11-25-2014

Making Telework Work: The Effect of Telecommuting Intensity on Employee Work Outcomes

Maria Spilker
University of Missouri-St. Louis

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by

Maria Anne Althoff Spilker

M. A., Psychology, University of Missouri – Saint Louis, 2010
B. S., Psychology, Truman State University, 2007

A dissertation submitted to The Graduate School at the University of Missouri – St. Louis
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy with an emphasis in Industrial and Organizational Psychology

December 2014

Advisory Committee

James A. Breaugh, Ph.D.
Chairperson

Cody Ding, Ph.D.

Stephanie Merritt, Ph.D.

Ekin Pellegrini, Ph.D.

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my advisor, Dr. James Breaugh, for his keen insight, thought-provoking questions, and encouragement to persevere. I would also like to thank my dissertation committee, Dr. Stephanie Merritt, Dr. Ekin Pellegrini, and Dr. Cody Ding, for their feedback and ideas to strengthen my dissertation.

My deepest thanks also go to my colleagues, friends, and family who joined me on this journey. A big thank you goes to my cohort and fellow UMSL students for providing laughs, encouragement, and mutual understanding. I would also like to thank my family for their continuous support through the ups and downs; I always knew you believed in me. To everyone who has joined me for part or all of this journey, thank you. I could not have reached this achievement without you.

ABSTRACT

The current study examined the effects of telecommuting intensity – the amount of scheduled time that employees spend doing work away from the central work location – on employee outcomes. Results of this study provided insight into how telecommuting intensity relates to turnover intent and supervisor-rated performance through mediating mechanisms of work-life conflict, professional isolation, and Leader-Member Exchange. An online survey instrument was created, and an invitation to participate was sent by e-mail to telecommuters. Each participant was asked to provide an email address for his or her direct supervisor. The supervisor was asked to complete a shortened version of the telecommuter survey including an evaluation of the employee's performance and an assessment of Leader-Member Exchange relationships. Data from these surveys were analyzed using structural equation modeling. Results indicated professional isolation fully mediated the relationship between telecommuting intensity and turnover intent. Further, work-life conflict, professional isolation, and LMX quality all were significantly related to turnover intent and LMX quality was significantly related to supervisor-rated performance. Implications for future research and practice are presented.

Keywords: Telecommuting, Work-Life Conflict, Professional Isolation, Leader-Member Exchange, Turnover Intent, Performance

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CHAPTER 1 – INTRODUCTION

As the Director of the Office of Personnel Management, John Berry, said in a 2010 *Washington Post* article: *"The president made it clear to me that he doesn't want snow, nature, or any other cause to be able to stop our government…Since OPM doesn't control the weather or the plows, telework is the only way to achieve the goal that the president very clearly set"* (O'Keefe, 2010). On December 9, 2010, United States President Obama signed into law the Telework Enhancement Act of 2010 in response to the 2009 blizzards that cost the federal government an estimated $71 million in lost productivity (Mummolo & Mariomow, 2010). In brief, this Act requires government agencies to establish telework policies, communicate with employees about eligibility, train teleworkers and their managers, and report on the effectiveness of their teleworking programs.

Many private sector businesses have also established teleworking policies of varying levels of formality. In 2011, 26.2 million Americans worked from home or remotely for an entire day at least once a month (WorldatWork, 2011). This statistic represents nearly 20% of the working adult population of 139 million in the United States (U.S. Bureau of Labor and Statistics, 2011). According the National Study of the Changing Work-force, 63% of employers allow some of their employees to telecommute on an occasional basis and 33% allow some of their employees to telecommute on a regular basis (Matos & Galinksy, 2012). Further, telecommuting arrangements are not unique to the United States – a recent survey of 1,777 Human Resource Directors in 13 countries estimated that 79% of companies offer voluntary telecommuting arrangements to attract and retain talent (Robert Half Singapore, 2012). Because of the large

percentage of employees participating in telecommuting arrangements, it is essential that researchers continue to expand their understanding of how telecommuting affects work attitudes and behaviors for individual employees[1]. With this insight, researchers can advise organizations on how to identify employees who are successful as teleworkers and how to help them maximize the benefits.

Although there are many work attitudes that have been researched as they relate to telecommuting, the current research focused on two of the most widely-cited outcomes, one positive (decreased work-family conflict) and one negative (increased isolation). The current research study assessed these outcomes' impact on turnover intent and supervisor-rated performance. Additionally, the current research examined the relationship between telecommuters and their supervisors through Leader-Member Exchange (LMX) theory.

Specifically, the current study extended previous research on the relationship between work-family conflict and telecommuting (e.g., Golden, Veiga, & Simsek, 2006) by examining the relationship between work-*life* conflict (instead of focusing on conflict from the work to *family* roles, this broader definition included other roles such as student, volunteer, and friend) and telecommuting. Second, the current study examined potential moderators that might affect that relationship. Third, the current study attempted to replicate previous research that indicated telecommuting intensity was related to increased professional isolation (i.e., isolation in the context of the working environment) and more surprisingly that professional isolation was related to decreased turnover intent (Cooper & Kurland, 2002). Fourth, the current study expanded our understanding of the relationship between Leader-Member Exchange (LMX; i.e., the dyadic exchange

[1] Most telecommuting research has not manipulated telecommuting; thus, casual language technically should not be used. However, for purposes of exposition, mirroring the usage of other authors, causal language will be used to address hypothesized causal relationship.

relationships between leaders and each of their followers; Golden, 2006) and telecommuter outcomes by including a longitudinal evaluation of the relationship between LMX and both telecommuter turnover intent and supervisor-rated performance. Finally, the current study examined individual telecommuter performance instead of performance at the organizational level where most research has been conducted (Martínez-Sánchez, Pérez-Pérez, Vela-Jiménez, & de-Luis-Carnicer, 2008).

The results of the research conducted have important implications for organizations. The current research informs organizations of what to expect if people telecommute and how best to maximize the effectiveness of telecommuters. A finding that telecommuting needs to be voluntary in order for telecommuters to realize the reduction to work-life conflict would encourage organizations to let employees have a choice whether or not to telecommute. Further, a finding that voluntariness needs to be complemented by scheduling flexibility in order to maximize the benefits would encourage organizations to ensure flexibility is an option. In summary, the current research informs on various structural decisions that are made when setting up a telecommuting system.

The current research also provides organizations and supervisors with insight into what type of person might be an effective telecommuter. A finding that people with lower need for affiliation are more effective telecommuters would encourage supervisors to use this information as a discussion point when helping employees decide whether or not a telecommuting arrangement would be a good fit. A finding that employees with shorter tenure at the organization experience greater professional isolation would suggest

supervisors pay closer attention to those employees' engagement and offer support (e.g., new technology with richer forms of communication).

CHAPTER 2 – THEORETICAL FRAMEWORK

Telecommuting has been defined as "an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization" (Gajendran & Harrison, 2007, p.1525). This virtual work can happen at many different locations such as: home, satellite offices, neighborhood work centers, and on the road (e.g., client offices, coffee shops); however, this definition does not include self-employment (Kurkland & Bailey, 1999).

Telecommuting is one of several types of flexible work schedules; other types include flexibility in work hours (i.e., the employee has some control over when he or she arrives and departs work), flexibility in workload (e.g., job sharing) and flexibility in continuity of work (e.g. seasonal work; Kossek & Van Dyne, 2008). There are advantages as well as drawbacks for both employees and employers when people telecommute.

For individuals, teleworking reduces fuel consumption, time spent in traffic, and air and noise pollution (Balepur, Varma, & Mokhtarian, 1998; Sardeshmukh, Sharma, & Golden, 2012). It may also lead to increased perceived personal job control (Lautsch & Kossek, 2009), circumventing flu pandemics (Lister & Harnish, 2011), decreased work-family conflict (Major, Virive, & Joice, 2008), fewer job distractions (Bailey & Kurland, 2002), and opportunities for people to work who may not otherwise be able to (e.g., individuals with disabilities; Matthes, 1992; Tahmincioglu, 2003). Some potential drawbacks include professional isolation (Golden, Veiga, & Dino, 2008), blurring of

work/non-work boundaries (Hilbrecht et al, 2008), and career stagnation (Hill, Ferris, & Martinson, 2007).

For organizations, advantages of telework include a reduction in office costs (Karnowski & White, 2002), improved employee attendance and performance (Pearce, 2008; Nieminen, Nicklin, McClure, & Chakrabarti, 2011), and increased commitment and retention (Bailey & Kurland, 2002; Martin & MacDonnell, 2012). However, there are also disadvantages such as initial start-up costs or supervisor resistance (Ryan & Kossek, 2008), and coworker dissatisfaction (Breaugh & Farabee, 2012). Although there are many important organizational outcomes to study, the current research focuses on outcomes for employees. Specifically, the current research examines the effect of telecommuting *intensity* (i.e., the number of hours during the work week that are spent in a telecommuting environment versus in a traditional work environment) on work-life conflict, professional isolation, and Leader-Member Exchange and resulting turnover intent and performance.

The intensity with which employees telecommute has been called an "instrumental" contingency in understanding the telecommuting work arrangement (Bailey & Kurland, 2002, p. 391). The current study defines telecommuting *intensity* similarly to previous research (e.g., Gajendran & Harrison, 2007) as the amount of scheduled time that employees spend doing work away from the central work location. Does an employee work from the office one day a week or four? Does he or she work full days at the office or part of each day? What percentage of his or her work week does the employee virtually commute? The intensity with which an employee telecommutes may affect many different individual outcomes for the employee including turnover intent

and performance (c.f., Bailey & Kurland, 2002; Pinsonneault & Boisvert, 2001). Furthermore, there may be many psychological mediators of these relationships including work-life conflict, professional isolation, and the relationship between the supervisor and employee. Therefore, the current research examines the spectrum of telecommuting intensity to determine, for example, if outcomes are similar for telecommuters who spend eight hours per week telecommuting, as opposed to those who spend forty hours per week telecommuting. Please note that causal terminology and symbols (→) used in the subsequent sections represent hypothesized relationships, but the current study design is correlational and does not allow for drawing causal inferences.

Telecommuting Intensity ⟶ Psychological Mediators

Work-to-life conflict. Work-to-family conflict is experienced when work and family expectations and role demands are mutually incompatible (Edwards & Rothbard, 2000; Greenhaus & Beutell, 1985). In other words, "compliance with one role would make it more difficult to comply with the other role . . . resulting in interrole conflict" (Kahn et al, 1964). *Family* has been defined as "persons related by biological ties, marriage social custom, or adoption" including immediate and extended family (Edwards & Rothbard, 2000, p. 179).

Recently, some researchers have expanded the research area from family-specific to all of life or non-work interference (e.g., student, volunteer, friend; Fisher, Bulger, & Smith, 2009). Specifically, they defined work-to-life conflict as work demands interfering with life responsibilities. This expanded definition including all non-work domains was the one used in the current study because it makes the research applicable to all workers, not just the ones who have families. This is an important change because in

2013, households with families made up 66% of U.S. households, down from 69% in 2000 and 81% in 1970 (U.S. Census Bureau, 2013).

The current research focused on work to life conflict (i.e., work demands interfering with life responsibilities) and not the reverse direction of life to work conflict (i.e., life demands interfering with work responsibilities). Only one direction of this relationship was examined because the focus of the current research is on the work environment and the work-related outcomes for employees, not the life-related outcomes. Although this research focused on work-life conflict, given the dearth of research in the area, the current review also draws from work-family studies in building the theoretical framework.

Work-family research has explained many negative consequences of conflict between work and family roles. These include physical and psychological health outcomes (Grzywacz, Frone, Brewer, & Kovner, 2006), lower organizational commitment and performance (Eby et al, 2005), and lower satisfaction (Allen, Herst, Bruck, & Sutton, 2000). In a meta-analysis, Kossek and Ozeki (1998) found a correlation of -0.23 between job satisfaction and work-family conflict. Other researchers found that this relationship holds across a variety of cultures (Chiu, 1998) and occupations (Netemeyer et al, 1996).

There is substantial research that supports that flexible work arrangements reduce work-family conflict (Allen, Johnson, Kiburz, & Shockley, 2013) and more specifically that telecommuting reduces work-to-family conflict (r = -0.27, p < .01; Golden, Veiga, & Simsek, 2006). Researchers explain this finding based on Edwards and Rothbard's (2000) depletion argument suggesting a zero-sum tradeoff where people's resources are

finite and thus when they spend resources in one domain (e.g., work), those are resources that cannot be spent in the other domain (e.g., family). More recent work-life research showed a similarly negative relationship between telecommuting and work-life conflict (Masden, 2003; Major et al, 2008; Gejendran & Harrison, 2007). Other researchers examined the relationship from a different angle and found that teleworkers report enhanced feelings of work-life balance (e.g., Hilbrecht, Shaw, Johnson, & Andrey, 2008; Hill, Miller, Weiner, & Colihan, 1998; Sullivan & Lewis, 2001). These favorable results afforded by telework arrangements could be due to the increased flexibility that teleworkers have to fulfill household responsibilities, manage time, and strengthen relationships. Further research is necessary to determine if the work-*life* conflict construct has relationships with telecommuting and outcomes similar to work-*family* conflict (see Figure 1).

Two variables that may affect this relationship between telecommuting intensity and work-life conflict are scheduling flexibility and boundary permeability. When telecommuters have more control and flexibility in setting their work schedules, they are more likely to experience decreased work-life conflict (Pierce & Newstrom, 1983; Golden, Veiga, & Simsek, 2006). Research suggests that for telecommuters with high flexibility, extent of telecommuting has a significant negative relationship with work-family conflict (Golden, Veiga, & Simsek, 2006). Scheduling flexibility allows telecommuters to work at the times when they are most productive. It also allows them to schedule around personal commitments by using tactics such as split-shifts.

Although telecommuters' scheduling flexibility may enhance the effect of telecommuting intensity on work-life conflict, the boundary permeability they experience

may temper the experienced work-life benefit of telecommuting. Research suggests that a telecommuting work arrangement may result in a blurring of work-life boundaries (Desrochers, Hilton, & Larwood, 2005). Boundary permeability refers to the extent to which either family/life or work encroaches on the other because they occupy the same time and/or place (Edwards & Rothbard, 2000). For example, is the employee expected to answer emails/texts/calls at all hours of the day thus making him/her feel "on-call" at all times? Can the employee work undisrupted or must he/she always be available to frequent family needs? If the employee is unable to maintain boundaries, he or she may not experience as strong of a beneficial relationship between telecommuting intensity and work-life conflict.

Hypothesis 1: Telecommuting intensity is negatively related to work-life conflict.

Hypothesis 1a: Scheduling flexibility moderates the negative relationship between telecommuting intensity and work-life conflict such that employees who have more flexibility will have a stronger negative relationship.

Hypothesis 1b: Boundary permeability moderates the negative relationship between telecommuting intensity and work-life conflict such that employees who have more boundary permeability will have a weaker negative relationship.

Professional Isolation. Isolation can be defined as the feeling of being "cut off from others" (Diekema, 1992, p.484), and it occurs when a person lacks sufficient connections to "critical networks of influence and social contact" (Miller, 1975, p. 261). The current study examined isolation in the context of the working environment; therefore, it has been termed *professional isolation.* Isolated employees are less likely to be able to interpret and respond to social cues, which may affect their performance on

assignments (Rook, 1984; Mann, Varey, & Button, 2000), and increase feelings of loneliness (Jones, 1990) and anxiety (Baumeister & Tice, 1990).

Isolation research stems from research on group membership. Group membership provides norms of acceptable behavior, contributes to goal achievement, and helps to reduce stress (Beehr, Jex, Stacy, & Murray, 2000). If employees feel isolated and not a part of the work-group, these feelings may negatively affect their satisfaction. Telecommuters may be particularly susceptible to feelings of isolation, because they likely do not work in close proximity to others. Telecommuters may miss the social interaction of informal chats, spontaneous discussions, sharing of experiences, meetings around the water cooler, and news through the company grapevine (Cooper & Kurland, 2002; Kurland & Bailey, 1999). Telecommuters may also fear being "out of sight and out of mind" for rewards and recognition (Kurkland & Bailey, 1999).

Telecommuters who are higher in need for affiliation may be more likely to experience professional isolation than those lower in the need. Need for affiliation refers to an employee's desire for social contact or belongingness; people higher in need for affiliation receive social gratification from harmonious relationships with others (Veroff & Veroff, 1980). Telecommuting provides less of the 'human element', meaning less opportunity for face-to-face interaction with others. For telecommuters higher in need for affiliation, isolation may manifest itself as a fear of a "loss of identity" and or "distinction" (Wagner, 2004). The lack of emotional support and affective bond might result in these telecommuters feeling more socially isolated (Mann, Varey, & Button, 2000). In sum, teleworkers who thrive on interpersonal relationships may be more

adversely affected by the diminished social interaction than teleworkers who are less driven by the need for affiliation (Wiesenfeld, Raghuram, & Garud, 2001).

Hypothesis 2: Telecommuting intensity is positively related to professional isolation.

Hypothesis 2a: Need for affiliation moderates the positive relationship between telecommuting intensity and professional isolation such that employees who have a higher need will have a stronger relationship.

Leader Member Exchange. Considerable research has shown that leaders can dramatically influence individual, team, and organizational performance (Judge, Piccolo, & Ilies, 2004). Leadership has been defined as "the ability to influence, motivate and enable the contributions of others toward overall success of an organization" (Erdogan, Liden, & Kaimer, 2006, p. 398). Leadership theories communicate a number of mechanisms through which leaders have such influences (Northouse, 1997). For example, some focus on the stable dispositions of leaders (Judge, Bono, Ilies & Gerhardt, 2002), others examine leaders' behaviors (Bass & Avolio, 1990; Yukl, 1994), and others examine how the effectiveness of leader actions depends on situational or contextual factors (Fiedler & Garcia, 1987; Morgeson, 2005).

Leader-member exchange (LMX) is in this third category of leadership models. It is a transactional model of leadership that "describes how leaders use their position power – organizational resources – to develop different exchange relationships with different subordinates" (Scandura & Schriescheim, 1994, p. 1589). Originally termed *vertical dyad linkage* (Dansereau, Graen, & Haga, 1975), LMX differs from other leadership theories by its focus on dyadic relationships between leaders and each of their

followers (Graen & Uhl-Bien, 1995; Liden, Sparrowe, & Wayne, 1997). This theory draws from social exchange theory (Blau, 1964) which suggests that there is a perceived obligation on the part of subordinates to reciprocate high-quality relationships (Gouldner, 1960). Research suggests that high quality Leader-Member Exchange results in outcomes such as improved satisfaction and productivity and decreased turnover intent (Gerstner & Day, 1997).

Research on LMX suggests that supervisors and their subordinates negotiate and develop work relationship roles over time (Dienesch & Liden, 1986), and high-quality relationships are built on liking and trust while lower quality relationships are based on economic exchange. When people build their relationships face-to-face, they learn each other's non-verbal communication and learn to interpret contextual indicators in a way that is difficult to do through interactions that are less personal (Lengel & Daft, 1988). Thus, without face-to-face interactions, telecommuters and their managers may struggle to generate the warmth, liking, and trust inherent in high-quality LMX relationships (Dienesch & Liden, 1986). Little research, however, has been conducted examining LMX in virtual work arrangements (Golden & Veiga, 2005).

Hypothesis 3: Telecommuting intensity is negatively related to Leader-Member Exchange.

Role of Voluntariness of the Telecommuting Relationship

Telecommuting can be voluntary or required of employees. Voluntary telecommuters are likely to see the arrangement as an opportunity that yields benefits, while employees who are required to telecommute may resent the potential initial hardship it causes (e.g., employees have to find a place to work; Thatcher & Zhu, 2006).

Some employees may be excited about being able to volunteer for telecommuting if they see it as a way their organization supports the reduction of work-family conflict (Breaugh & Frye, 2008). Alternately, some employees may not see telecommuting as a good fit. For example, they may fear that telecommuting may cause them to feel isolated or that it may hurt their relationship with their supervisor; therefore, they will want the opportunity to self-select out of that arrangement (Golden, 2006). If telecommuting is required, these apprehensive employees may perceive the move as intentionally getting them "out of the way." Therefore, they may expect adverse influence on their career opportunities.

Additionally, even if the employee is able to volunteer for telecommuting, his or her control of the intensity of the arrangement may also influence his or her individual outcomes. For example, if an employee is able to choose to telecommute only on the days that best fit with his or her children's school schedule, he or she may experience decreased work-life conflict. Or, if an employee likes the quiet of telecommuting but doesn't want to spend too much time away from the office for fear of missing out on relationships, he or she may be able to temper feelings of professional isolation. Additionally, if the arrangement is decided by the supervisor, the telecommuter might increase the telecommuting intensity as the leader-member exchange relationship improves.

If an employee is able to choose whether or not to enter into a telecommuting arrangement as a part of employment, he or she may be able to seek out a more visceral understanding of what the experience of telecommuting will be like prior to employment and thus be better able to cope and adapt to the more difficult parts of that arrangement (Pitt & Ramaseshan, 1995). For example, an employer may provide a realistic job

preview portraying the potential benefits and drawbacks of telecommuting, thus providing applicants enough information to self-select into or out of the telecommuting arrangement (Breaugh, 1983). Research has shown that when employees are provided a realistic preview, they are less likely to voluntarily leave the organization and more likely to experience higher job satisfaction (Suszko & Breaugh, 1986). Further, realistic previews are also linked with increased personal commitment, lowered expectations, and increased performance (Premack & Wanous, 1985).

Hypothesis 4: Voluntariness of the telecommuting arrangement moderates the impact of telecommuting intensity on (a) work–life conflict by accentuating its beneficial effects and on (b) professional isolation and (c) LMX by minimizing its detrimental effects.

Telecommuting Intensity ⟶ Individual Outcomes

Turnover Intent. Telecommuting availability signals that an organization trusts and values its employees and desires to support their well-being and meet their needs. This perceived organizational support may generate greater psychological commitment and reduce turnover intentions (ρ = -0.10; Gajendran & Harrison, 2007; Rhoades & Eisenberger, 2002). Although a somewhat weak relationship, given the high cost of voluntary turnover to organizations, it is an important relationship to understand. Teleworkers may be less likely to leave preferable conditions for organizations that do not provide telecommuting options (e.g., Igbaria & Guimaraes, 1999). For example, Merrill Lynch experienced a six percent decrease in turnover following the implementation of their telecommuting program (Wells, 2001). Researchers cite telecommuting as a competitive advantage for employers to attract and retain talent

(Vega, 2003). For example, the millennial generation values a balanced approach to work and life more than previous generations (Deal, 2007); therefore, employers must better understand how to create and advertise work-life benefits with an understanding of which benefits are most attractive to which applicants (Thompson & Aspinwall, 2009).

A similar stream of research suggests that telecommuting is related to increased organizational commitment (i.e., overall construct including normative, continuance, and affective commitment components; Golden, 2006). A recent meta-analysis found a small but positive relationship between telecommuting and commitment ($\rho = 0.11$, Martin & MacDonnell, 2011). The research suggests that telecommuting programs demonstrate the organization's trust and supportiveness of employees (Igbaria & Guimaraes, 1999; Rau & Hyland, 2002). Telecommuters also report decreased stress (Guimaraes & Dallow, 1999), an easier ability to meet non-work (e.g., family) responsibilities (Riley & McClosky, 1997), and fewer interruptions and unplanned interactions with colleagues and managers (DuBrin, 1991). Telecommuting also leads to reduced costs in transportation and attire and reduced commuting time. Therefore, if employees indeed feel that telecommuting is a benefit, they often are more likely to reciprocate the gesture from the organization with increased organizational commitment (e.g., Shore & Wayne, 1993; Golden, 2006).

Hypothesis 5: Telecommuting intensity is negatively related to turnover intentions.

Performance. One of the strongest arguments for companies to implement telecommuting policies is that telecommuters are more productive than traditional office workers (Pinsonneault & Boisvert, 2001; Bailey & Kurland, 2002). For example, Pearce

(2008) found a productivity increase for employees who telecommute one to three days per week. Compaq Computer Corporation found productivity increased from 15% to 45%, American Express found that telecommuters could handle 26% more calls and created 43% more business than their colleagues in the office, IBM found productivity increased from 15% to 40%, and Hewlett-Packard moved its sales force to a telecommuting arrangement and doubled its revenue per salesperson (Pearce, 2008). Meta-analytic results suggested telecommuting to be positively related to supervisor-rated performance (ρ = 0.19; Gajendran & Harrison, 2007; ρ = 0.23; Martin & MacDonnell, 2012).

Researchers suggest these productivity gains are due to increased work hours saved by not commuting (Apgar, 1998). Furthermore, telecommuters experience fewer disruptions while working and can adjust the work environment to fit their needs (Bailey & Kurland, 2002). Although there is clearly a relationship between productivity and telecommuting, further research is needed to determine the effects of telecommuting on individual employee performance instead of at the organizational level, where most research has been conducted (e.g., Martínez-Sánchez, Pérez-Pérez, Vela-Jiménez, & de-Luis-Carnicer, 2008). Furthermore, most research has been conducted using self-report performance data. In contrast, the current study collects supervisor-rated performance data. By involving the supervisor, the performance rating should be less biased by social desirability (e.g., Chan, 2009). Finally, most research has been conducted on telecommuters who telecommute only part time. The current study adds to the research by examining a wider spectrum of telecommuting intensity.

