

DISSERTATION

UNFOLDING OF TELECOMMUTING'S EFFECTS IN ORGANIZATIONS:  
PERFORMANCE, COMMITMENT, AND MECHANISMS OF ACTION

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## ABSTRACT

### UNFOLDING OF TELECOMMUTING'S EFFECTS IN ORGANIZATIONS: PERFORMANCE, COMMITMENT, AND MECHANISMS OF ACTION

Telecommuting is an increasingly popular flex work arrangement, and there is controversy regarding its effects on employee performance and commitment. There is likewise lack of clarity regarding mechanisms of action. While autonomy has received support as a mediator of telecommuting's relationship with several work outcomes, the role of work-life balance as a mediating mechanism remains untested, and prior research is largely cross-sectional. The present study drew on instrumental as well as signaling-and-exchange perspectives of telecommuting's benefits to test the simultaneous influence of mediators of job autonomy and work-life balance support perceptions on outcomes of supervisor-rated performance, affective commitment, and intent to stay. I proposed and tested a theoretical model of telecommuting's impact on these outcomes using lagged self-report and supervisor-rated performance data from 2,682 full-time managerial and administrative employees in an organization where telecommuting was broadly offered as a flexible work policy. Results indicated that telecommuting had a positive impact on affective commitment and intent to stay through perceptions of work-life balance support. Perceptions of autonomy and job performance, however, were unaffected. Results suggest that work-life balance support is an important mediator of telecommuting's impact on commitment-related outcomes, and that where telecommuting is perceived as a form of work-life balance support, performance may be unaffected. Results of this study extend the literature on telecommuting's mechanisms of action

and from an organizational perspective, suggest that the “value added” of work-life balance supportive telecommuting arrangements is more likely to come in the form of enhanced commitment versus performance.

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## CHAPTER I

### **Introduction**

Telecommuting, virtual work, telework, remote work, work from home – the form and terminology varies, but in a technologically enabled, global business environment the practice of working away from the office is commonplace. Telecommuting in particular has been defined as a work practice whereby employees substitute some or all of their regular working hours to work away from the office, often at home, performing work tasks and communicating with others via technological means (Allen, Golden, & Shockley, 2015; Nilles, 1998).

Telecommuting is both popular and controversial. Where telecommuting initially gained traction as a means to improve traffic patterns, reduce energy consumption, and recruit highly specialized workers, today the practice is offered to a wide range of workers, often as a means to manage work and non-work roles (Allen et al., 2015; Bailey & Kurland, 2002). A 2014 study found that 67% of U.S. companies offered the option of occasional telecommuting, up from 50% in 2010 (Matos & Galinsky, 2014). About 20% of the U.S. working adult population reports telecommuting at least once a month, and of these individuals, 84% telecommute at least once per week (WorldatWork, 2013). Perhaps due to its pervasiveness and visible contrast to traditional, in-office work, there is debate regarding the implications of telecommuting for human capital outcomes such as employee performance, commitment, and organizational culture. This is well illustrated by revocations of popular work from home policies by several high-profile corporations in recent years, and the ensuing public backlash (Allen et al., 2015).

Happily for those who use and/or support voluntary telecommuting arrangements, there is growing evidence of positive links to outcomes of prime interest to organizations, including



employees' performance and intent to remain with the organization (Gajendran & Harrison, 2007; Martin & MacDonnell, 2012). There are a number of gaps in our understanding of telecommuting's effects, however, which the present study helps to address. First, although there is general support for links to positive outcomes like increased performance and decreased turnover intent (Gajendran & Harrison, 2007), less is known regarding the mechanisms of these relationships. Autonomy appears to be an important partial mediator for attitudinal and behavioral outcomes (Gajendran & Harrison, 2007), but empirical evidence regarding alternative mediators is lacking. Support for previously proposed mechanisms of work-family conflict and organizational/supervisor support is weak at best (Butts, Casper, & Tae, 2013; Gajendran & Harrison, 2007), and although many researchers draw on social exchange theory (Blau, 1964) to frame positive work outcomes of telecommuting, few studies directly test exchange mechanisms.

Furthermore, while telecommuting appears to have small negative links with turnover intent (Gajendran & Harrison, 2007; Golden, Veiga, & Dino, 2008), the limited research examining telecommuting and organizational commitment tends to yield mixed results. It may be that telecommuting impacts certain facets of commitment more than others. In addition, commitment and performance outcomes of telecommuting are rarely examined in conjunction, and it is not clear whether the type of commitment engendered by telecommuting unfolds via pathways similar to those resulting in enhanced performance.

Another gap in existing research on telecommuting is a lack of longitudinal data. Although inevitable for most content areas in industrial and organizational psychology, particularly for relatively recent workforce phenomena, this gap increases the possibility of reverse causation. For example, rather than telecommuting enhancing performance through

benefits like increased autonomy and positive exchange relationships, high performance on the part of employees (and/or, managerial favoritism) may beget an array of benefits, including autonomy, support, and permission to telecommute. Of course, the two explanations are not mutually exclusive, and relationships may be reciprocal, as well. There have been some attempts to address potential for reverse causality, e.g. via inclusion of control variables, but lagged/longitudinal data data would provide a more rigorous test of telecommuting's effects.

The present study helps to address these gaps by using telecommuting data spanning five years to test telecommuting's relationship with current-year performance and commitment, mediated by autonomy and support for work-life balance. This study also examines the potential impact of job type (administrative versus managerial) on these pathways. A simplified model of relationships tested is presented in Figure 1.

### **Telecommuting and Work Outcomes: Beneficial in Theory**

Telecommuting offers a number of potential benefits, including better work-life balance, fewer office distractions, reduced travel time, and increased autonomy (Crandall & Gao, 2005). Although comprehensive theoretical formulations are lacking, there are two general perspectives of how these benefits will in turn enhance a broad range of work outcomes, including commitment and performance: An instrumental benefits perspective, and a signaling perspective. An instrumental benefits perspective suggests that tangible and motivational advantages of telecommuting enactment lead to enhanced work outcomes, through intra- and/or interpersonal mechanisms. A signaling perspective, on the other hand, suggests that the *opportunity* to telecommute (regardless of whether or how frequently the employee actually telecommutes, or whether the arrangement is actually beneficial) is a signal of goodwill that, per the norm of

reciprocity (Gouldner, 1960), employees are compelled to reciprocate via increased attitudes and performance. These perspectives are discussed in further detail below.

### **Instrumental Perspective of Telecommuting's Benefits**

Multiple theories of human motivation, when applied to unique features of remote work, would suggest that many of these features have inherent value for enhancing experiences, motivation, and performance at work. These theories include person-environment fit theories and resource-based theories originating in the occupational stress literature.

**Person-environment fit.** Broadly, person-environment (PE) fit refers to compatibility of an individual with his or her environment (Kristof, 1996). Employees experience varying degrees of fit with different entities (supervisors, coworkers, job, organization) and across a wide range of factors, such as values, demands versus abilities, and vocational interests (Kristof-Brown, Zimmerman, & Johnson, 2005).

Voluntary telecommuting arrangements are likely to enhance fit for participating employees in that they are a) preferred as an overall work modality (individuals opt in to these arrangements) and b) they are particularly amenable to adjustment according to individual needs, preferences, and abilities (telecommuters tend to have increased freedoms or flexibility).

Telecommuting may enhance needs-supplies fit, which occurs when the environment satisfies individual needs or preferences, and demands-abilities fit, which occurs when individuals are able to meet environmental demands (Kristof-Brown et al., 2005). For example, telecommuters may value the autonomy of working at home or from a location of choice (needs-supplies fit). Likewise employees with substantial family obligations may be better equipped to meet work demands outside of a traditional 9 to 5, in-office arrangement (demands-abilities fit).

Pierce and Newstrom's work adjustment approach may be particularly relevant to telecommuting. Derived from the Minnesota Theory of Work Adjustment (Dawis & Lofquist, 1984), this framework is one of the first (and one of the few) comprehensive theoretical treatments of flex work arrangement (FWA) psychological benefits to date (Baltes, Briggs, Huff, Wright, & Neuman, 1999; Pierce & Newstrom, 1980 - for a sociotechnical framework, see Belanger, Watson-Manheim, & Swan, 2013). Pierce and Newstrom argue that the unique features of flex scheduling arrangements – in particular their capacity to “flex” to individual needs and preferences – enhances fit, in turn enhancing performance, satisfaction, tenure, organizational commitment, and job involvement, while reducing absenteeism (Pierce & Newstrom, 1980). The same principles may apply for telecommuting. Although the arrangements are distinct, flex scheduling and telecommuting are both considered FWAs in that they provide flexibility in the boundaries (temporal or spatial) within which work is completed (Rau & Hyland, 2002).

**Resource-based perspective.** While the PE fit perspective focuses on compatibility of telecommuters with their work environments, a resource-based perspective construes perks of telecommuting as resources to be synthesized into improved work-related outcomes (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Demands and resources from a resource-based perspective correspond to the demands-abilities and needs-supplies halves of the PE fit equation, respectively. Rather than hinging on individual fit, however, telecommuting's resources are seen as beneficial for work outcomes across individuals. Per job demands-resources theory (JDR), for instance, the optional nature of telecommuting and particular features associated with its use (e.g., autonomy) may constitute a net increase in resources, facilitating positive outcomes such as

engagement and performance (Harter, Schmidt, & Hayes, 2002; Schneider, Macey, Barbera, & Martin, 2009; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

There are a number of features of telecommuting that may be construed as resource increases and/or demand decreases. A commonly cited resource benefit of telecommuting is reduced commute time, which presumably will be channeled into work tasks (Pyöriä, 2011) and/or fulfilling non-work demands and preferences. Working remotely also allows employees to avoid typical office distractions (Bailey & Kurland, 2002; L. Duxbury & Neufeld, 1999; Hunton, 2005). Specifically, there is evidence that employees who voluntarily telecommute actively adjust their work location patterns to minimize interruption (Hunton, 2005). Ability to alter one's work environment and approach to work tasks in general may increase perceived resources (e.g. autonomy, supervisor support) and decrease work or family demands perceived as hindrances, i.e. barriers to growth and goal attainment (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Lazarus & Folkman, 1984).

### **A Signaling & Social Exchange Perspective of Telecommuting's Benefits**

Thus far the benefits of telecommuting have been construed as inherently beneficial and motivating. Greater fit, and/or a greater resources-to-demands ratio, is innately valuable and can directly elicit improved attitudes and performance. A signaling theory perspective (Spence, 1973), on the other hand, suggests potential for positive work outcomes of telecommuting even in the absence of inherent benefits. Applied to organizations, signaling theory suggests that people interpret an organization's observable actions as signals of less observable firm characteristics, thereby forming impressions about the organization's motives (Casper & Harris, 2008). In the work-family literature, signaling theory has been used to explain greater effects of policy availability versus actual use (Butts et al., 2013). Per signaling theory, telecommuting

may be linked to employees' perceptions of supervisor trust, and of organizational, supervisor, peer, and/or cultural support for their best interests (particularly for their work-life balance). Signaling mechanisms may be especially salient for ad hoc or occasional telecommuters, who often work remotely only a few times a month (WorldatWork, 2011).

Unlike instrumental benefits, which have inherent value (tangible and/or motivational) for enhancing work outcomes, purely symbolic benefits of telecommuting may operate largely through mechanisms of social exchange. A broadly supported "macro-theory" of human behavior, social exchange theory (Blau, 1964; Cropanzano & Mitchell, 2005) states that human social interaction is motivated by expected inducements from other party. Supervisors and organizations may allow employees to telecommute, for example, with the expectation of increased loyalty and/or job performance. The rule of reciprocity, moreover, requires that interactions be mutually beneficially or reciprocated in order to persist (Gouldner, 1960). Thus supervisors/organizations will continue to offer the option to telecommute, and telecommuters will continue to demonstrate increased attitudes and/or performance, as long as the other party's inducements are seen as desirable.

Note that principles of social exchange can also apply to instrumental benefits of telecommuting. That is, employees may feel compelled or obligated to reciprocate experienced benefits of these arrangements, in addition to (or versus) reciprocating their value as social symbols. Whereas instrumental benefits of telecommuting can lead to enhanced work outcomes outside of social exchange pathways, however, purely symbolic benefits can only enhance commitment and performance insofar as they lead to reciprocation within an exchange relationship. In short, telecommuting may enhance work outcomes via their inherent and/or symbolic value, within and/or outside of social exchange pathways.

## **Telecommuting and Job Performance**

Lending credence to distinct but complementary theoretical perspectives of telecommuting's effects, research generally associates telecommuting with a range of positive outcomes, particularly higher performance. Two meta-analyses indicate positive relationships between telecommuting and objective or supervisor-rated performance (Gajendran & Harrison, 2007; Martin & MacDonnell, 2012), and recent studies parallel these findings (Bloom, Liang, Roberts, & Ying, 2015; Gajendran, Harrison, & Delaney-Klinger, 2015). In addition, though the vast majority of telecommuting studies are cross-sectional, at least two experimental studies support causal links between telecommuting arrangements and productivity of administrative employees (Bloom et al., 2015; Hunton, 2005). Productivity is distinct from supervisor-rated performance in that it generally represents an "objective" and results-based (versus evaluative and behavior-based) approach to performance appraisal (MacKenzie, Podsakoff, & Fetter, 1991).

Findings from a meta-analysis of experimental and quasi-experimental studies on FWAs (Baltes et al., 1999) likewise imply potential causal links of telecommuting with performance and productivity. Specifically, the authors found that flex schedules or "flextime," a practice which as mentioned has some relation to telecommuting, predicted increased productivity, while compressed work weeks (CWWs) had no relationship with productivity but predicted higher supervisor-rated performance (links of flextime and CWW with supervisor-rated performance and self-rated performance, respectively, were not evaluated due to insufficient number of studies).

From a theoretical perspective, telecommuting should increase performance due to its instrumental benefits (e.g., increased resources). Specifically, telecommuters should be better equipped to meet both work and non-work (e.g. family) demands through working out-of-office

and potentially outside a 9-5 time window, they have reduced travel time and potentially time to get dressed, and they can adjust their approach and pace of work to suit their preferences.

Signaling-based benefits are less relevant to performance where telecommuting is offered as a FWA, intended to support work-life balance, rather than a means to improve performance per se. Thus, based on broad theoretical and empirical support for positive effects of telecommuting and related FWAs on supervisor-rated performance, in the current study I hypothesize that:

*H1: Telecommuting will have a positive relationship with supervisor-rated performance.*

### **Telecommuting and Organizational Commitment**

While improved performance is expected to arise from work-life balance supportive telecommuting arrangements due in large part to instrumental/tangible benefits, commitment-related outcomes are expected to arise at least in part through signaling-and-exchange.

