

11-6-2020

## Resolving the Telecommuting Paradox: Does Leader-Member Exchange Matter?

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

RESOLVING THE TELECOMMUTING PARADOX: DOES LEADER-MEMBER  
EXCHANGE MATTER?

A dissertation submitted in partial fulfillment of

the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

BUSINESS ADMINISTRATION

by

Ajay Rama Ponnappalli

2020

To: Dean Joanne Li  
College of Business

This dissertation, written by Ajay Rama Ponnappalli, and entitled Resolving the Telecommuting Paradox: Does Leader-Member Exchange Matter?, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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The dissertation of Ajay Rama Ponnappalli is approved.

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Dean Joanne Li  
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Andrés G. Gil  
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Florida International University, 2020

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## DEDICATION

To all the people I love and care for

To those who have supported me, looked out for me, endured me, and challenged me

To those I look up to and aspire to be like

This dissertation is for all of you

## ACKNOWLEDGMENTS

I would like to express my sincere and heartfelt gratitude to my professors for investing in me and guiding me over the years. In particular, I would like to thank my dissertation Chair, Dr. Ravi Gajendran, for being the best mentor I could ask for. I would also like to thank my dissertation committee members – Dr. Nathan Hiller, Dr. Hock-Peng Sin, and Dr. Chockalingam Viswesvaran – for always believing in me and encouraging me at every step; I would not be who and where I am today without their continued support. I am grateful to the FIU Center for Leadership for the enduring support I received throughout my graduate education. Finally, graduate school would not be nearly as enjoyable as it was without my colleagues, peers, and friends.

I would also like to thank my mother and sisters for encouraging me to move back home and for putting up with me as I contemplated and pursued a career in academia. I am also grateful to Chen and her wonderful family – her mom, dad, and grandma – for accepting me as their own and for encouraging me at every step.

Last and certainly not least, I would like to thank Dr. Deepa Sethi for her support and for helping me collect data for this study during incredibly challenging times; this dissertation would not have been possible without her.

ABSTRACT OF THE DISSERTATION

RESOLVING THE TELECOMMUTING PARADOX: DOES LEADER-MEMBER  
EXCHANGE MATTER?

by

Ajay Rama Ponnappalli

Florida International University, 2020

Miami, Florida

Professor Ravi S. Gajendran, Major Professor

Prior theorizing about telecommuting has proposed the possibility of a telecommuting paradox (Gajendran & Harrison, 2007), which refers to a set of mutually incompatible consequences that telecommuting has for employees. On one hand, a key theme in managerial and scholarly writings on telecommuting is that it provides employees with greater flexibility and discretion over where, when, and how work is completed. According to this view, telecommuting leads to greater autonomy and this in turn is linked to beneficial outcomes including greater job satisfaction, intentions to stay, and better job performance. On the other hand, some researchers and the popular press have proposed that telecommuting is associated with social and professional isolation which are known to be negatively related to outcomes such as job satisfaction and job performance. Considered simultaneously, these theorized paths hint at a telecommuting paradox wherein telecommuting is theorized to lead to upsides on key employee outcomes via autonomy while simultaneously leading to downsides via isolation on the same set of outcomes. Nonetheless, research thus far has not examined the simultaneous existence of these countervailing pathways nor has any attention been devoted to

understanding ways of resolving this paradox. Therefore, a key contribution of this dissertation is to integrate these hitherto distinct themes by developing and testing a unified theoretical model that seeks to explain these seemingly paradoxical effects by drawing on self-determination theory. A second contribution of this dissertation is to help resolve the telecommuting paradox by proposing leader-member exchange (LMX) as a lever to do so. Specifically, I propose that high-quality LMX relationships between leaders and telecommuters serve as an important boundary condition capable of not only enhancing the beneficial aspects of telecommuting, but also, diminishing the negative aspects. Data were collected during the 2020 COVID-19 global pandemic from 191 supervisor-subordinate pairs in India; subordinates were expected to be telecommuting full-time during the pandemic. Results reveal minimal support for the hypothesized theoretical model, however, this is likely impacted by the context in which the data were collected. Overall, this dissertation sheds light on the relationship between telecommuting intensity and key aspects of job performance, as well as the critical role that leaders can play in enhancing telecommuter productivity.



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## I. INTRODUCTION

Telecommuting is a flexible work arrangement that continues to grow in popularity and has generated significant interest from scholars and managers alike (Allen, Golden, & Shockley, 2015). Telecommuting has been experiencing growth all around the world including in countries such as India, Indonesia, and Mexico (Greenfield, 2017). Within the United States, the total number of telecommuters has grown by 173 percent since 2005 with an estimated 26 million Americans telecommuting at least part of the time (Bureau of Labor Statistics, 2019). Further, 80-90 percent of the United States workforce have expressed an interest in telecommuting at least part-time, highlighting public buy-in for this work arrangement (GlobalWorkplaceAnalytics.com, 2019).