Hypothesis 6: Telecommuting intensity is positively related to performance, as rated by supervisors.

Psychological Mediators ⟶ Individual Outcomes

Work-Life Conflict and Individual Outcomes. Work-family research explains the consequences of conflict between work and family roles, including increased turnover intent and decreased performance. When work-family conflict is high, employees may desire to leave the organization to reduce its interference with family (Frone, 2003). In their meta-analysis, Kossek and Ozeki (1999) reported that increased work-family conflict was related to increased turnover intent (ρ = 0.32). Allen, Herst, Bruck, and Sutton (2000) further suggested that turnover intent is the strongest outcome of work-family conflict (ρ = 0.29). This relationship can be explained based on a depletion argument suggesting a zero-sum tradeoff where people have finite resources; thus, resources spent in one domain (e.g., work) cannot be spent in the other domain (e.g., family; Edwards & Rothbard, 2000).

Netemeyer and colleagues (1996) replicated this negative relationship across three different samples: teachers and school administrators, small business owners, and real estate agents. Judge, Boudreau, Bretz (1994) further replicated this relationship for executives; Thomas and Ganster (1995) replicated this relationship for health professionals; and Duxbury, Higgins, and Thomas (1996) replicated this relationship for dual-career professionals. Additionally, in a study measuring actual turnover, researchers found a similarly positive yet slightly weaker relationship between work-family conflict and turnover (ρ = 0.22; Carr, Boyar, & Gregory, 2008).

Although there is strong support of the relationship between work-family conflict and turnover intent, there is less clear evidence for the relationship between work-family conflict and performance. In their meta-analysis, Kossek and Ozeki (1999) reported that increased work-family conflict was only slightly negatively related to job performance (ρ = -0.03). Allen, Herst, Bruck, and Sutton (2000) found a slightly stronger relationship (ρ = -0.12), and posited that increased conflict may lead to decreased extra-role behavior but not necessarily in-role performance. A more recent meta-analysis suggested work-family conflict is minimally related to self-rated performance (ρ = -0.03) but slightly more strongly related to supervisor-rated performance (ρ = -0.19; Hoobler, Hu, & Wilson, 2010).

Hypothesis 7: Work-life conflict is positively related to (a) turnover intent and negatively related to (b) supervisor-rated performance.

Professional Isolation and Individual Outcomes. Similar to work-life conflict, professional isolation can result in unfavorable outcomes for employees. Golden and colleagues (2008) explain that isolation stems from research on group membership and that isolation may result in feelings of stress and anxiety. Wiesenfeld, Raghuram, and Garud (2001) add that isolated employees may not have their need for affiliation and need for social support met.

Recent research found that isolation was related to decreased intent to turnover (β = -0.27, $p < .001$; $\Delta R^2 = 0.07$, $p < .001$; Golden, Veiga, & Dino, 2008). This may seem surprising given isolated employees are presumably not happy in their positions, thus it would make sense for them to desire to leave the organization. However, the researchers surmised that isolated employees may have lost faith in their knowledge and skills and

consequently in their ability to find alternative employment. Or perhaps, isolated employees may experience other favorable outcomes – especially in a work arrangement such as telecommuting – that compensate for the isolation. This research conflicts with previous research that indicates isolated employees may experience disinterest or rejection from coworkers, resulting in a desire to exit the organization (Golden 2006, 2007). At a more basic level, isolated employees may not feel they belong and therefore are less likely to feel ownership in the company (Duffy, Ganster, & Pagon, 2002). The current research sheds light on this unclear relationship.

Limited research has linked isolation to performance by explaining that isolated employees often lack "social barometers" that they can utilize to compare themselves with other employees (Mann, Varey, & Button, 2000; Vega, 2003). With the lack of comparison groups, professionally isolated employees are less likely to be confident in their knowledge and abilities, thus putting them at a disadvantage (Golden, Veiga, & Dino, 2008). Furthermore, isolated employees are less able to interpret important social and political information and use it to guide their behavior and reactions to work situations (Kurland & Egan, 1999; Mann et al, 2000). Research has recently supported these conclusions by demonstrating that increased isolation is linked to lower performance (β = -0.13, $p < .05$; $\Delta R^2 = 0.02$, $p < .05$; Golden, Veiga, & Dino, 2008).

Hypothesis 8: Professional isolation is positively related to (a) turnover intent and negatively related to (b) supervisor-rated performance.

Leader-Member Exchange and Individual Outcomes. Leader Member Exchange (LMX) has been found to relate to attitudinal and behavioral variables including turnover intent and performance. Positive LMX relationships are due to the

intangible (e.g., trust of supervisor or communication/visibility with leaders) and tangible (e.g., empowerment or career advancement) benefits to members (Erdogan & Enders, 2007). These benefits create a positive working environment, contributing to higher job satisfaction.

Research suggests that poor quality relationships with leaders increase employees' intentions to voluntarily leave their organizations (Graen, Liden, & Hoel, 1982). Gerstner and Day (1997) report a ρ = -0.31 relationship between LMX and turnover intentions. Further, Griffeth and colleagues' (2000) meta-analysis reports a negative relationship between LMX and actual turnover (ρ = -0.23). These results have been replicated across different populations including Federal Government employees (Shirley, 2003), multinational company employees (Ansari et al., 2008), and research and development and public administration employees (Sparr & Sonnentag, 2008).

In addition to supporting the relationships between Leader-Member Exchange and work attitudes, research has also demonstrated that LMX is related to performance (Gerstner & Day, 1997). Specifically, Gerstner and Day (1997) found that leader-reported LMX (ρ = 0.57) and member-reported LMX (ρ = 0.30) are both related to supervisor ratings of performance. Members who feel support, trust, respect, and other intangible benefits from their leaders are more likely to feel an obligation to reciprocate, according to social exchange theory (Erdogan & Enders, 2007). Task performance becomes a form of currency in which the member repays his or her leader for favorable treatment (Wang, Law, Hackett, Wang, & Chen, 2005).

Hypothesis 9: Leader-Member-Exchange is negatively related to (a) turnover intent and positively related to (b) supervisor-rated performance.

Telecommuting Intensity ⟶ Psychological Mediators ⟶ Individual Outcomes

In previous sections, research has been provided to explain the relationships between telecommuting intensity and psychological mediators (e.g., work-life conflict) and between telecommuting intensity and individual outcomes (e.g., performance). The current section links the sections to offer support for the mediating influences of work-life conflict, professional isolation, and Leader-Member Exchange between telecommuting intensity and individual outcomes of turnover intent and supervisor-rated performance.

For work-life conflict and individual outcomes, justification has been provided suggesting a relationship between telecommuting intensity and work-life conflict (e.g., Golden, Veiga, & Simsek, 2006), between telecommuting intensity and outcomes (e.g., Golden & Veiga, 2005; Gajendran & Harrison, 2007; Pinsonneault & Boisvert, 2001), and between work-life conflict and individual outcomes (e.g., Kossek & Ozeki,1998; Allen, Herst, Bruck, & Sutton, 2000). Therefore, the current research proposes that work-life conflict may serve as a partial intervening mechanism between telecommuting intensity turnover intent and supervisor-rated performance.

Hypothesis 10: The relationships between telecommuting intensity and (a) turnover intent and (b) supervisor-rated performance are partially mediated by work-life conflict.

For professional isolation and individual outcomes, justification has been provided suggesting a relationship between telecommuting intensity and professional isolation (e.g., Cooper & Kurland, 2002), between telecommuting intensity and outcomes (e.g., Golden & Veiga, 2005; Gajendran & Harrison, 2007; Pinsonneault & Boisvert,

2001), and between professional isolation and individual outcomes (e.g., Hester-Smith, 2010; Golden, Veiga, & Dino, 2008). Therefore, the current research proposes that professional isolation may serve as a partial intervening mechanism between telecommuting intensity and turnover intent and supervisor-rated performance.

Hypothesis 11: The relationships between telecommuting intensity and (a) turnover intent and (b) supervisor-rated performance are partially mediated by professional isolation.

For Leader-Member Exchange and individual outcomes, justification has been provided suggesting a relationship between telecommuting intensity and Leader-Member Exchange (e.g., Golden & Veiga, 2008), between telecommuting intensity and outcomes (e.g., Golden & Veiga, 2005; Gajendran & Harrison, 2007; Pinsonneault & Boisvert, 2001), and between Leader-Member Exchange and individual outcomes (e.g., Gerstner & Day, 1997). Therefore, the current research proposes that Leader-Member Exchange may serve as a partial intervening mechanism between telecommuting intensity and turnover intent and supervisor-rated performance.

Hypothesis 12: The relationships between telecommuting intensity and (a) turnover intent and (b) supervisor-rated performance are partially mediated by Leader-Member Exchange

CHAPTER 3 – RESEARCH DESIGN

Participants

The current study examined the relationship between telecommuting and turnover intent and performance, including the mediating influences of work-life conflict, professional isolation, and Leader-Member Exchange (LMX). Data were gathered from

organizations in varying industries across the United States that have employees who telecommute. Data were gathered from telecommuters at two time-points and from supervisors at one time-point. There were a total of 525 responses to the telecommuter Time 1 survey; however, 45 were eliminated because they involved duplicate responses (i.e., a person began a survey then quit and started another one later; the survey with fewer questions answered was removed), 23 were eliminated because a person did not telecommute for at least part of the standard work week, and 16 were eliminated due to their missing all study scales (i.e., participants left the survey after completing none or some of the first page of the survey asking about telecommuting intensity). This left a total of 441 telecommuter participants at Time 1. A total of 271 supervisors participated in the survey; however, 13 were eliminated because they were duplicate responses (i.e., a person began a survey then quit and started another one later; the survey with fewer responses was removed). No supervisor responses were eliminated due to missing study scales. This left a total of 258 supervisors. A total of 186 telecommuters participated in the Time 2 survey; no responses were eliminated.

In total, 441 telecommuters at Time 1, 258 supervisors, and 186 telecommuters at Time 2 provided usable data for the current study; Monte Carlo studies have suggested rules of thumb where "large" sample sizes for structural equation modeling exceed 200 observations (p.268, Milsap, 2002). Further, current guidelines about sample size requirements for SEM suggest a need for approximately ten observations per indicator; thus, 200 telecommuter-supervisor pairs should be sufficient given the proposed structural model (Muthén & Muthén, 2002; Schumacker & Lomax, 2004; see Figure 1). Statistical power in structural equation modeling is affected by sample size, the size of

the misspecified parameter, and the location of the parameter in the model (Schumacker & Lomax, 2004). Required sample size was calculated in R (a language and software environment for statistical computing) using an alpha of .05 and power of .80; analysis showed that greater than 165 telecommuter-supervisor pairs were needed to demonstrate adequate power (Preacher, 2010).

Telecommuters were invited to participate through a variety of methods including the researchers' connections at several organizations (e.g., call center employees, sales agents, financial advisors, healthcare professionals) and telecommuting-based networking groups on LinkedIn (e.g., "Real Jobs = Telecommuting" and "Teleworking Jobs"). Utilizing the Department of Labor Industry categorization, 32.2% of telecommuter participants work in Manufacturing, 30.6 % in Professional and Business Services, 14.5% in Financial Activities, 6.6% in Information, 6.2% in Education, 3.3% in Wholesale, 3.3% in Other Services (e.g., social services), 1.5% in Leisure, 1.1% in Construction, and 0.4% in Natural Resources. Utilizing the Department of Labor Occupation categorization, 30.2% in Business and Financial Operations, 24.0% of telecommuter participants work in Sales, 13.7% in Computer and Mathematical, 9.0% in Management, 6.2% in Education, 5.1% in Office and Administrative Support, 2.9% in Life, Physical, and Social Science, 2.0% in Architecture, 2.0% in Community and Social Service, 1.8% in Healthcare Practitioners, 0.4% in Farming and Forestry, 0.4% in Arts, Entertainment, and Media, 0.4% in Construction, 0.4% in Legal Occupations, 0.2% in Building and Grounds Maintenance, 0.2% in Healthcare Support, 0.2% in Military, and 0.2% in Transportation.

Telecommuters, by definition, work as company employees (not contractors) and work remotely for at least part of the standard work-week. The telecommuters in this sample have worked at their organization for an average of 9.34 years (*SD* = 12.89) and in their current position for an average of 4.92 years (*SD* = 5.13). They have been telecommuting for an average of 8.51 years in their career (*SD* = 7.80). The majority of telecommuters receive salary compensation (85.9%) rather than hourly compensation (11.5%) or project-based compensation (1.8%). The telecommuters have characterized themselves as individual contributors (65.0%), team leaders (19.8%), department leaders (7.0%), and senior leader/executives (7.3%). They ranged in age from 21 to 75 years of age (*M* = 42.17, *SD* = 11.40), are 51% female, and are 85% white. The majority of telecommuters have received at least a bachelor's degree (84.7%) with 33% completing a masters or doctorate degree. The average household size for the telecommuters is 2.71 people (*SD* = 1.22) with an average of 0.72 people (*SD* = 1.01) under the age of 18 and 0.04 people (*SD* = 0.22) over the age of 70 residing in the house.

Of the telecommuters who participated in the second phase of the study (*N* = 186), nearly all of them had the same supervisor (91.8%) and position (96.9%) as when they completed the initial survey. When asked about differences between Time 1 and Time 2, a large majority of respondents (88.2%) indicated no significant differences that would have influenced his or her responses. Further examination indicated there were no meaningful differences in the demographic variables between the groups who participated at Time 1 and Time 2.

Telecommuters' direct supervisors also participated in the study. These supervisors had managed these telecommuters for an average of 5.17 years (*SD* = 1.64).

Supervisors had worked at their organization for an average of 12.22 years (*SD* = 8.45) and in their current position for an average of 4.12 years (*SD* = 4.93). The majority of supervisors had telecommuted at some point during their career (74.7%). Supervisors were team leaders (52.3%), department leaders (28.3%), and senior leader/executives (19.4%). Supervisors ranged in age from 27 to 69 years of age (*M* = 43.75, *SD* = 9.21), were 42.2% female, and were 89.1% white.

Procedures

An online survey instrument was created and an invitation to participate was sent by e-mail to telecommuters. The telecommuters provided their responses on the individual outcome, mediator, and individual difference measures. Each participant was asked to provide an email address for his or her direct supervisor. Out of the 344 email addresses received, 79% of the supervisors replied (*N* = 271). The supervisors were asked to complete a shortened version of the telecommuter survey including a measure of the employee's telecommuting intensity, an evaluation of the employee's performance, and an assessment of Leader-Member Exchange relationships. Telecommuters were also asked to provide their email addresses if they would be willing to complete a brief follow-up survey approximately one month following the completion of the Time 1 survey. Out of the 258 email addresses received, 72% of the telecommuters participated in Time 2 (*N* = 186). All participants were given informed consent information prior to beginning the survey and were given information to debrief about the intent of the study after the Time 1 survey was completed. Additionally, an explanation was provided to participants regarding how confidentiality of the data was ensured as well as how

participant responses were aggregated before they were viewed by anyone outside the research team.

The current study employed both self- and supervisor-report data to gain richer insight on the study variables. Self-report data is criticized for construct validity issues, difficulty in interpreting correlations, and social desirability in responding (Chan, 2009). Chan suggested that "Future research needs to go beyond the subjective nature of self-report data to use other-report measures or objective indicators of the focal constructs to replicate study findings and test generalizability." However, researchers also acknowledge that some measures such as self-perception constructs (e.g., turnover intent) are best measured by asking the person to share his or her perceptions. Therefore, work-life conflict, professional isolation, Leader-Member Exchange, turnover intent, scheduling flexibility, boundary permeability, and need for affiliation were measured via self-report measures. Conversely, constructs highly susceptible to impression management or constructs that can be readily observed by others should be measured with non-self-report measures (Wayne & Liden, 1995). Therefore, performance was rated by the telecommuters' supervisors. Additionally, research suggests that Leader-Member Exchange should be evaluated by both employee and supervisor (Gerstner & Day, 1997; Krasikova & LeBreton, 2012), so supervisors were asked to rate that as well. Both telecommuters and their supervisors rated the structural components of the arrangement (e.g., voluntariness of the relationship, telecommuting intensity).

Cross-sectional designs, although adding value (e.g., Brief, 1996), only provide a single snapshot of job attitudes. To gain better insight into work attitudes, variables need to be sampled within individuals across time (Ilies & Judge, 2004; Podsakoff,

MacKenzie, Lee, & Podsakoff, 2003). Therefore, telecommuters were emailed and asked to again respond to the attitudinal measures (i.e., work-life conflict, professional isolation, Leader-Member exchange, and turnover intent) one month following the initial survey completion. The four week time lag was chosen for the following reasons: it will likely be long enough to realize any fluctuations in affect so as to get a more stable view of the focal variables, the seasonal influence will be relatively stable (e.g., Zapf, Dormann, & Frese, 1996), and it is not too long with regard to non-response (e.g., Inge, Janssen, de Jonge, & Bakker, 2003).

Measures

All measures used to collect telecommuter and supervisor data are available in Appendix A and Appendix B. Telecommuters were asked to report the following variables for Time 1: telecommuting intensity, work-life conflict, professional isolation, Leader-Member Exchange, voluntariness of the telecommuting arrangement, turnover intent, scheduling flexibility, boundary permeability, need for affiliation, and demographics (see Appendix C). Telecommuters were asked to report the following variables for Time 2: work-life conflict, professional isolation, Leader-Member Exchange, and turnover intent (see Appendix D). Supervisors were asked to report the following variables at Time 1: the employee's telecommuting intensity, voluntariness of the telecommuting arrangement, Leader-Member Exchange, and telecommuter job performance (see Appendix E).

Telecommuter measures. The measures that follow were filled out by the telecommuter participants at Time 1 or both Time 1 and Time 2 in the study.

Work-Life Conflict. The current study used a recently developed scale by Fisher, Bulger, and Smith (2009) designed to measure work-life interaction at both Time 1 and Time 2. This scale was created to be inclusive of all employees, regardless of whether they were single or in a relationship and whether or not they have dependents. The current study used one of four sub-scales, specifically the one designed to measure work interference with personal life (α = 0.91; Fisher et al, 2009). The five –item scale includes items such as "My job makes it difficult to maintain the kind of personal life I would like" and "I often neglect my personal needs because of the demands of my work." One item ("I come home from work too tired to do things I would like to do.") was slightly revised to be more appropriate for a telecommuting arrangement: "When I finish my workday, I am too tired to do the things I would like to do." Telecommuters answered using a five-point scale from 1 (not at all) to 5 (almost all of the time) to indicate the frequency with which they have felt a particular way during the last month. Scale reliability was α = 0.91 at Time 1 and α = 0.94 at Time 2.

Professional Isolation. The current study used a measure of professional isolation created and validated by Golden, Veiga, and Dino (2008) at both Time 1 and Time 2. Telecommuters were asked the frequency over the last month with which they experienced professional isolation on a scale from 1 (rarely) to 5 (most of the time). This seven-item measure includes items such as "I feel out of the loop" and "I feel isolated" with a scale reliability of α = 0.92 at Time 1 and α = 0.90 at Time 2.

Turnover Intent. At both Time 1 and Time 2, the current study used a three-item measure adapted from Luchak & Gellatly (2007): 'Over the past month, how frequently have you (a) had thoughts of quitting, (b) considered searching for another job, or (c)

intended to quit (1 = almost never; 7 = almost always). The Luchak and Gellatly measure used a reference period of a year; however, the current study used a reference period of one month given the one month retest period. This scale was developed to reflect cognitive processes (i.e., thinking of quitting, intention to search, and intention to leave) that have been linked to actual turnover (Sagar, Griffeth, & Hom, 1998; Mobley, 1977). Telecommuter responses were averaged to form a composite measure of turnover intent; scale reliability was $\alpha = 0.87$ for Time 1 and $\alpha = 0.92$ for Time 2.

Scheduling Flexibility. Pierce and Newstrom (1983) created a three-item measure asking participants how much flexibility they have in determining when they work and the extent to which their work schedule is independent of others (e.g., "To what extent are you able to define your work schedule independently of others?" "How much are you left on your own to define your own work schedule?") Responses range from 1 = very little to 5 = very much. Scheduling flexibility was measured at Time 1 and the scale presented acceptable reliability ($\alpha = 0.88$).

Boundary Permeability. Kossek, Lautsch, and Eaton (2006) developed a nine-item scale assessing boundary management strategy. At Time 1, telecommuters were given the following prompt: "With the increasing demands of work and home, employees may work in different ways to handle these demands," and asked to indicate their agreement using a scale ranging from 1 = strongly agree to 5 = strongly disagree. Items include the following: "Throughout the work day, I deal with personal and work issues as they occur" and "I tend to not talk about work issues with family and friends". Six of the nine items were used in the current study as they focus on the permeability between work and life rather than the reverse. Further, the six items were reworded to reflect the

broader focus of the current study on *life* roles rather only *family* roles. The scale reliability was $\alpha = 0.63$ at Time 1. This lower reliability appears to stem in-part from the fact that four of the six items are reverse coded; maximum likelihood factor analysis with direct oblimin rotation indicates two distinct factors are created with the positively worded items (Q1 and Q3) forming one factor and the negatively worded items forming the second factor (Q2, Q4, Q5, Q6). However, scale reliabilities for the two and four items were no better: $\alpha = 0.63$ for the two-item scale and $\alpha = 0.62$ for the four-item scale. Further, as discussed in the results section, model fit did not substantively improve with either the two- or four-item scales. Therefore, the complete six-item scale was used in analyses.

***Need for Affiliation*.** Need for affiliation was measured using a five-item scale Wiesenfeld and colleagues (2001) adapted from Hill's (1987) Interpersonal Orientation Scale - Positive Stimulation Component at Time 1. These items measure Murray's (1938) affiliative need (Mayhew, Gardner, & Ashkanasy, 2010). Items include "I think being close to others, listening to them, and relating to them is one of my favorite and most satisfying pastimes," and "I would find it very satisfying to be able to form new friendships with whomever I liked." Scale endpoints are 1 = strongly disagree and 7 = strongly agree. The scale presented acceptable reliability at Time 1 ($\alpha = 0.89$).

Measures for telecommuters and their direct supervisors. The measures that follow were filled out by the telecommuters and supervisors in the study.

Telecommuting Intensity. Previous research (e.g., Golden, Veiga, & Simsek, 2006), measured telecommuting intensity by asking study participants to respond to the following questions "As a company telecommuter, in a typical week, how many hours do

you spend working remotely?" and "What proportion of an average week do you spend telecommuting?" Golden and colleagues (2006) found these measures to be highly correlated (r = 0.91) and the current research replicated those results (r = 0.86). The current research added to previous research by gathering richer data on telecommuting intensity. Specifically, at Time 1 the current research measured telecommuting intensity by asking telecommuters to write down the number of hours per day of a typical week that they spend at each work location (e.g., office, home office). A composite scale of the three telecommuter measures of telecommuting intensity (standardized) presented acceptable reliability (α = 0.94).

To add to previous research, supervisors were also asked to record telecommuters' work schedule, as was recently suggested by Golden and colleagues (2008). Supervisors answered the following two questions: "In a typical week, how many hours does this employee telecommute?" and "What proportion of an average week does this employee telecommute?" A composite scale of the two supervisor measures of telecommuting intensity (standardized) presented acceptable reliability (α = 0.95).

Leader-Member Exchange. The current study used Scandura and Graen's (1984) LMX-7 scale as recommended by Graen and Uhl-Bien (1995). This seven-item measure includes items such as "How well does your leader recognize your potential?" (1 = extremely ineffective; 5 = extremely effective) and "How well does your leader understand your job problems and needs?" (1 = not at all; 5 = fully). Similar items on the leader scale include "How well do you recognize your subordinate's potential?" and "How well do you understand this subordinate's problems and needs?" Scale reliability

was $\alpha = 0.90$ and $\alpha = 0.92$ for telecommuters at Time 1 and Time 2 respectively; scale reliability was $\alpha = 0.82$ for supervisor reported LMX.

Voluntariness of Telecommuting Relationship. The current study asked both the telecommuter and his or her supervisor to rate to what extent the telecommuting arrangement was voluntary. At Time 1, telecommuters answered the question "How did you start telecommuting in your current job?" Answers included the following options: (1) I applied for a job that involved telecommuting part- or full-time; (2) In my current job, I asked for the option to telecommute; (3) In my current job, I was offered the option to telecommute; (4) My supervisor decided that I would telecommute; (5) My company decided that I would telecommute; and (6) Other, please describe. To make a dichotomous moderator of voluntariness, options 1, 2, and 3 were collapsed to represent voluntary telecommuting and options 4 and 5 were collapsed to represent involuntary telecommuting. As a second check to the voluntariness of the arrangement, telecommuters were asked to "Briefly expand on the question above and describe how you began telecommuting." No responses needed to be recategorized; however, 21 participants chose "Other". Two researchers independently read the explanations provided by the participants who chose "Other" and categorized them into one of the first five categories with perfect agreement on all but one response. The researchers discussed the response and agreed upon the categorization.