Telecommuting is a signal of goodwill and support on the part of the employer, which employees reciprocate in the form of increased commitment. Commitment can take several forms, including the employee's desire (affective commitment), perceived need (continuance commitment), or felt obligation (normative commitment) to remain with the organization (Meyer & Allen, 1991).

Likewise there is evidence for two subcomponents of continuance commitment, one related to perceptions of personal sacrifice should one leave the organization, and the second to a perceived lack of employment alternatives (McGee & Ford, 1987).

Previous research on telecommuting, commitment (overall or affective), and the related outcome of turnover intent tends to indicate small positive and negative associations, respectively. Gajendran and colleagues observed a corrected correlation of  $\rho = -0.10$  with turnover intent, but did not draw meta-analytic conclusions regarding links with commitment. Martin and MacDonnell's 2012 telecommuting meta-analysis indicated a correlation of  $r = 0.10$



with organizational commitment, operationalized by different studies as a composite of affective, continuance, and normative commitment (Meyer & Allen, 1991), a single dimension, or a hybrid commitment measure. Finally, an experimental study of telecommuting observed increases in affective, continuance, and normative commitment for telecommuting conditions including at least two location options (Hunton & Norman, 2010).

Despite some indication of benefits, findings regarding telecommuting and commitment are far from conclusive. Leslie and colleagues found that FWA use, including occasional and extensive telecommuting, was not related to employees' self-reported affective commitment (though it was positively associated with supervisors' commitment perceptions; 2012). Another study observed that flex scheduling, but not telecommuting, had positive and negative associations with affective commitment and turnover intent, respectively (Hyland, Rowsome, & Rowsome, 2005). Consistent with a signaling perspective, availability of telecommuting may be a stronger predictor of commitment than actual use. For instance, Caillier and colleagues found no difference in turnover intent of federal government telecommuters versus non-telecommuters; denial of the opportunity to telecommute, however, was associated with increased turnover intent (Caillier, 2013).

Researchers have recently turned to moderators to better understand conditions under which FWAs such as telecommuting enhance commitment and related outcomes, for example telecommuting frequency (Golden, 2006a), sense of physical isolation (Golden et al., 2008), supervisor relationship quality (Golden & Veiga, 2008), employee work-life boundary preferences (Rothbard, Phillips, & Dumas, 2005), and cultural context (Masuda et al., 2012). Results are mixed. For instance Golden and colleague's research indicates that telecommuting frequency amplifies positive links with organizational commitment (Golden, 2006a), and that

physical isolation of telecommuters, while detrimental for performance, is actually associated with decreases in turnover intent (Golden et al., 2008). In contrast, Hunton and Norman observed increased commitment in all telecommuting conditions *except* for full-time telecommuting (which showed no difference from the control group; 2010). This suggests that very high frequency of telecommuting and/or associated features (e.g. physical isolation) may negate commitment-related benefits of this arrangement, and is particularly surprising as participants had originally requested to work from home full-time.

In contrast to prior research, I argue that telecommuting may relate differently to different facets of commitment, and through different mechanisms. Affective commitment is likely to be more heavily influenced by signaling-and-exchange versus instrumental benefits. Specifically, permission to telecommute signals that the organization/supervisor trusts and cares for telecommuters. This in turn should result in a sense of values congruence, identification or belonging with the organization, and pride, each of which is closely tied to the construct of affective commitment (Meyer & Allen, 1991). The importance of signaling to affective commitment receives indirect support from research on work-family policies, which indicates that policy availability (primarily a symbolic construct) is more strongly related to perceptions of support and affective commitment than is policy use (Butts et al., 2013). Note that this does not preclude some influence of tangible benefits on affective commitment; for example affective commitment can arise from improved “fit” with employees’ values regarding freedom and flexibility. The argument is simply that the signaling pathway is particularly relevant for a construct that is inherently relational. Experienced benefits inform employees’ perceptions of the employer’s intentions in offering the policy, in turn influencing their affective commitment.

A signaling perspective implies that, where offered as an employee-centric policy (e.g., as a form of unconditional support versus a motivational or performance-enhancing technique), telecommuting is less likely to influence the perceived effort/performance facet of affective commitment. Put simply, employees will not reciprocate with increased effort when increased effort is not expected (or at least, employees do not perceive this expectation). In addition, from a PE fit perspective, ability to shape one's job according to one's needs, preferences, and strengths may allow telecommuters to work better without working harder. From a job demands-resources perspective, telecommuters may experience decreased demands in certain aspects of their jobs (most obviously, time spent getting dressed and commuting), that counteract increased effort or demands in others (e.g., increased self-set work standards due to desire or felt obligation to return the favor of telecommuting). Thus, telecommuters may actually expend or perceive themselves as expending the same degree of effort as non-telecommuters, while preserving or even increasing the quality of their contributions. This argument receives support from generally null linkages of telecommuting with self-reported performance (Gajendran & Harrison, 2007), although as others argue this pattern may also result from ceiling effects (Allen et al., 2015).

In contrast to affective commitment, continuance commitment reflects "side-bets" (Becker, 1960; Meyer & Allen, 1984) or awareness of costs of leaving. As such telecommuters' continuance commitment (specifically perceived sacrifice commitment) should hinge more heavily on day-to-day benefits of telecommuting (versus more abstract perceptions of the employer's intentions), relative to affective commitment. Signals of support and trust are also likely to be perceived as valuable resources. Thus, whereas I expect that telecommuting's impact on affective commitment is more closely tied to the symbolic value of this arrangement,

attenuated somewhat by null linkages with (employee-perceived) effort, its impact on continuance commitment should be more robust.

The above theoretical arguments as well as previous research on telecommuting and organizational commitment lead me to hypothesize that:

*H2a: Telecommuting will have a positive relationship with affective organizational commitment.*

*H2b: Telecommuting will have a positive relationship with continuance (personal sacrifice) commitment.*

*H2c: The relationship between telecommuting and continuance (personal sacrifice) commitment will be stronger than the relationship between telecommuting and affective commitment.*

### **Mediators of Telecommuting's Relationships with Performance and Commitment**

As mentioned, researchers have linked telecommuting with positive outcomes through theoretical pathways of instrumental and motivational benefits of remote work itself, and the symbolic/exchange value of permission to work remotely. Prior researchers have often implicated autonomy and work-family conflict (WFC) in these pathways, though again direct tests of mediators of links to commitment are lacking. Supervisor relationship quality and perceived organizational support (POS) have also received attention within the telecommuting and work-family policy literatures, respectively. The following section integrates prior theory and empirical research to propose autonomy and work-life balance support as mediators of telecommuting's effects in the current study.

## **Autonomy**

Perceived autonomy, defined here as individual discretion over how one carries out one's work, has obvious relevance to voluntary, "out of sight" remote work arrangements, and empirical research generally supports autonomy as a proximal benefit of telecommuting. Gajendran and Harrison estimated a true score correlation of  $\rho = .22$  between telecommuting and autonomy; telecommuting frequency did not moderate this relationship (2007). Recent research echoes these findings (Gajendran et al., 2015; Hornung & Glaser, 2009; Sardeshmukh, Sharma, & Golden, 2012), and telecommuting appears to be viewed more positively by individuals with a higher need for autonomy (Van Yperen, Rietzschel, & De Jonge, 2014). Thus, despite concerns and/or realities of increased work contact (e.g., via company cellphones) and electronic monitoring (Donnelly, 2006; Kelliher & Anderson, 2010; Mazmanian, Orlikowski, & Yates, 2013; Schieman & Young, 2013), on the whole telecommuters appear to see themselves as more autonomous than employees in traditional work arrangements.

Of note, flexibility or discretion over the spatial and temporal aspects of work is central to telecommuters' perceptions of autonomy, and several prior studies have defined telecommuters' autonomy or desire for it more narrowly in these terms (Gajendran & Harrison, 2007; Pierce & Newstrom, 1983; Van Yperen et al., 2014). However, it is reasonable to presume that telecommuters may experience increased job role freedoms in general due to working outside the office. Specifically, telecommuters are "out of sight" and may be less subject to behavioral performance monitoring (excepting organizations that closely monitor behavior using electronic means). Likewise employees who are permitted to telecommute may also be given more discretion to make decisions regarding the work itself, either because performance evaluations are more likely to be results- versus behavior-based or because they are generally

more trusted by their managers. Finally, voluntary telecommuting is in and of itself a decision regarding how to carry out one's work, thus spatial/temporal autonomy and general job autonomy likely exhibit substantial overlap.

In sum, based on previous findings regarding telecommuting and spatial/temporal autonomy, as well as the intuitive relevance of the broader construct of autonomy to voluntary, reduced face-time telecommuting arrangements, I propose that:

*H3: Telecommuting will have a positive association with perceived autonomy.*

Theory and empirical research likewise support autonomy as a key mediator of telecommuting's benefits. Autonomy, or individual freedom/discretion, is thought to be critical to motivation and fulfillment at work in general (Hackman & Oldham, 1976; Herzberg, 1966; Ryan & Deci, 2000). Likewise, telecommuters' autonomy can be construed as a means for attaining better PE fit, a resource for improved work attitudes and performance, and/or a sign of trust and support on the part of the employer. In short, autonomy can confer both instrumental and signaling benefits for work outcomes. As with main effects for performance and commitment-related outcomes of telecommuting, performance benefits are expected to arise from instrumental mechanisms of autonomy, whereas pathways to affective commitment and intent to stay are more likely explained by a combination of instrumental and signaling mechanisms.

Empirical research supports autonomy as a critical mediator of telecommuting outcomes. Gajendran and Harrison found that autonomy fully mediated meta-analytic links with job satisfaction, with partial mediation for supervisor-rated/objective performance, turnover intent, and role stress (2007). Controlling for autonomy led to the largest reductions in relationships with outcomes across the board, relative to alternative potential mediators of WFC, supervisor

relationship quality, and coworker relationship quality (Gajendran & Harrison, 2007). More recent studies parallel these findings. Gajendran and colleagues, for instance, found that autonomy was positively related to performance after controlling for a range of alternative performance predictors, and partially mediated links between telecommuting use, telecommuting intensity, and performance outcomes (Gajendran et al., 2015). Hornung and Glaser observed that autonomy partially mediated links of telecommuting intensity with increased quality of life and job satisfaction (Hornung & Glaser, 2009).

Despite broad support for autonomy as a critical mediator of telecommuting's relationships with work outcomes, including performance, research regarding potential mediation of links with commitment-related outcomes specifically is lacking. Drawing on the instrumental and signaling-and-exchange perspectives, however, telecommuters, who are permitted to alter the place, time, and general approach to work to suit their needs and preferences, should be more committed out of a desire to stay (affective commitment) and/or a perceived need to stay to retain telecommuting benefits (continuance/personal sacrifice commitment). This prediction receives indirect support from non-telecommuting research indicating that autonomy, affective commitment, normative commitment, and perceived sacrifice commitment (but not lack of alternatives commitment) are related (Gillet & Vandenberghe, 2014).

In sum, based on theoretical and empirical support for autonomy's ties to telecommuting enactment and associated work outcomes, I predict that:

*H4a: Autonomy will mediate the link between telecommuting and supervisor-rated performance.*

*H4b: Autonomy will mediate the link between telecommuting and affective commitment.*

*H4c: Autonomy will mediate the link between telecommuting and continuance (personal sacrifice) commitment.*

### **Work-Family Conflict and Perceived Organizational Support: Is Work-Life Balance Support a More Appropriate Mediator?**

Whereas prior research provides fairly robust (albeit largely cross-sectional) evidence that autonomy mediates telecommuting's effects, evidence for alternatively proposed mediators of work-family conflict (WFC) and support-related constructs is far less convincing. The following section reviews related research and proposes that perceived support for work-life balance may be a more appropriate mediator.

**Work-family conflict.** According to research to date, main effects of telecommuting on WFC, generally defined as incompatibility in role demands of work and family domains (Greenhaus & Beutell, 1985) are generally weak or nonexistent. A recent meta-analysis indicated a corrected correlation of  $\rho = -0.08$  for flexplace/telecommuting and work interference with family (WIF), and no link with family interference with work (FIW) (Allen, Johnson, Kiburz, & Shockley, 2013). These findings are similar to those observed in previous meta-analytic investigations (Mesmer-Magnus & Viswesvaran, 2006; Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011). In addition, while Gajendran and Harrison (2007) observed somewhat higher corrected correlations of  $\rho = -0.15$  and  $\rho = -0.16$  for FIW and WIF, respectively, reductions only occurred within relatively uncommon (WorldatWork, 2013) high-intensity telecommuting arrangements. Surprisingly, links between telecommuting, non-directional WFC, WIF, and FIW do not appear to be consistently moderated by gender, parental status, marital status, or weekly work hours (Allen et al., 2013).



The most common explanation for these findings involves the unanticipated consequences of working at home. These include blurring of family and work boundaries, increased family responsibilities, and increased work contact/demands (Allen et al., 2013; Allen et al., 2015; Kelliher & Anderson, 2010; Mazmanian et al., 2013; Schieman & Young, 2013). Another possibility, given that most studies are cross-sectional, is that individuals with higher WFC are more likely to telecommute, washing out apparent benefits on this outcome (Allen et al., 2015). For present purposes, the key take-away is that weak or nonexistent linkages between telecommuting and WFC also mean that WFC cannot mediate links of telecommuting with work outcomes. Even in Gajendran and Harrison's 2007 meta-analysis, where telecommuting-WFC linkages were somewhat stronger, WFC was not found to mediate links with supervisor-rated/objective performance outcomes, although it did have a modest partial mediating effect for turnover intent (2007). Furthermore, while reduced WIF may enhance organizational commitment (Amstad, Meier, Fasel, Elfering, & Semmer, 2011), there is little evidence that WIF negatively impacts supervisor-rated or objective performance (Ode-Dusseau, Greene-Shortridge, & Britt, 2012; Witt & Carlson, 2006). In sum, despite the intention of many telecommuting/FWA policies to reduce WFC, the actual impact of these policies on WFC is tenuous, and there is little indication that WFC mediates telecommuting's links to positive work outcomes.

