	.08
Telecommuting would make me less visible to company management.*	-.15	**.56**	.02	.23
It is a mistake to telecommute.*	.40	**.55**	.17	.12
I believe you have to be seen at the office to be taken seriously.*	.27	**.53**	.03	.06
When telecommuting, it would be difficult to share experiences with coworkers.*	-.07	**.50**	.28	.28
I may miss important work events or communications if I telecommute.*	-.07	**.48**	.29	.29
Others may have difficulty reaching me if I telecommute.*	.23	**.47**	.24	-.03
Telecommuting would make it hard to find the right materials and information when needed.*	.20	**.43**	.14	.09
I think I would be most productive in a traditional office setting.*	.17	.19	**.70**	.33
I like working in a well-structured office environment.*	.22	.06	**.69**	.08
I work best in a standard office environment in which all resources are readily available to me.*	.19	.16	**.68**	.25
In general, I prefer the social interaction found at the conventional workplace.*	.04	.29	**.62**	.15

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APPENDIX 2 Continued

Item	Flex. Factor 1	Chall. Factor 2	Work Pref. Factor 3	Benef. Factor 4
I enjoy working in an environment where clear direction is provided about what to do and when.*	-.13	.02	**.56**	-.09
I would prefer to come into the office, get my work done, and go home.*	.24	.30	**.53**	.26
A standard office setting provides the most efficient workplace.*	.23	.40	**.52**	.28
I work better in the presence of others than on my own.*	.15	.24	**.46**	.15
Telecommuting would actually increase my social stimulation.	.11	.22	.12	**.66**
If I telecommute, others would believe that I am more committed to my job.	-.08	.12	.17	**.61**
Telecommuting would enhance my ability to get promoted.	-.06	.13	.21	**.60**
Telecommuting would allow me to enhance my social ties with others.	.18	.31	.12	**.60**
My work efforts will be better rewarded if I telecommute.	.02	.18	.17	**.57**
I would feel more connected to my work when telecommuting.	-.01	.07	.35	**.57**
Management will view me more positively if I telecommute.	.09	.13	-.22	**.54**
Telecommuting would make it easier to coordinate my work with others.	.20	.19	.04	**.53**
Telecommuting would enhance my career development.	.18	.26	-.07	**.49**
Coefficient alpha for subscale	.83	.82	.85	.81
Eigenvalue for factor	12.19	4.36	2.55	2.21
Variance accounted for by factor	24.0 %	9.0%	5.0%	4.0%
Overall Coefficient alpha (38 item scale)		.91		
Cumulative Variance accounted for by entire scale		42.6%		

Note: Items are grouped to show patterns of factor loadings. The items were placed in random order during the assessment.

* indicates that the item was reverse-scored.