Supervisors were asked to answer the same question after it was rephrased to reflect the supervisor role: "How did your direct report start telecommuting in his/her current job?" with similar response options (e.g., He/she applied for a job that involved telecommuting part- or full-time). To make a dichotomous moderator of voluntariness,

options 1, 2, and 3 were collapsed to represent voluntary telecommuting and options 4 and 5 were collapsed to represent involuntary telecommuting. As a second check to the voluntariness of the arrangement, supervisors were asked to "Briefly expand on the question above and describe how you began telecommuting." No responses needed to be recategorized; however, eight supervisors chose "Other". Two researchers independently read the explanations provided by the supervisors who chose "Other" and categorized them into one of the first five categories with perfect agreement.

The majority of participants applied for a job that involved telecommuting (43.5%) followed by the participant requesting the option to telecommuting (24.4%), the participant being offered the option to telecommute (20.3%), the company deciding the participant would telecommute (10.0%), and the supervisor deciding the employee would telecommute (1.8%). Categorized into the dichotomous moderator, 88.2% of participants voluntarily entered into a telecommuting arrangement and 11.8% entered that arrangement involuntarily. Supervisors reported a similar understanding of the voluntariness of the arrangement. According to the supervisors, the majority of telecommuters applied for a job that involved telecommuting (37.0%) followed by the participant requesting the option to telecommuting (26.5%), the participant being offered the option to telecommute (21.0%), the company deciding the participant would telecommute (13.6%), and the supervisor deciding the employee would telecommute (1.9%). Categorized into the dichotomous moderator, 84.4% of participants voluntarily entered into a telecommuting arrangement and 15.6% entered that arrangement involuntarily. It should be noted that due to this imbalanced distribution of voluntariness of the arrangement, caution should be taken when interpreting analyses with this variable.

Additional measure for the telecommuter's direct supervisor. One additional measure was completed by the supervisor.

***Telecommuter performance*.** Supervisors rated their direct report's job performance using three items from Hackman and Oldham's (1976) scale measuring quantity of work, quality of work, and effort put forth. Responses range from 1 = very unsatisfactory to 7 = very satisfactory. The scale presented acceptable reliability (α = 0.89).

CHAPTER 4 – RESULTS

Basic Scale Characteristics

Descriptive statistics and intercorrelations for study variables can be found in Tables 1-6. Most measures have adequate internal consistency (i.e., greater than .70; Nunnally, 1978) with the exception of telecommuter boundary permeability (α = .63). To ensure univariate normality, Kline (1998) suggests a cutoff of an absolute value of 3.0 standard deviations from the mean. All variables were checked for univariate outliers and very few existed (i.e., less than 2% for each variable). The outliers that did exist were positive outliers on telecommuter turnover intent (i.e., high intent to turnover), negative on telecommuter scheduling flexibility and LMX (i.e., poor LMX quality and limited scheduling flexibility), and negative on supervisor-rated performance (i.e., poor performance). No responses were excluded given all responses were plausible (e.g., no ratings were outside the realm of possibility). A test of the influence of the outliers indicated the leverage effects of the outliers were negligible. Specifically, there were no significant differences between the group with the outliers removed and the full sample: turnover intent (M_{diff} = 0.13, SD_{diff} = 1.63; $t(401) = 1.60$, $p > 0.05$, $d = 0.10$), scheduling flexibility (M_{diff} = -0.05, SD_{diff} = 1.29; $t(412) = -0.84$, $p > 0.05$, $d = -0.06$), LMX (M_{diff} = -0.04, SD_{diff} = 1.01; $t(407) = -0.76$, $p > 0.05$, $d = -0.06$), or performance (M_{diff} = -0.09, SD_{diff} = 0.75; $t(232) = -1.59$, $p > 0.05$, $d = 0.15$). Therefore, no outliers were removed.

Although many of the variables were skewed – as typically found in applied settings – the spread of the data were adequate for most variables (see Tables 1, 2, and 3). Standard deviations for the five-point scales ranged from SD = 0.49 (supervisor-rated

LMX) and *SD* = 0.62 (telecommuter-rated boundary permeability) and *SD* = 0.61 (supervisor-rated Performance) to *SD* = 0.96 (telecommuter-rated scheduling flexibility). Standard deviations for the seven-point scales were all above *SD* = 1.0 with the exception of supervisor-rated telecommuter performance which was *SD* = 0.61. The variables with the lowest standard deviations were negatively skewed (i.e., supervisor-rated telecommuter performance *M* = 6.54; supervisor-rated LMX *M* = 4.29; telecommuter-rated LMX *M* = 4.05 at Time 1 and *M* = 3.98 at Time 2). Relationships with these variables were truncated due to restriction in range.

The data were checked for multivariate outliers using Mahalanobis' Distance. In comparison to a critical value of χ^2 (9) = 21.67, $p < .01$, five cases were identified as multivariate outliers. There appeared to be no systematic reasons that these participants were multivariate outliers; therefore, the data were not removed. Additionally, SEM is robust to deviations from normality and the cases should present negligible effects (Schumacker & Lomax, 2004).

Reliability, Test-Retest Stability, and Agreement among Rating Sources

Several study variables were measured multiple times and/or by both the telecommuter and supervisor. Internal consistency, test-retest stability, and agreement were examined for each of these variables: telecommuting intensity, work-life conflict, professional isolation, leader-member exchange, voluntariness of the telecommuting arrangement, and turnover intent.

Telecommuting Intensity. All measures of telecommuting intensity (provided both by telecommuters at Time 1 and supervisors) were significantly correlated (r = 0.71-0.89, $p < .01$; see Table 4). There was no significant difference between

telecommuter and supervisor ratings of percent of time spent telecommuting ($t(248) = -0.91$, $p > .05$; $d = -0.04$; see Table 7). However, there was a slight difference between telecommuter and supervisor ratings of hours spent telecommuting ($t(252) = 2.64$, $p = .01$; $d = 0.11$). This difference, however, did not reach the threshold for a "small" effect size (i.e., $d = 0.20$) according to Cohen (1969). The telecommuter and supervisor composite (standardized) measures of telecommuter intensity were also correlated ($r = 0.81$, $p < .01$; see Table 6) and an analysis of agreement indicated no significant difference ($t(251) = 0.61$, $p > .05$; $d = 0.00$; see Table 7).

Work-Life Conflict. Telecommuter ratings of work-life conflict at Time 1 and Time 2 were correlated ($r = 0.77$, $p < .01$; see Table 6). An analysis of means further indicated stability of ratings between Time 1 and Time 2 ($t(183) = -1.40$, $p > .05$; $d = 0.08$; see Table 8).

Professional Isolation. Telecommuter ratings of professional isolation at Time 1 and Time 2 were correlated ($r = 0.67$, $p < .01$; see Table 6). An analysis of means further indicated stability of ratings between Time 1 and Time 2 ($t(185) = -1.45$, $p > .05$; $d = 0.09$; see Table 8).

Leader-Member Exchange. Telecommuter ratings of LMX at Time 1 and Time 2 were correlated ($r = 0.75$, $p < .01$; see Table 6); however, Time 2 ratings were slightly lower than Time 1 ratings ($t(182) = 2.36$, $p = .02$; $d = 0.10$; see Table 8). This difference, however, did not reach the threshold for a "small" effect size (i.e., $d = 0.20$) according to Cohen (1969).

Researchers suggest LMX should be measured from both supervisor and subordinate perspectives as both perspectives may provide unique insight to the

relationship (Gerstner & Day, 1997; Scandura & Schriesheim, 1994). According to Kenny and colleagues (2006), dyadic agreement should be assessed using the most parsimonious dyadic index possible, which in this case would be similarity of LMX construct ratings (aggregated score not individual items). Supervisor and telecommuter ratings of LMX were correlated ($r = 0.41$; $p < .01$); however, analysis of agreement indicated a significant difference ($t(251) = -3.40$, $p < .01$; $d = 0.28$; see Table 7). On average, telecommuters reported a lower quality LMX relationship ($M = 4.12$, $SD = 0.69$) than did their supervisors ($M = 4.29$, $SD = 0.50$); however, both groups reported high quality relationships.

Voluntariness of Telecommuting Relationship. In the current study, both the telecommuter and the supervisor were asked how the telecommuter entered the telecommuting arrangement. Categorized into the dichotomous moderator, 88.2% ($N = 387$) of participants voluntarily entered into a telecommuting arrangement and 11.8% ($N = 52$) entered that arrangement involuntarily ($M = 1.12$, $SD = 0.32$). Supervisors reported a similar understanding of the voluntariness of the arrangement. Supervisors indicated that 84.4% ($N = 217$) of participants voluntarily entered into a telecommuting arrangement and 15.6% ($N = 40$) entered that arrangement involuntarily ($M = 1.16$, $SD = 0.36$; $r = 0.31$, $p < .01$; see Table 6). Although there was an imbalanced distribution of voluntariness of the arrangement, an analysis of agreement indicated that supervisors and telecommuters agreed on how the telecommuter entered into the arrangement ($t(250) = -0.78$, $p > .05$; $d = 0.06$; see Table 7). Given the insufficient sample size of involuntary telecommuters, voluntariness of the telecommuting relationship was not included in the analysis of the full hypothesized model. In the

original hypothesized model, there were 49 free parameters and 55 distinct values in the covariance matrix; thus, the model was overidentified. In the model with voluntariness removed, there were 39 free parameters and 45 distinct values in the covariance matrix; thus, the model was still overidentified. Although voluntariness was not included in the analysis of the hypotheses, exploratory evidence for this hypothesis was provided by examining correlations between study variables.

Turnover Intent. Telecommuter ratings of turnover intent at Time 1 and Time 2 were correlated (r = 0.84, p < .01; see Table 6). An analysis of means further indicated stability of ratings between Time 1 and Time 2 ($t(185)$ = -0.69, p > .05; d = 0.04; see Table 8).

In summary, all of the telecommuter variables measured at Time 1 and Time 2 were reasonably stable. Further, there were no significant differences (p > .05) in stability on telecommuter variables between the people who indicated there was (11.8%) or was not (88.2%) a significant event that may have influenced his or her responses. Given stability on all of the telecommuter variables measured at Time 1 and Time 2, Time 1 telecommuter data were used with the supervisor data to test the hypothesized structural equation model. Since there was a lack of strong agreement between telecommuters and supervisors on LMX quality, a structural equation model with telecommuter-rated LMX was compared to a model with supervisor-rated LMX. Any difference in the SEM paths could suggest areas for future research.

Data Analysis

The moderated mediation model illustrated in Figure 1 was tested using Structural Equation Modeling (SEM). According to Baron and Kenny (1986), a variable is a

mediator if the following criteria are met: 1) there is a significant relationship between the independent variable (IV) and the dependent variable (DV; e.g., telecommuting intensity and turnover intent), 2) there is a significant relationship between the IV and the mediator (e.g., telecommuting intensity and work-life conflict), 3) the mediator still predicts the DV after controlling for the IV, and 4) the relationship between the IV and the DV is reduced when the mediator is in the equation. Full mediation occurs when the relationship between the IV and DV becomes zero when the mediator is added to the equation. Partial mediation occurs when the relationship between the IV and DV is diminished – but not zero – when the mediator is added to the equation.

There are two primary limitations of Baron and Kenny's (1986) method; the SEM method recommended by Edwards and Lambert (2007) – used in the current study – addresses those limitations. First, because the relationships are estimated with independent regressions, the Baron and Kenny method does not take into account the result of one regression on the other two. Second, the method prescribed by Baron and Kenny does not involve the comparison of the strength of the relationship between the independent variable and the mediator, and the mediator and the outcome variable. Baron and Kenny's method only suggests that there needs to be a significant relationship in both places, but it does not suggest the importance of the relative strength of those relationships.

Therefore, the hypotheses represented in Figure 1 were tested with the more parsimonious and powerful test of mediation explained by Edwards and Lambert (2007). Specifically, the hypotheses were examined as a direct effect and first stage model. The direct *and* indirect effects of the independent variable on the dependent variable were

integrated in a single regression equation. This method algebraically substitutes the direct and indirect effects directly into the regression equation instead of having the three separate equations prescribed by Baron and Kenny (1986). The direct effect is the linear relationship between the IV (e.g., telecommuting intensity) and the DV (e.g., turnover intent); the indirect effect is the relationship between the IV and the DV through the mediated path (e.g., work-life conflict). This more parsimonious and powerful test of mediation explained by Edwards and Lambert (2007) was tested using the structural equation modeling capabilities of the Lavann package in R.

Lavaan in the R environment provides multiple advantages over commercial SEM software, in that it is extremely modular and allows direct access to the SEM code (Rosseel, 2012). Additionally, the Lavaan package has been developed for use in research, academic teaching, and practical usage (Oberski, 2014).

There are five steps to testing a model using SEM: Model Specification, Model Identification, Model Estimation, Model Testing, and Model Modification (Schumacker & Lomax, 2004). Each of these steps is addressed in turn.

The first step, model specification, describes the theory about relationships among the variables. It involves defining the measurement model and structural models by specifying the measurement choices, paths between the observed variables, and design of the structural equations for the model (see Figure 2; Milsap, 2002, p. 262-265). Additionally, testing moderation in SEM involves calculating an interaction term, represented in the equations below as two variables joined by "_X_" (Little, Card, Bovaird, Preacher, & Crandall, 2007; Preacher, Rucker, & Hayes, 2007). The following structural equations simultaneously were used to test the structural model:

(1) WLConflict = TeleIntensity + TeleIntensity_X_Flex + Flex + TeleIntensity_X_BPerm + BPerm + ζ 1

(2) Isolation = TeleIntensity + TeleIntensity_X_NAff + NAff + ζ 2

(3) LMX = TeleIntensity + ζ 3

(4) TOIntent = TeleIntensity + TeleIntensity_X_Flex + Flex + TeleIntensity_X_BPerm + BPerm + WLConflict + TeleIntensity_X_NAff + NAff + Isolation + LMX + ζ 5

(5) Perf = TeleIntensity + TeleIntensity_X_Flex + Flex + TeleIntensity_X_BPerm + BPerm + WLConflict + TeleIntensity_X_NAff + NAff + Isolation + LMX + ζ 6

The second step, model identification, provides information for estimating the parameters in the model. Model identification concerns whether a unique solution can be found given the data and model estimated. Free parameters are compared with the number of elements in the covariance matrix. For a model to be overidentified – the desired outcome – the number of free parameters estimated must be smaller than the number of elements in the matrix analyzed. If the model is underidentified or just identified (fewer or the same number of distinct values in the covariance matrix than free parameters), the model may not converge and its results will be suspect. A count of the free parameters in the model (see Figure 2) reveals 39 free parameters (17 path coefficients, 5 equation disturbance variables, 9 correlations among the independent variables, and 8 independent variables). The number of distinct variables in the identification matrix is calculated with the following equation:

$[\ p\ (p + 1)\ ] / 2$; p = the number of observed variables in the matrix

In the current study, there are 9 observed variables. Therefore, the number of distinct variables in the identification matrix is 45. The current model is overidentified because 45, the number of distinct values in the covariance matrix, is larger than 39, the number of free parameters in the structural model.

The third step and fourth steps in SEM are model estimation – the use of the structural model to estimate path coefficients – and model testing. Research suggests the use of the Satorra-Bentler Maximum Likelihood (ML) method of estimation, rather than other options including GLS and WLS, as it is robust to modest violations of normality. A concern when testing a model where predictors may have shared variance – as is the case in the current study – is that the shared variance may mask or distort other more distal relationships in the model. In other words, the shared variance between two variables could reduce another path coefficient to such a degree that it becomes nonsignificant (Moosbrugger, Schermelleh-Engel, Kelava, & Klein, 2009). This concern was raised due to the frequent use of control variables in research (Breaugh 2006; 2008). Breaugh (2008) illustrated this effect through a discussion of Judge and Cable (2004) which compared height and earnings but controlled for gender, age and weight. Breaugh indicated that by controlling for those variables, the researchers changed the substantive meaning of the construct of interest. Willams, Vendenberg, and Edwards (2009) further cautioned against including control variables in the form of exogenous latent variables in SEM, thus partialling variance from the substantive relationships. For this reason, no variables were included in the SEM that were not of substantive interest. However, it should be noted that SEM permits researchers to test the fit of an entire set of equations

in a single, simultaneous analysis rather that sequentially where results of one equation may influence the next equation (LeBreton, Wu, & Bing, 2009).

To test the model, global fit indices including Chi-Squared Index (χ^2) and degrees of freedom (*df*), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) are used to evaluate fit of the model as a whole as suggested by Hu and Bentler (1999). The Chi-squared difference test measures the significance of the difference between two SEM models in which one of the models is a nested subset of the other (Tabachnick & Fidell, 2007). CFI compares the proposed model fit with a null model with latent variables that are assumed to be uncorrelated – referred to as the "independence model". The Tucker-Lewis index (TLI) compares the chi-squared value of the proposed model to the chi-squared value of the independence model, adjusting for degrees of freedom. RMSEA estimates the lack of fit in a model compared to a perfect (saturated) model. The standardized root mean square residual (SRMR) represents the average difference between the predicted and observed variances and covariances in the model, based on standardized residuals. Good model fit is indicated by meeting the following criteria: $\chi^2/df < 2$, CFI > 0.90, TLI > 0.90, RMSEA < 0.05, SRMR ~ 0 (Hu & Bentler, 1999; Schumacker & Lomax, 2004).

A two-step process was used to test the measurement and structural models hypothesized in Figure 1. The first step evaluated the contributions of the multiple scales to the measurement of the latent constructs. Confirmatory factor analysis was used to assess the construct validity (i.e., the extent to which the survey questions designed to measure a specific factor actually do so). Testing the validity of the measurement model prior to evaluating the structural model ensures that any rejections of the proposed

theoretical model are not due to problems stemming from measurement inadequacies (Schumacker & Lomax, 2004).

The initial measurement model was compared against the null baseline model – where all path estimates are zero or non-existent – by allowing all the latent variables to covary with no specified paths. This null model served as the basis for comparison of goodness of fit indices. Maximum likelihood estimation was performed and the results indicated reasonable model fit (χ^2/df = 1.62, CFI = 0.92, TLI = 0.91, RMSEA = 0.05, SRMR = 0.06; see Table 9 and 10; see Figure 3). Two alternate measurement models with alternate boundary permeability scales were also compared: a measurement model with the two positively worded boundary permeability items and a measurement model with the four negatively worded boundary permeability items. Maximum likelihood estimation was performed and the results indicated that the fit was not substantively improved with the two-item scale (χ^2/df = 1.61, CFI = 0.93, TLI = 0.92, RMSEA = 0.05, SRMR = 0.05) nor the four-item scale (χ^2/df = 1.60, CFI = 0.93, TLI = 0.91, RMSEA = 0.05, SRMR = 0.05; see Table 9; see Figure 3). Therefore, the full six-item boundary permeability scale was used in subsequent analyses.

The second step tested the theorized causation of the structural model. Using Maximum Likelihood to estimate the coefficients between the latent variables, the fit indices showed poor model fit for the full hypothesized model (χ^2/df = 4.45, CFI = 0.47, TLI = 0.45, RMSEA = 0.12, SRMR = 0.11 (see Table 11; see Figure 4). Given the lack of strong agreement between telecommuter- and supervisor-rated LMX, the hypothesized structural model was tested using supervisor-rated LMX; the fit indices showed similarly poor model fit for the full hypothesized model (χ^2/df = 4.42, CFI = 0.47, TLI = 0.45,

RMSEA = 0.12, SRMR = 0.10 (see Table 12). Recall that voluntariness of the telecommuting arrangement was not included in these analyses of the full hypothesized model due to insufficient sample size in the involuntary group. Prior to discussing the final step, model modification, the following section examines the full hypothesized model and addresses each hypothesis in turn.

Hypothesis Testing

Telecommuting Intensity → Psychological Mediators

Hypothesis 1 stated that telecommuting intensity will be negatively related to work-life conflict. To test the hypothesis, the path between telecommuting intensity and work-life conflict was examined for a significant relationship, indicating that those who spend more time telecommuting are less likely to have conflict between their work and life roles. This relationship was in the opposite direction as hypothesized; however, it was non-significant ($\beta = 0.11$, $SE = 0.05$, $p > .05$). Thus Hypothesis 1 was not supported.

Hypothesis 1a stated that scheduling flexibility will moderate the negative relationship between telecommuting intensity and work-life conflict such that employees who have more flexibility will have a stronger negative relationship. To test this hypothesis, scheduling flexibility was centered. Mean-centering is an oft-used technique; however it does not achieve ideal orthogonality of interaction terms (Lance, 1988); therefore, an alternate method of residual centering – recommended by Little and colleagues (2007) for SEM – was used. Residual centering is a two-step process where a product-term is regressed on its first-order effects then the residuals are used to represent the interaction effects. With this method, the new orthoganalized interaction term represents the unique variance of the interaction, which is independent of the first-order

effect variance (Little, Bouviard, & Widaman, 2006). For completeness of the analyses, both residual- and mean-centering results are reported. The path estimate indicated that residual-centered scheduling flexibility did not moderate the relationship between telecommuting intensity and work-life conflict ($\beta = 0.00$, $SE = 0.07$, $p > .05$). Similarly, mean-centered scheduling flexibility did not moderate the relationship ($\beta = 0.01$, $SE = 0.01$, $p > .05$); thus Hypothesis 1a was not supported.

Hypothesis 1b stated that boundary permeability will moderate the negative relationship between telecommuting intensity and work-life conflict such that employees who have more boundary permeability will have a weaker negative relationship. The path estimate indicated that residual-centered boundary permeability – while performing in the hypothesized direction – did not significantly moderate the relationship between telecommuting intensity and work-life conflict ($\beta = 0.12$, $SE = 0.06$, $p > .05$). Similarly, mean-centered boundary permeability did not moderate the relationship ($\beta = 0.14$, $SE = 0.15$, $p > .05$); thus Hypothesis 1b was not supported.

Hypothesis 2 stated that telecommuting intensity will be positively related to professional isolation. To test the hypothesis, the path between telecommuting intensity and professional isolation was examined for a significant relationship indicating that those who spend more time telecommuting are more likely to experience professional isolation. This relationship was found to be significant and in the hypothesized direction ($\beta = 0.23$, $SE = 0.06$, $p < .01$), thus Hypothesis 2 was supported.

Hypothesis 2a stated that need for affiliation will moderate the positive relationship between telecommuting intensity and professional isolation such that employees who have a higher need will have a stronger relationship. The path estimate

indicated that residual-centered need for affiliation – while performing in the hypothesized direction – did not significantly moderate the relationship between telecommuting intensity and professional isolation ($\beta = 0.03$, $SE = 0.06$, $p > .05$). Similarly, mean-centered need for affiliation did not moderate the relationship ($\beta = 0.05$, $SE = 0.03$, $p > .05$); thus Hypothesis 2a was not supported.

Hypothesis 3 stated that telecommuting intensity will be negatively related to telecommuter-rated Leader-Member Exchange (LMX). To test the hypothesis, the path between telecommuting intensity and LMX was examined for a significant relationship, indicating that those who spend more time telecommuting are less likely to have a quality LMX relationship. No relationship was found ($\beta = 0.00$, $SE = 0.04$, $p > .05$), thus Hypothesis 3 was not supported. Given the lack of strong agreement between telecommuters ($M = 4.12$, $SD = 0.69$) and supervisors ($M = 4.29$, $SD = 0.50$) on LMX ratings ($r = 0.41$, $p < .01$), an alternate model using supervisor-rated LMX was tested. The alternate model similarly indicated no significant relationship between telecommuting intensity and LMX ($\beta = 0.02$, $SE = 0.03$, $p > .05$).

Moderating Role of Voluntariness of the Telecommuting Relationship

Hypothesis 4 stated that voluntariness of the telecommuting arrangement will moderate the impact of telecommuting intensity on (a) work–life conflict by accentuating its beneficial effects and on (b) professional isolation and (c) LMX by minimizing its detrimental effects. Voluntariness of the telecommuting arrangement is a dichotomous moderator and therefore can be analyzed using multiple group analysis in the laavan package for R (Rosseel, 2014). Researchers suggest that at least 200 people are needed in each group for multiple group analysis (i.e., voluntary telecommuters and involuntary

telecommuters; Kenny, 2011). In the current study, only 52 telecommuters identified as entering the arrangement involuntarily (11.8%). Therefore, there were not sufficient observations to conduct multiple group analysis. Recall also that this variable was not included in the analysis of all other hypotheses due to insufficient sample size in the involuntary group. The current study does not evaluate the hypotheses, but instead presents results of bivariate correlations as exploratory to encourage future research with this variable.