**Perceived support.** An alternative potential mediator of telecommuting-outcome linkages, beyond autonomy, is perceived support. As mentioned, a signaling perspective suggests that telecommuting will be linked to employees' perceptions of supervisor trust, and of organizational, supervisor, peer, and/or cultural support for their best interests, particularly for their work-life balance.

While direct tests of a link from telecommuting enactment to perceived support are lacking, FWA/work-life support research indicates that availability but not use of work-life policies is linked to perceptions of support (Allen, 2001; Butts et al., 2013; Muse, Harris, Giles, & Feild, 2008). This casts some doubt on the signaling-based mechanism of telecommuting benefits, and may be due to several factors. First, as suggested by Butts and colleagues (2013), a signaling perspective of work-family policy use, and by implication, FWA/telecommuting use, may simply be inaccurate (note that although the authors excluded FWAs from their study because they are not family-specific, the same principles may apply). Specifically, the authors suggest that the symbolic (signaling) value of available work-family policies shifts to instrumental (self-interest) value (Lind & Tyler, 1988) once individuals commence utilizing the arrangement(s). Likewise, it may be that users of work-family policies habituate to these arrangements and come to take them for granted, although there is little evidence to date for a sense of entitlement (Beauregard & Henry, 2009). Alternatively, discrepant findings regarding availability versus use may result from common method variance and/or halo effects (Thorndike, 1920). With regards to halo effects, perceptions of the organization as generous and supportive with regards to employee's family lives may also impact perceptions of policy availability, whereas the observable behavior of policy use is less likely to be impacted by simplifying heuristics.

Alternatively, I propose that issues of referent may also explain null relationships between work-family policy use and perceived support. A measure of support that addresses this issue (e.g., the measure proposed in the current study) may reveal true positive relationships between telecommuting (and/or work-family policy) use and perceptions of support. First, the organization may be an inappropriate referent for perceptions of support in many cases.

Supervisors are much more proximal to employees' use of FWAs and work-life policies. They usually make the final call regarding employees' requests to utilize policies, particularly requests to flex, and they may convey approval or disapproval for policy use explicitly or implicitly, e.g. via role modeling (Kelly & Kalev, 2006). Particularly in large organizations, policy use may be more strongly related to seeing one's supervisors, immediate workgroup, and departmental or functional role culture as supportive, versus the organization as a whole. Thus in the current study it may be more appropriate to examine supervisor or generically-sourced support as a proximal outcome of telecommuting use, rather than the more abstract, distal construct of organizational support.

In sum, based on a signaling perspective of telecommuting, I hypothesize that:

*H5: Telecommuters will have increased perceptions of work-life balance support.*

This study will also examine a mediating role of WLB support perceptions for outcomes of performance and commitment. Turning first to performance, no published telecommuting study has tested mediation by WLB support in particular, and I argue that enhanced WLB support of telecommuters need not result in increased performance. First, there are theoretical reasons to speculate that WLB support may not result in enhanced performance. Specifically, a signaling perspective suggests that perceived support for employee WLB suggests that the employee is valued specifically *beyond* his or her performance contributions, implying that employees may reciprocate WLB support in ways distinct from performance. For example non-telecommuting organizational policies specifically targeted at employees' WLB/WFC do not always lead to higher performance (Bal & De Lange, 2015; Beauregard & Henry, 2009; Kossek & Ozeki, 1999; Odle-Dusseau et al., 2012) and there is some indication that work-life policy users may not interpret these arrangements as having a performance "catch." One study observed

that flex scheduling use had no relationship or a negative relationship with perceived managerial performance expectations, and a negative relationship with working paid overtime (Hornung, Rousseau, & Glaser, 2008). In addition, even if telecommuting truly improved WLB itself, prior research suggests that links between WLB and performance are tenuous at best (Lyness & Judiesch, 2008; Odle-Dusseau et al., 2012; Witt & Carlson, 2006; Witt & Carlson, 2006).

Given theoretical constraints regarding pathways between WLB support and performance and lack of prior research on this topic in the context of telecommuting in particular, I pose the following research question.

*RQ1: Do WLB support perceptions partially mediate the link between telecommuting and supervisor-rated performance?*

In contrast to the behavioral outcome of performance, it is more likely that WLB support perceptions mediate telecommuting's links with the relationship-oriented construct of organizational commitment. As described previously, a signaling-and-exchange perspective suggests that employees who sense that their supervisors/departments/organizations care about their functioning as a whole person (versus just results) should be more committed out of a desire to stay (affective commitment) and/or a perceived need to stay to retain this support (personal sacrifice). Although no published study to date directly examines mediators of telecommuting-commitment linkages, indirect support for this prediction comes from research indicating strong links between perceptions of support with these forms of commitment in general (Rhoades & Eisenberger, 2002). Specifically, while POS tends to be unrelated to general continuance commitment (Shore & Wayne, 1993) and negatively related to the lack of alternatives component of continuance commitment (Aggarwal-Gupta, Vohra, & Bhatnagar, 2010; Vandenberghe et al., 2007), POS tends to co-occur with affective, normative, and perceived

sacrifice commitment, with particularly strong links for affective commitment (Aggarwal-Gupta et al., 2010; Vandenberghe et al., 2007). Thus, based on the signaling-and-exchange perspective of telecommuting I predict that:

*H6a: WLB support perceptions will mediate links between telecommuting and affective commitment.*

*H6b: WLB support perceptions will mediate links between telecommuting and continuance (perceived sacrifice) commitment.*

*H6c: WLB support perceptions will play a stronger mediating role for telecommuting and affective commitment versus continuance (perceived sacrifice) commitment.*

Finally, I anticipate that autonomy and WLB support will partially and fully mediate telecommuting's links with performance and affective/continuance commitment, respectively. As described previously, telecommuting has a wide range of potential advantages for performance beyond autonomy and (potentially) WLB support, such as reduced travel time and travel-related stress. In contrast, smaller main effects are generally observed between telecommuting, commitment, and commitment-related variables (Gajendran & Harrison, 2007; Martin & MacDonnell, 2012), and WLB support is expected to play a larger mediating role in telecommuting's links with commitment relative to performance. Thus controlling for autonomy and WLB support is likely to fully account for the impact of telecommuting on organizational commitment. In short I hypothesize that:

*H7: Telecommuting will have a positive relationship with supervisor-rated performance, controlling for autonomy and WLB support.*

*H8a: Autonomy and WLB support will fully mediate links of telecommuting with affective commitment.*

*H8b: Autonomy and WLB support will fully mediate links of telecommuting with continuance (personal sacrifice) commitment.*

### **Differences in Effects of Telecommuting by Job Type**

While tests for a moderating impact of job type on telecommuting outcomes are limited (Gajendran & Harrison, 2007), administrative employees may be more likely to demonstrate positive work outcomes than managerial employees. A social information processing perspective (Salancik & Pfeffer, 1978) suggests that “freedom to flex” may be experienced as more favorable by employees who tend to have less freedoms to begin with, e.g., administrative employees (Gajendran et al., 2015). As a result, administrative employees may feel more compelled to reciprocate telecommuting’s benefits with positive attitudes and increased performance, relative to managerial/professional employees. Indirect support for this expectation comes from a recent study by Gajendran and colleagues, where high-quality leader-member exchange relationships and telecommuting normativeness buffered positive links between telecommuting and task performance, and telecommuting and autonomy, respectively (2015). Likewise, Baltes and colleagues’ meta-analysis of FWA outcomes found that FWA use was only related to positive performance and attitudinal outcomes for non-managerial/professional employees (1999). Thus in the current study, I expect that job type will alter links between telecommuting and proximal/distal outcomes, with stronger links for administrative versus managerial employees (note that in the current sample, administrative employees rarely enter the management track). Specifically I predict that:

*H9: Telecommuting will have stronger positive links with autonomy, WLB support, commitment, and performance for administrative versus managerial employees.*

## CHAPTER II

### **Method**

Study hypotheses were tested using archival data collected from a sample of full-time employees at a large, U.S.-based multinational consumer products company. Telecommuting and employee attitudes data came from responses on an annual organization-wide survey. Specifically, telecommuting was sampled annually, mediators were assessed in 2014, and attitudinal (commitment-related) outcome variables were assessed in 2015. The organizational survey is administered to all full- and part-time employees at the company (interns, coops, and contract workers are excluded) and assesses a range of categories specific to the company. Survey items are administered in multiple languages; an external translation services vendor utilizes rigorous translation/back-translation procedures to ensure equivalent meaning of items across languages. From 2011 to 2015 the survey took an average of 10 to 20 minutes to complete and had an average response rate of about 70%, which is higher than typical organizational response rates (Baruch & Holtom, 2008). The survey is voluntary and employees are not compensated for responding. All survey data is confidential; raw data is only accessible to the survey vendor and a small internal team of Industrial-Organizational psychologists.

Performance data was taken from a 2015 selection test validation study involving a smaller, randomly selected sample of approximately 5,000 employees. Data were de-identified prior to receipt by the study investigator, and only data for employees indicating permission to link survey responses to non-survey employee data for research purposes were utilized in the present study. Plant technicians and retail sales employees were excluded from the sample as the nature of their jobs precludes telecommuting.

## Sample

The final sample was comprised of 2,682 employees. The sample was 46% female ( $N = 1,267$ ) and 54% male ( $N = 1,482$ ); 29 (1.0% of) employees did not provide information on gender. 25% had a tenure of more than 20 years ( $N = 683$ ), 13% ( $N = 359$ ) from 16 to 20 years, 14% ( $N = 383$ ) from 11 to 15 years, 24% ( $N = 670$ ) from 6 to 10 years, 10% ( $N = 279$ ) from 4 to 5 years, 14% ( $N = 397$ ) from 1 to 3 years, and less than 1% ( $N = 6$ ) less than one year. Telecommuting was common, with 50% to 67% of the sample indicating that they had telecommuted in any given year. Age, ethnicity, and national origin information was not available.

While the above sample was used for tests of study hypotheses, I adhered to the principle of “use all available data” (Newman, 2009) and used a larger sample of  $N = 26,756$  to determine measurement properties of non-performance constructs. In other words, I initially tested measurement and relationships among telecommuting and attitudinal constructs on a larger sample of employees from which participants in the selection test validation study had been randomly selected. As expected, sample statistics were very similar to those for the final sample. Specifically the larger sample was 46% female ( $N = 12,045$ ) and 54% male ( $N = 12,248$ ); 463 (1.7% of) employees did not provide information on gender. 79% ( $N = 21,375$ ) of the larger sample was comprised of managerial and professional employees; the remaining 20% ( $N = 5381$ ) had an administrative role. 23% of this sample had a tenure of more than 20 years ( $N = 6046$ ), 13% ( $N = 3424$ ) from 16 to 20 years, 14% ( $N = 3785$ ) from 11 to 15 years, 25% ( $N = 6760$ ) from 6 to 10 years, 10% ( $N = 2684$ ) from 4 to 5 years, 15% ( $N = 3994$ ) from 1 to 3 years, and less than 1% ( $N = 60$ ) less than one year. Again, telecommuting was common, with 45% to 60% of employees indicating that they had telecommuted in any given year.



## Measures

**Telecommuting status.** Telecommuting was assessed from 2011 to 2015 on the annual survey with a composite flex work arrangement item, “Please mark all of the following flexible work arrangements that you have used in the past year.” For the present study telecommuting was coded as selection of “Work from Home (e.g. occasional use, set schedule)” or “Location free.” Lack of telecommuting (or adherence to traditional office arrangements) was indicated by selection of “none” or any non-telecommuting response option on the flex work arrangement item, without selection of one of the telecommuting options.

Because telecommuting was the only variable assessed longitudinally, annual responses were treated as indicators of a latent telecommuting variable indicating overall propensity to telecommute. Inclusion of longitudinal telecommuting data is superior to sampling one year of telecommuting data in that it reduces potential for “honeymoon effects” (Boswell, Boudreau, & Tichy, 2005), measurement error, and the impact of missing data from year to year. Latent variable (LV) modeling of telecommuting likewise provides superior measurement over simple aggregation of annual telecommuting data: by estimating within-subjects variance within overall variance in telecommuting utilization, between-subjects variance in telecommuting is more accurately represented.

**Autonomy.** Autonomy was assessed with three items from the 2014 survey rated on a Likert-type scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Item text has been omitted in this document as this information is confidential and proprietary to the organization under study. Adapted item text may be available at the author’s and organization’s discretion upon request. Reliability of this scale was  $\alpha = .78$  for the final sample.

**Work-life balance support.** Work-life balance (WLB) support was assessed with three items from the 2014 engagement survey rated on a Likert-type scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Item text has been omitted in this document as this information is confidential and proprietary to the organization under study. Adapted item text may be available at the author's and organization's discretion upon request. The reliability estimate for this scale was  $\alpha = .83$  for the final sample.

**Affective commitment.** As originally proposed, affective commitment was assessed with the following four items from the 2015 survey, rated on a Likert-type scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Item text has been omitted in this document as this information is confidential and proprietary to the organization under study. Adapted item text may be available at the author's and organization's discretion upon request. The reliability of this scale was  $\alpha = .77$  for the final sample.

**Intent to stay.** Two 2015 items, rated on a Likert-type scale from 1 (Strongly Disagree) to 5 (Strongly Agree) were used to assess intent to stay. Item text has been omitted in this document as this information is confidential and proprietary to the organization under study. Adapted item text may be available at the author's and organization's discretion upon request. The correlation between these items was  $r = .60$  for the final sample.

I had originally proposed and formulated hypotheses regarding a "personal sacrifice," continuance commitment factor, indicative of a more calculative versus affective form of commitment to the organization. This 3-item scale had an acceptable Cronbach's alpha of .74. However, in light of existing scales of affective and continuance commitment (Mowday, Steers, & Porter, 1979) and measurement model issues involving the two scales as originally proposed, the third item was re-assigned from continuance to affective commitment in the final model,

resulting in a 5-item affective commitment scale and a 2-item scale indicative an individual's intent to remain with the organization, versus personal sacrifice commitment. The modified affective commitment scale had a reliability of  $\alpha = .84$  in the final sample. A brief overview of associated confirmatory factor analyses is available in Results; details are available in the Appendix as well as Table 2. Note that although this change did preclude me from testing my original hypotheses regarding personal sacrifice commitment, the same theoretical principles apply to the construct of intent to stay. However all analyses pertaining to this construct are necessarily post hoc.