A primary reason for the substantial interest in telecommuting is because this work arrangement is theorized to provide employees with autonomy-related benefits such as greater flexibility and psychological control over work (Gajendran & Harrison, 2007). These benefits have been linked to employee outcomes at (e.g., job satisfaction, performance) and outside (work-family conflict) work. When telecommuting, employees are physically and psychologically removed from direct supervision and other hassles associated with the workplace (Allen et al., 2015; DuBrin, 1991; Gajendran & Harrison, 2007; Gajendran, Harrison, & Delaney-Klinger, 2015). Therefore, a key theme in managerial and scholarly writings about telecommuting is that telecommuters, in general, are likely to experience increased feelings of freedom and discretion over where, when, and how their work is completed. Such autonomy, in turn, is found to be associated with a host of beneficial outcomes such as greater work-life balance, greater job satisfaction,

lower turnover intentions, and enhanced job performance (Allen et al., 2015; Gajendran & Harrison, 2007; Golden, 2006a; Kossek, Lautsch, & Eaton, 2009).

Concurrently and cutting against these positive outcomes theorized to come about due to greater autonomy, scholarly and managerial writings have also raised the concern that telecommuting could be associated with greater social and professional isolation of employees who telecommute (e.g., Cooper & Kurland, 2002; Farrer, 2019; Feldman & Gainey, 1997; Golden, Veiga, & Dino, 2008, Moss, 2018). Because telecommuters work away from the central workplace, out of sight of managers and coworkers, prior scholarly research finds that telecommuters are prone to experiencing feelings of isolation.

Working at remote locations means that they are often ‘out of sight, and out of mind’ of their coworkers and are often left out of the loop from various workplace interactions (Bailey & Kurland, 2002; Baruch & Nicholson, 1997; Cooper & Kurland, 2002; Kurland & Cooper, 2002; Morganson, Major, Oborn, Verive, & Heelan, 2010). Echoing this, recent surveys with telecommuters find that they struggle with feelings of isolation and loneliness associated with this work arrangement (GlobalWorkplaceAnalytics.com, 2019; Stone, Horan, & Flaxman, 2018). Isolation, in turn, is found to be associated with several downsides including lower job satisfaction (Marshall, Michaels, & Mulki, 2007), higher turnover intentions, and poorer job performance (Golden et al., 2008; Mulki, Locander, Marshall, Harris, & Hensel, 2008), and has implications for employees’ connections to, and inclusion in, their organizations (e.g., Alton, 2017; Cooper & Kurland, 2002; Farrer, 2019; Feldman & Gainey, 1997; Golden et al., 2008; McIlvaine, 2019; Morganson et al., 2010; Moss, 2018).

When considered together, these two themes posit seemingly contradictory effects of telecommuting on the same set of outcomes: on one hand, telecommuting enhances employees' perceived autonomy which, in turn, can be expected to lead to positive employee outcomes such as higher job satisfaction, lower turnover intentions, and better performance. On the other hand, telecommuting also leads to feelings of isolation which can be expected to have contrasting, negative effects on the same set of outcomes. Collectively, these themes hint at the “*telecommuting paradox*”, i.e., the set of mutually incompatible consequences that telecommuting has for employees (Gajendran & Harrison, 2007). So far, scholarly research on these themes has progressed independently and the autonomy-enhancing and isolation-inducing effects of telecommuting explained earlier have not been examined simultaneously thus far.

Therefore, a first and key contribution of this dissertation will be to develop and test an integrated theoretical framework that accounts for the simultaneous occurrence of the positive and negative relationships linking telecommuting to two key aspects of job performance, i.e., task performance and organizational citizenship behaviors (OCBs) (Borman & Motowidlo, 1997). I ground my theoretical model in self-determination theory (SDT; Deci & Ryan, 2000). SDT is well-suited to explain the relationship between telecommuting intensity and job performance as it allows for the simultaneous consideration of two distinct motivational mechanisms, satisfied versus frustrated basic psychological needs, through which environmental factors or conditions influence individual behaviors (Deci & Ryan, 2000; Deci, Olafsen, & Ryan, 2017). Accordingly, this dissertation puts forward a conceptual framework that posits simultaneous positive and negative pathways linking telecommuting intensity to job performance: a positive

pathway through the satisfaction of telecommuters' autonomy needs and a negative pathway through the frustration of telecommuters' belongingness needs.