Compared to the relationship between telecommuting intensity and work-life conflict for the full sample ($r = 0.07$, $p > .05$), the people who entered the telecommuting arrangement voluntarily had a stronger positive relationship ($r = 0.10$, $p > .05$) and the people who entered it involuntarily had a negative relationship ($r = -0.30$, $p < .05$; see Table 13 and 14). This indicates that voluntariness may be a moderator of the relationship. In relation to Hypothesis 4b, compared to the relationship between telecommuting intensity and professional isolation for the full sample ($r = 0.26$, $p < .01$), the people who entered the telecommuting arrangement voluntarily had a relationship of similar strength ($r = 0.25$, $p < .01$) as did the people who entered it involuntarily ($r = 0.27$, $p > .05$). Third, there was no significant difference in relationship between telecommuting intensity and telecommuter-rated LMX for the full sample ($r = 0.06$, $p > .05$) and the people who entered the telecommuting arrangement voluntarily ($r = 0.05$, $p > .05$) or the people who entered the arrangement involuntarily ($r = 0.16$, $p > .05$). Similarly, there was no significant difference in relationship between telecommuting intensity and supervisor-rated LMX for the full sample ($r = -0.02$, $p > .05$) and the people who entered the telecommuting arrangement voluntarily

(r = -0.02, p > .05) or the people who entered the arrangement involuntarily (r = -0.09, p > .05). However, again it should be noted that the sample size for telecommuters in involuntary arrangements was very small compared to that of voluntary arrangements so caution should be taken when interpreting the significance of these relationships. For example, given a larger population of involuntary telecommuters, a significant relationship may be found between telecommuting intensity and LMX (r = 0.16, p > .05).

Telecommuting Intensity ⟶ Individual Outcomes.

Hypothesis 5 stated that telecommuting intensity will be negatively related to turnover intent. To test the hypothesis, the path between telecommuting intensity and turnover intent was examined for a significant relationship which would indicate that those who spend more time telecommuting are less likely to intend to leave their organization. This relationship was in the hypothesized direction but non-significant (β = -0.08, SE = 0.09, p > .05), thus Hypothesis 5 was not supported.

Hypothesis 6 stated that telecommuting intensity will be positively related to performance, as rated by supervisors. To test the hypothesis, the path between telecommuting intensity and performance was examined for a significant relationship indicating that those who spend more time telecommuting are more likely to be receive higher performance ratings by their supervisors. This relationship was in the hypothesized direction but non-significant (β = 0.08, SE = 0.04, p > .05), thus Hypothesis 6 was not supported.

Psychological Mediators ⟶ Individual Outcomes.

Hypothesis 7 stated that work-life conflict will be positively related to (a) turnover intent and negatively related to (b) supervisor-rated performance. To test these

hypotheses, the paths between work-life conflict and both turnover intent and performance were examined. The relationship between work-life conflict and turnover intent was in the hypothesized direction and significant (β = 0.31, *SE* = 0.12, $p < .01$), thus Hypothesis 7a was supported. The relationship between work-life conflict and supervisor-rated performance was in the opposite direction as hypothesized; however, it was non-significant (β = 0.11, *SE* = 0.06, $p > .05$), thus Hypothesis 7b was not supported.

Hypothesis 8 stated that professional isolation will be positively related to (a) turnover intent and negatively related to (b) supervisor-rated performance. To test these hypotheses, the paths between professional isolation and both turnover intent and performance were examined. The relationship between professional isolation and turnover intent was in the hypothesized direction and significant (β = 0.18, *SE* = 0.10, $p < .01$), thus Hypothesis 8a was supported. The relationship between professional isolation and supervisor-rated performance was in the hypothesized direction; however, it was non-significant (β = -0.12, *SE* = 0.05, $p > .05$), thus Hypothesis 8b was not supported.

Hypothesis 9 stated that leader-member exchange will be negatively related to (a) turnover intent and positively related to (b) supervisor-rated performance. To test these hypotheses, the paths between leader-member exchange and both turnover intent and performance were examined. The relationship between leader-member exchange and turnover intent was in the hypothesized direction and significant (β = -0.36, *SE* = 0.16, $p < .01$), thus Hypothesis 9a was supported. The relationship between leader-member exchange and supervisor-rated performance was in the hypothesized direction and significant (β = 0.35, *SE* = 0.08, $p < .01$), thus Hypothesis 9b was supported.

Given the lack of strong agreement between telecommuters (M = 4.12, SD = 0.69) and supervisors (M = 4.29, SD = 0.50) on LMX ratings, an alternate model using supervisor-rated LMX was tested. The relationship between supervisor-rated LMX and turnover intent was significant, albeit somewhat weaker (β = -0.15, SE = 0.22, $p < .01$), thus providing further support for Hypothesis 9a. The relationship between supervisor-rated LMX and performance was also significant and somewhat stronger (β = 0.65, SE = 0.12, $p < .01$), thus providing further support for Hypothesis 9b.

Telecommuting Intensity ⟶ Psychological Mediators ⟶ Individual Outcomes.

Hypothesis 10 stated that the relationships between telecommuting intensity and (a) turnover intent and (b) supervisor-rated performance will be partially mediated by work-life conflict. In order for partial mediation to be present, the following three paths must be significant: 1) telecommuting intensity and turnover intent or performance, 2) telecommuting intensity and work-life conflict and 3) work-life conflict and turnover intent or performance. Although there was a significant relationship between work-life conflict and turnover intent (β = 0.31, SE = 0.12, $p < .05$), given there was no significant relationship between telecommuting intensity and turnover intent (β = -0.08, SE = 0.09, $p > .05$) or telecommuting intensity and work-life conflict (β = 0.11, SE = 0.05, $p > .05$), there was no partial mediation. Thus, Hypothesis 10a was not supported.

Further, given there was no significant relationship between telecommuting intensity and performance (β = 0.08, SE = 0.04, $p > .05$), telecommuting intensity and work-life conflict (β = 0.11, SE = 0.05, $p > .05$), and work-life conflict and performance

(β = 0.11, *SE* = 0.06, $p > .05$), there was no partial mediation. Thus, Hypothesis 10b was not supported.

Hypothesis 11 stated that the relationships between telecommuting intensity and (a) turnover intent and (b) supervisor-rated performance will be partially mediated by professional isolation. In order for partial mediation to be present, the following three paths must be significant: 1) telecommuting intensity and turnover intent or performance, 2) telecommuting intensity and professional isolation and 3) professional isolation and turnover intent or performance. Given the path between telecommuting intensity and turnover intent (β = -0.08, *SE* = 0.09, $p > .05$) was not significant there was no partial mediation. Thus, Hypothesis 11a was not supported. However, although there was no partial mediation, the path between telecommuting intensity and professional isolation was significant (β = 0.23, *SE* = 0.06, $p < .01$) and the path between professional isolation and turnover intent was significant (β = 0.18, *SE* = 0.10, $p < .01$), thus indicating that professional isolation fully mediated the relationship between telecommuting intensity and turnover intent.

Although the relationship between telecommuting intensity and professional isolation was significant (β = 0.23, *SE* = 0.06, $p < .01$), given there was no significant relationship between telecommuting intensity and performance (β = 0.08, *SE* = 0.04, $p > .05$) or between professional isolation and performance (β = -0.12, *SE* = 0.05, $p > .05$), there was no partial mediation. Thus, Hypothesis 11b was not supported.

Hypothesis 12 stated that the relationships between telecommuting intensity and (a) turnover intent and (b) supervisor-rated performance will be partially mediated by Leader-Member Exchange. In order for partial mediation to be present, the following

three paths must be significant: 1) telecommuting intensity and turnover intent or performance, 2) telecommuting intensity and Leader-Member Exchange and 3) Leader-Member Exchange and turnover intent or performance. Although there was a significant relationship between Leader-Member Exchange and turnover intent (β = -0.36, SE = 0.16, $p < .05$), given there was no significant relationship between telecommuting intensity and turnover intent (β = -0.08, SE = 0.09, $p > .05$) or telecommuting intensity and Leader-Member Exchange (β = 0.00, SE = 0.04, $p > .05$), there was no partial mediation. Thus, Hypothesis 12a was not supported. Given the lack of strong agreement between telecommuters (M = 4.12, SD = 0.69) and supervisors (M = 4.29, SD = 0.50) on LMX ratings, an alternate model using supervisor-rated LMX was tested. This model explained similar relationships: there was a significant relationship between Leader-Member Exchange and turnover intent (β = -0.15, SE = 0.22, $p < .01$), no significant relationship between telecommuting intensity and turnover intent (β = -0.08, SE = 0.09, $p > .05$), and no significant relationship between telecommuting intensity and Leader-Member Exchange (β = 0.02, SE = 0.03, $p > .05$). Thus, the supervisor-rated LMX model provided further lack of support for Hypothesis 12a.

Hypothesis 12b stated that the relationships between telecommuting intensity and supervisor-rated performance will be partially mediated by Leader-Member Exchange. Although there was a significant relationship between Leader-Member Exchange and performance (β = 0.35, SE = 0.08, $p < .01$), given there was no significant relationship between telecommuting intensity and performance (β = 0.08, SE = 0.04, $p > .05$) or telecommuting intensity and Leader-Member Exchange (β = 0.00, SE = 0.04, $p > .05$), there was no partial mediation. Thus, Hypothesis 12b was not supported. Given the lack

of strong agreement between telecommuters (M = 4.12, SD = 0.69) and supervisors (M = 4.29, SD = 0.50) on LMX ratings, an alternate model using supervisor-rated LMX was tested. This model explained similar relationships: there was a significant relationship between Leader-Member Exchange and performance (β = 0.65, SE = 0.12, $p < .01$), no significant relationship between telecommuting intensity and performance (β = 0.06, SE = 0.04, $p > .05$), and no significant relationship between telecommuting intensity and Leader-Member Exchange (β = 0.02, SE = 0.03, $p > .05$). Thus, the supervisor-rated LMX model provided further lack of support for Hypothesis 12b.

Model Modification and Exploratory Analyses

After completing the first four steps of testing a structural equation model – model specification, model identification, model estimation, and model testing – the final step to be completed is model modification (Schumacker & Lomax, 2004). This step allows for revisions to the model based on the model testing conducted in the previous step. Model modification involves estimating and testing alternate models and evaluating them by examining Modification Indices (MI). Given the full hypothesized model showed poor model fit, variables were removed in an iterative process until satisfactory model fit was achieved. First, the moderator Boundary Permeability was removed, which improved fit (χ^2/df = 4.49, CFI = 0.62, TLI = 0.60, RMSEA = 0.12, SRMR = 0.09; see Table 11). Reasonable fit was not achieved, so second, the moderator Scheduling Flexibility was removed which slightly improved fit (χ^2/df = 4.64, CFI = 0.66, TLI = 0.64, RMSEA = 0.12, SRMR = 0.10). Reasonable fit was still not achieved, so third, the moderator Need for Affiliation was removed which resulted in reasonable model fit (χ^2/df = 2.15, CFI = 0.92, TLI = 0.91, RMSEA = 0.07, SRMR = 0.12).

Therefore, this Model 4 was the most parsimonious, statistically well-fitting, and theoretically meaningful model (see Figure 5; significant path estimates are bolded).

The data showed a significant relationship between professional isolation and LMX for both telecommuter-rated LMX (r = -0.22, p < .01) and supervisor-rated LMX (r = -0.18, p < .01). Therefore, an exploratory analysis was conducted to determine whether LMX mediated the relationship between professional isolation and supervisor-rated performance. Recall that professional isolation had a negative but non-significant relationship with supervisor-rated performance (β = -0.12, SE = 0.05, p > .05) and LMX was positively related to supervisor-rated performance for both telecommuter-rated LMX (β = 0.35, SE = 0.08, p < .01) and supervisor-rated LMX (β = 0.65, SE = 0.12, p < .01). A path was added from professional isolation to LMX in the full hypothesized SEM model (Model 1; see Figure 1). In this exploratory model, professional isolation was not significantly related to performance (β = -0.11,SE = 0.05, p > .05), employee- and supervisor-rated LMX were related to supervisor-rated performance (β = 0.35, SE = 0.08, p < .01; β = 0.65, SE = 0.12, p < .01), and professional isolation was significantly related to LMX for both telecommuter-rated LMX (β = -0.27, SE = 0.05, p < .01) and supervisor-rated LMX (β = -0.23, SE = 0.04, p < .01).

An exploratory analysis was conducted to test the non-partialed relationships amongst the variables for only those telecommuters who described themselves as individual contributors (65%). As compared to the full sample surveyed (i.e., individual contributors, team leaders, department leaders, and senior leader/executives), telecommuters who were individual contributors (N = 290) had a weaker relationship between voluntariness of the telecommuting arrangement and need for affiliation

(r = 0.09, p > 0.05) than did the full sample (r = 0.12, p < .05; see Table 6 and Table 15). Telecommuters who were individual contributors had a stronger relationship between professional isolation and boundary permeability (r = 0.13, p < .05) than did the full sample (r = 0.00, p > 0.05). Telecommuters who were individual contributors had weaker relationships between LMX and boundary permeability (r = 0.09, p > 0.05), work-life conflict (r = -0.25, p < .01), and professional isolation (r = 0.18, p < .01) as compared to the full sample (r = 0.12, p < .05; r = -0.29, p < .01; r = 0.22, p < .01). Telecommuters who were individual contributors also had a weaker relationship between turnover intent and work-life conflict (r = 0.33, p < .01) than did the full sample (r = 0.38, p < .01). In sum, although there were some differences between individual contributors and the full sample, few differences were very large.

An additional exploratory analysis was conducted to test the non-partialed relationships amongst the variables for only those telecommuters who described themselves as full-time telecommuters (48%), telecommuting 100% of the workweek. As compared to the full sample surveyed, full-time telecommuters (N = 213) had a stronger relationship between voluntariness of the telecommuting arrangement and need for affiliation (r = 0.16, p < .05) than did the full sample (r = 0.12, p < .05; see Table 6 and Table 16). Full-time telecommuters had a weaker relationship between voluntariness of the telecommuting arrangement and work-life conflict (r = -0.01, p > 0.05) than did the full sample (r = 0.08, p > 0.05). Full-time telecommuters had a weaker relationship between scheduling flexibility and LMX (r = 0.10, p > 0.05) and turnover intent (r = -0.10, p > 0.05) as compared to the full sample (r = 0.21, p < .01; r = -0.17, p > 0.05). Full-time telecommuters had a stronger relationship between need for

affiliation and turnover intent (r = 0.12, p > .05) as compared to the full sample (r = 0.00, p > 0.05). Full-time telecommuters had a stronger relationship between professional isolation and turnover intent (r = 0.44, p < .01) as compared to the full sample (r = 0.25, p < .01).

CHAPTER 5 – DISCUSSION

The current research adds to the literature by providing insight into the relationship between telecommuting intensity and individual outcomes with a discussion of moderating and mediating mechanisms. Specifically, results of this study provided insight into the understanding of how telecommuting intensity relates to turnover intent and supervisor-rated performance through mediating mechanisms of work-life conflict, professional isolation, and Leader-Member Exchange. In other words, the current study addressed the question "how do the individual consequences of telecommuting come about?"

A Discussion of the Tests of the Hypotheses[2]

Telecommuting Intensity ⟶ Psychological Mediators

Hypothesis 1. The results of Hypothesis 1 extended research by Golden, Veiga, and Simsek (2006) on the relationship between work-life conflict (instead of work-family conflict) and telecommuting with further examination of moderators – including scheduling flexibility and boundary permeability – that might affect the relationship. Contrary to expectations, the current study found that telecommuting intensity was not significantly related work-life conflict. Further, whereas Golden and colleagues found a significant negative relationship (r = -0.27, p < .01) between work-family conflict and telecommuting intensity, the current research found a positive and non-significant

[2] Given the complexity of the results, this section included a number of statistical findings to simplify the discussion of results. Correlations were discussed in addition to path estimates for ease of comparison with relevant previous research.

relationship (r = 0.07, p >.05) and non-significant path estimate (β = 0.11, SE = 0.05, p > .05) between work-life conflict and telecommuting intensity.

This discrepancy could be due to the current study measuring work-life conflict rather than work-family conflict. Perhaps telecommuting does not offer the same benefits for managing all life activities that it does for managing family responsibilities. Another potential explanation is that the relationship between telecommuting intensity and work-life conflict may be changing. With more recent advances in handheld technology that make it easier to access work emails and tasks remotely, telecommuting may no longer be unique in affording the advantage of remote work to solving work-life conflict challenges. Alternatively, and somewhat less likely, there could be a sample difference between the current study and Golden and colleagues (2006). For example the current study found a correlation of (r = -0.30, p < .01) between telecommuting intensity and work-life conflict for involuntary telecommuters. Golden and colleagues did not ask their participants whether they entered the relationship voluntarily, so if many of their participants involuntarily entered the arrangement, this may explain the different findings. However, the current study had a very small number of involuntary telecommuters, so caution should be taken when interpreting the results.

Hypothesis 1a examined scheduling flexibility as a potential moderator of the relationship between telecommuting intensity and work-life conflict. Contrary to the hypothesis, results indicated scheduling flexibility did not moderate the relationship (β = 0.00, SE = 0.07, p > .05). Further, scheduling flexibility was not significantly related to telecommuting intensity (r = 0.06, p > .05) or work-life conflict (r = -0.08, p > .05). A few possible explanations exist for this finding. Although the theoretical

argument seems intuitive that telecommuters who have more flexibility will be better able to reduce work-life conflict, previous research provides limited support. For example, Golden, Veiga, and Simsek (2006) found only small correlations between scheduling flexibility and telecommuting intensity ($r = 0.03$, $p > .05$) and between scheduling flexibility and work-family conflict ($r = 0.09$, $p < .05$). Their conclusion that scheduling flexibility moderates this relationship may also be attributed – at least in part – to the statistical methods utilized; a dichotomized moderator and hierarchical stepwise regression have limitations that SEM does not; SEM is able to simultaneously estimate relationships amongst the variables. However, it should be noted that similar to previous research, telecommuters reported – on average – fairly high scheduling flexibility ($M = 3.94$, $SD = 0.96$); the lack of variance could have restricted the discovery of a significant relationship.

The current research also failed to provide support for Hypothesis 1b; boundary permeability did not moderate the relationship between telecommuting intensity and work-life conflict ($\beta = 0.12$, $SE = 0.06$, $p > .05$). Further, boundary permeability was not significantly related to telecommuting intensity ($r = 0.01$, $p > .05$) or work-life conflict ($r = 0.02$, $p > .05$). Telecommuting may result in a blurring of work-life boundaries (Desrochers, Hilton, & Larwood, 2005), but it appears that, at least for participants in this study, the effect of this boundary permeability is minimal. In sum, there was no evidence linking telecommuting intensity to work-life conflict or indicating that boundary permeability or scheduling flexibility moderated that relationship.

Hypothesis 2. The current study answered a call by Cooper and Kurland (2002) and Golden, Veiga, and Dino (2008) for further research on the positive relationship

between telecommuting and professional isolation. There is limited research with professional isolation in the telecommuting population; however, the current study found very different results between the variables than did previous research. Previous research found only a weak, non-significant relationship between telecommuting intensity and professional isolation ($r = 0.04$; Golden, Veiga, and Dino, 2008) whereas the current study found a significant positive path estimate ($\beta = 0.23$, $SE = 0.06$, $p < .01$) and strong positive correlation ($r = 0.26$, $p < .01$). Further, telecommuters – on average – reported fairly low professional isolation ($M = 2.18$; $SD = 0.84$); thus, if more people felt professionally isolated, the relationship might have been even stronger.

Limited explanations on this relationship were provided in previous research, but one potential explanation could be a result of different samples. One advantage of the current study was that it included a telecommuter sample with a wider range of time spent telecommuting; most previous research was conducted with employees who telecommuted part-time or it categorized telecommuting intensity as a dichotomous variable (e.g., Gajendran & Harrison, 2007). The current study measured intensity as a continuous variable and nearly half of the current sample were full-time telecommuters. Thus, it is likely that as employees telecommute with greater frequency, they more greatly miss the social interaction of informal chats, spontaneous discussions, sharing of experiences, meetings around the water cooler, and news through the company grapevine (Cooper & Kurland, 2002; Kurland & Bailey, 1999). Recall, however, that although there was a strong positive correlation between telecommuting intensity and professional isolation, the professional isolation experienced by the sample was on average low.

Hypothesis 2a examined need for affiliation as a potential moderator of the relationship between telecommuting intensity and professional isolation. Contrary to the hypothesis, results indicated need for affiliation did not moderate the relationship ($\beta = 0.03$, $SE = 0.06$, $p > .05$). Further, need for affiliation was not significantly related to telecommuting intensity ($r = 0.00$, $p > .05$); however, it was significantly positively related to professional isolation ($r = 0.26$, $p < .01$). These results support the theory that people who are higher in need for affiliation may be more likely to experience professional isolation than those lower in the need (Wagner, 2004). It appears though that a higher intensity of telecommuting is not linked to this relationship. Simply put, although employees who thrive on interpersonal relationships are more likely to feel professionally isolated, the extent to which they telecommute does not accentuate this relationship.

Hypothesis 3. Hypothesis 3 suggested that telecommuting intensity would be negatively related to Leader-Member Exchange (LMX). The non-significant path estimate in the SEM model indicated that there was no significant relationship between telecommuting and LMX, thus failing to support Hypothesis 3. Further, although there was a lack of strong agreement between telecommuters ($M = 4.12$, $SD = 0.69$) and supervisors ($M = 4.29$, $SD = 0.50$) on LMX ratings ($r = 0.41$, $p < .01$), the results of the hypothesis tests were the same for both groups. It should be noted though that telecommuters and supervisors reported – on average – fairly high LMX; the lack of variance could have restricted the discovery of a significant relationship. Little research has been conducted on LMX in the telecommuting environment (Golden & Veiga, 2008); however, researchers have suggested that without face-to-face interactions,

telecommuters and their managers may struggle to generate the warmth, liking, and trust inherent in high-quality LMX relationships (Dienesch & Liden, 1986). One potential reason for the findings in the current study is that the supervisor himself or herself may telecommute and thus not have many opportunities for face-to-face interactions with any employees; thus, the relationship with this particular telecommuter is not adversely affected by the lack of face-to-face communication. Regardless of the reason, the results of the current study provide a favorable picture indicating that the supervisor-telecommuter relationship does not suffer based on the less frequent face-to-face interactions implicit in the telecommuting arrangement.

Moderating Role of Voluntariness of the Telecommuting Relationship

Hypothesis 4 attempted to answer a call by Gajendran and Harrison (2007) for research on the voluntariness of the telecommuting arrangement. In other words, how much does it affect the relationships when an employee is told he/she must telecommute? Unfortunately, in the current study, only 11.8% (N = 52) of the telecommuter sample indicated they entered the relationship involuntarily, so there was insufficient sample size to run and interpret the results of the SEM with confidence. The trends in the data indicate that voluntary telecommuters may have a stronger positive relationship between telecommuting intensity and work-life conflict (Hypothesis 4a). Specifically, compared to the relationship between telecommuting intensity and work-life conflict for the full sample (r = .07, p > .05), the people who entered the telecommuting arrangement voluntarily had a stronger positive relationship (r = 0.10, p > .05) and the people who entered it involuntarily had a significant negative relationship (r = -0.30, p < .05). These results are surprising given one could argue that if the telecommuter chose to enter into

the arrangement, he or she may be better prepared to realize the benefits of one of the most oft-cited favorable outcomes of telecommuting – reduced work-life conflict (e.g., Golden, Veiga, & Simsek, 2006); however the results suggest the opposite. One potential explanation is that the telecommuters who entered the relationship involuntarily were more likely to telecommute full-time (55.1%) as compared to voluntary telecommuters (49.6%); thus, they may have made a greater effort to separate work and life responsibilities.

In relation to Hypothesis 4b, compared to the relationship between telecommuting intensity and professional isolation for the full sample ($r = 0.26$, $p < .01$), the people who entered the telecommuting arrangement voluntarily had a relationship of similar strength ($r = 0.25$, $p < .01$) as did the people who entered it involuntarily ($r = 0.27$, $p > .05$). Thus, there is no reason to suggest that voluntariness may moderate the relationship. In other words, these results suggest that employees who telecommute more frequently likely experience greater professional isolation regardless of whether they voluntarily entered the arrangement.

In relation to Hypothesis 4c, there was no significant difference in relationship between telecommuting intensity and telecommuter-rated LMX for the full sample ($r = 0.06$, $p > .05$) and the people who entered the telecommuting arrangement voluntarily ($r = 0.05$, $p > .05$) or the people who entered the arrangement involuntarily ($r = 0.16$, $p > .05$). Similarly, there was no significant difference in relationship between telecommuting intensity and supervisor-rated LMX for the full sample ($r = -0.02$, $p > .05$) and the people who entered the telecommuting arrangement voluntarily ($r = -0.02$, $p > .05$) or the people who entered the arrangement involuntarily ($r = -0.09$,

$p > .05$). Thus, there is no reason to suggest that voluntariness may moderate the relationship. However, given a larger sample of involuntary telecommuters, a significant relationship may be found between telecommuting intensity and both telecommuter- and supervisor-rated LMX. Further, LMX ratings were quite high on average, so results were truncated. In sum, although the hypotheses could not be examined through multiple group analysis due to insufficient sample size of involuntary telecommuters, the data provided trends that should be examined in future research with a larger sample of involuntary telecommuters.

Telecommuting Intensity ⟶ Individual Outcomes.