**Performance.** As mentioned, performance was assessed via supervisor ratings of performance collected for a selection test validation study conducted by an Industrial-Organizational psychologist internal to the company in 2015. Because these performance ratings were confidential and were not used for performance appraisal purposes, they are less susceptible to biases arising from social and political factors (Murphy & Cleveland, 1995).

Supervisors participating in the validation study rated their employees on 20 performance behavior items on a 5-point Likert-type scale, from 1 = Weak to 5 = Exceptional. They also had the option to opt out of rating reports on items they felt unable to assess. This was not common (< 1% for any given item), and 80% of supervisors providing performance ratings in this sample had supervised their ratee for over 1 year.

The performance items were developed on the basis of an organization-wide competency model that was likewise developed by Industrial-Organizational psychologists at the company. Given that this model is proprietary, details of item content and competencies are not available. I had no initial hypotheses regarding the structure of the performance outcome variable(s). The performance items demonstrated high reliability ( $\alpha = .94$ ) and as I am not able to report the

substantive meaning behind dimensionality of the performance construct, I averaged performance item scores for an overall performance score. One item had somewhat unique content and high mean scores, approaching a ceiling effect ( $M = 4.23$ ,  $SD = .77$  for the overall performance subsample). This item was removed from the model, resulting in a 19-item performance scale with  $\alpha = .94$ .

### **Control variables.**

**Tenure.** One-way analyses of variance (ANOVAs) indicated that tenure was significantly and positively related to several attitudinal variables, particularly WLB support ( $F(6, 26,766) = 53.71$ ,  $p < .001$ ,  $\eta^2 = .03$ ) and intent to stay ( $F(6,25705) = 128.81$ ,  $p < .001$ ,  $\eta^2 = .03$ ). In particular, individuals with longer tenure on average indicated higher levels of WLB support and higher intent to stay. Despite relatively small effect sizes, tenure was controlled in study analyses in order to more precisely estimate model parameters.

**Managerial role level.** ANOVAs indicated statistically significant differences across managerial role level (from entry-level manager-track employees to senior leaders) for several attitudinal variables as well as performance. Higher level leaders generally reported slightly higher levels of WLB support: ( $F(4, 20,438) = 115.11$ ,  $p < .001$ ,  $\eta^2 = .02$ ). They also had higher average performance ratings than lower level leaders ( $F(4, 2,094) = 15.43$ ,  $p < .001$ ,  $\eta^2 = .03$ ), with senior leaders on average receiving performance ratings .48 units higher (on a 5-point scale) than entry-level managers. As with tenure, the increase in outcome score was consistent across increasing levels of the independent variable (in this case, managerial role level). Thus I controlled for managerial role level in the analyses involving managerial employees.

**Gender.** In addition to tenure and managerial role level, I examined the impact of gender on interpretation of study constructs and their interrelationships. The meaning of WLB support in

particular might differ among men and women due to gender role socialization and behavioral norms regarding work-family balance (Cinamon & Rich, 2002; L. E. Duxbury & Higgins, 1991; Eagly, 1987). For instance, as women often assume greater family responsibilities and assign greater importance to family roles (Cinamon & Rich, 2002), they may be more likely to equate WLB support with managerial or frontline support for WLB more so than the presence of more abstract organizational policies supporting WLB (Kelly & Kalev, 2006). Given that the WLB construct encompassed both sources of support as well as generically sourced support, these differences could translate into lack of metric invariance for men and women. Note that this possibility is necessarily speculative but nonetheless worth examination: Differences in either measurement or structural models across gender would preclude meaningful interpretation of results for the full sample (Preacher, 2015). Thus I submitted study measurement models to tests of measurement invariance across gender. Details are described in Results.

### **Analytic Approach**

Study hypotheses were tested with structural equation modeling (SEM) in MPlus version 6.11 (Muthén & Muthén, 1998-2010). Major advantages of SEM include ability to account for both observed and latent variables, direct and indirect effects, and perhaps most notably, its disattenuation of path estimates for measurement error (Kline, 2015). That is, SEM's ability to model latent and indicator variables simultaneously allows for more accurate representation of true relationships among study constructs (versus imperfect measures of these constructs). SEM also allows for multigroup analyses to determine whether constructs and paths are equivalent for different subgroups (e.g., male and female employees, job role).

I adhered to Anderson and Gerbing's recommended two-stage procedure for structural equation modeling, which evaluates measurement model properties before proceeding to test

structural models (Anderson & Gerbing, 1988). Specifically, I specified the best-fitting, theoretically supported measurement model prior to testing hypothesized structural paths among study variables. In particular, I was interested in confirming that annual telecommuting data was representative of a latent, “general propensity to telecommute” construct, as well as adequate measurement properties of the attitudes scales.

Maximum likelihood estimation with robust standard errors (MLR) was used for all measurement and structural models given that data was ordinal, and attitudinal survey items and factors were not normally distributed. MLR is robust to violation of univariate and multivariate normality and assesses factor relationships and model fit equally well to alternative least-squares methods (Rhemtulla et al., 2012); it has the additional advantage of using full information maximum likelihood estimation versus pairwise or listwise deletion methods to handle missing data.

## CHAPTER III

### Results

#### Preliminary Analyses

**Descriptive statistics.** Means, standard deviations, correlations, and scale reliabilities for relevant variables are reported in Table 1 for the final overall sample as well as the manager- and administrative-only subsamples. Estimates reported here apply to the overall sample. Of note, propensity to telecommute did not have substantive relationships with autonomy ( $r = .01, p = .52$ ), affective commitment ( $r = .00, p = .86$ ), intent to stay ( $r = .00, p = .57$ ), or performance ( $r = -.02, p = .29$ ) in the final overall sample (or either subsample), though it did have a practically and statistically significant relationship with WLB support ( $r = .25, p < .001$ ). The lack of simple relationships between telecommuting and study outcomes was notable and deviated from prior research (Bloom et al., 2015; Bloom & Van Reenan, 2006; Gajendran & Harrison, 2007; Gajendran et al., 2015; Hunton & Norman, 2010; Igarria & Guimaraes, 1999).

In contrast to telecommuting utilization, the hypothesized mediators of autonomy and WLB support were each significantly and positively related with affective commitment, intent to stay, and performance. Autonomy had a stronger relationship with affective commitment one year later relative to WLB support ( $r = .40, p < .01$  for autonomy versus  $r = .26, p < .01$  for WLB support), with both constructs demonstrating approximately equal strength of relationships with intent to remain ( $r = .24, p < .01$  and  $r = .25, p < .01$  for autonomy and WLB support, respectively). As mentioned, women were more likely to telecommute and had slightly lower mean perceptions of autonomy, and tenure was positively related to WLB support perceptions as well as intent to remain (see Method for tests of differences by tenure range). The differential

relationships between gender and autonomy perceptions suggested that women may be particularly likely to utilize telecommuting arrangements for reasons other than enhanced job autonomy, and coupled with the unexpected null relationship between telecommuting and autonomy, reinforces the idea that telecommuting is not used for or experienced as a means to increase job autonomy in this sample.

Finally, and as one would expect based on method effects (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), constructs assessed cross-sectionally (i.e., mediators with mediators, outcomes with outcomes; final sample mean  $r = .50, p < .01$ ) had stronger relationships than constructs measured at different timepoints (mediators with outcomes; final sample mean  $r = .28, p < .01$ ).

**Missing Data.** Next, I examined the dataset for patterns of missing data. Although the extent of missing responses at the item level in this study was small, between .5 to 5%, I used systematic nonresponse parameter estimates to gauge potential for parameter estimate bias (Newman, 2009). In this case, high response rate and evidence for a low to moderate degree of missing not at random (MNAR) based on systematic nonresponse parameter estimates led to the conclusion that parameter estimate bias due to missing data, if present, was negligible. Details of this analysis are available upon request.

### **Measurement Models**

**Telecommuting and attitudes.** As mentioned in the Method section, I conducted confirmatory factor analysis (CFA) on the larger sample of  $N = 26,756$  to test the measurement properties and distinctiveness of non-performance constructs (organizational attitudes as well as telecommuting status) prior to restricting the sample to those with performance data. Again, the



performance subsample was randomly selected from employees at the company and sample statistics for the larger and smaller samples are similar.

In general for measurement model testing, I first evaluated goodness of fit on an absolute basis, according to four fit indices: Comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root-mean-square residual (SRMR), and root-mean-square error of approximation (RMSEA). Each fit index has unique properties that make it useful for evaluation different aspects of latent variable model fit. CFI and TLI, for instance, are relative fit indices and assess improvements in chi-square over the specified baseline model, whereas SRMR and RMSEA assess fit by comparing the hypothesized or model covariance matrix with sample or population covariance matrix, respectively. As per commonly accepted guidelines for model fit (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996; Steiger, 2007), acceptable fit was indicated by CFI greater than .90, RMSEA less than .06, and SRMR less than .08. In addition to assessing fit of each model individually, I conducted Satorra-Bentler chi-square scaled difference tests to determine whether nested or restricted models (Marsh, 1994) adequately represented item variance and covariance patterns. The Satorra-Bentler scaled chi-square (SBS  $\chi^2$ ) statistic for MLR adjusts traditional chi-square statistics with correction factors in order to arrive at a more accurate approximation of model fit (Satorra & Bentler, 2001); SBS  $\Delta\chi^2$  is further adjusted according to a simple formula as differences between SBS  $\chi^2$  statistics for nested models do not fit a  $\chi^2$  distribution (Satorra & Bentler, 2001).

Table 2 provides fit and difference test statistics for the measurement models. Ultimately this set of analyses confirmed the measurement properties of telecommuting and attitudinal variables as hypothesized, with the previously described exception that one item initially hypothesized to reflect personal sacrifice commitment loaded more highly onto the affective

continuance factor, resulting in a 5-item affective continuance variable and a 2-item intent to stay (versus 3-item personal sacrifice) factor. The full 5-factor model showed acceptable fit to the data (CFI = .96; TLI = .95; SRMR = .03; RMSEA = .04) and significantly improved fit over a 4-factor model that combined affective and continuance commitment factors into one ( $SBS\Delta\chi^2(4) = 4,062.61, p < .001$ ). A more detailed description of non-performance measurement model testing and the decision to modify the initially hypothesized personal sacrifice commitment factor to intent to stay is provided in the Appendix.

**Full measurement model.** Next, I confirmed the full measurement model structure, including the 19-item performance variable, on the “smaller” sample of employees with performance data available ( $N = 2,682$ ). This model demonstrated acceptable fit to the data in the final overall sample (CFI = .92; TLI = .91; SRMR = .04; RMSEA = .05) as well as the manager-only (CFI = .92; TLI = .91; SRMR = .04; RMSEA = .05) and administrative subsamples (CFI = .91; TLI = .90; SRMR = .05; RMSEA = .05).

### **Tests of Measurement Equivalence**

**Job Role.** Next, I tested for measurement invariance by job type (managers versus administrative employees). Although I expected differences in structural path estimates for managerial versus administrative employees (Hypothesis 9), such differences cannot be meaningfully interpreted when constructs vary in meaning across groups (Preacher, 2015). In particular I tested for (full) configural and (at least partial) metric invariance of autonomy, WLB support, and organizational commitment using multigroup confirmatory factor analysis (MGCFA). An equal number of latent factors (configural variance) and equivalent factor loadings for at least 50% of relevant items (partial metric invariance) for managerial versus administrative employees would indicate that the items represented the same general constructs

for these groups. Differences in item difficulty (scalar invariance) and factor means were expected and as such I did not attempt to test for these forms of invariance.

Tests of measurement invariance generally proceed hierarchically, beginning with the most restrictive model and proceeding with subsequent less restricted models (Marsh, 1994). As such, prior to testing more relaxed assumptions of configural and partial metric invariance, I restricted all item variances and covariances to be equal for managerial and administrative employees.

Fit statistics associated with this model were good, suggesting full measurement equivalence for managers and professionals versus administrative employees (CFI = 1.00; TLI = .99; SRMR = .02; RMSEA = .03). This signified equivalent measurement of study variables, as well as lack of statistically significant differences in structural paths across job type; statistically equivalent item covariance matrices by definition necessitates equivalent factor relationships. Note that this also means that Hypothesis 9 was not supported: Telecommuting did not have significantly stronger positive links with autonomy, WLB support, commitment and intent to remain among administrative versus managerial/professional employees. That said, managers and administrative employees were separated in the main analyses in order to provide path estimates that were as precisely estimated as possible, i.e. by controlling for role level of managers (see Method).

**Gender.** Next, I tested the full model for the measurement models for configural and partial metric invariance across gender, in a manner analogous to the above tests for job role. The model which restricted all item variances and covariances to be equal across gender had very good fit (CFI = .99; TLI = .99; SRMR = .03; RMSEA = .02). Thus, the measurement model for

this study demonstrated full measurement equivalence and I did not examine gender further in my models.

### **Structural Models**

I proceeded with structural equation modeling on the basis of the final 6-factor measurement model. Prior to discussing hypothesis tests I will describe model fit, given that I compared goodness of fit for several models before proceeding to interpret path estimates from the final structural model. Model fit and path estimates are provided in Tables 3 and 4. First, I tested the initially hypothesized model (see Figure 1), where autonomy and WLB support partially mediated telecommuting's relationship with performance and fully mediated its relationship with affective commitment and intent to stay<sup>1</sup>; note that this model freely estimated the path between WLB support and performance given that this was a relationship I proposed to explore. This model, which controlled hypothesized relationships for tenure and managerial role level in the manager sample, and tenure in the administrative sample, demonstrated acceptable fit for both groups of employees (see Table 3).

I then removed the (nonsignificant) exploratory path between WLB support and performance; fit statistics for the final model were CFI = .91, TLI = .90, SRMR = .04, RMSEA = .04 for managers and CFI = .90, TLI = .90, SRMR = .05, RMSEA = .05. In the interest of parsimony I opted for the simpler model.

**Hypothesis Tests.** Path estimates associated with the final model are provided in Table 4 and Figure 2. Given that the results of the hypothesis tests are generally equivalent for managers and administrative employees, they are described in tandem with associated path estimates for

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<sup>1</sup>Although initial hypotheses were formulated regarding personal sacrifice commitment, I refer to the model with intent to stay substituted for personal sacrifice commitment as the initially hypothesized model throughout the remainder of the manuscript for simplicity.

each subsample noted. All path coefficients reported are standardized. First, hypotheses regarding overall effects of telecommuting on performance (hypothesis 1), affective commitment (hypothesis 2a), and intent to stay (hypothesis 2b) were not supported. Controlling for tenure and managerial role level (managers only), telecommuting did not have a significant overall effect on performance ratings ( $c'+a*b = -.02, p > .05$  for managers and  $c'+a*b = -.02, p > .05$  for administrative employees), affective commitment ( $c'+a*b = .00, p > .05$  for managers and  $c'+a*b = .03, p > .05$  for administrative employees), or intent to stay ( $c'+a*b = .02, p > .05$  for managers and  $c'+a*b = .05, p > .05$  for administrative employees).