Hypothesis 5 replicated previous research and determined that the relationship between telecommuting intensity and turnover intent was as weak as previously suggested. Although the path estimate in the SEM was insignificant ($\beta = -0.08$, $SE = 0.09$, $p > .05$), the correlation in the current study ($r = -0.06$) was similar – albeit a bit weaker – than previous research ($\rho = -0.10$; Gajendran & Harrison, 2007). However, as previous researchers have mentioned (e.g., Rhoades & Eisenberger, 2002**)**, turnover is very costly to organizations and thus any insight into why people voluntarily exit is important. Further, telecommuters – on average – reported fairly low turnover intent ($M = 1.98$; $SD = 1.30$); thus, if more people intended to leave the organization, the relationship might have been stronger.

Hypothesis 6 answered a call by Martínez-Sánchez and colleagues (2008) for research on individual telecommuter performance instead of performance at the organizational level where most research has been conducted (e.g., Martin & MacDonnell, 2013). The current study measured supervisor-rated performance rather

than self-rated performance (Chan, 2009). The current research also added to previous research by examining a telecommuter sample with a wider range of time spent telecommuting; most previous research was conducted with employees who telecommuted part-time (Gajendran & Harrison, 2007). Previous meta-analytic results suggested a positive relationship between telecommuting and supervisor-rated performance (ρ = 0.19; Gajendran & Harrison, 2007; ρ = 0.23; Martin & MacDonnell, 2012); however, the current research found only a weak, non-significant relationship both in the SEM path estimates (β = 0.08, *SE* = 0.04, $p > .05$) and in the bivariate correlation (r = 0.04, $p > .05$).

These results were similar whether the employee telecommuted full- or part-time. Nearly half of the current sample were full-time telecommuters, and results from the current study indicate that full-time telecommuters had a similar performance ratings (*M* = 6.55, *SD* = 0.60) to the full sample of telecommuters (*M* = 6.54, *SD* = 0.61) and a similar relationship between telecommuting intensity and performance (r = 0.03, $p > .05$). One explanation for the lack of significance could be that performance ratings were quite high on average, so results were truncated. Another potential explanation of the difference is that in previous research, performance was often operationalized as assignment completion or assessments of productivity (e.g., Gajendran & Harrison, 2007) whereas the current study measured performance as a combination of productivity (i.e., quantity of work), quality of work, and effort put forth (Hackman & Oldham, 1976).

Psychological Mediators → Individual Outcomes.

Hypothesis 7. This hypothesis replicated and extended previous research on the relationship between work-life conflict (e.g., Kossek & Ozeki, 1999; Allen, Herst, Bruck,

& Sutton, 2000) and turnover intent and supervisor-rated performance through an examination of these relationships in the telecommuter population. There was support for Hypothesis 7a, indicating a significant positive relationship between work-life conflict and turnover intent ($\beta = 0.31$, $SE = 0.12$, $p < .01$). Further, the relationship between work-life conflict and turnover intent ($r = 0.38$, $p < .01$) was even stronger than previous research on work-family conflict and turnover intent ($\rho = 0.29$ to $\rho = 0.32$; Allen, Herst, Bruck, & Sutton, 2000; Kossek & Ozeki, 1999). This strong relationship, which is based on self-report data gathered at one point in time, is unsurprising given that this area of research is often explained based on a depletion argument where people's resources are finite (Edwards & Rothbard, 2000). Thus, by expanding the work-family definition to work-life conflict, there is a greater possibility to capture resources spent outside of the work domain that may be related to increased turnover intent.

Although there was a strong relationship between work-life conflict and turnover intent, there was no significant relationship between work-life conflict and supervisor-rated performance ($\beta = 0.11$, $SE = 0.06$, $p > .05$; $r = -0.01$, $p > .05$), thus failing to support Hypothesis 7b. Previous research has presented mixed findings on the relationship between work-family conflict and performance ($p = -0.03$ to -0.19; Kossek & Ozeki, 1999; Hoobler, Hu, & Wilson, 2010). Researchers have suggested that work-family conflict may influence extra-role behavior but not in-role performance; it is likely that those results are replicated here. Again, it is noted that most of the performance ratings were either a 6 or 7 on a 1-7 scale, thus truncating the results.

Hypothesis 8. This hypothesis replicated and extended previous research on the relationship between professional isolation (e.g., Hester-Smith, 2010; Golden, Veiga, &

Dino, 2008) and turnover intent and supervisor-rated performance through an examination of these relationships in the telecommuter population. The current study found a very different relationship between professional isolation and turnover intent than has been cited in previous research. The current study found a strong positive relationship ($\beta = 0.18$, $SE = 0.10$, $p < .01$; $r = 0.25$, $p < .01$) whereas previous research found a strong negative correlation ($r = -0.28$, $p < .01$; Golden, Veiga, and Dino, 2008).

Golden and colleagues mentioned they were surprised by their results and suggested that perhaps as a consequence of increased professional isolation, telecommuters might have decreased confidence in their skills and ability to find another job. The results from the current study support Hypothesis 8a – and the hypothesis originally put forth by Golden and colleagues – that professional isolation is positively related to turnover intent. Further, both professional isolation and turnover intent had low average ratings, so the study results may have been even stronger if a higher number of people felt more isolated or intended to leave their organizations. This relationship is likely due to telecommuters' decreased feelings of belonging and interpersonal relationships (Duffy, Ganster, & Pagon, 2002).

The path estimate for the relationship between professional isolation and supervisor-rated performance was non-significant ($\beta = -0.12$, $SE = 0.05$, $p > .05$), thus failing to support Hypothesis 8b. However, the correlation between the two variables was significant ($r = -0.14$, $p < .05$). This relationship is similar to that found in previous research previous research ($r = -0.13$, $p < .05$; Golden, Veiga, and Dino, 2008). Although this may seem like a modest relationship, given the low average level of professional isolation, high average level of performance, and data from two sources, it is a

meaningful relationship. Further, one potential explanation for the lack of a stronger relationship between professional isolation and supervisor-rated performance is the influence of a mediating variable. Perhaps the telecommuter's relationship with his or her supervisor mediates whether increased professional isolation is linked to decreased performance. This potential relationship is discussed further in the exploratory analyses section.

Hypothesis 9. This hypothesis replicated and extended previous research on the relationship between Leader-Member Exchange (e.g., Gerstner & Day, 1997) and turnover intent and supervisor-rated performance through an examination of these relationships in the telecommuter population. As hypothesized, there were significant relationships for both supervisor-rated LMX and telecommuter-rated LMX with turnover intent and supervisor-rated performance. Specifically, Hypothesis 9a was supported, indicating that turnover intent was related to both telecommuter-rated LMX (β = -0.36, *SE* = 0.16, $p < .01$; r = -0.45, $p < .01$) and supervisor-rated LMX (β = -0.15, *SE* = 0.22, $p < .01$; r = -0.16, $p < .05$). These results are similar to previous research that reported a ρ = -0.31 relationship between LMX and turnover intentions (Gerstner & Day, 1997). One potential reason for the difference in the magnitude of the relationships between telecommuter and supervisor reports is that turnover intent and telecommuter-rated LMX were rated by the same source. However, it should also be noted that turnover intent had a low average and LMX had a high average; thus, the current study may have found stronger results if more people intended to turnover or had a lower quality LMX relationship.

Hypothesis 9b was also supported, indicating that supervisor-rated performance was related to both telecommuter-rated LMX ($\beta = 0.35$, $SE = 0.08$, $p < .01$; $r = 0.30$, $p < .01$) and supervisor-rated LMX ($\beta = 0.65$, $SE = 0.12$, $p < .01$; $r = 0.51$, $p < .01$). These results are very similar in magnitude to previous research with non-telecommuter samples; Gerstner and Day (1997) found that leader-reported LMX ($\rho = 0.57$) and member-reported LMX ($\rho = 0.30$) are both related to supervisor ratings of performance. Further, researchers suggested that employees who feel benefits including support, trust, and respect are more likely to feel a need to reciprocate with favorable performance (Wang, Law, Hackett, Wang, & Chen, 2005).

Telecommuting Intensity → Psychological Mediators → Individual Outcomes.

Hypothesis 10 proposed that work-life conflict would mediate the relationship between telecommuting intensity and both turnover intent (Hypothesis 10a) and supervisor-rated performance (Hypothesis 10b). Given there was no significant relationship between telecommuting intensity and work-life conflict (Hypothesis 1), telecommuting intensity and turnover intent (Hypothesis 5), or telecommuting intensity and performance (Hypothesis 6), there was no relationship to mediate, thus Hypotheses 10a and 10b were not supported. The relationship between work-life conflict and turnover intent was strong; however, there was no significant relationship between telecommuting intensity and work-life conflict or telecommuting intensity and either turnover intent or supervisor-rated performance, both of which were prone to range restriction.

Hypothesis 11. Hypothesis 11a was not supported as professional isolation did not partially mediate the relationship between telecommuting intensity and turnover intent; instead, evidence suggested that professional isolation fully mediated that relationship. Recall that the respective relationships for these variables were: telecommuting intensity and turnover intent (β = -0.08, *SE* = 0.09, $p > .05$; r = -0.06, $p > 0.05$), telecommuting intensity and professional isolation (β = 0.23, *SE* = 0.06, $p < .01$; r = 0.26, $p < .01$), and professional isolation and turnover intent (β = 0.18, *SE* = 0.10, $p < .01$; r = 0.25, $p < .01$). Together the path estimates and correlations indicate that although the relationship between telecommuting intensity and turnover intent was not strong, the variance that was presented was mediated by professional isolation. Previous research provided evidence for a relationship between telecommuting intensity and professional isolation (e.g., Cooper & Kurland, 2002), between telecommuting intensity and turnover intent (e.g., Gajendran & Harrison, 2007), and between professional isolation and individual outcomes (e.g., Golden, Veiga, & Dino, 2008). However, previous research had not examined these relationships simultaneously through SEM thus finding that professional isolation fully mediates the relationship. This was an important initial finding as it indicated that professional isolation strongly linked to whether or not telecommuters plan to leave their organizations.

Although professional isolation fully mediated the relationship between telecommuting intensity and turnover intent, it did not partially or fully mediate the relationship between telecommuting intensity and supervisor-rated performance, thus failing to support Hypothesis 11b. Further, although there was a significant relationship between telecommuting intensity and professional isolation (Hypothesis 2), given there

was no significant relationship between telecommuting intensity and performance (Hypothesis 6) or between professional isolation and supervisor-rated performance (Hypothesis 8b), no mediation was present, thus Hypothesis 11b was not supported. However, if there had been a lower average performance rating across the sample – and thus more variance – there is a possibility that Hypothesis 8b would have been supported and thus there could have been a full mediation similar to Hypothesis 11a.

Hypothesis 12. This hypothesis attempted to expand the research by Golden (2006) on the relationship between Leader-Member Exchange (LMX) quality and telecommuter satisfaction by including an evaluation of the relationship between LMX quality and both telecommuter turnover intent and supervisor-rated performance. Given there was no significant relationship between telecommuting intensity and LMX (Hypothesis 3) or between telecommuting intensity and turnover intent (Hypothesis 5) or supervisor-rated performance (Hypothesis 6), LMX did not mediate a relationship between telecommuting intensity and turnover intent or supervisor-rated performance. The relationships between telecommuter-rated and supervisor-rated LMX and both outcomes were strong; however, there was no meaningful relationship between telecommuting intensity and either telecommuter-rated or supervisor-rated LMX.

A Discussion of the Model Modification and Exploratory Analyses

Before discussing the limitations and practical implications of the current study, there are a few exploratory findings worth mentioning. First, as mentioned in previous discussions of Hypotheses 1a, 1b, and 2a, none of the individual differences in the study moderated the hypothesized relationships. Therefore, they were iteratively removed from the SEM until the best fitting model was identified – a model with all moderators

removed. Refer to discussions of Hypotheses 1a, 1b, and 2a for potential explanations regarding why these variables did not moderate the hypothesized relationships.

An exploratory analysis was conducted to determine if a telecommuter's LMX relationship with his or her supervisor was related to his or her feelings of professional isolation and if LMX mediated the relationship between professional isolation and supervisor-rated performance. Recall that the respective relationships for these variables were: professional isolation and supervisor-rated performance (β = -0.12, *SE* = 0.05, $p > .05$; r = -0.14, $p < .05$; Hypothesis 11b), telecommuter-rated LMX and supervisor-rated performance (β = 0.35, *SE* = 0.08, $p < .01$; r = 0.30, $p < .01$; Hypothesis 12b), and supervisor-rated LMX and supervisor-rated performance (β = 0.65, *SE* = 0.12, $p < .01$; r = 0.51, $p < .01$). Further, the data showed that professional isolation was related to LMX for both telecommuter-rated LMX (r = -0.22, $p < .01$) and supervisor-rated LMX (r = -0.18, $p < .01$). Therefore, an exploratory analysis was conducted to determine whether LMX mediated the relationship between professional isolation and supervisor-rated performance. To conduct this analysis, a path was added from professional isolation to LMX in the full hypothesized SEM model (Model 1; see Figure 1). The path estimates indicated that professional isolation was not significantly related to performance (β = -0.11, *SE* = 0.05,$p >$.05), employee- and supervisor-rated LMX were related to supervisor-rated performance (β = 0.35, *SE* = 0.08, $p < .01$; β = 0.65, *SE* = 0.12, $p < .01$), and professional isolation was significantly related to LMX for both telecommuter-rated LMX (β = -0.27, *SE* = 0.05, $p < .01$) and supervisor-rated LMX (β = -0.23, *SE* = 0.04, $p < .01$). In sum, the results of this exploratory model suggest that LMX may fully mediate the relationship between professional isolation and performance.

Research had not previously examined these relationships simultaneously through SEM; thus, this was an important initial finding as it indicated that a telecommuter's relationship with his or her supervisor may influence how his or her feelings of professional isolation may affect his or her performance. More specifically, if an LMX relationship improves, performance likely does as well; however, since LMX is negatively related to professional isolation, if professional isolation increases, LMX decreases and therefore so does performance.

Third, an exploratory analysis with only the telecommuters who described themselves as individual contributors was conducted. In general, the relationships found for the full sample and the sample of individual contributors were quite similar. One difference to note was that the relationship between professional isolation and boundary permeability was insignificant in the full sample ($r = 0.00$, $p > .05$) but significant in the individual contributor sample ($r = 0.13$, $p < .05$). One potential explanation could be that the lack of control or sacrifice sometimes felt with high boundary permeability could be expected for managers and executives, but not individual contributors. Individual contributors may not feel they have the support to manage those feelings and therefore may feel more isolated.

The final exploratory research examined the non-partialed relationships amongst the full-time telecommuters as compared to the full sample. Two relationships were significantly different between the groups: scheduling flexibility with LMX and professional isolation with turnover intent. Full-time telecommuters had a weaker relationship between scheduling flexibility and LMX ($r = 0.10$, $p > .05$) than did the full sample ($r = 0.21$, $p < .01$). One potential explanation could be that employees who

telecommute only part-time more fully appreciate flexibility in scheduling and attribute that – at least in part – to their supervisors, thus leading to more favorable rating of the LMX relationship. Full-time telecommuters also had a stronger relationship between professional isolation and turnover intent ($r = 0.44$, $p < .01$) than did the full sample ($r = 0.25$, $p < .01$). Full-time telecommuters likely have fewer opportunities for personal connections and conversations and thus have a desire for a job where they will feel less isolated.

Limitations

There are a few limitations of this study that should be mentioned. The current study involved two sources of data (telecommuter and supervisor) and data gathered at two points in time; however, the data were correlational and therefore the assumption of causality could not be met. Further, the data were collected over a short time frame; telecommuter time 1 and supervisor data were collected simultaneously and telecommuter time 2 data was collected one month following time 1 collection. Although there were no meaningful differences on study variables between the two time points, it is possible that data collected over a longer time frame would have produced different results.

Another limitation of the current study was that there was restricted variance for three key variables: telecommuting intensity, turnover intent, and supervisor-rated performance. The limited variance in the current sample may have reduced the magnitude of results involving these variables. The current study may also have missed variables that should have been included in the model. For example, the current study did not investigate the frequency or modality of communication between telecommuters and their

colleagues and supervisor. The current study also may have missed subtleties in variables that were included. For example, the current study measured performance with one item each for work quantity, quality, and effort. A more robust and thorough measure could have been used to gain insight on the more subtle aspects of performance. Similarly, the current study measured intent to turnover; different results may have been found if actual turnover had been measured.

The lack of involuntary telecommuters in the current sample was another limitation of the current study. Given the insufficient sample size, conclusions could not be drawn on the influence of voluntariness of the arrangement on telecommuter outcomes. A final potential limitation is that the sample in this study may have influenced the results. A wide variety of individuals with different backgrounds were included in the study. Whereas this may be a limitation because it can be harder to isolate relationships, it can also be viewed as strength because shows that relationships hold across different companies, industries, and other variables.

Future Research

To expand the current research and address study limitations, the following future research should be conducted. First, to determine causality of the relationships, experimental or quasi-experimental research should be conducted where employees are randomly selected to participate in a telecommuting program and surveyed before and after they start telecommuting to determine the effect of telecommuting on individual outcomes (e.g., Hill, Miller, Weiner, & Colihan, 1998). With this type of design, data could also be collected from people who choose to self-select out of the telecommuting arrangement and why.

Although this study collected data at two time-points, data collected over a longer period of time could provide additional insight into any potential fluctuation in relationships among variables. Additionally, although this study used two sources of data – telecommuter and supervisor ratings – it would also be interesting to examine how coworkers influence telecommuter outcomes. Research might also consider if outcomes experienced by telecommuters are influenced by whether or not their fellow coworkers and/or supervisor also telecommute. Further, although the current study examined individual-level outcomes, future multilevel research could delve into potential team and organizational experiences (e.g., might employees of a 100% virtual organization have different experiences than employees on a 100% virtual team in a brick-and-mortar company or a single employee who has no other telecommuting colleagues).

The sample from the current study had restricted variance on several key variables. On average, telecommuters reported low professional isolation and turnover intent and supervisors reported high telecommuter performance. Future research should examine a telecommuter sample with a wider range on professional isolation, turnover intent, and supervisor-rated performance. With increased variance, the current study might have found stronger relationships between the variables in the model.

As with any study, there are other potential variables to consider. As mentioned in discussing the limitations, the current study measured turnover intent rather than the actual behavior of leaving the organization. In the future, researchers should examine actual turnover of the telecommuter population. The current study measured performance with three items inquiring about quantity of work, quality of work, and effort put forth. Future research should include a more complex measure of performance.

Future research should also consider looking at the influence of other individual differences (e.g., need for autonomy, extraversion, self-discipline, social anxiety) and characteristics of the telecommuting arrangement (e.g., communication modality between telecommuters and their colleagues) on additional outcomes (e.g., issues with coworkers or supervisor, role stress, organizational citizenship behaviors). Two particular differences that might affect the relationship between the telecommuter and supervisor include whether the supervisor himself or herself telecommutes and whether the telecommuter is supervised by someone in a different country (e.g., cultural, language considerations); differences such as these should be included in future research.

Two variables in the current study should also be examined further. Voluntariness of the telecommuting relationship should be examined in research where there are more participants who entered the relationship involuntarily. Previous research indicated that employees who are required to telecommute may resent the potential initial hardship it causes (Thatcher & Zhu, 2006). The current research, although based on a very small sample of involuntary telecommuters, provided initial support of a potential voluntariness moderator. Further, an examination of the relationship between voluntariness and other study variables provided initial evidence on meaningful differences that should be examined with a larger sample of involuntary telecommuters. For example, for involuntary telecommuters (N = 52), telecommuting intensity was negatively related to turnover intent (r = -0.28, p < .05), scheduling flexibility was negatively related to professional isolation (r = -0.26, p > .05), and need for affiliation was negatively related to supervisor-rated LMX (r = -0.34, p < .05).

A second variable that should be further examined is professional isolation. Limited research has been conducted on this variable and results have been mixed about the nature of the relationships between professional isolation and various outcomes. For example, an exploratory analysis in the current study indicated that LMX might fully mediate the relationship between professional isolation and performance; future research should be conducted to further understand this relationship. Additionally, the current research examined one potential moderator – need for affiliation – of the relationship, but the results were non-significant. Further research is necessary to understand why and when telecommuters feel professionally isolated.

Finally, one of the potential limitations in the current study was that the sample included a wide variety of individuals with different backgrounds. A cleaner test of the study relationships should be conducted with a more homogenous sample of people doing the same job for the same organization. In other words, the hypotheses in the current study could be tested in one job in multiple organizations or several jobs in one organization rather than gathering data directly from individuals across a variety of jobs in a variety of organizations (Schneider, 2008). Overall, the results of this study need to be replicated so that the generalizability of these findings can be assessed.

Practical Implications

Given that telecommuting can result in cost savings for organizations (e.g., lower real estate costs) and employees (e.g., lower commuting costs), it is essential that researchers continue to expand practitioners' understanding of how telecommuting affects work attitudes and behaviors for individual employees. If a supervisor's awareness about the potential trouble spots for a telecommuter is raised (e.g., feeling

isolated), the supervisor may be able to identify problems before they have any serious impact on the telecommuter or the supervisory relationship. Based on this research, the variable of most concern in the telecommuting arrangement is professional isolation, which was associated with poor LMX (both supervisor- and telecommuter-rated) and turnover intent. Therefore, practitioners should focus on implementing initiatives to alleviate those feelings of isolation. Practitioners can include telecommuters in organizational events, socialization activities, and make available all learning and development events at the organization (Thatcher & Zhu, 2006; Golden, Veiga, & Dino, 2008). Practitioners can also create a "virtual water cooler" via instant messaging or other internet tool to facilitate daily interaction amongst colleagues and keep everyone "in the loop" (Noonan & Glass, 2012).

Practitioners should also focus on ensuring applicants or employees have the necessary information to evaluate whether or not they would fit well in a telecommuting arrangement. For example, organizations could implement a realistic job preview (RJP) in order to provide potential telecommuters with a real-life picture of what it would be like to work as a telecommuter (e.g. Breaugh & Billings, 1988, Breaugh, 1992). RJPs can help increase new telecommuters' abilities to cope with difficult parts of the job by helping them set expectations and giving them insight into potential problems (e.g. Suszko & Breaugh, 1986; Breaugh, 1983). Practitioners should consider various methods to help telecommuters adjust to the new role including strategic on-boarding, organizational socialization, and relationship or team- building. When making staffing decisions, practitioners might also consider giving preference to individuals with

previous telecommuting experience as they will likely have more realistic expectations for the arrangement.

Conclusions

The purpose of this study was to examine the effects of telecommuting intensity – the amount of scheduled time that employees spend doing work away from the central work location – on employees. Results of this study provided insight into how telecommuting intensity relates to turnover intent and supervisor-rated performance through mediating mechanisms of work-life conflict, professional isolation, and Leader-Member Exchange (LMX). Structural equation model analyses indicated professional isolation fully mediated the relationship between telecommuting intensity and turnover intent. Further, work-life conflict, professional isolation, and LMX quality all were significantly related to turnover intent and LMX quality was significantly related to supervisor-rated performance. My hope is that this study will generate additional discussion and research attention to telecommuter experiences. Telecommuting is an important work arrangement for many people and organizations, so additional research is needed to move fully understand the potential benefits and drawbacks. With additional research, organizations can continue to create a more supportive environment for telecommuters.