Telecommuting was likewise not associated with perceptions of autonomy ( $a$  path =  $-.03, p > .05$  for managers and  $a$  path =  $.01, p > .05$  for administrative employees). Indirect effects of telecommuting on study outcomes via autonomy were broadly nonsignificant (see Table 4). This indicated lack of mediation (Preacher & Hayes, 2008) via autonomy; hypotheses 3 and 4a-4c were not supported.

In contrast to autonomy, telecommuting did appear to increase perceptions of WLB support, as indicated by significant effects observed for managerial ( $a$  path =  $.25, p < .01$ ) and administrative ( $a$  path =  $.19, p < .01$ ) employees. Hypothesis 5 was therefore supported. Due to differences in power across the managerial and administrative subsamples ( $N = 2,209$  for managers versus  $N = 473$  for administrative employees), practically equivalent indirect effect size estimates associated with WLB were significant for the managerial and not the administrative subsample (see Table 4). Thus results for the managerial sample are used as the basis of interpretation for tests of indirect effects. Among managers, indirect effects on affective commitment and intent to stay associated with WLB support were positive and statistically

significant ( $a*b = .02, p < .05$  and  $a*b = .03, p < .05$ , respectively): Hypotheses 6a-6b were supported.

Hypothesis 6c, which anticipated a stronger mediating effect of WLB on affective commitment versus intent to stay, was not supported: total effects of telecommuting on affective commitment and intent to stay were not significant, and 95 percent confidence intervals for significant indirect effects via WLB for each attitudinal outcome overlapped (e.g. for managers, 95% CI, affective commitment: [.00, .04]; 95% CI, intent to stay: [.03, .11]). Hypothesis 7 was also not supported: Direct paths between telecommuting and performance were not statistically significant for either the managerial ( $c' = -.02, p > .05$ ) or administrative subsample ( $c' = -.02, p > .05$ ).

Nonsignificant indirect effects for performance associated with WLB support in the initially tested model suggested that telecommuting did not influence performance via WLB support (Research Question 1). This was further confirmed by the lack of significant differences in fit of this model relative to the final model, which restricted the WLB support-performance path as discussed (see Table 3 for fit statistics associated with each model).

The expectation that autonomy and WLB support would fully mediate relationships of telecommuting with affective commitment and intent to stay (hypotheses 8a-8b) was partially supported. Specifically, WLB support alone appeared to fully mediate these paths. This was indicated by significant indirect effects of telecommuting on these outcomes via WLB support among managers ( $a*b = .02, p < .05$  for affective commitment and  $a*b = .03, p < .05$  for intent to stay) as well as nonsignificant direct paths ( $c = -.01, p > .05$  for affective commitment and  $c = -.01, p > .05$  for intent to stay) in a fully saturated model which included direct paths from telecommuting to all study outcomes (see Post hoc analyses as well as Table 5). Indirect effect

size estimates for administrative employees were nearly identical but nonsignificant due to less statistical power (affective commitment:  $a*b = .02, p > .05$ ; intent to stay:  $a*b = .04, p > .05$ ). It was noted that the direct path estimate of telecommuting on intent to stay among administrative employees was technically larger than the indirect effect via WLB support ( $c = .07, p > .05$ ), suggesting factor(s) beyond WLB support that may have played a mediating role. Because both effects were not statistically significant, however, this finding is inconclusive. In contrast to WLB support, autonomy did not play a mediating role for affective commitment or intent to stay due to its negligible relationship with telecommuting.

Finally, hypothesis 9, regarding stronger paths of telecommuting with mediators and outcomes as hypothesized among administrative versus managerial employees, was not supported. This was indicated by presence of full measurement equivalence among the two samples, further underscored by generally parallel structural path estimates for the two groups as observed in Table 4. In short, results for this study broadly applied for both the managerial and administrative subsamples.

### **Post hoc analyses**

**Fully saturated model.** Despite nonsignificant simple correlations between propensity to telecommute and outcome variables, I proceeded to freely estimate initially constrained direct paths from telecommuting to affective commitment and intent to stay in order to explore relationships among these variables controlling for WLB support and autonomy and disattenuating estimates for measurement error. Note that this fully saturated model was also used to test hypotheses 8a and 8b. This model showed significantly improved fit for administrative (SBS  $\Delta\chi^2(2) = 11.99, p = .01$ ) but not managerial employees (SBS  $\Delta\chi^2(2) = .78, p = .15$ ). Direct effects of telecommuting on affective commitment and intent to stay were broadly

nonsignificant, however (see Table 5). Overall, results for the fully saturated model were similar to those associated with the final structural model.

**Alternative operationalizations of telecommuting.** The non-telecommuting group in this study included individuals who, though they did not endorse telecommuting, may have endorsed related FWA. In order to get a better sense of telecommuting's effects in comparison to not utilizing an FWA, I recoded non-telecommuters in any given year as those who specifically selected "none" on the FWA item. Fit statistics and parameter estimates for this model were broadly equivalent (i.e. identical results of hypothesis tests and similar path estimates) to those associated with the model that operationalized telecommuting as originally proposed and are available upon request.



## CHAPTER IV

### **Discussion**

The purpose of the present study was to simultaneously test autonomy and WLB support as distinct, theoretically pertinent mediators of telecommuting's effects, and to determine whether these mechanisms are similar for both commitment and performance outcomes. Few published studies examine performance and commitment-related variables in conjunction (for an exception, see Hunton & Norman, 2010), and research on potential mediators likewise has largely progressed in topical siloes (Allen et al., 2015; Gajendran & Harrison, 2007): Some studies focus on changes in the nature of remote work itself, e.g. in terms of job autonomy and interactions with coworkers (Gajendran et al., 2015; Golden, 2006b), whereas others focus on work-life variables associated with telecommuting (Allen et al., 2013; Golden, Veiga, & Simsek, 2006). Including tests of multiple, distinct mediators and outcomes of telecommuting within a single organization provides an additional layer of control and helps to clarify unique contributions of each pathway to commitment and performance outcomes. In addition to testing distinct theoretical mechanisms of telecommuting's relationships to commitment and performance outcomes, this study sheds light on the intervening influence of WLB support, a construct whose role as a mediator of telecommuting's effects has been unexamined to date.

Results of the present study also help to clarify telecommuting's relationship with commitment-related constructs of affective commitment and turnover intent. Prior tests of relationships with affective commitment in particular have yielded mixed results (Golden et al., 2008; Hunton & Norman, 2010; Hyland et al., 2005; Leslie, Park, Mehng, & Manchester, 2012), and mediators of telecommuting's relationships with commitment-related variables remain

largely unexplored. In light of the potential for drawbacks such as decreased coworker relationship quality (Golden, 2009) and fewer professional development activities (Cooper & Kurland, 2002) due to telecommuting, it is important to understand the ways in which telecommuting can actually support employees' commitment to the organization.

A key finding of the present study is that where telecommuting impacted work outcomes, its impact was mediated by perceptions of WLB support, and not autonomy. In particular, telecommuting had small indirect effects on affective commitment and intent to stay through WLB support. Turning first to WLB, the main effect observed for WLB support perceptions contributes to the debate regarding telecommuting's effects on the related construct of WFC (Allen et al., 2013), as well as effects of FWA and work-family policy utilization on POS (Butts et al., 2013; Muse et al., 2008). Prior research suggests that telecommuting may not have a wholly positive impact on WLB itself due to increased family responsibilities and blurring of work-nonwork boundaries, resulting in increased FIW (Allen et al., 2013). For example, telecommuters with children can likely attend to family and non-work demands such as picking children up from school more easily than if they worked purely in-office; at the same time, if telecommuters have a working partner whose organization does not permit telecommuting, they may become the default caretaker (Sullivan & Lewis, 2001). In addition, non-work distractions while telecommuting may abound (Golden et al., 2006; Raghuram & Wiesenfeld, 2004).

Even if WLB/WFC do not improve due to telecommuting (Allen et al., 2013), however, results suggest that employees *perceive* the policy as supporting WLB, which in turn influences their commitment. Full mediation via WLB support essentially supports the signaling-and-exchange perspective of telecommuting's benefits. Moreover, the fact that these relationships applied equally well to both males and females lends further credence to the idea that gender

does not broadly influence the effects of telecommuting on work-family related constructs one way or the other (Allen et al., 2015; Gajendran & Harrison, 2007). Finally, although other, unmeasured moderators (e.g., parental status, weekly work hours) may certainly have played some role here, prior research has not consistently supported their influence (Allen et al., 2013); broadly positive indirect effects of telecommuting via WLB support on commitment are encouraging from the standpoint of evaluating telecommuting as a workplace policy offered to the broader employee population.

Findings regarding WLB support are particularly noteworthy when held in contrast to findings regarding autonomy. Null linkages with autonomy contradict prior research (Gajendran & Harrison, 2007) and suggest that employees in this sample who telecommuted did not perceive additional freedoms or flexibility in their job roles relative to employees who worked in the office. This finding suggests that telecommuting may not be an effective means of increasing employees' perceptions of autonomy, at least in contexts where telecommuting is popular, long-standing, and experienced as a form of WLB support.

One explanation for null linkages with autonomy is telecommuting prevalence. Recent research indicates that telecommuting normativeness moderates telecommuting's effects such that paths are stronger where the policy is less common (Gajendran et al., 2015). Those authors explained this effect in terms of social information processing theory (Salancik & Pfeffer, 1978), suggesting that telecommuters interpret their arrangement in the context of social cues which include others' telecommuting-related attitudes and behaviors. As in Gajendran and colleagues' study, social cues regarding telecommuting may have altered employees' threshold for work features they consider to be "autonomous" in this study. A related explanation is that in samples where telecommuting is highly prevalent, employees may experience in-office freedoms similar

to what they would experience working from home. On the one hand, the organizational culture as a whole may be less hierarchical in such organizations (Cameron & Quinn, 2005), and on the other, managers in such organizations are more likely to be working away from the office themselves. Thus, subordinates may find themselves communicating remotely with their managers even when subordinates themselves are in the office; in this sample, managers were nearly as likely to telecommute as administrative employees.

An alternative explanation for null linkages with autonomy (and potentially, a contaminating factor for effect sizes associated with WLB support) is range restriction in individuals' valuation of these factors. The organization from which data was sampled is well-known for its positive treatment of employees, and telecommuting as well as other forms of WLB support have been highly integrated into its work culture for many years. From an attraction-selection-attrition perspective (Schneider, 1987), such qualities might lead to self-selection whereby the sample under study, on the whole, values autonomy and WLB support much more than a "typical" white collar population, in effect dampening estimates of true relationships. On the other hand, high value placed on mediators of telecommuting in the current study might amplify or moderate relationships of these constructs with study outcomes. The potential influence of theoretically relevant individual difference variables is considered further in Limitations.

Finally, it may simply be the case that in this sample, a remote work modality did not increase job role freedoms not due to the social context or relatively high autonomy while working in the office, but rather due to more advanced forms of communication technology (Mazmanian et al., 2013). In many modern work contexts, including large, multinational organizations, work may look quite similar when working in and away from the office.

Specifically, emails, phone meetings, and mid-project deliverables may be just as or even more prevalent while working remotely. Previously “cubicular” and fixed office spaces are being up-ended, coworkers and team members are less likely to be colocated (Gilson, Maynard, Young, Vartiainen, & Hakonen, 2015), and more and more work – regardless of whether the employee works in or out of the office – is conducted virtually (Priem, Li, & Carr, 2012). In sum, in this organization, particularly given the length of time telecommuting policies have been available and broadly utilized, parallel modifications in job tasks and communications technologies may have rendered autonomy of remote and in-office work to be practically equivalent.

Another key finding of the present study was the null relationship of telecommuting with performance. The finding of null direct and indirect effects on performance was surprising in light of prior empiricism and theory regarding telecommuting’s productivity and performance advantages (Bloom et al., 2015; Gajendran & Harrison, 2007; Gajendran et al., 2015; Hunton, 2005). Although longitudinal and experimental research on performance (versus productivity) is lacking, if anything prior research provides more robust support for links of telecommuting to performance ratings than to commitment and intent to stay (Gajendran & Harrison, 2007).

Null indirect effects of telecommuting on performance stemmed from the fact that of the two mediators, only autonomy, and not WLB support, related to performance (recall that a link between WLB support and performance was not necessarily expected). As previously described, autonomy had a significant positive relationship with supervisor-rated performance, while telecommuting was completely unrelated to autonomy, even with high power to detect small effects.

One potential explanation for this study’s failure to support telecommuting-performance linkages is the way in which employees use telecommuting arrangements, particularly when they

are offered as a FWA. Provision of a telecommuting arrangement by one's manager, where it is offered as a form of WLB support, may be interpreted as a signal *not* to over-do it in terms of performance behaviors, at least where such behaviors interfere with personal well-being and non-work demands. This idea receives some support from telecommuting's apparent lack of impact on self-reported performance (Allen et al., 2015; Carlson, Grzywacz, & Kacmar, 2010; Gajendran & Harrison, 2007), as well as "individual deals" (i-deals) research comparing FWA i-deals to developmental i-deals (Hornung et al., 2008). Specifically, a study by Hornung and colleagues (2008) observed that employees who negotiated developmental i-deals (e.g., special training opportunities) perceived increases in managerial performance expectations whereas employees who negotiated for FWA i-deals did not. In sum, it may be that in cases where telecommuting is offered as a WLB-supportive FWA, employees by and large use the arrangement to engage in activities that are not associated with their primary job roles, such as caretaking or side projects, versus increasing job performance.

A complimentary explanation for these findings pertains to telecommuting normativeness, social information processing, and principles of social exchange. Employees who perceive (and experience) telecommuting as the norm rather than the exception within the organization may not feel particularly obliged to reciprocate with enhanced performance. If specially negotiated i-deals to support WLB are not related to perceived obligations of performance reciprocation (Hornung et al., 2008), performance reciprocation may be even less likely where the policy is framed as a form of WLB support to be offered freely to all employees. In other words, where telecommuting is seen as less "special," it is less likely to result in performance reciprocation on the part of employees – particularly when there is no indication on the part of the organization or manager that such reciprocation is expected. On the whole, this study suggests that

telecommuting's impact on performance may be highly contextual and influenced by moderators requiring further specification.