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Table 1

Telecommuter Time 1 Descriptives

	N	Mean	SD	Skewness	Kurtosis	α
Telecommuting Intensity*	441	0.00	0.94	-0.44	-1.20	0.94
Voluntariness of the Arrangement	439	1.12	0.32	2.37	3.63	-
Scheduling Flexibility	435	3.94	0.96	-0.79	0.20	0.88
Boundary Permeability	436	3.14	0.62	-0.01	-0.09	0.63
Need for Affiliation	435	4.45	1.23	-0.28	-0.34	0.89
Work-Life Conflict	436	2.50	0.87	0.39	0.16	0.91
Professional Isolation	432	2.18	0.84	0.44	-0.29	0.92
LMX Quality	432	4.05	0.74	-1.02	1.12	0.90
Turnover Intent	432	1.98	1.30	1.77	3.26	0.87

* *Note:* Scale includes three telecommuter-rated intensity items (standardized)

Table 2

Telecommuter Time 2 Descriptives

	N	Mean	SD	Skewness	Kurtosis	α
Work-Life Conflict	184	2.61	0.94	0.61	-0.16	0.94
Professional Isolation	186	2.24	0.78	0.61	-0.51	0.90
LMX Quality	183	3.98	0.78	-0.79	0.13	0.92
Turnover Intent	186	2.06	1.47	1.64	2.06	0.92

Table 3

Supervisor Descriptives

	N	Mean	SD	Skewness	Kurtosis	α
Telecommuting Intensity*	258	0.00	0.97	-0.62	-1.24	0.95
Voluntariness of the Arrangement	258	1.16	0.36	1.91	1.67	-
LMX Quality	258	4.29	0.49	-0.68	0.86	0.82
Performance	258	6.54	0.61	-1.59	3.01	0.89

* *Note:* Scale includes two supervisor-rated intensity items (standardized)

Table 4

Telecommuting Intensity Correlations

	Telecommuter Reported			Supervisor Reported	
	Hrs/Week (Agg.)	Hrs/Wk (Direct)	% Week (Direct)	Hrs/Wk (Direct)	% Week (Direct)
Telecommuter Reported					
Hours/Week (Agg.)	--				
Hours/Week (Direct)	0.84**	--			
Percent of Week (Direct)	0.76**	0.87**	--		
Supervisor Reported					
Hours/Week (Direct)	0.77**	0.74**	0.71**	--	
Percent of Week (Direct)	0.74**	0.71**	0.79**	0.89**	--

Note. **$p < .01$

Table 5

Telecommuting Intensity Descriptives

		N	Min	Max	Mean	SD
Telecommuter (Direct)	Hours per Week	440	2	70	31.53	16.60
	Percent of Week	427	2	100	70.89	34.69
Supervisor (Direct)	Hours per Week	258	2	65	29.93	15.31
	Percent of Week	258	8	100	73.45	34.51
Telecommuter (Aggregated)	Hours per day per location					
	Not Telecommuting	442	0	63	10.10	14.17
	Telecommuting (Aggregated)	442	2	74	34.44	16.58
	Home Office	442	0	74	23.27	17.33
	Satellite Office	442	0	56	0.89	5.04
	Neighborhood Work Center	442	0	32	0.32	2.39
	On the Road	442	0	66	8.83	14.71
	Other Telecommuting	442	0	56	1.08	5.47

Table 6

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	1	2	3	4	5	6
Telecommuter Demographics									
1 T1: Age	417	42.17	11.40	-					
2. T1: Gender (1 = Male; 2 = Female)	428	1.55	0.50	-0.05	-				
3. T1: Tenure at Organization (Yrs)	450	8.91	8.49	0.53**	-0.03	-			
4. T1: Tenure in Current Job (Yrs)	449	4.92	5.13	0.53**	-0.04	0.61**	-		
5. T1: Tenure Tele. (Current Job; Yrs)	447	4.16	4.58	0.48**	-0.08	0.57**	0.74**	-	
6. T1: Tenure Tele. (Any Job; Yrs)	436	8.51	7.80	0.53**	-0.12*	0.51**	0.43**	0.64**	-
7. T1: Tenure w/ Current Supervisor (Yrs)	429	2.58	2.96	0.22**	-0.05	0.31**	0.37**	0.39**	0.27**
8. T1: % of Coworkers who Tele.	438	70.74	35.07	-0.01	-0.04	0.01	-0.05	0.10*	0.20**
9. T1: Highest Level of Education	431	5.47	1.65	-0.19**	-0.10*	-0.25**	-0.25**	-0.18**	-0.11*
10. T1: Number of Dependents (<18)	416	0.72	1.01	-0.09	-0.01	-0.01	-0.11*	-0.08	-0.03
Supervisor Demographics									
11. S: Age	248	43.40	9.98	0.18**	0.09	0.12	0.16*	0.13	0.08
12. S: Gender (1 = Male; 2 = Female)	255	1.44	0.51	-0.04	0.20**	-0.02	-0.08	-0.14*	-0.17**
13. S: Tenure at Organization (Yrs)	256	12.22	8.45	0.09	0.09	0.36**	0.24**	0.16*	0.13*
14. S: Tenure in Current Job (Yrs)	257	4.12	4.93	0.03	0.08	0.12	0.12*	0.12	0.11
15. S: Tele. Experience (1 = No; 2 = Yes)	257	1.75	0.44	0.14*	-0.08	0.03	0.03	0.12	0.24**
16. S: % Employees who Tele.	251	75.51	32.69	-0.03	-0.08	-0.02	0.05	0.18**	0.20**

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	7	8	9	10	11	12
Telecommuter Demographics									
1 T1: Age	417	42.17	11.40						
2. T1: Gender (1 = Male; 2 = Female)	428	1.55	0.50						
3. T1: Tenure at Organization (Yrs)	450	8.91	8.49						
4. T1: Tenure in Current Job (Yrs)	449	4.92	5.13						
5. T1: Tenure Tele. (Current Job; Yrs)	447	4.16	4.58						
6. T1: Tenure Tele. (Any Job; Yrs)	436	8.51	7.80						
7. T1: Tenure w/ Current Supervisor (Yrs)	429	2.58	2.96	-					
8. T1: % of Coworkers who Tele.	438	70.74	35.07	0.02	-				
9. T1: Highest Level of Education	431	5.47	1.65	-0.03	-0.04	-			
10. T1: Number of Dependents (<18)	416	0.72	1.01	0.01	-0.07	-0.02	-		
Supervisor Demographics									
11. S: Age	248	43.40	9.98	0.44**	0.03	-0.03	-0.05	-	
12. S: Gender (1 = Male; 2 = Female)	255	1.44	0.51	0.00	-0.12	-0.14*	0.08	-0.11	-
13. S: Tenure at Organization (Yrs)	256	12.22	8.45	0.42**	-0.01	-0.20**	0.01	0.50**	-0.02
14. S: Tenure in Current Job (Yrs)	257	4.12	4.93	0.45**	-0.06	-0.08	0.02	0.54**	-0.07
15. S: Tele. Experience (1 = No; 2 = Yes)	257	1.75	0.44	-0.01	0.44**	0.03	0.04	0.03	-0.06
16. S: % Employees who Tele.	251	75.51	32.69	0.07	0.60**	0.01	0.10	0.02	0.00

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	13	14	15
Telecommuter Demographics						
1 T1: Age	417	42.17	11.40			
2. T1: Gender (1 = Male; 2 = Female)	428	1.55	0.50			
3. T1: Tenure at Organization (Yrs)	450	8.91	8.49			
4. T1: Tenure in Current Job (Yrs)	449	4.92	5.13			
5. T1: Tenure Tele. (Current Job; Yrs)	447	4.16	4.58			
6. T1: Tenure Tele. (Any Job; Yrs)	436	8.51	7.80			
7. T1: Tenure w/ Current Supervisor (Yrs)	429	2.58	2.96			
8. T1: % of Coworkers who Tele.	438	70.74	35.07			
9. T1: Highest Level of Education	431	5.47	1.65			
10. T1: Number of Dependents (<18)	416	0.72	1.01			
Supervisor Demographics						
11. S: Age	248	43.40	9.98			
12. S: Gender (1 = Male; 2 = Female)	255	1.44	0.51			
13. S: Tenure at Organization (Yrs)	256	12.22	8.45	-		
14. S: Tenure in Current Job (Yrs)	257	4.12	4.93	0.52**	-	
15. S: Tele. Experience (1 = No; 2 = Yes)	257	1.75	0.44	-0.16**	-0.02	-
16. S: % Employees who Tele.	251	75.51	32.69	0.03	0.02	0.43**

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	1	2	3	4	5	6
Telecommuter Scales (Time 1)									
17. T1: Tel. Intensity (Standardized)	441	0.00	0.94	0.04	0.06	0.07	0.04	0.18**	0.22**
18. T1: Voluntariness (1 = Vol.; 2 = Invol.)	439	1.12	0.32	0.08	-0.13**	0.18**	0.14**	0.19**	0.18**
19. T1: Boundary Permeability	436	3.14	0.62	-0.10*	0.01	-0.21**	-0.12*	-0.01	0.02
20. T1: Scheduling Flexibility	435	3.94	0.96	0.08	-0.11*	0.01	0.02	0.09	0.17**
21. T1: Need Affiliation	435	4.45	1.22	-0.07	-0.04	-0.09	-0.04	-0.03	-0.04
22. T1: Work Life Conflict	436	2.50	0.87	0.08	-0.05	0.12*	0.08	0.15**	0.17**
23. T1: Prof. Isolation	436	2.18	0.84	-0.11*	-0.07	-0.06	-0.07	-0.01	-0.07
24. T1: LMX	432	4.05	0.74	0.02	0.07	0.00	0.02	0.06	0.06
25. T1: Turnover Intent	432	1.98	1.30	-0.11*	0.03	-0.05	0.00	-0.03	-0.08
Supervisor Scales									
26. S: Tel. Intensity (Standardized)	258	0.00	0.97	0.06	0.15*	0.04	0.10	0.21**	0.31**
27. S: Voluntariness	257	1.16	0.36	0.17**	0.03	0.18**	0.06	0.18**	0.33**
28. S: LMX	258	4.29	0.49	0.10	0.11	0.04	0.05	0.13*	0.10
29. S: Performance	258	6.53	0.61	0.02	0.13*	0.01	-0.02	-0.01	0.00
Telecommuter Scales (Time 2)									
30. T2: Work Life Conflict	184	2.61	0.94	0.11	-0.13	0.10	0.05	0.18*	0.26**
31. T2: Prof. Isolation	186	2.24	0.78	-0.03	-0.07	-0.22*	-0.07	0.00	-0.04
32. T2: LMX	183	3.98	0.78	0.04	0.06	-0.02	0.07	0.02	-0.06
33. T2: Turnover Intent	186	2.06	1.47	-0.12	0.01	-0.03	-0.02	0.08	0.03

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	7	8	9	10	11	12
Telecommuter Scales (Time 1)									
17. T1: Tel. Intensity (Standardized)	441	0.00	0.94	0.08	0.12**	-0.03	-0.04	0.03	0.00
18. T1: Voluntariness (1 = Vol; 2 = Invol)	439	1.12	0.32	0.08	0.07	-0.04	0.03	-0.02	-0.14*
19. T1: Boundary Permeability	436	3.14	0.62	0.05	0.10*	0.16**	0.02	0.05	-0.08
20. T1: Scheduling Flexibility	435	3.94	0.96	0.06	0.03	0.11*	0.06	0.10	-0.13*
21. T1: Need Affiliation	435	4.45	1.22	-0.06	0.08	0.00	0.01	-0.09	-0.15*
22. T1: Work Life Conflict	436	2.50	0.87	0.04	0.06	-0.01	0.02	-0.01	-0.07
23. T1: Prof. Isolation	436	2.18	0.84	-0.11*	0.04	0.14**	-0.02	-0.10	-0.10
24. T1: LMX	432	4.05	0.74	0.13**	0.00	-0.01	0.08	0.09	0.10
25. T1: Turnover Intent	432	1.98	1.30	-0.05	-0.04	0.07	-0.03	-0.08	-0.05
Supervisor Scales									
26. S: Tel. Intensity (Standardized)	258	0.00	0.97	-0.07	0.13*	-0.11	-0.05	-0.03	-0.01
27. S: Voluntariness	257	1.16	0.36	0.07	-0.03	-0.08	-0.11	0.07	-0.18**
28. S: LMX	258	4.29	0.49	0.15*	0.13*	-0.18**	-0.05	0.07	0.12*
29. S: Performance	258	6.53	0.61	0.04	0.04	-0.08	0.03	0.08	0.18**
Telecommuter Scales (Time 2)									
30. T2: Work Life Conflict	184	2.61	0.94	0.03	0.15	-0.12	0.20*	-0.12	-0.07
31. T2: Prof. Isolation	186	2.24	0.78	-0.03	-0.09	0.24**	0.11	-0.06	-0.14
32. T2: LMX	183	3.98	0.78	-0.01	0.05	0.00	-0.03	0.12	0.09
33. T2: Turnover Intent	186	2.06	1.47	0.00	-0.04	0.09	-0.05	-0.04	-0.03

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	13	14	15	16	17	18
Telecommuter Scales (Time 1)									
17. T1: Tel. Intensity (Standardized)	441	0.00	0.94	0.01	0.06	0.14*	0.06	(0.94)	
18. T1: Voluntariness (1 = Vol; 2 = Invol)	439	1.12	0.32	0.06	0.05	0.17**	0.03	0.07	-
19. T1: Boundary Permeability	436	3.14	0.62	-0.04	0.01	0.11	0.02	0.01	-0.01
20. T1: Scheduling Flexibility	435	3.94	0.96	0.08	0.09	0.11	0.10	0.06	0.03
21. T1: Need Affiliation	435	4.45	1.22	-0.13*	-0.04	0.07	0.06	0.00	0.12*
22. T1: Work Life Conflict	436	2.50	0.87	0.05	-0.03	0.04	0.10	0.07	0.08
23. T1: Prof. Isolation	436	2.18	0.84	-0.16*	-0.08	0.02	0.05	0.26**	0.11*
24. T1: LMX	432	4.05	0.74	0.15*	0.03	-0.01	0.07	0.06	0.00
25. T1: Turnover Intent	432	1.98	1.30	-0.08	-0.03	0.02	-0.10	-0.06	0.11*
Supervisor Scales									
26. S: Tel. Intensity (Standardized)	258	0.00	0.97	0.02	0.05	0.15*	0.11	0.81**	0.16**
27. S: Voluntariness	257	1.16	0.36	0.14*	0.13*	0.18**	0.03	0.21**	0.31**
28. S: LMX	258	4.29	0.49	0.21**	0.02	-0.01	0.09	-0.02	0.07
29. S: Performance	258	6.53	0.61	0.18**	0.10	0.02	-0.04	0.04	0.06
Telecommuter Scales (Time 2)									
30. T2: Work Life Conflict	184	2.61	0.94	-0.02	-0.02	0.02	0.16	0.11	0.02
31. T2: Prof. Isolation	186	2.24	0.78	-0.23*	0.02	-0.01	0.15	0.12	0.03
32. T2: LMX	183	3.98	0.78	0.01	-0.05	0.07	0.08	-0.07	0.09
33. T2: Turnover Intent	186	2.06	1.47	-0.04	-0.05	0.06	-0.10	0.02	-0.02

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	19	20	21	22	23	24
Telecommuter Scales (Time 1)									
17. T1: Tel. Intensity (Standardized)	441	0.00	0.94						
18. T1: Voluntariness (1 = Vol; 2 = Invol)	439	1.12	0.32						
19. T1: Boundary Permeability	436	3.14	0.62	(0.63)					
20. T1: Scheduling Flexibility	435	3.94	0.96	0.21**	(0.88)				
21. T1: Need Affiliation	435	4.45	1.22	0.24**	0.07	(0.89)			
22. T1: Work Life Conflict	436	2.50	0.87	0.02	-0.08	0.00	(0.91)		
23. T1: Prof. Isolation	436	2.18	0.84	0.00	-0.03	0.26**	0.30**	(0.92)	
24. T1: LMX	432	4.05	0.74	0.12*	0.21**	0.05	-0.29**	-0.22**	(0.90)
25. T1: Turnover Intent	432	1.98	1.30	-0.02	-0.17**	0.00	0.38**	0.25**	-0.45**
Supervisor Scales									
26. S: Tel. Intensity (Standardized)	258	0.00	0.97	-0.10	0.00	-0.03	0.02	0.20**	-0.04
27. S: Voluntariness	257	1.16	0.36	0.03	0.02	0.12	0.10	0.05	0.02
28. S: LMX	258	4.29	0.49	0.11	0.13*	-0.07	-0.01	-0.18**	0.41**
29. S: Performance	258	6.53	0.61	0.07	0.09	-0.11	-0.01	-0.14*	0.30**
Telecommuter Scales (Time 2)									
30. T2: Work Life Conflict	184	2.61	0.94	0.09	-0.13	0.00	0.77**	0.33**	-0.25**
31. T2: Prof. Isolation	186	2.24	0.78	0.15	0.07	0.21**	0.14	0.67**	-0.16*
32. T2: LMX	183	3.98	0.78	0.06	0.18*	0.03	-0.31**	-0.21**	0.75**
33. T2: Turnover Intent	186	2.06	1.47	0.14	-0.07	-0.13	0.42**	0.26**	-0.49**

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	25	26	27	28	29	30
Telecommuter Scales (Time 1)									
17. T1: Tel. Intensity (Standardized)	441	0.00	0.94						
18. T1: Voluntariness (1 = Vol; 2 = Invol)	439	1.12	0.32						
19. T1: Boundary Permeability	436	3.14	0.62						
20. T1: Scheduling Flexibility	435	3.94	0.96						
21. T1: Need Affiliation	435	4.45	1.22						
22. T1: Work Life Conflict	436	2.50	0.87						
23. T1: Prof. Isolation	436	2.18	0.84						
24. T1: LMX	432	4.05	0.74						
25. T1: Turnover Intent	432	1.98	1.30	(0.87)					
Supervisor Scales									
26. S: Tel. Intensity (Standardized)	258	0.00	0.97	-0.10	(0.95)				
27. S: Voluntariness	257	1.16	0.36	-0.04	0.17**	-			
28. S: LMX	258	4.29	0.49	-0.16*	-0.01	0.03	(0.82)		
29. S: Performance	258	6.53	0.61	-0.05	0.03	-0.01	0.51**	(0.89)	
Telecommuter Scales (Time 2)									
30. T2: Work Life Conflict	184	2.61	0.94	0.35**	-0.02	0.06	0.12	0.01	(0.94)
31. T2: Prof. Isolation	186	2.24	0.78	0.24**	0.02	-0.02	-0.20*	-0.24**	0.31**
32. T2: LMX	183	3.98	0.78	-0.47**	-0.03	-0.11	0.36**	0.22**	-0.33**
33. T2: Turnover Intent	186	2.06	1.47	0.84**	-0.19*	-0.14	-0.15	-0.17*	0.45**

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 6 (continued)

Means, standard deviations, and intercorrelations for all measures

Measure	*N*	*M*	*SD*	31	32	33
Telecommuter Scales (Time 1)						
17. T1: Tel. Intensity (Standardized)	441	0.00	0.94			
18. T1: Voluntariness (1 = Vol; 2 = Invol)	439	1.12	0.32			
19. T1: Boundary Permeability	436	3.14	0.62			
20. T1: Scheduling Flexibility	435	3.94	0.96			
21. T1: Need Affiliation	435	4.45	1.22			
22. T1: Work Life Conflict	436	2.50	0.87			
23. T1: Prof. Isolation	436	2.18	0.84			
24. T1: LMX	432	4.05	0.74			
25. T1: Turnover Intent	432	1.98	1.30			
Supervisor Scales						
26. S: Tel. Intensity (Standardized)	258	0.00	0.97			
27. S: Voluntariness	257	1.16	0.36			
28. S: LMX	258	4.29	0.49			
29. S: Performance	258	6.53	0.61			
Telecommuter Scales (Time 2)						
30. T2: Work Life Conflict	184	2.61	0.94			
31. T2: Prof. Isolation	186	2.24	0.78	(0.90)		
32. T2: LMX	183	3.98	0.78	-0.22**	(0.92)	
33. T2: Turnover Intent	186	2.06	1.47	0.27**	-0.50**	(0.92)

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; T2 = Telecommuter Time 2 ratings; Internal consistency alpha values are listed in parentheses on the diagonal

Table 7

Telecommuter and Supervisor Agreement

		N	Mean	SD	*paired t*	*Df*	*p-value*	*cohen's d*
Telecommuting Percent	Telecommuter	249	71.58	34.98	-0.91	248	0.36	0.04
	Supervisor	249	72.89	34.89				
Telecommuting Hours (Direct)	Telecommuter	253	31.77	16.36	2.64	252	0.01	0.11
	Supervisor	253	29.87	15.43				
Telecommuting Intensity*	Telecommuter	253	0.00	0.94	0.61	252	0.54	0.00
	Supervisor	253	0.00	0.97				
Voluntariness of the Arrangement	Telecommuter	251	1.13	0.33	-0.78	250	0.44	0.06
	Supervisor	251	1.15	0.35				
LMX Quality	Telecommuter	251	4.12	0.69	-3.40*	250	0.00	0.28
	Supervisor	251	4.29	0.50				

* *Note:* Telecommuter measure includes three intensity items (standardized); supervisor measure includes two intensity items (standardized)
*Note. *p* < .05

Table 8

Telecommuter Time 1 and Time 2 Stability

		N	Mean	SD	*paired t*	*Df*	*p-value*	*cohen's d*
Work-Life Conflict	Time 1	184	2.53	0.92	-1.40	183	0.16	0.08
	Time 2	184	2.61	0.94				
Professional Isolation	Time 1	186	2.16	0.83	-1.45	185	0.15	0.09
	Time 2	186	2.24	0.78				
LMX Quality	Time 1	183	4.08	0.71	2.36*	182	0.02	0.10
	Time 2	183	4.00	0.78				
Turnover Intent	Time 1	186	2.01	1.33	-0.69	185	0.50	0.04
	Time 2	186	2.06	1.46				

Note. $*p < .05$

Table 9

Measurement Model

	χ2	*Df*	*χ2/df*	*p-value*	CFI	TLI	RMSEA (90% CI)	SRMR
Measurement Model	1280.4	783	1.63	0.00	0.92	0.91	0.05 (0.05,0.06)	0.06
Alternate Model 1	1011.28	629	1.61	0.00	0.93	0.92	0.05 (0.04,0.06)	0.05
Alternate Model 2	1119.66	704	1.60	0.00	0.93	0.92	0.05 (0.04,0.06)	0.05

Note. Alternate Model 1 includes the two positively worded Boundary Permeability items;

Alternate Model 2 includes the four negatively worded Boundary Permeability items

Table 10

Parameter Estimates of the Measurement Model

	TI	SF	BP	NA	WL	PI	LMX	TO	Perf
Tele Hrs/Wk (Agg)	0.88								
Tele Hrs/Wk (Direct)	0.99								
Tele Percent (Direct)	0.90								
Scheduling Flex. #1		0.88							
Scheduling Flex. #2		0.79							
Scheduling Flex. #3		0.81							
Boundary Perm. #1			0.44						
Boundary Perm. #2			0.35						
Boundary Perm. #3			0.52						
Boundary Perm. #4			0.49						
Boundary Perm. #5			0.46						
Boundary Perm. #6			0.64						
Need Affiliation #1				0.78					
Need Affiliation #2				0.69					
Need Affiliation #3				0.88					
Need Affiliation #4				0.81					
Need Affiliation #5				0.69					
Work Life #1					0.72				
Work Life #2					0.92				
Work Life #3					0.86				

Table 10 (continued)

Parameter Estimates of the Measurement Model

	TI	SF	BP	NA	WL	PI	LMX	TO	Perf
Work Life #4					0.88				
Work Life #5					0.77				
Prof. Isolation #1						0.77			
Prof. Isolation #2						0.72			
Prof. Isolation #3						0.79			
Prof. Isolation #4						0.72			
Prof. Isolation #5						0.78			
Prof. Isolation #6						0.78			
Prof. Isolation #7						0.82			
LMX #1							0.63		
LMX #2							0.78		
LMX #3							0.75		
LMX #4							0.76		
LMX #5							0.77		
LMX #6							0.76		
LMX #7							0.82		
Turnover Intent #1								0.93	
Turnover Intent #2								0.80	
Turnover Intent #3								0.69	

Table 10 (continued)

Parameter Estimates of the Measurement Model

	TI	SF	BP	NA	WL	PI	LMX	TO	Perf
Performance #1									0.84
Performance #2									0.84
Performance #3									0.85

Table 11

Fit Statistics for Comparison Models

	χ2	*Df*	*χ2/df*	*P*	CFI	TLI	RMSEA (90% CI)	SRMR
Model 1: Full Hypothesized Model (w/o Vol)	14977.74	3363	4.45	0.00	0.47	0.45	0.12 (0.12, 0.12)	0.11
Model 2: Full Model except BP	7555.78	1684	4.49	0.00	0.62	0.60	0.12 (0.12, 0.12)	0.09
Model 3: Full Model except BP and SF	4934.40	1063	4.64	0.00	0.66	0.64	0.12 (0.12, 0.13)	0.10
Model 4: Full Model except BP, SF, and NA	725.19	338	2.15	0.00	0.92	0.91	0.07 (0.06, 0.08)	0.12

Note. BP = Boundary Permeability, SF = Scheduling Flexibility, NA = Need for Affiliation

Table 12

Fit Statistics for Telecommuter- and Supervisor-Rated LMX Comparison Models (w/o Vol.)