Finally, my prediction regarding stronger effects of telecommuting for managerial versus administrative employees was not supported. Model comparisons indicated complete measurement equivalence, telecommuting did not have direct or indirect effects on performance in either sample, and with the exception of intent to stay as noted in the Results, point path estimates of indirect effects (associated with WLB support) were highly similar for each subsample.

Overall, this study contributes to our understanding of how telecommuting influences work outcomes, and paints a unique picture of telecommuting's outcomes and mechanisms of these outcomes relative to previous research. Namely, whereas results of prior studies suggest stronger effects of telecommuting on the proximal and distal outcomes of autonomy and performance, respectively, this study indicated that telecommuting was more likely to impact perceptions of WLB support, and in turn, commitment-related constructs, as more distal outcome variables. Theoretical and practical implications of these findings are discussed below.

### **Implications for Theory and Practice**

This study based its predictions on two distinct but complementary lines of theory. The first, which encompassed resource-based construals of telecommuting such as person-environment fit (Kristof, 1996) and job demands-resources theories (Demerouti et al., 2001), pertains to instrumental benefits of telecommuting arrangements, either for completing one's work or addressing non-work demands and preferences. This perspective suggests that telecommuting has inherent advantages as a form of work, e.g. via decreased commute time, freedom in one's approach to work tasks, and decreased work interruptions, which in turn

support enhanced work outcomes directly and/or through mechanisms of social exchange (Blau, 1964).

The second major mechanism through which I expected telecommuting would exert its effects was through signaling-and-exchange. This perspective anticipates beneficial effects on outcomes not through inherent advantages of telecommuting, but through the symbolic value of these relationships within the context of the employment relationship (Blau, 1964; Spence, 1973). The offer or opportunity to telecommute is seen as a token of goodwill, which the employee subsequently reciprocates in the form of enhanced attitudes and/or performance behaviors (Kelliher & Anderson, 2010).

Though this study did not directly test the instrumental versus signaling-and-exchange perspectives of telecommuting, when combined with prior research results are somewhat more suggestive of the latter. First, telecommuting had indirect links to commitment-related outcomes, but no direct or indirect links to performance. Given that my hypotheses regarding performance were based on an instrumental benefits perspective, null links across the board suggest that tangible features of this WLB-supportive arrangement did not lead to enhanced performance, either directly (e.g., through increased fit and job resources including autonomy) or indirectly through mechanisms of social exchange. This finding is significant in its distinction from prior research and supports my previous assertion that, where telecommuting is seen primarily as a form of WLB support, it may not generally elicit higher performance.

In addition, while enhanced affective commitment and intent to stay may have arisen through a combination of instrumental and signaling benefits, the finding regarding WLB support as a critical mediator supports the relevance of signaling over instrumental benefits. Specifically, findings supported a substantive link of telecommuting with WLB support, where



prior studies of telecommuting and the related construct of actual WFC generally find small to negligible effects, including among individuals with high work and/or non-work demands (Allen et al., 2013). Combined, these findings suggest that, as is often the case with WLB-related work arrangements (Butts et al., 2013), symbolic/relational aspects of telecommuting may be more central to this practice's positive attitudinal outcomes than instrumental benefits. This study also has important implications for practice in that it provides insight into proximal and distal outcomes that result from telecommuting when offered as a FWA, versus outcomes requiring further investigation. Namely, this study provides evidence that long-term telecommuting policies are effective to the extent that they impact employees' perceptions of WLB support, and in turn, affective commitment and intent to stay with the organization. Small indirect paths are practically significant for large organizations in particular given their broad cumulative effects.

Findings cast doubt on the contention that telecommuting broadly supports performance, however, at least where this practice is experienced principally as a means of supporting WLB versus job autonomy. In turn, in this study and according to prior research, autonomy has stronger links to performance *and* commitment outcomes than work-life/work-family constructs (Fried & Ferris, 1987; Gajendran & Harrison, 2007). Thus, WLB-targeted telecommuting may not be a particularly effective means for organizations to increase employees' performance levels, and a suboptimal means of increasing commitment. Organizations desiring the most "bang for their buck" in terms of telecommuting arrangements, therefore, should seek ways to ensure that such arrangements promote employees' sense of job autonomy.

On the other hand, notwithstanding "file drawer effects" (Rosenthal, 1979), reliably estimated null effects are of note here from a practical perspective as well, especially in the absence of obvious methodological artifacts. Namely, telecommuting may not have influenced

autonomy and performance in this study, but it did not negatively influence these outcomes either. This result is particularly encouraging given that prior findings on career penalties due to FWA have been mixed (Coltrane, Miller, DeHaan, & Stewart, 2013; Frank & Lowe, 2003; Gajendran & Harrison, 2007; Glass, 2004; Leslie et al., 2012). Overall, study results suggest that where telecommuting influences commitment-related and performance outcomes, the impact is positive. This finding should allay fears of organizational leaders and managers that reduced face-time will impair the average worker's performance (Turetken, Jain, Quesenberry, & Ngwenyama, 2011), or that employees need to be physically colocated with coworkers "on the organization's turf" in order to feel committed.

Lack of negative effects on performance and commitment outcomes is also significant in that, internal marketing aside, many organizations utilize telecommuting arrangements in part to cut costs (e.g. real estate, relocation reimbursements) and/or employ individuals who may not otherwise be inclined (Avery & Zabel, 2001; Caldwell, 2009) or able to work on-site (Executive Office of the President, 2009). Other benefits to organizations include ADA compliance, avoidance of environmental sanctions, and avoiding turnover among employees who desire or need to relocate for non-work reasons (Allen et al., 2015). Results of this study are concordant with prior research in that these gains do not appear to be offset by decrements in telecommuters' job performance or commitment to the organization.

Study findings also suggest that opportunity to telecommute may be an effective means to promote perceptions of WLB support as part of the employer's brand image (Collins & Stevens, 2002). The positive impact of telecommuting on WLB support perceptions suggests that organizations that wish to emphasize WLB as part of their overall organizational values and those seeking to attract, recruit, and retain populations who value WLB should consider offering

telecommuting policies and encouraging managers to actually allow their employees to use them. Even organizations that do not wish to emphasize WLB support as a cornerstone of organizational values or employer brand image may opt to offer telecommuting given that so many workers value flexibility for managing the work-life interface (Allen et al., 2013; Hornung et al., 2008; Hornung & Glaser, 2009). Moreover, signals of WLB support, both within the organization and outside of it, may become increasingly relevant given that there is some evidence that today's "younger workers" value non-work activities more so than their predecessors (Twenge, Campbell, Hoffman, & Lance, 2010).

### **Future research directions**

Results of this study provide insights into outcomes and mechanisms of long-term telecommuting policies, while raising additional questions for future research. First, the contrasting findings in this study regarding links of telecommuting to WLB support versus autonomy as well as commitment and performance imply the need to examine how telecommuting policies are framed and what features are built in when they are offered. A manager who allows telecommuting as a means to support performance (e.g., via increased autonomy, reduced work distractions, and/or reduced commute time) may see quite different results versus a manager who allows telecommuting because his/her employee(s) use it to perform caretaking responsibilities. In either case the results may be positive, while the mechanisms and specific attitudes/behaviors impacted are distinct. Future studies can directly test messaging as well as implicit or explicit contracts around individual telecommuting arrangements to tease out these effects. Certainly, autonomy versus WLB support, and performance versus commitment outcomes are not mutually exclusive; manipulation of how telecommuting is framed, e.g. in a lab or quasi-experimental setting, and the terms and

conditions under which it is offered can provide information to help organizations to achieve the best of all worlds.

Another natural direction for future researchers based on the current study's results is to include additional predictors and controls to isolate unique effects of telecommuting relative to supportive HR and manager practices more broadly. Prior research has examined telecommuting alongside other FWAs and developmental i-deals (Allen et al., 2013; Hornung et al., 2008). However, the question of telecommuting/FWAs' unique contribution to outcomes above and beyond supportive HR policies more broadly remains to be answered. Signaling-and-exchange mechanisms of telecommuting in particular are highly relational and non-specific to features of the policy itself, and there is some indication that controlling for overall quality of management removes apparent effects of WLB practices (Bloom & Van Reenan, 2006). More clarity around potentially unique effects of telecommuting beyond other forms of HR and managerial support, particularly when coupled with careful attention to distinct versus common features of each policy, would provide a more definitive answer to the question of whether telecommuting has unique benefits beyond signaling-and-exchange value.

Future research can also build on this study by examining the effects of telecommuting over time. Theoretically and practically speaking, outcomes and mechanisms of telecommuting's effects might look quite different where employees have used this policy long-term; prior studies examining effects of telecommuting experience have tended to substitute rough measures of how long the policies have existed (e.g., more than or less than one year) versus how long individuals have actually telecommuted (Gajendran & Harrison, 2007). Cross-sectional investigation of telecommuting's effects predominates, and where there is experimental manipulation, outcomes are generally measured in the near-term (Bloom et al., 2015; Hunton & Norman, 2010). In the

current study, telecommuting was offered for many years, and individuals may have telecommuted far prior to the period during which data was collected. Thus, habituation (Groves & Thompson, 1970) may have played some role in differences observed in telecommuting's links to WLB support and autonomy. Namely, whereas WLB support is a relational variable that is more likely to resist change over time (Greenwald & Banaji, 1995; Hogarth & Einhorn, 1992), job role perceptions may shift with changes in job demands – in this case, location requirements. Employees who telecommute may not see themselves as more autonomous given that they come to expect their work to be more autonomous. In other words, some degree of beta change or measurement variance over time may have been present (Golembiewski, Billingsley, & Yeager, 1976). Truly longitudinal research, ideally collecting data from the time at which telecommuting policies are first offered to several years later, can elucidate longitudinal patterns in telecommuting's effects.

Another potential avenue for future researchers is to examine individual difference characteristics that may influence telecommuting utilization and its effects. In this study, for instance, tenure was significantly related to certain work outcomes, and there is some evidence that age moderates FWA effects (Bal, De Lange, Jansen, & Van, 2008). Nontraditional career orientations may be another fruitful area of investigation. Boundaryless mindset, for instance, which refers to a preference for working across traditional organizational boundaries (Briscoe, Hall, & Frautschy DeMuth, 2006), may heighten outcomes of telecommuting where communication technologies support boundary-crossing. Individuals with a boundaryless mindset may respond well to physical transcendence of cubicle and office walls, in the form of 100% remote positions, participation in virtual teams, and/or colocation with remote workers

from other organizations. Of note, such effects would apply regardless of whether job autonomy increases due to telecommuting.

Finally, results suggest that future researchers should further clarify the meaning and potential implications of telecommuting in organizations where this practice is highly prevalent. There is some evidence to indicate that telecommuting impacts others within the office as well as relationship quality (Gajendran & Harrison, 2007; Golden, 2006b), but overall our understanding of how supervisor and coworker telecommuting influences outcomes of telecommuting at the individual and group level is limited (Allen et al., 2015; Coenen & Kok, 2014; Golden & Raghuram, 2010). As noted previously, any single individual's utilization of telecommuting arrangements exists within the context of how others use the arrangement (Gajendran et al., 2015). The meaning of telecommuting can change substantively depending on whether one's peers and one's manager are actually in the office or working remotely themselves (Golden, Barnes-Farrell, & Mascharka, 2009). Future researchers can use social network analysis and multilevel models to examine interactive effects of telecommuting within workgroups and supervisor-report dyads, as well as group- or team-level outcomes that may be impacted.

### **Strengths and Limitations**

This study has two notable methodological features which represent advancements over prior research. First, this study aimed to reduce potential for reverse causality relative to typical cross-sectional studies of telecommuting (Allen et al., 2015; Gajendran & Harrison, 2007) through the use of lagged data. Linking propensity to telecommute over a 5-year period to mediators one year and outcomes the next provided a more convincing test of the unfolding and staying power of telecommuting's effects over time that was less prone to Type I error.

Second, although data in this study was not fully longitudinal and I was not able to directly test longitudinal trends telecommuting's impact on constructs of interest, this study's findings are particularly relevant for assessing the impact of telecommuting in circumstances where it is highly common and has been so for several years organization-wide.

A limitation of the current study is that I was not able to test hypotheses regarding continuance commitment given measurement properties of the originally proposed commitment factors. That said, continuance (perceived sacrifice) commitment and intent to stay are related (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002), in this case even more so given how I proposed to measure perceived sacrifice commitment; the same theoretical justifications applied. The current study's tests of telecommuting's relationship with intent to stay were by definition ad hoc, however, and I was not able to supplement the lack of prior research on telecommuting and perceived sacrifice commitment.

Further, although lagged data and a large, diverse sample are strengths, this study has several methodological limitations. One is that telecommuting data did not reflect frequency of telecommuting within a given year. Prior studies of telecommuting have demonstrated main or moderating effects of telecommuting frequency (Golden & Raghuram, 2010; Golden & Veiga, 2005; Golden et al., 2006; Golden, 2006b; Morganson, Major, Oborn, Verive, & Heelan, 2010; Virick, DaSilva, & Arrington, 2010). Specifically there is evidence that telecommuting frequency has curvilinear relationships with organizational attitudes, with low to moderate frequency relating most strongly to job satisfaction (Golden, 2006b) and peer relationship quality and high frequency relating most strongly to supervisor relationship quality, commitment, and reduced work-family conflict (Gajendran & Harrison, 2007; Golden, 2006a; Golden, 2006b). Had modeling of telecommuting frequency in the present study been possible, it may have

clarified effects and substantiated the notion that telecommuting has dose-response or curvilinear effects on study mediators and outcomes.

Some might also object to including individuals who used non-telecommuting forms of FWA in the comparison group. The same theoretical mechanisms (particularly signaling-and-exchange) may apply to non-telecommuting forms of FWA like flextime, and isolating telecommuting from other forms of FWA may have obscured overall effects relative to traditional work arrangements. Of note, recoding the control group as those who indicating using no FWA did not substantively alter study results.

Another limitation of this study was the diverse nature of the sample. While a diverse sample is advantageous for more generalizable conclusions, measurement variance across national origin and/or first language may have influenced results. Rigorous translation and back-translation procedures to ensure equivalent meaning of items across languages to some extent reduces the possibility for distorted results due to a lack of measurement invariance in this study. Ideally, one could either control for or model the various individual differences of relevance to the relationships under study. For example, as alluded to previously, there is evidence of universal human values (Schwartz, 1994), e.g. benevolence and self-direction, which have clear relevance to how individuals may have responded to telecommuting in this study. The lack of information on theoretically pertinent moderators may have obscured true effect sizes, and/or suggested broad main effects where conditional conclusions may have been more appropriate. Of note, there is debate regarding the utility of control variables (Spector & Brannick, 2011) as well as moderators (Murphy & Russell, 2016) in model-building as well as application in organizational settings. If nothing else, main effects in the population of interest are arguably more salient to clarifying bottom-line impact and informing enterprise strategy.



In addition to issues pertaining to sample, this study used performance and attitudes items that were specific to the organization, versus measures with validity evidence from previous research. Autonomy in particular was defined differently than in prior studies of telecommuting, which have focused on temporal/spatial aspects of autonomy specifically. Arguably, this study's operationalization of autonomy was more closely aligned with conceptualization of autonomy as a general work characteristic; unfortunately, its generality may also have contributed to null links with telecommuting utilization. In general, although review of item content and the literature on WLB support, autonomy, commitment and intent to stay as well as confirmatory factor analyses of attitudinal measures provided a reasonable degree of content and construct validity evidence (Binning & Barrett, 1989), a construct validation study would have been ideal. Construct validity evidence would have been particularly helpful in the case of the performance variable. On the other hand, goodness of fit for the final measurement model including the performance variable was acceptable, and measurement of performance in this study was in some ways a strength in that the large number of items reduced chances of criterion deficiency, items were developed by I-O psychologists, and ratings were used for research purposes only and made on a confidential basis (Murphy & Cleveland, 1995).

Finally, although use of lagged data in this study is a strength, causation would be more strongly supported with truly longitudinal modeling or an experimental design. As mentioned, longitudinal data on my particular constructs of interest, beyond telecommuting, were not available given changes in survey items from one year to the next. Single item indicators may have been an alternative (Fisher, Matthews, & Gibbons, 2016), though this approach has its own limitations, including decreased variance and criterion deficiency. However, the lack of information on when individual employees began telecommuting, given that the policy has been

promoted and utilized for many years in this organization, is a remaining impediment. Note that reverse causality is less likely here from both a theoretical and intuitive perspective. For example it does not make sense that commitment or intent to stay would lead to telecommuting (via WLB support), though directionality of the path between telecommuting and WLB support is somewhat more amenable to reverse or reciprocal effects. Moreover, study hypotheses were based on two disparate yet mostly compatible streams of theory, each of which has a broad basis of empirical support for explaining work (and non-work) attitudes and behaviors in general, and to some extent work outcomes of telecommuting specifically (Gajendran et al., 2015; Golden, 2006a).

## **Conclusion**

The act of telecommuting has become widespread within modern organizations, and there is controversy regarding the impact of this practice on critical work outcomes. The current study drew on instrumental and signaling theoretical perspectives of telecommuting to propose a model of two disparate mechanisms through which telecommuting might influence employees' commitment and supervisor-rated performance. Results suggested that WLB support mediated telecommuting's impact on affective commitment and intent to stay, whereas telecommuting did not influence perceptions of autonomy or performance ratings one way or the other. Taken together these results suggest that when telecommuting is perceived primarily as a form of WLB support, performance may be unaffected. Moreover, where telecommuting influences employees' commitment and performance, its effects appear to be beneficial; however, in light of prior research on telecommuting, job autonomy, and work outcomes, findings suggest that the nature and magnitude of telecommuting's effects depend largely on the extent to which this practice promotes perceptions of job autonomy versus WLB support. The present study contributes to our

understanding of how telecommuting can influence employees' experiences and work outcomes; perceptions of telecommuting as a form of WLB support appear to be an important mechanism for its effects. From a practical perspective, organizations and managers seeking to obtain the most value from telecommuting arrangements should bear in mind that perceptions of WLB support promote commitment, but do not appear to enhance performance.

Table 1

*Descriptives and Correlations for Study Variables*

| <b>Full Sample (Listwise N = 2422)</b> |        |        |           |            |            |            |            |            |
|--|--------|--------|-----------|------------|------------|------------|------------|------------|
|  | 1      | 2      | 3         | 4          | 5          | 6          | 7          | 8          |
| 1. Gender                              | -      |        |           |            |            |            |            |            |
| 2. Tenure                              | -.06** | -      |           |            |            |            |            |            |
| 3. Telecommuting Status                | .15**  | -.01   | -         |            |            |            |            |            |
| 4. Autonomy                            | -.09** | .01    | .01       | (.78)      |            |            |            |            |
| 5. WLB Support                         | .00    | .09**  | .25**     | .45**      | (.83)      |            |            |            |
| 6. Affective Commitment                | -.02   | -.02   | .00       | .40**      | .26**      | (.84)      |            |            |
| 7. Intent to Stay                      | .00    | .15**  | .03       | .24**      | .25**      | .55**      | (r = .60)  |            |
| 8. Performance                         | -.06** | -.05*  | -.02      | .09**      | .05*       | .09**      | .06**      | (.94)      |
| Mean (SD)                              | -      | -      | .61 (.38) | 4.01 (.70) | 4.22 (.76) | 4.28 (.60) | 4.30 (.80) | 3.43 (.64) |
| <b>Managers (Listwise N = 2000)</b>    |        |        |           |            |            |            |            |            |
|  | 1      | 2      | 3         | 4          | 5          | 6          | 7          | 8          |
| 1. Gender                              | -      |        |           |            |            |            |            |            |
| 2. Tenure                              | -.08** | -      |           |            |            |            |            |            |
| 3. Manager Role Level                  | -.12** | .46**  | -         |            |            |            |            |            |
| 4. Telecommuting Status                | .13**  | -.02   | .03       | -          |            |            |            |            |
| 5. Autonomy                            | -.09** | .00    | .09**     | .03        | (.77)      |            |            |            |
| 5. WLB Support                         | .00    | .08**  | .11**     | .26**      | .44**      | (.83)      |            |            |
| 7. Affective Commitment                | -.02   | -.01   | .03       | -.01       | .40**      | .26**      | (.84)      |            |
| 8. Intent to Stay                      | -.02   | .15**  | .01       | .01        | .25**      | .25**      | .55**      | (r = .59)  |
| 9. Performance                         | -.04   | -.07** | .17**     | -.01       | .09**      | .05*       | .09**      | .07**      |
| Mean (SD)                              | -      | -      | -         | .59 (.38)  | 4.02 (.70) | 4.22 (.76) | 4.27 (.60) | 4.28 (.80) |

Table 1 (continued)

*Descriptives and Correlations for Study Variables*

| <b>Administrative Employees (Listwise N = 422)</b> |       |       |           |            |            |            |                   |            |
|--|-------|-------|-----------|------------|------------|------------|-------------------|------------|
|  | 1     | 2     | 3         | 4          | 5          | 6          | 7                 | 8          |
| 1. Gender  | -     |       |           |            |            |            |                   |            |
| 2. Tenure  | .16** | -     |           |            |            |            |                   |            |
| 3. Telecommuting Status                            | .04   | .07   | -         |            |            |            |                   |            |
| 4. Autonomy  | -.07  | .02   | .03       | (.80)      |            |            |                   |            |
| 5. WLB Support                                     | .08   | .16** | .21**     | .50**      | (.85)      |            |                   |            |
| 6. Affective Commitment                            | -.02  | -.06  | -.01      | .38**      | .24**      | (.84)      |                   |            |
| 7. Intent to Stay                                  | .00   | .17** | .09       | .23**      | .23**      | .56**      | ( <i>r</i> = .62) |            |
| 8. Performance                                     | .02   | .02   | .00       | .10*       | .08        | .10*       | .06               | (.95)      |
| Mean (SD)  | -     | -     | .70 (.34) | 3.94 (.72) | 4.24 (.78) | 4.30 (.59) | 4.42 (.75)        | 3.24 (.69) |

*Note:* \* $p < .05$ , \*\* $p < .01$ . For Gender, 0 = male and 1 = female. Telecommuting status is the proportion of years from 2011 to 2015 that the individual indicated telecommuting (e.g., .61 = 61%).

Table 2

*Measurement Model Fit, Non-Performance Variables*

|  | SBS $\chi^2$ | <i>df</i> | SBS $\Delta\chi^2$ | CFI  | TLI  | SRMR | RMSEA |
|--|--------------|-----------|--------------------|------|------|------|-------|
| 1-Factor Model                               | 62382.94*    | 135       | -                  | 0.58 | 0.52 | 0.14 | 0.13  |
| 2-Factor Model <sup>1</sup>                  | 38757.24*    | 134       | 8557.54*           | 0.74 | 0.70 | 0.08 | 0.10  |
| 4-Factor Model (Commitment Factors Combined) | 11740.60*    | 129       | 17894.05*          | 0.92 | 0.91 | 0.04 | 0.06  |
| 5-Factor Model (Proposed)                    | 11546.71*    | 125       | 214.00*            | 0.92 | 0.91 | 0.04 | 0.06  |
| 5-Factor Model (Final) <sup>2</sup>          | 6076.93*     | 125       | 4062.61*           | 0.96 | 0.95 | 0.03 | 0.04  |

*Note:*  $\chi^2$  = Chi-square; *df* = degrees of freedom; SBS  $\Delta\chi^2$  = Satorra-Bentler chi-square difference test; CFI = comparative fit index. RMSEA = root mean square error of approximation. \**p* < .001. Satorra-Bentler scaled chi-square difference test results are displayed next to the less restricted model and were conducted in the following manner: 2-factor model versus nested 1-factor model, 4-factor model versus nested two-factor model, 5-factor model (proposed) versus nested 4-factor model, and 5-factor (final) model versus nested 4-factor model. <sup>1</sup>All attitudes items combined onto one factor, telecommuting items loaded onto second factor. <sup>2</sup>One item was moved from the originally proposed Continuance Commitment factor to Affective Commitment, as described in the Method.

Table 3

*Structural Model Fit*

|                                 | SBS $\chi^2$ | df  | SBS $\Delta\chi^2$ | SBS $\Delta\chi^2$ df | CFI | TLI | SRMR | RMSEA |
|---------------------------------|--------------|-----|--------------------|-----------------------|-----|-----|------|-------|
| <b>Managers</b>                 |              |     |                    |                       |     |     |      |       |
| 1. Initial Model                | 3643.97***   | 678 | -                  | -                     | .91 | .90 | .04  | .04   |
| 2. Saturated Model              | 3643.19***   | 676 | .78                | 2                     | .91 | .90 | .04  | .05   |
| 3. Final Model                  | 3644.63***   | 679 | .66                | 1                     | .91 | .90 | .04  | .04   |
| <b>Administrative Employees</b> |              |     |                    |                       |     |     |      |       |
| 1. Initial Model                | 1357.45***   | 647 | -                  | -                     | .90 | .90 | .05  | .05   |
| 2. Saturated Model              | 1345.47***   | 645 | 11.99*             | 2                     | .91 | .90 | .05  | .05   |
| 3. Final Model                  | 1359.79***   | 648 | 2.34               | 1                     | .90 | .90 | .05  | .05   |

Note:  $\chi^2$  = Chi-square; df = degrees of freedom; SBS  $\Delta\chi^2$  = Satorra-Bentler chi-square difference test; CFI = comparative fit index. RMSEA = root mean square error of approximation. 1. Initially hypothesized model, with exploratory path between WLB support and performance freely estimated. 2. Fully saturated model with paths among all study variables freely estimated. 3. Initially hypothesized model, with exploratory path between WLB support and performance constrained. SBS  $\Delta\chi^2$  estimates reflect comparisons of saturated and final models with initial model. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 4

*Standardized Path Coefficients, Final Model*

|   | Performance |       |     |      |            | Affective Commitment |       |      |    |            | Intent to Stay |       |       |    |            |
|---|-------------|-------|-----|------|------------|----------------------|-------|------|----|------------|----------------|-------|-------|----|------------|
|   | a           | b     | a*b | c'   | c'+<br>a*b | a                    | b     | a*b  | c' | c'+<br>a*b | a              | b     | a*b   | c' | c'+<br>a*b |
| <b>Managers (N = 2209)</b>                |             |       |     |      |            |                      |       |      |    |            |                |       |       |    |            |
| WLB Support                               | .25**       | -     | -   |      |            | .25**                | .07*  | .02* |    |            | .25**          | .11** | .03** |    |            |
|   |             |       |     | -.02 | -.02       |                      |       |      | -  | .00        |                |       |       | -  | .02        |
| Autonomy                                  | -.03        | .15** | .00 |      |            | -.03                 | .64** | -.02 |    |            | -.03           | .44** | -.01  |    |            |
| <b>Administrative Employees (N = 473)</b> |             |       |     |      |            |                      |       |      |    |            |                |       |       |    |            |
| WLB Support                               | .19**       | -     | -   |      |            | .19**                | .11   | .02  |    |            | .19**          | .24** | .04   |    |            |
|   |             |       |     | -.02 | -.01       |                      |       |      | -  | .03        |                |       |       | -  | .05        |
| Autonomy                                  | .01         | .32** | .00 |      |            | .01                  | .52** | .01  |    |            | .01            | .23** | .00   |    |            |

*Note:* c' = direct effect (from telecommuting to outcome), a = path from telecommuting to mediator, b = path from mediator to outcome, indirect effect = a\*b. Mediation is supported when indirect effect is significant. Full mediation supported when indirect effect is significant and c' is not significant. \*p < .05 \*\*p < .01