	χ2	*Df*	*χ2/df*	*p*	CFI	TLI	RMSEA (90% CI)	SRMR
Model 1: Full Model with Telecommuter-Rated LMX	14977.7	3363	4.45	0.00	0.47	0.45	0.12 (0.12, 0.12)	0.11
Model 2: Full Model with Supervisor-Rated LMX	14851.4	3363	4.42	0.00	0.47	0.45	0.12 (0.12, 0.12)	0.10

Table 13

Voluntary Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	1	2	3	4	5	6	7
1. T1: Tel. Intensity	387	-0.02	0.95	(0.94)						
2. T1: Boundary Perm.	382	3.14	0.63	0.01	(0.63)					
3. T1: Scheduling Flex.	381	3.93	0.96	0.06	0.21**	(0.87)				
4. T1: Need Affiliation	381	4.40	1.23	-0.03	0.23**	0.08	(0.89)			
5. T1: Work Life	382	2.48	0.88	0.10	0.03	-0.08	0.00	(0.92)		
6. T1: Prof. Isolation	382	2.15	0.83	0.25**	0.01	0.00	0.25**	0.31**	(0.91)	
7. T1: LMX	378	4.04	0.74	0.05	0.10	0.22**	0.05	-0.28**	-0.23**	(0.90)
8. T1: Turnover Intent	378	1.93	1.26	-0.04	-0.03	-0.15**	0.01	0.40**	0.27**	-0.47**
9. S: LMX	219	4.28	0.50	-0.02	0.13	0.14*	-0.05	-0.03	-0.22**	0.42**
10. S: Performance	219	6.53	0.62	0.05	0.06	0.10	-0.10	-0.03	-0.17**	0.30**

Note. *$p < .05$; **$p < .01$; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; Internal consistency alpha values listed in parentheses on the diagonal

Table 13 (continued)

Voluntary Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	8	9	10
1. T1: Tel. Intensity	387	-0.02	0.95			
2. T1: Boundary Perm.	382	3.14	0.63			
3. T1: Scheduling Flex.	381	3.93	0.96			
4. T1: Need Affiliation	381	4.40	1.23			
5. T1: Work Life	382	2.48	0.88			
6. T1: Prof. Isolation	382	2.15	0.83			
7. T1: LMX	378	4.04	0.74			
8. T1: Turnover Intent	378	1.93	1.26	(0.87)		
9. S: LMX	219	4.28	0.50	-0.22**	(0.83)	
10. S: Performance	219	6.53	0.62	-0.10	0.50**	(0.89)

Note. *$p < .05$; **$p < .01$; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings;

Internal consistency alpha values listed in parentheses on the diagonal

Table 14

Involuntary Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	1	2	3	4	5	6	7
1. T1: Tel. Intensity	51	0.19	0.76	(0.87)						
2. T1: Boundary Perm.	51	3.12	0.54	0.04	(0.61)					
3. T1: Scheduling Flex.	51	4.02	0.98	0.14	0.15	(0.93)				
4. T1: Need Affiliation	51	4.84	1.16	0.20	0.28*	-0.03	(0.89)			
5. T1: Work Life	51	2.69	0.81	-0.30*	-0.10	-0.03	-0.06	(0.90)		
6. T1: Prof. Isolation	51	2.44	0.85	0.27	-0.04	-0.26	0.34*	0.13	(0.91)	
7. T1: LMX	51	4.04	0.79	0.16	0.19	0.13	0.03	-0.32*	-0.14	(0.92)
8. T1: Turnover Intent	51	2.38	1.53	-0.28*	0.08	-0.30*	-0.15	0.20	0.05	-0.36**
9. S: LMX	33	4.38	0.47	-0.09	-0.03	0.07	-0.34*	0.06	-0.03	0.32
10. S: Performance	33	6.63	0.54	-0.19	0.21	0.09	-0.30	0.14	0.04	-0.35*

Note. *$p < .05$; **$p < .01$; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; Internal consistency alpha values listed in parentheses on the diagonal

Table 14 (continued)

Involuntary Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	8	9	10
1. T1: Tel. Intensity	51	0.19	0.76			
2. T1: Boundary Perm.	51	3.12	0.54			
3. T1: Scheduling Flex.	51	4.02	0.98			
4. T1: Need Affiliation	51	4.84	1.16			
5. T1: Work Life	51	2.69	0.81			
6. T1: Prof. Isolation	51	2.44	0.85			
7. T1: LMX	51	4.04	0.79			
8. T1: Turnover Intent	51	2.38	1.53	(0.90)		
9. S: LMX	33	4.38	0.47	0.20	(0.82)	
10. S: Performance	33	6.63	0.54	0.29	0.59**	(0.86)

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings;

Internal consistency alpha values listed in parentheses on the diagonal

Table 15

Individual Contributor Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	1	2	3	4	5	6	7
1. T1: Tel. Intensity	290	-0.04	0.91	(0.93)						
2. T1: Voluntariness	290	1.11	0.31	0.05	-					
3. T1: Boundary Perm.	287	2.40	0.86	-0.01	-0.07	(0.61)				
4. T1: Scheduling Flex.	287	2.19	0.83	0.09	0.00	0.17**	(0.88)			
5. T1: Need Affiliation	287	3.08	0.61	-0.02	0.09	0.24**	0.10	(0.89)		
6. T1: Work Life	286	3.83	1.01	0.07	0.05	0.04	-0.09	0.04	(0.92)	
7. T1: Prof. Isolation	286	4.50	1.19	0.25**	0.15*	0.13*	0.07	0.27**	0.31**	(0.91)
8. T1: LMX	285	4.03	0.74	0.04	0.03	0.09	0.22**	0.07	-0.25**	-0.18**
9. T1: Turnover Intent	285	2.02	1.31	-0.07	0.10	0.04	-0.18**	0.05	0.33**	0.26**
10. S: Performance	180	6.50	0.63	0.01	0.06	0.12	0.04	-0.05	-0.07	-0.12

Note. *$p < .05$; **$p < .01$; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; Internal consistency alpha values listed in parentheses on the diagonal

Table 15(continued)

Individual Contributor Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	8	9	10
1. T1: Tel. Intensity	290	-0.04	0.91			
2. T1: Voluntariness	290	1.11	0.31			
3. T1: Boundary Perm.	287	2.40	0.86			
4. T1: Scheduling Flex.	287	2.19	0.83			
5. T1: Need Affiliation	287	3.08	0.61			
6. T1: Work Life	286	3.83	1.01			
7. T1: Prof. Isolation	286	4.50	1.19			
8. T1: LMX	285	4.03	0.74	(0.90)		
9. T1: Turnover Intent	285	2.02	1.31	-0.41**	(0.86)	
10. S: Performance	180	6.50	0.63	0.32**	-0.06	(0.90)

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings;

Internal consistency alpha values listed in parentheses on the diagonal

Table 16

Full-Time Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	1	2	3	4	5	6	7
1. T1: Voluntariness	213	1.13	0.33	-						
2. T1: Boundary Perm.	210	3.13	0.66	0.02	(0.66)					
3. T1: Scheduling Flex.	209	3.99	0.97	0.04	0.24**	(0.87)				
4. T1: Need Affiliation	209	4.42	1.24	0.16*	0.27**	0.06	(0.90)			
5. T1: Work Life	210	2.42	0.89	-0.01	0.05	-0.07	0.07	(0.92)		
6. T1: Prof. Isolation	210	2.38	0.88	0.08	0.00	-0.04	0.31**	0.28**	(0.91)	
7. T1: LMX	208	4.10	0.68	0.01	0.14*	0.10	-0.08	-0.25**	-0.25**	(0.88)
8. T1: Turnover Intent	208	1.92	1.17	0.11	-0.03	-0.10	0.12	0.43**	0.44**	-0.44**
9. S: Performance	129	6.55	0.60	0.03	0.05	0.03	-0.17	0.00	-0.16	0.36**

Note. *$p < .05$; **$p < .01$; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings; Internal consistency alpha values listed in parentheses on the diagonal

Table 16 (continued)

Full-Time Telecommuters: Means, standard deviations, and intercorrelations

Measure	*N*	*M*	*SD*	8	9
1. T1: Voluntariness	213	1.13	0.33		
2. T1: Boundary Perm.	210	3.13	0.66		
3. T1: Scheduling Flex.	209	3.99	0.97		
4. T1: Need Affiliation	209	4.42	1.24		
5. T1: Work Life	210	2.42	0.89		
6. T1: Prof. Isolation	210	2.38	0.88		
7. T1: LMX	208	4.10	0.68		
8. T1: Turnover Intent	208	1.92	1.17	(0.84)	
9. S: Performance	129	6.55	0.60	-0.05	(0.88)

Note. *p < .05; **p < .01; T1 = Telecommuter Time 1 ratings; S = Supervisor ratings;

Internal consistency alpha values listed in parentheses on the diagonal

Figure 1. Proposed conceptual model

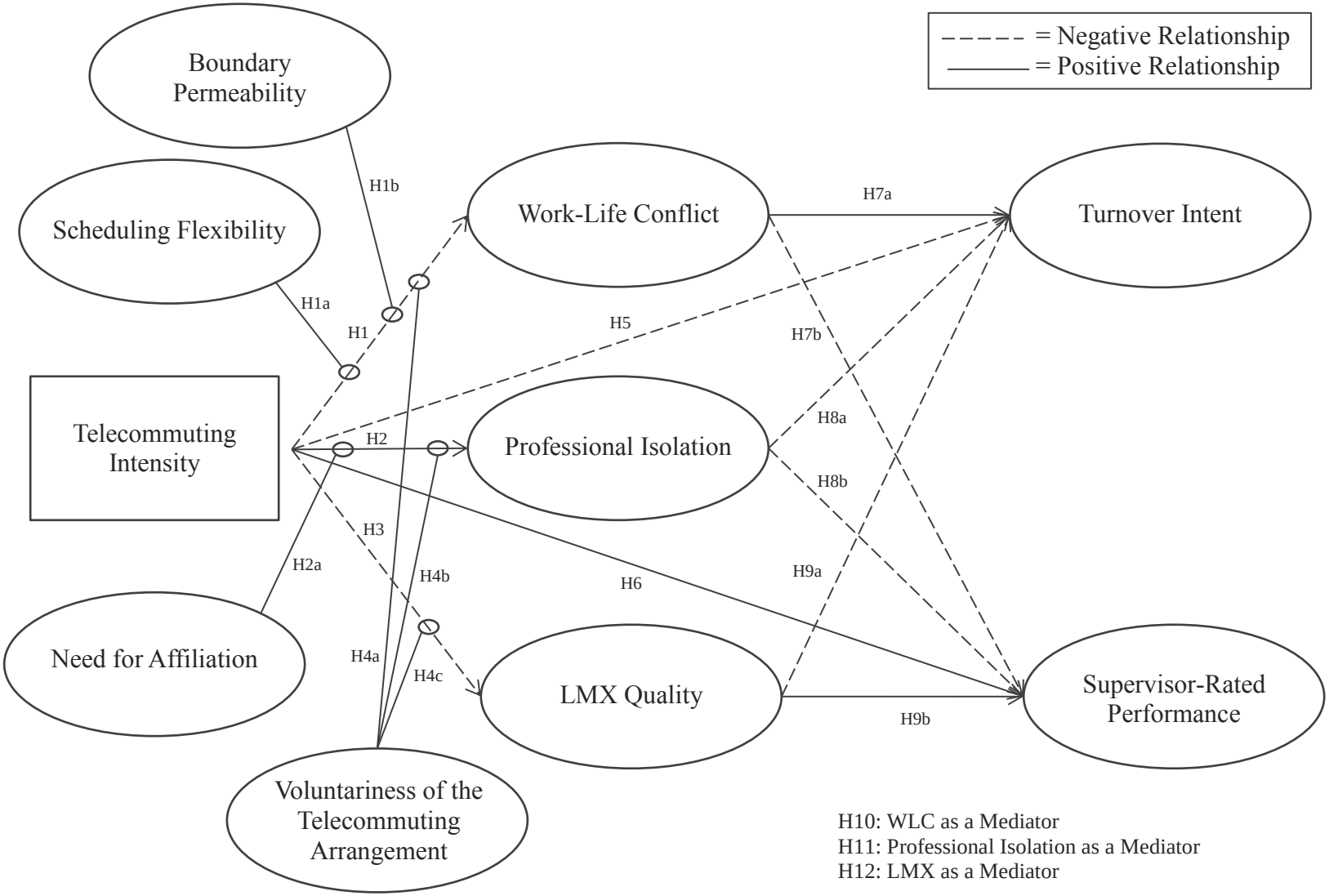


Figure 2. Structural Equation Model (Revised model with Voluntariness dropped)

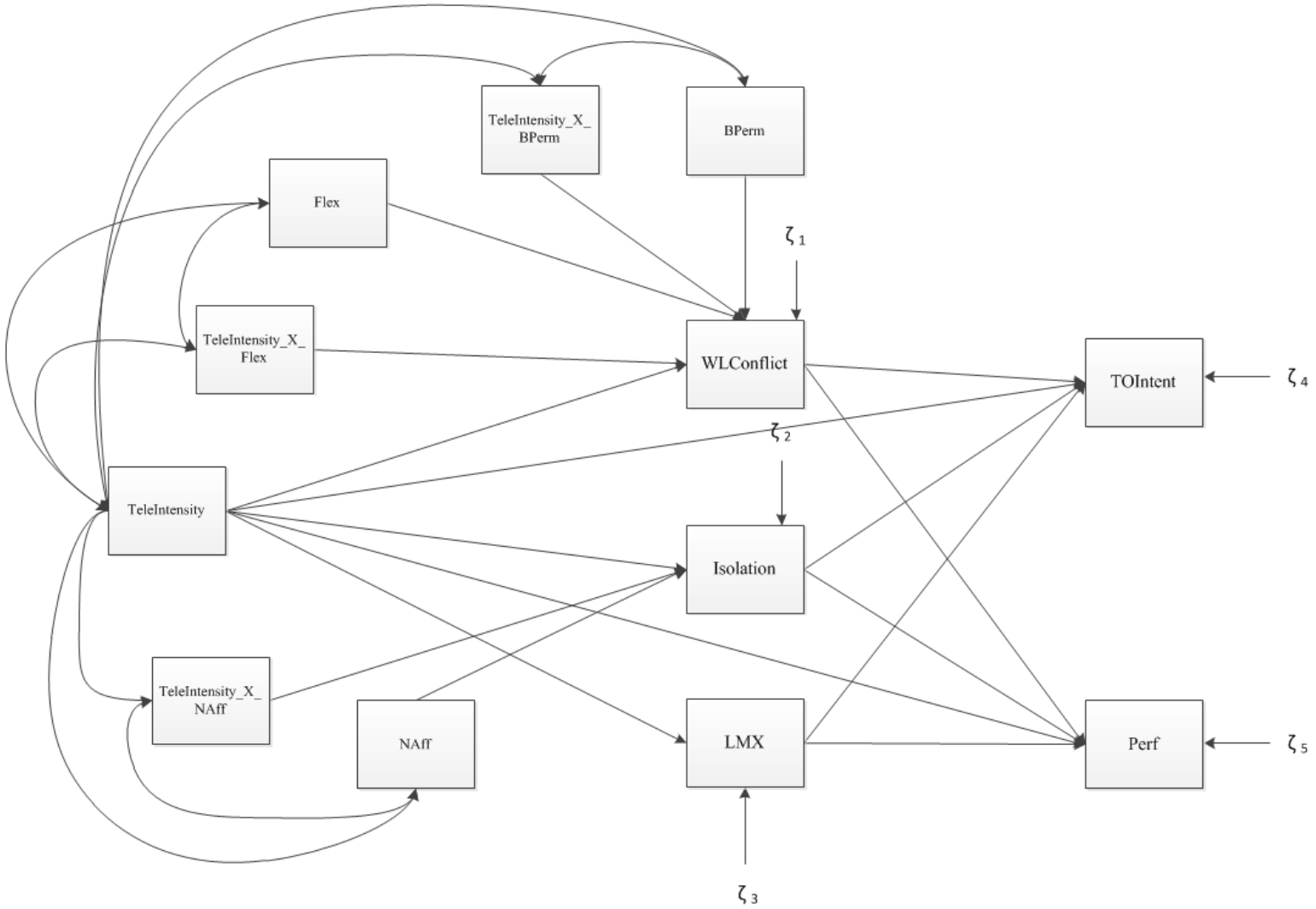


Figure 3. CFA Measurement Model

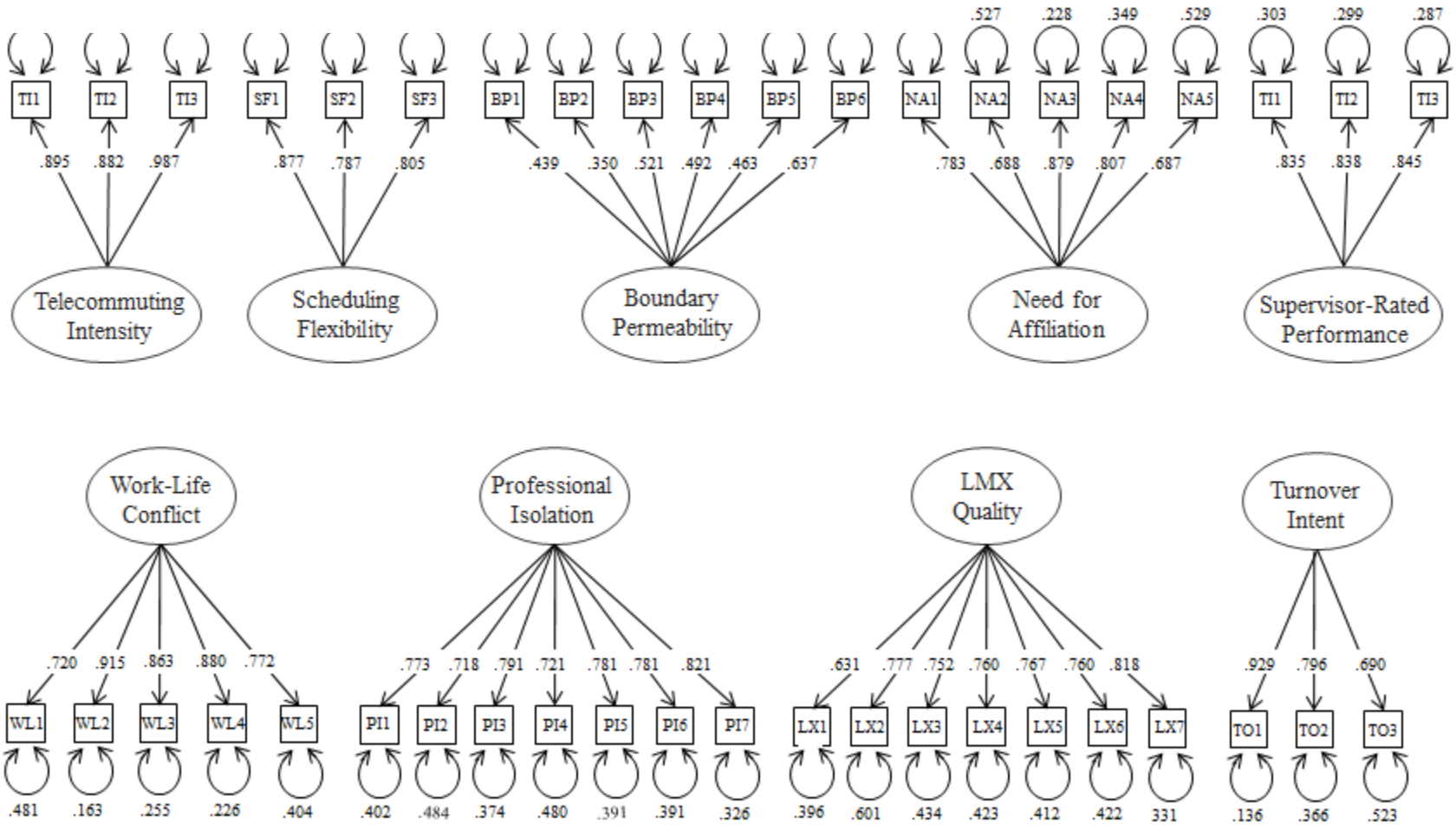


Figure 4. Structural Equation Model 1– Model with LMX rated by the telecommuter and Voluntariness dropped

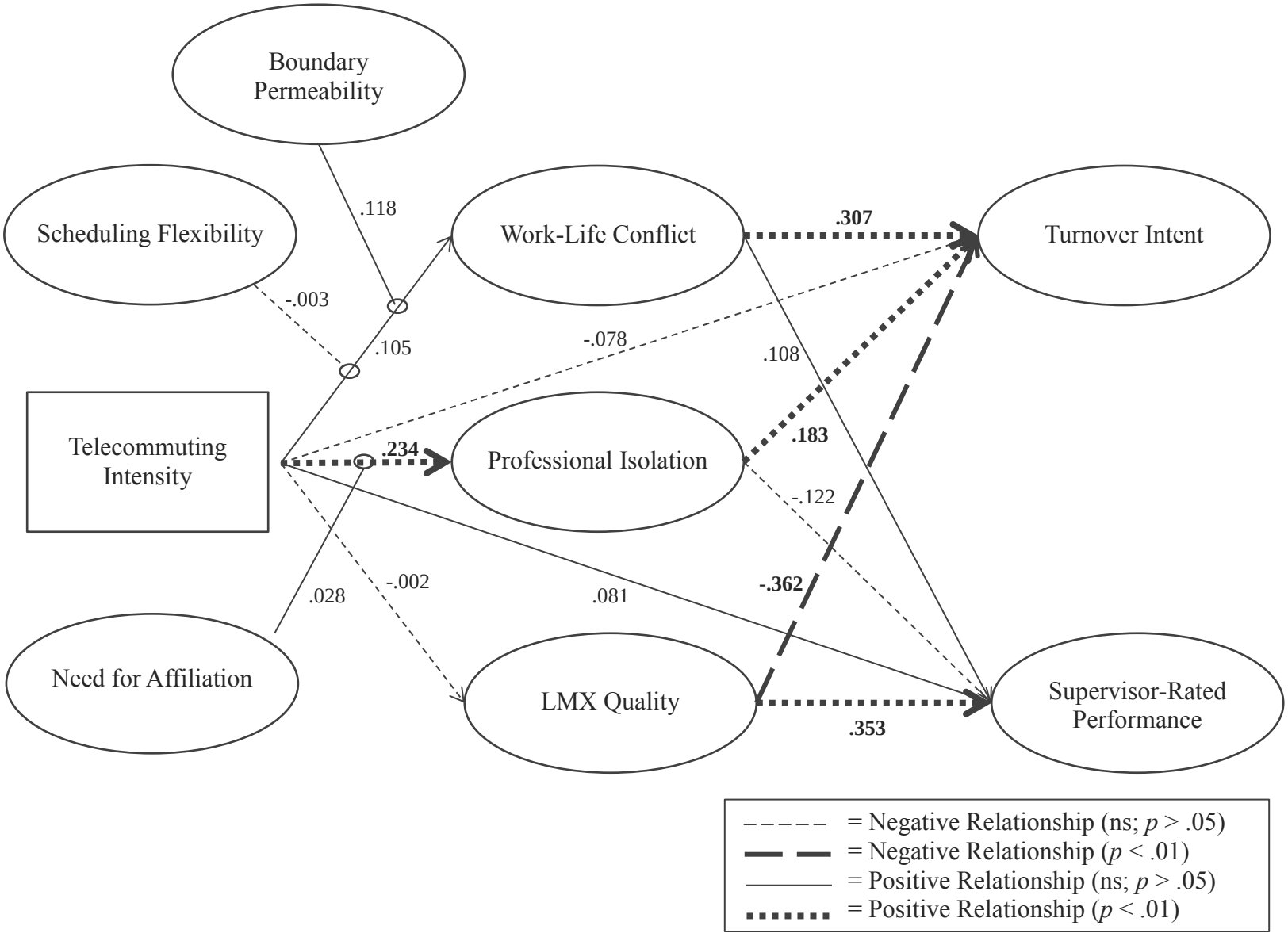
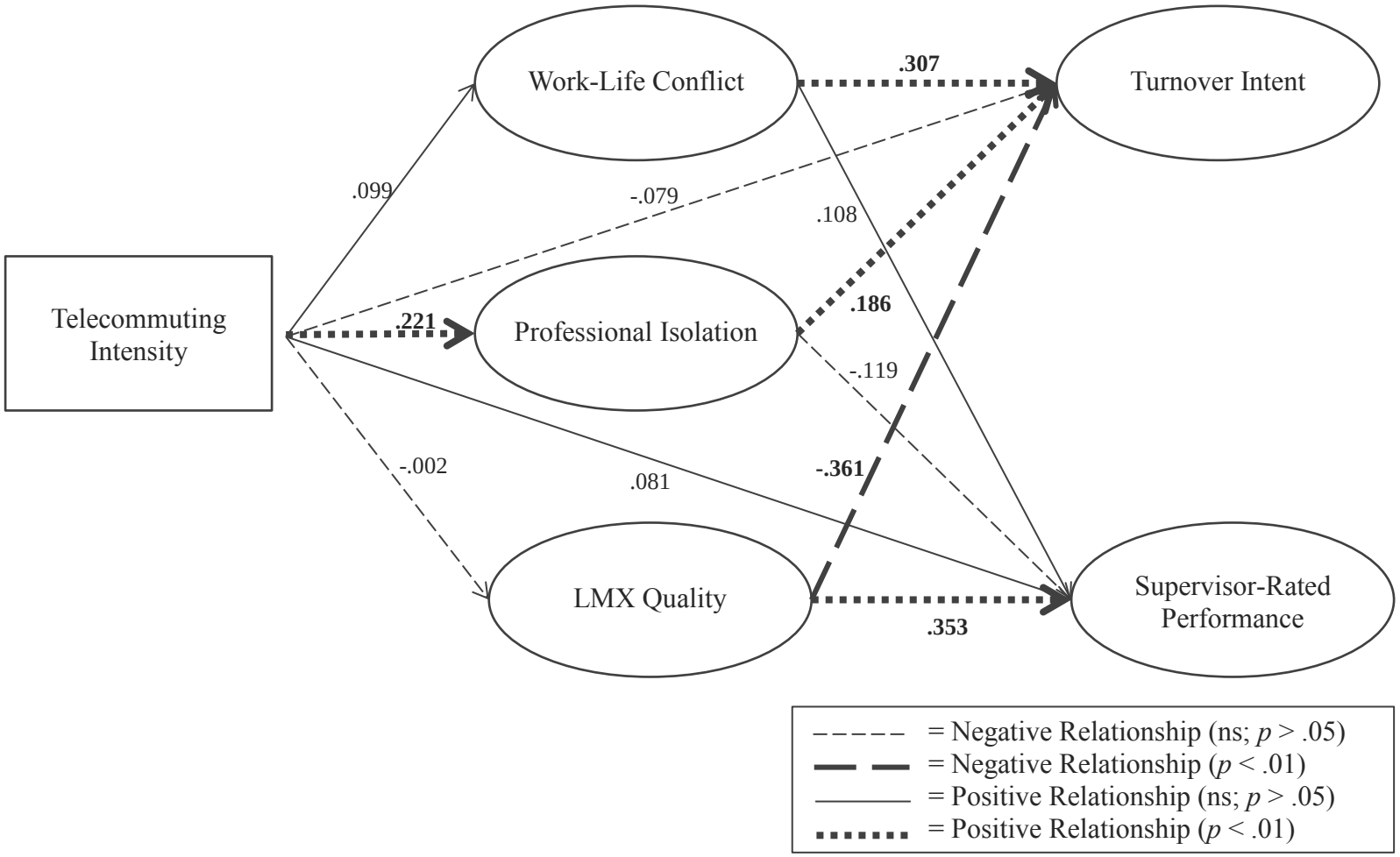


Figure 5. Structural Equation Model 4– Model with all moderators removed



APPENDICES

Appendix A: Telecommuter Scales

Telecommuting Intensity

Please describe a typical week using the table below. In each box, please write the ***number of hours*** worked at the location on a particular day. The number of hours in the box should equal the number of hours worked during the week. For example, if I worked an 8 hour day on Monday, 3 of which were at home and 5 of which were at the office, I would record the hours as illustrated below.