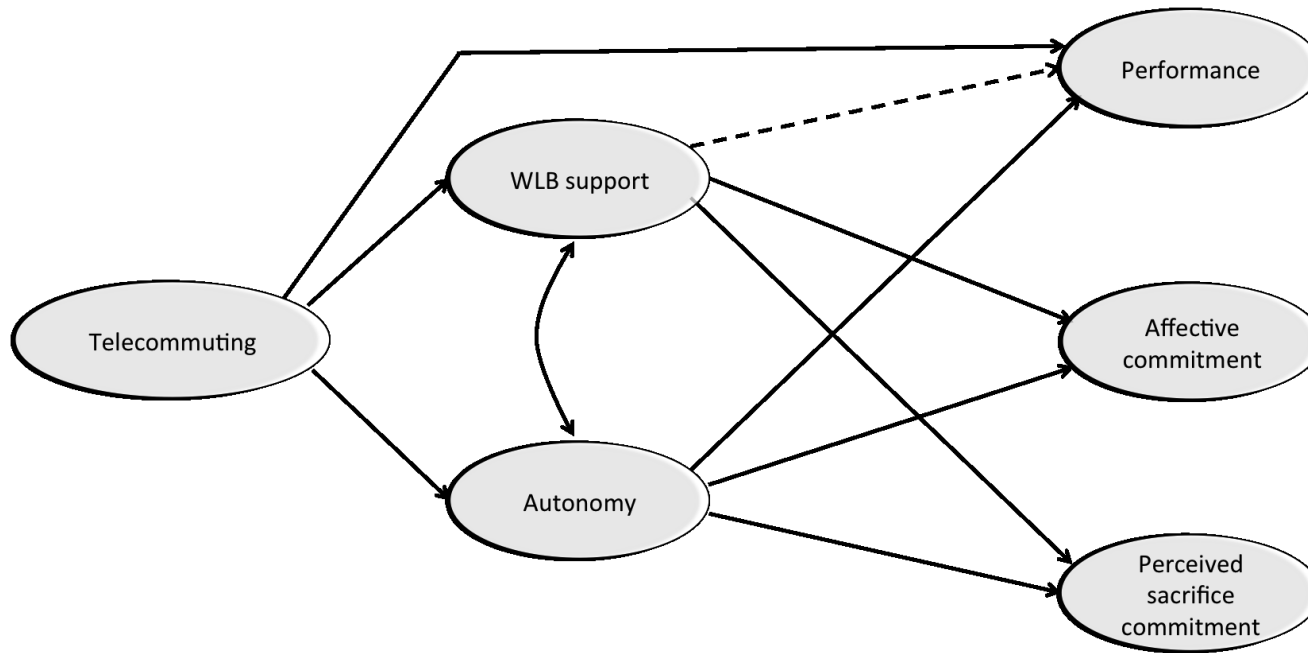


Table 5

*Standardized Path Coefficients, Saturated Model*

|   | Performance |       |     |      |            | Affective Commitment |       |      |      |            | Intent to Stay |       |       |      |            |
|---|-------------|-------|-----|------|------------|----------------------|-------|------|------|------------|----------------|-------|-------|------|------------|
|   | a           | b     | a*b | c'   | c'+<br>a*b | a                    | b     | a*b  | c'   | c'+<br>a*b | a              | b     | a*b   | c'   | c'+<br>a*b |
| <b>Managers (N = 2209)</b>                |             |       |     |      |            |                      |       |      |      |            |                |       |       |      |            |
| WLB Support                               | .25**       | .03   | .01 |      |            | .25**                | .08*  | .02* |      |            | .25**          | .12*  | .03** |      |            |
| Autonomy                                  | -.02        | .13** | .00 | -.02 | -.02       | -.02                 | .64** | -.02 | -.01 | -.01       | -.02           | .43** | -.01  | -.01 | 0.01       |
| <b>Administrative Employees (N = 473)</b> |             |       |     |      |            |                      |       |      |      |            |                |       |       |      |            |
| WLB Support                               | .18**       | .12   | .02 | -.02 | .01        | .18**                | .12   | .02  | -.04 | -.01       | .18**          | .21*  | .04   | .07  | .12        |
| Autonomy                                  | .02         | .24** | .01 |      |            | .02                  | .51** | .01  |      |            | .02            | .24** | .01   |      |            |

*Note:* All  $c'$  = direct effect (from telecommuting to outcome),  $a$  = path from telecommuting to mediator,  $b$  = path from mediator to outcome, indirect effect =  $a*b$ . Mediation is supported when indirect effect is significant. Full mediation supported when indirect effect is significant and  $c'$  is not significant. \* $p < .05$  \*\* $p < .01$



*Figure 1.* Simplified graphical representation of proposed SEM model. Note that predictions regarding magnitude of effects and moderation by job type are not depicted.

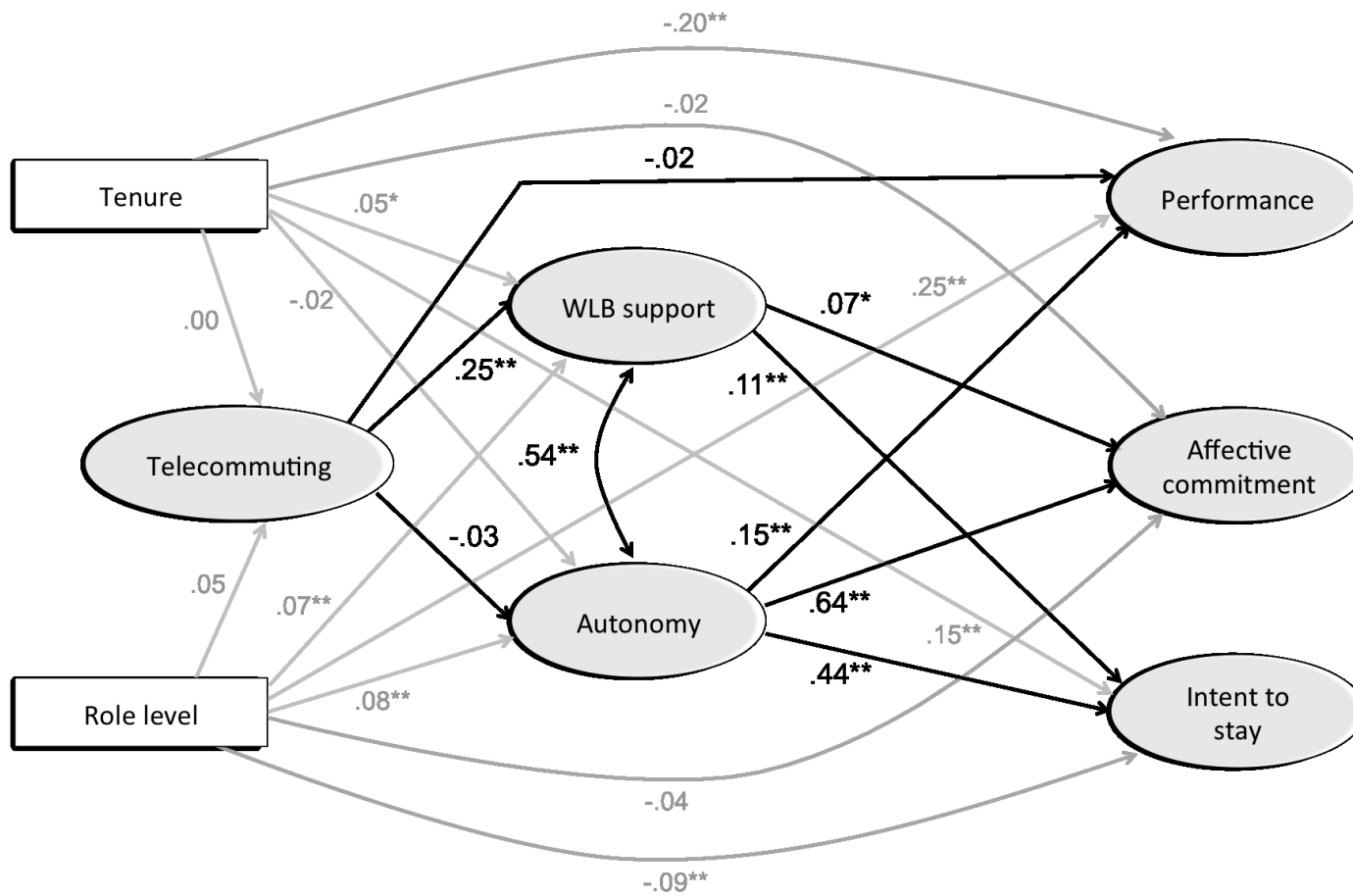


Figure 2. Final model with standardized path coefficients, managers. \* $p < .05$ ; \*\* $p < .01$ . Grey paths are associated with control variables.

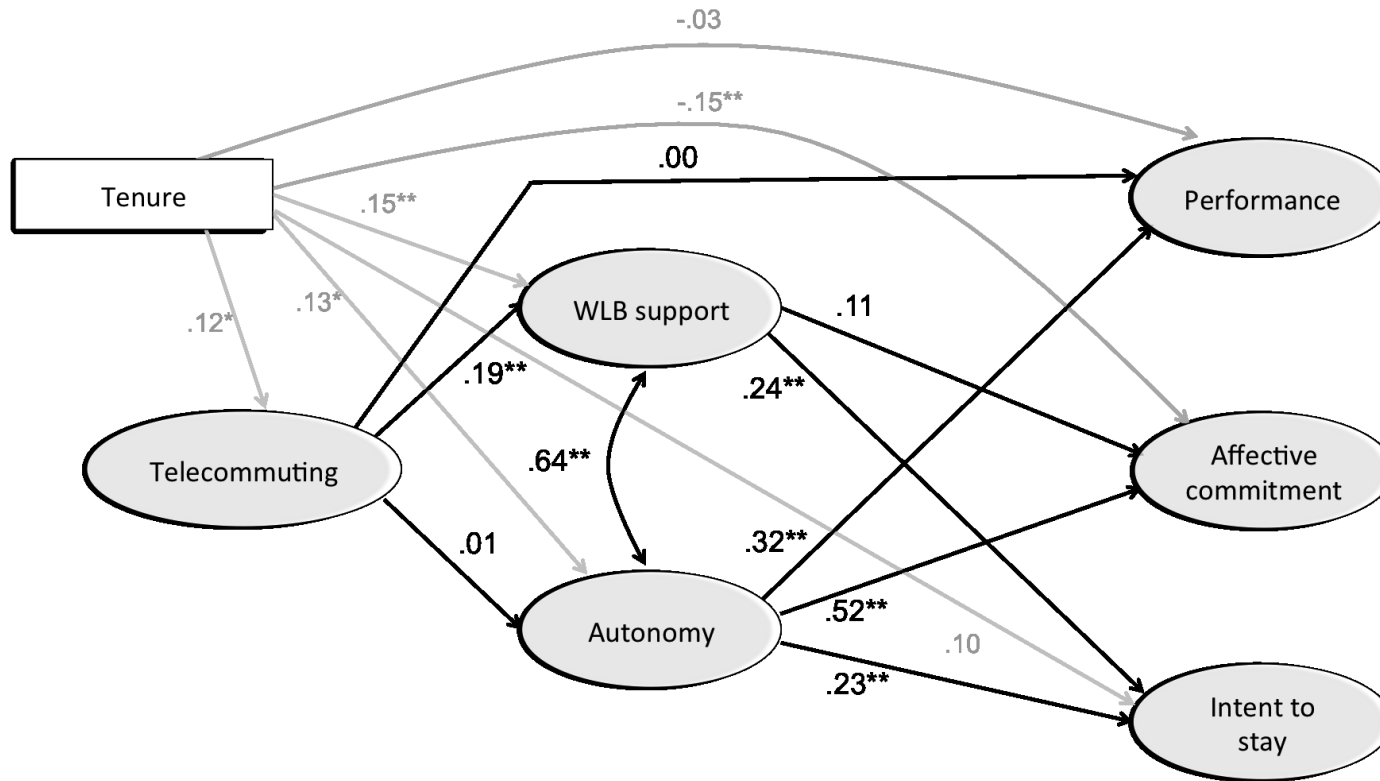


Figure 3. Final model with standardized path coefficients, administrative employees. \* $p < .05$ ; \*\* $p < .01$ . Grey paths are associated with control variables.

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## APPENDIX

This section describes the steps taken to arrive at the final 5-factor measurement model of non-performance data, which included telecommuting, autonomy, work-life-balance support, affective commitment, and intent to stay. Results are also available in Table 2. First, I tested relatively simple one- and two-factor models, both of which collapsed indicators of employee attitudes onto one factor (the 1-factor model further loaded the annual telecommuting indicators onto the same factor as attitudes). As expected, fit for these models was poor. Next, I examined the initially proposed 5-factor model (with telecommuting, the two mediators, and the two outcome variables). This model demonstrated acceptable fit (CFI = .92, TLI = .91, SRMR = .04, RMSEA = .06). However, a strong correlation between the proposed affective and continuance (perceived sacrifice) commitment factors ( $r = .71$ ), and examination of inter-item correlations suggested that one item in particular (content for which is proprietary to the organization under study) related more strongly to the affective commitment indicators than was ideal for purposes of discriminant validation between affective and continuance commitment. Specifically, this item had stronger relationships with the other affective commitment items, averaging  $r = .59$ , than it did with the continuance commitment items, averaging  $r = .44$ . A consultation of the literature on organizational commitment suggested that this item indeed might be justifiably seen as an indicator of affective, versus personal sacrifice commitment. For instance the Organizational Commitment Questionnaire (Mowday et al., 1979), which defines commitment as an affective construct involving the relative strength of an individual's identification with and involvement in a particular organization, includes a similar item, "I talk up this organization to my friends as a great organization to work for." Based on item statistics and prior theory and measures of

organizational commitment, I determined that the cross-loading item would be more suitably loaded on the affective commitment factor in the present study. This resulted in a 5-item affective commitment factor ( $\alpha = .85$ ) and a 2-item “intent to stay” factor ( $r = .62$ ). As expected, these factors showed a more modest correlation of  $r = .56$ . Note that although the removal of item did change the substantive meaning of the originally hypothesized personal sacrifice commitment factor, intent to stay was still of great interest and relevant for testing the theoretical pathways proposed. Namely, the rationale for differential relationships of telecommuting and study mediators with affective commitment and personal sacrifice commitment still applied (see Introduction).

Although it was not technically possible to conduct significance testing to compare fit of the original and final 5-factor models given that these models were not nested, on an absolute basis fit statistics were uniformly superior for the final model (see Table 2). Akaike’s information criterion (AIC) and Bayesian information criterion (BIC) values were improved for this model as well (AIC = 844238.08, BIC = 844763.00 for the final model and AIC = 850889.34, BIC = 851414.26 for the original model). The reduced correlation between the modified Affective and Continuance Commitment factors likewise suggested improved measurement properties.

Finally, in the interest of parsimony I also tested a 4-factor model, which collapsed the original affective and continuance commitment indicators onto a broader organizational commitment factor. Satorra-Bentler chi-square difference testing indicated that this model had significantly worse fit relative to the final 5-factor models (SBS  $\Delta\chi^2(4) = 4062.61, p < .001$ ) and to a lesser extent relative to the proposed 5-factor model (SBS  $\Delta\chi^2(4) = 214.00, p < .001$ ).