	Typical Work Week						
	MON	**TUE**	**WED**	**THU**	**FRI**	**SAT**	**SUN**
Not Telecommuting (Office)	5						
Telecommuting							
Home Office	3						
Satellite Office							
Neighborhood Work Center							
On the Road							
Other, Please Explain							
Total Hours Per Day	8						

In a typical week, how many hours do you telecommute?
What percentage of an average week do you telecommute? (0-100%)

Voluntariness of the Telecommuting Arrangement
How did you start telecommuting in your current job?

1. I applied for a job that involved telecommuting part- or full-time
2. In my current job, I asked for the option to telecommute
3. In my current job, I was offered the option to telecommute
4. My supervisor decided that I would telecommute
5. My company decided that I would telecommute
6. Other (please specify)

Answers 1, 2, and 3 were collapsed to represent voluntary and answers 4 and 5 were collapsed to represent involuntary.

Briefly elaborate on the question above and describe how you began telecommuting:

Work-Life Balance (Fisher, Bulger, & Smith, 2009)
Please indicate the frequency with which you have felt the following during the last month:
1 (*not at all*), 2 (*rarely*), 3 (*sometimes*), 4 (*often*), and 5 (*almost all of the time*)

When I finish my workday, I am too tired to do the things I would like to do.
My job makes it difficult to maintain the kind of personal life I would like.
I often neglect my personal needs because of the demands of my work.
My personal life suffers because of my work.
I have to miss out on important personal activities due to the amount of time I spend doing work.

Professional Isolation (Golden, Veiga, & Dino, 2008)
Please indicate the frequency with which you have felt the following during the last month:
1 (*rarely*), 2 (*occasionally*), 3 *(a moderate amount),* 4 (*often*), and 5 (*most of the time*)

I feel left out on activities and meetings that could enhance my career.
I miss out on opportunities to be mentored.
I feel out of the loop.
I miss face-to-face contact with coworkers.
I feel isolated.
I miss the emotional support of coworkers.
I miss informal interaction with others.

Leader-Member Exchange (LMX7; Graen, Novak, & Sommerkamp, 1982)
This section is to obtain additional information about you and your current boss.
Please check the response that most clearly reflects how you feel.

Do you know where you stand with your leader ... do you usually know how satisfied your leader is with what you do?

__ (5) Very often __ (2) Occasionally
__ (4) Fairly often __ (1) Rarely
__ (3) Sometimes

How well does your leader understand your job problems and needs?

__ (5) A great deal __ (2) A little
__ (4) Quite a bit __ (1) Not a bit
__ (3) A fair amount

How well does your leader recognize your potential?

__ (5) Fully __ (2) A little
__ (4) Mostly __ (1) Not at all
__ (3) Moderately

Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?

__ (5) Very high
__ (4) High
__ (3) Moderate
__ (2) Small
__ (1) None

Again, regardless of the amount of formal authority your leader has, what are the chances that he/she would "bail you out" at his/her expense?

__ (5) Very high
__ (4) High
__ (3) Moderate
__ (2) Small
__ (1) None

I have enough confidence in my leader that I would defend and justify his/her decision if he/she were not present to do so.

__ (5) Strongly agree
__ (4) Agree
__ (3) Neutral
__ (2) Disagree
__ (1) Strongly disagree

How would you characterize your working relationship with your leader?

__ (5) Extremely effective
__ (4) Better than average
__ (3) Average
__ (2) Worse than average
__ (1) Extremely ineffective

Turnover Intent (Luchak & Gellatly, 2007)
Please indicate your agreement with the following statements.
1 (almost never), 2 (seldom), 3 (sometimes but infrequently), 4 (occasionally), 5 (often), 6 (usually), 7 (almost always)

Over the past month, how frequently have you:
(a) had thoughts of quitting
(b) considered searching for another job
(c) intended to quit.

Boundary Permeability (Kossek, Lautsch, & Eaton, 2006)
Please indicate your agreement with the following statements.
1 (strongly agree), 2 (agree), 3(neutral), 4 (disagree), 5 (strongly disagree)

Throughout the work day, I deal with personal and work issues as they occur.
It would be rare for me to read work related materials in my personal time.
I tend to integrate work and non-work roles through the work day.
I tend to handle emails related to work separately from emails related to personal matters.
I tend to not talk about work issues with my family and friends.
I actively strive to keep my personal and work-life separate.

Scheduling Flexibility (Pierce & Newstrom, 1983)
Please indicate your agreement with the following statements.
1 (very little) to 3 (moderate) to 5 (very much)

To what extent are you able to act independently of your supervisor in defining your work schedule?
How much discretion can you exercise in defining your work schedule?
How much are you left on your own to define your own work schedule?

Need for Affiliation (Wiesenfeld, Raghuram, & Garud, 2001)
Please indicate your agreement with the following statements.
1 (strongly disagree), 2 (disagree), 3 (slightly disagree), 4 (neutral), 5 (slightly agree), 6 (agree), 7 (strongly agree)

I think being close to others, listening to them, and relating to them is one of my favorite and most satisfying pastimes
I would find it very satisfying to be able to form new friendships with whomever I liked.
Just being around others and finding out about them is one of the most interesting things I can think of doing.
I seem to get satisfaction from being with others more than a lot of other people do.
I feel like I have really accomplished something valuable when I am able to get close to someone.

Appendix B: Supervisor Scales

Telecommuting Intensity

In a typical week, how many hours does this employee telecommute?
What percentage of an average week does this employee telecommute? (0-100%)

Voluntariness of the Telecommuting Arrangement
How did this employee start telecommuting in his/her current job?

1. He/she applied for a job that involved telecommuting part- or full-time
2. He/she asked for the option to telecommute
3. He/she was offered the option to telecommute
4. I decided that he/she would telecommute
5. My company decided that he/she would telecommute
6. Other (please specify)

Answers 1, 2, and 3 were collapsed to represent voluntary and answers 4 and 5 were collapsed to represent involuntary.

Briefly elaborate on the question above and describe how you began telecommuting:

Leader-Member Exchange (LMX7; Graen, Novak, & Sommerkamp, 1982)
This section is to obtain additional information about you and your referent subordinate. Please check the response that most clearly reflects how you feel.

Does your subordinate know where he/she stands with you ... does your subordinate usually know how satisfied you are with what he/she does?

__ (5) Very often __ (2) Occasionally
__ (4) Fairly often __ (1) Rarely
__ (3) Sometimes

How well do you understand this subordinate's problems and needs?

__ (5) A great deal __ (2) A little
__ (4) Quite a bit __ (1) Not a bit
__ (3) A fair amount

How well do you recognize your subordinate's potential?

__ (5) Fully __ (2) A little
__ (4) Mostly __ (1) Not at all
__ (3) Moderately

Regardless of how much formal authority you have built into your position, what are the chances that you would be personally inclined to use your power to help this subordinate solve problems in his/her work?

__ (5) Very high __ (2) Small
__ (4) High __ (1) None
__ (3) Moderate

Again, regardless of the amount of formal authority you have, what are the chances that you would "bail him/her out" at your expense?

__ (5) Very high
__ (4) High
__ (3) Moderate
__ (2) Small
__ (1) None

Your subordinate would have enough confidence in you that he/she would defend and justify your decision if you were not present to do so.

__ (5) Strongly agree
__ (4) Agree
__ (3) Neutral
__ (2) Disagree
__ (1) Strongly disagree

How would you characterize your working relationship with this subordinate?

__ (5) Extremely effective
__ (4) Better than average
__ (3) Average
__ (2) Worse than average
__ (1) Extremely ineffective

Overall Job Performance (Hackman & Oldham, 1976)

Please rate your direct report's job performance using the following questions:
1 (very unsatisfactory), 2 (unsatisfactory), 3 (slightly unsatisfactory), 4 (neutral), 5 (slightly satisfactory), 6 (satisfactory), 7 (very satisfactory)

My direct report's work quality is:
My direct report's work quantity is:
My direct report's effort on his/her job is:

Appendix C: Survey Instrument for Telecommuters (Time 1)

Welcome to the Study of Telecommuting Experiences

The current study will consist of a survey made up of 50 questions and is designed to take about 20 minutes to complete. On the next page, you will see the 'Informed Consent' form that is required for participation in University doctoral research. By clicking 'Next' at the end of the Informed Consent section, you are indicating your consent. After you choose to participate, you will begin the survey.

First Name:
Last Name:

Telecommuting Definition

The current research measures the effect of telecommuting intensity on employee outcomes. Telecommuting has been defined as "an alternative work arrangement in which employees perform tasks elsewhere (e.g., home-office, satellite office, client site) that are normally done in a primary or central workplace, for at least some portion of their work schedule". Telecommuting Intensity is defined as the number of hours during the work week that are spent in a telecommuting (remote work) environment versus at the central workplace.

Do you telecommute for at least part of your standard work week?

Yes
No

Background

Before we talk about telecommuting, please tell me a bit about yourself and your background.

Your Organization

1. How long have you worked for your current organization?

   Year(s):
   Month(s):

2. What is your current job/position title?

3. How would you categorize your organization according to the Department of Labor Industry list?

    a. Construction (e.g., construction of buildings or engineering projects)
    b. Education and Health Services (e.g., educational services, health care and social assistance)
    c. Financial Activities (e.g., finance and insurance, real estate and rental and leasing)
    d. Information (i.e., establishments engaged in producing and distributing information, gathering and processing data)
    e. Leisure and Hospitality (e.g., arts, entertainment, recreation, accommodation and food services)
    f. Manufacturing (i.e., establishments engaged in the mechanical, physical, or chemical transformation of materials into new products)
    g. Natural resources and mining (e.g., agriculture, forestry, fishing and hunting, mining, quarrying, and oil and gas extraction)
    h. Other services (e.g., repair & maintenance, personal & laundry, religious, civic and social advocacy)
    i. Professional and business services (e.g., legal, accounting, architecture, computer systems design, scientific research, advertising, technical consulting, management, office administration)
    j. Wholesale and retail trade, transportation and warehousing, and utilities.

<u>Your Job/Current Position</u>

4. How long have you worked in your current job/position?

    Year(s):
    Month(s):

5. How long have you been telecommuting in your current job/position?

    Year(s):
    Month(s):

6. How many hours do you work per week on average?

    a. Part Time (0-9 hours/week)
    b. Part Time (10-19 hours/week)
    c. Part Time (20-29 hours/week)
    d. Part Time (30-39 hours/week)
    e. Full Time (40-49 hours/week)
    f. Full Time (50-59 hours/week)
    g. Full Time (60+ hours/week)
    h. I am not currently working

7. How would you categorize your job/position according to the Department of Labor Occupation list?

    a. Architecture and Engineering
    b. Arts, Design, Entertainment, Sports, and Media
    c. Building and Grounds Cleaning and Maintenance
    d. Business and Financial Operations
    e. Community and Social Service
    f. Computer and Mathematical
    g. Construction and Extraction
    h. Education, Training, and Library
    i. Farming, Fishing, and Forestry
    j. Food Preparation and Serving Related
    k. Healthcare Practitioners and Technical
    l. Healthcare Support
    m. Installation, Maintenance, and Repair
    n. Legal
    o. Life, Physical, and Social Science
    p. Management
    q. Office and Administrative Support
    r. Personal Care and Service
    s. Production
    t. Protective Service
    u. Sales and Related
    v. Transportation and Material Moving

8. Over your career, how much time have you spent in jobs that involved telecommuting?

    Year(s):
    Month(s):

9. What is your pay structure?

    a. Salaried
    b. Hourly
    c. Project-Based

10. What is your job level?

    a. Individual contributor
    b. Team leader
    c. Department leader
    d. Senior leader/Executive

Your Supervisor and Coworkers

11. What is your current supervisor's job title?

12. How long has your current supervisor been in his/her current job?

    Year(s):
    Month(s):

13. How long have you worked for your current supervisor?

    Year(s):
    Month(s):

14. What percentage of your coworkers telecommute at least part time?

Telecommuting Intensity

15. Please describe a typical week using the table below. In each box, please write the ***number of hours*** worked at the location on a particular day. The number of hours in the box should equal the number of hours worked during the week. For example, if I worked an 8 hour day on Monday, 3 of which were at home and 5 of which were at the office, I would record the hours as illustrated below.

	Typical Work Week						
	MON	**TUE**	**WED**	**THU**	**FRI**	**SAT**	**SUN**
Not Telecommuting (Office)	5						
Telecommuting							
Home Office	3						
Satellite Office							
Neighborhood Work Center							
On the Road							
Other, Please Explain							
Total Hours Per Day	8						

16. In a typical week, how many hours do you telecommute?

17. What percentage of an average week do you telecommute?

18. How did you start telecommuting in your current job?

    a. I applied for a job that involved telecommuting part- or full-time
    b. In my current job, I asked for the option to telecommute
    c. In my current job, I was offered the option to telecommute
    d. My supervisor decided that I would telecommute
    e. My company decided that I would telecommute
    f. Other (please specify)

    Briefly elaborate on the question above and describe how you began telecommuting:

Telecommuter Experiences

Please indicate the frequency with which you have felt the following during the last month:

1	2	3	4	5
Not at All	Rarely	Sometimes	Often	Almost All of the Time

19. When I finish my workday, I am too tired to do the things I would like to do.
20. My job makes it difficult to maintain the kind of personal life I would like.
21. I often neglect my personal needs because of the demands of my work.
22. My personal life suffers because of my work.
23. I have to miss out on important personal activities due to the amount of time I spend doing work.

Please indicate the frequency with which you have felt the following during the last month:

1	2	3	4	5
Rarely	Occasionally	A moderate amount	Often	Most of the Time

24. I feel left out on activities and meetings that could enhance my career.
25. I miss out on opportunities to be mentored.
26. I feel out of the loop.
27. I miss face-to-face contact with coworkers.
28. I feel isolated.
29. I miss the emotional support of coworkers.
30. I miss informal interaction with others.

Please indicate your agreement with the following statements.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

31. Throughout the work day, I deal with personal and work issues as they occur.
32. It would be rare for me to read work related materials in my personal time.
33. I tend to integrate work and non-work roles through the work day.
34. I tend to handle emails related to work separately from emails related to personal matters.
35. I tend to not talk about work issues with my family and friends.
36. I actively strive to keep my personal and work-life separate.

Please indicate your agreement with the following statements.

1	2	3	4	5
Very Little		Moderate		Very Much

37. To what extent are you able to act independently of your supervisor in defining your work schedule?
38. How much discretion can you exercise in defining your work schedule?
39. How much are you left on your own to define your own work schedule?

Please indicate your agreement with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

40. I think being close to others, listening to them, and relating to them is one of my favorite and most satisfying pastimes
41. I would find it very satisfying to be able to form new friendships with whomever I liked.
42. Just being around others and finding out about them is one of the most interesting things I can think of doing.
43. I seem to get satisfaction from being with others more than a lot of other people do.
44. I feel like I have really accomplished something valuable when I am able to get close to someone.

Telecommuter Outcomes

Please check the response that most clearly reflects how you feel.

45. Do you know where you stand with your leader ... do you usually know how satisfied your leader is with what you do?

1	2	3	4	5
Rarely	Occasionally	Sometimes	Fairly Often	Very Often

46. How well does your leader understand your job problems and needs?

1	2	3	4	5
Not a bit	A little	A fair amount	Quite a bit	A great deal

47. How well does your leader recognize your potential?

1	2	3	4	5
Not at all	A little	Moderately	Mostly	Fully

48. Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?

1	2	3	4	5
None	Small	Moderate	High	Very High

49. Again, regardless of the amount of formal authority your leader has, what are the chances that he/she would "bail you out" at his/her expense?

1	2	3	4	5
None	Small	Moderate	High	Very High

50. I have enough confidence in my leader that I would defend and justify his/her decision if he/she were not present to do so.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

51. How would you characterize your working relationship with your leader?

1	2	3	4	5
Extremely Ineffective	Worse than Average	Average	Better than Average	Extremely Effective

Over the past month, how frequently have you:

1	2	3	4	5	6	7
Almost Never	Seldom	Sometimes but Infrequently	Occasionally	Often	Usually	Almost Always

52. had thoughts of quitting

53. considered searching for another job

54. intended to quit.

Demographics

55. What is your Age?

56. What is your gender?

    a. Male
    b. Female
    c. Decline to Identify

56. How would you describe yourself?

    a. American Indian/Alaska Native
    b. Asian
    c. Hispanic
    d. Native Hawaiian or other Pacific Islander
    e. Black or African-American
    f. White or Caucasian
    g. More than one race
    h. Other-please specify

57. What is your highest level of education?

    a. High School
    b. Some College (non-degreed)
    c. Technical/Trade Certification
    d. Associates Degree
    e. Bachelor's Degree
    f. Some Graduate School (non-degreed)
    g. Master's Degree
    h. Doctorate

58. What is the size of your Household?

    a. Total number of people routinely residing at the house
    b. Number of dependents under 18
    c. Number of dependents over 70

Follow-Up Information

I would also like to ask your supervisor a few questions in a survey that will take no more than 5 minutes to complete. If possible, please provide the following information to identify you to your supervisor so that he/she can accurately respond to questions about the telecommuting relationship.

What is your name?

What is your supervisor's information?
First Name:
Last Name:
Email Address:

Would you be willing to complete a brief 5 minute follow-up to this survey in approximately 4 weeks?
Yes
No

If you would be willing to participate, please enter your email address.
Thanks Again! Your responses will help further the research on telecommuter experiences!

Thank you for participating in this research!

Appendix D: Survey Instrument for Telecommuters (Time 2)

Welcome to Part II of the Study of Telecommuting Experiences

The current study will consist of a few follow-up questions to the original study you completed earlier this year. The survey is designed to take approximately 5 minutes to complete. As a reminder, all data will be confidential.

First Name:
Last Name:

Telecommuter Experiences

Please indicate the frequency with which you have felt the following during the last month:

1	2	3	4	5
Not at All	Rarely	Sometimes	Often	Almost All of the Time

1. When I finish my workday, I am too tired to do the things I would like to do.
2. My job makes it difficult to maintain the kind of personal life I would like.
3. I often neglect my personal needs because of the demands of my work.
4. My personal life suffers because of my work.
5. I have to miss out on important personal activities due to the amount of time I spend doing work.

Please indicate the frequency with which you have felt the following during the last month:

1	2	3	4	5
Rarely	Occasionally	A moderate amount	Often	Most of the Time

6. I feel left out on activities and meetings that could enhance my career.
7. I miss out on opportunities to be mentored.
8. I feel out of the loop.
9. I miss face-to-face contact with coworkers.
10. I feel isolated.
11. I miss the emotional support of coworkers.
12. I miss informal interaction with others.

Telecommuter Outcomes

Please check the response that most clearly reflects how you feel.

13. Do you know where you stand with your leader ... do you usually know how satisfied your leader is with what you do?

1	2	3	4	5
Rarely	Occasionally	Sometimes	Fairly Often	Very Often

14. How well does your leader understand your job problems and needs?

1	2	3	4	5
Not a bit	A little	A fair amount	Quite a bit	A great deal

15. How well does your leader recognize your potential?

1	2	3	4	5
Not at all	A little	Moderately	Mostly	Fully

16. Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?

1	2	3	4	5
None	Small	Moderate	High	Very High

17. Again, regardless of the amount of formal authority your leader has, what are the chances that he/she would "bail you out" at his/her expense?

1	2	3	4	5
None	Small	Moderate	High	Very High

18. I have enough confidence in my leader that I would defend and justify his/her decision if he/she were not present to do so.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

19. How would you characterize your working relationship with your leader?

1	2	3	4	5
Extremely Ineffective	Worse than Average	Average	Better than Average	Extremely Effective

Over the past month, how frequently have you:

1	2	3	4	5	6	7
Almost Never	Seldom	Sometimes but Infrequently	Occasionally	Often	Usually	Almost Always

20. had thoughts of quitting
21. considered searching for another job
22. intended to quit.

Follow-up Questions

23. Do you have the same job as when you completed the first survey approximately one month ago?
    a. Yes
    b. No
    c. I don't remember

24. Do you have the same supervisor as when you completed the first survey approximately one month ago?
    a. Yes
    b. No
    c. I don't remember

25. Since the first survey, has anything happened that may have significantly influenced your answers today? If so, please briefly explain.

Thank you for participating in this research!

Appendix E: Survey Instrument for Supervisors

Welcome to the Study of Telecommuting Experiences

One of your employees completed a survey about his/her experiences as a telecommuter. To provide more insight into his/her experiences, I would greatly appreciate if you would spend approximately 5 minutes to complete the following brief survey. On the next page, you will see the 'Informed Consent' form that is required for participation in University doctoral research. By clicking 'Next' at the end of the Informed Consent section, you are indicating your consent. After you choose to participate, you will begin the survey.

First Name:
Last Name:

What is the full name of your employee?

Telecommuting Intensity

1. In a typical week, how many hours does this employee telecommute?
2. What percentage of an average week does this employee telecommute?
3. How did this employee start telecommuting in his/her current job?
    a. He/she applied for a job that involved telecommuting part- or full-time
    b. He/she asked for the option to telecommute
    c. He/she was offered the option to telecommute
    d. I decided that he/she would telecommute
    e. My company decided that he/she would telecommute
    f. Other (please specify)

    Briefly elaborate on the question above and describe how you began telecommuting:

4. How long have you been the supervisor of this telecommuter?

    Year(s):
    Month(s):

5. What percentage of your employees telecommute at least part time?

Telecommuting Outcomes

Please check the response that most clearly reflects how you feel.

6. Does your subordinate know where he/she stands with you ... does your subordinate usually know how satisfied you are with what he/she does?

1	2	3	4	5
Rarely	Occasionally	Sometimes	Fairly Often	Very Often

7. How well do you understand this subordinate's problems and needs?

1	2	3	4	5
Not a bit	A little	A fair amount	Quite a bit	A great deal

8. How well do you recognize your subordinate's potential?

1	2	3	4	5
Not at all	A little	Moderately	Mostly	Fully

9. Regardless of how much formal authority you have built into your position, what are the chances that you would be personally inclined to use your power to help this subordinate solve problems in his/her work?

1	2	3	4	5
None	Small	Moderate	High	Very High

10. Again, regardless of the amount of formal authority you have, what are the chances that you would "bail him/her out" at your expense?

1	2	3	4	5
None	Small	Moderate	High	Very High

11. Your subordinate would have enough confidence in you that he/she would defend and justify your decision if you were not present to do so.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

12. How would you characterize your working relationship with this subordinate?

1	2	3	4	5
Extremely Ineffective	Worse than Average	Average	Better than Average	Extremely Effective

Please rate your employee's job performance using the following questions:

1	2	3	4	5	6	7
Very Unsatisfactory	Unsatisfactory	Slightly Unsatisfactory	Neutral	Slightly Satisfactory	Satisfactory	Very Satisfactory

13. My direct report's work quality is:
14. My direct report's work quantity is:
15. My direct report's effort on his/her job is:

Demographics

16. How long have you worked for your current organization?
    Years:
    Months:

17. What is your current job/position title?

18. How long have you worked in your current job/position?

19. Have you telecommuted at all during your career?

    No
    Yes
    If yes, please list the number of years and months you have spent telecommuting.

20. What is your job level?

    a. Individual contributor
    b. Team leader
    c. Department leader
    d. Senior leader/Executive

21. What is your Age?

22. What is your gender?

    a. Male
    b. Female
    c. Decline to Identify

23. How would you describe yourself?

    a. American Indian/Alaska Native
    b. Asian
    c. Hispanic
    d. Native Hawaiian or other Pacific Islander
    e. Black or African-American
    f. White or Caucasian
    g. More than one race
    h. Other-please specify

Thank you for participating in this research!