A second contribution of this dissertation is that it could better explain the relationship between telecommuting and job performance. Prior research on this relationship is limited and with mixed findings ranging from negative (Golden et al., 2008), to positive (Gajendran et al., 2015; Golden & Gajendran, 2019) or unsupported (Kossek, Lautsch, & Eaton, 2006). The most recent meta-analysis on telecommuting reveals that it has a modest yet positive relationship with job performance (Gajendran & Harrison, 2007). It is possible that the simultaneous positive and negative effects theorized above compete against one another, with the positive effects slightly overpowering the negative, and perhaps explaining these weak positive effects that we see. If so, it sets up the possibility of organizations intervening to manage telecommuting, so it has stronger effects on job performance by amplifying the positive effects via autonomy and weakening the negative effects via isolation. This dissertation examines one way to do so as another key contribution that is discussed next.

A third contribution of this dissertation is to examine the role leaders can play in resolving the telecommuting paradox identified above. I contend that the extent to which telecommuters truly experience psychological freedom associated with this work arrangement, as well as remain psychologically connected to their work units, may depend on their relationship quality with their leader. Therefore, I posit that high-quality leader-member exchange relationships (LMX; Dansereau, Graen, & Haga, 1975; Graen & Scandura, 1987; Graen & Uhl-Bien, 1995) with telecommuters would not only enhance “the good” of telecommuting by increasing autonomy need satisfaction but also

dampen “the bad” by diminishing belongingness need frustration, effectively resolving the telecommuting paradox. Figure 1 presents the conceptual framework being tested in this study.



## II. THEORY AND HYPOTHESIS DEVELOPMENT

### **Telecommuting**

Telecommuting is a flexible work arrangement that involves employees completing at least a portion of their typical work hours away from a central workplace and using technology to interact with others to perform their work tasks (Allen et al., 2015; Gajendran & Harrison, 2007). Telecommuters often choose to work from home or alternate locations (such as cafes, satellite offices, shared/coworking spaces, etc.) and do so for a portion of their regular work hours which can range from a few hours per week to nearly full-time<sup>1</sup> (Allen et al., 2015).

Research on telecommuting has largely progressed by answering two kinds of questions. In the first kind, researchers have been interested in understanding telecommuting as a flexible/alternative work arrangement and its impact on various outcomes by comparing telecommuters with non-telecommuters (e.g. Bailey & Kurland, 2002; Crossan & Burton, 1993; DuBrin, 1991; Fonner & Roloff, 2010; Fritz, Narasimhan, & Rhee, 1998; Igbaria & Guimaraes, 1999; Kurland & Bailey, 1999; Lautsch, Kossek, & Eaton, 2009). Findings from these studies generally suggest that telecommuting improves job attitudes (e.g. Igbaria & Guimaraes, 1999; Gajendran & Harrison, 2007; Golden & Veiga, 2005; Kelliher & Anderson, 2010; Masuda, Holtschlag,

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<sup>1</sup> To be a telecommuter, individuals need to: a) be part of a larger organization; b) complete a portion of their *regular* work hours away from the central workplace; and c) use some form of communication technology to interact with members within and outside the organization (Allen et al., 2015; Gajendran & Harrison, 2007). Therefore, mobile/freelance workers who do not typically work from a central office are not telecommuters. Further, full-time employees who continue to work at home after regular work hours would also not be considered as telecommuters. Telecommuting, however, may involve some degree of scheduling flexibility wherein a telecommuter may choose to complete their work tasks during non-traditional work hours.

& Nicklin, 2017; ten Brummelhuis, Bakker, Hetland, & Keulemans, 2012; Vega, Anderson, & Kaplan, 2015) and job performance (Bloom, Liang, Roberts, & Ying, 2015; Gajendran & Harrison, 2007; Gajendran et al., 2015), though findings from meta-analysis reveals that these effects are modest (Gajendran & Harrison, 2007). In the second kind, researchers have examined how the extent of telecommuting, i.e. the number or hours or days per week one spends telecommuting, impacts various employee attitudes and outcomes (e.g. Gajendran, Harrison, & Delaney-Klinger, 2015; Golden et al., 2006; Golden 2006a, 2006b; Golden & Gajendran, 2019; Morganson et al., 2010; Virick, DaSilva, & Arrington, 2010). Findings from studies in this line of research suggest that individuals who spend a relatively small amount of time telecommuting have different experiences than those who spend a majority of their time away from their central workplace. This dissertation will expand on existing research by focusing on telecommuting intensity, ranging from a few hours per week to full-time, and examining its association with two aspects of job performance, i.e., task performance and organizational citizenship behaviors (Borman & Motowidlo, 1997). Task performance refers to one's effectiveness at performing work-related duties and responsibilities that are usually specified within a formal job description (Rotundo & Sackett, 2002) while organizational citizenship behaviors (OCBs) refer to behaviors that are not formally part of one's job but are intended to help others and support the organization (Borman & Motowidlo, 1997).

## **Linking Telecommuting Intensity to Job Performance via Autonomy Need**

### **Satisfaction: The Positive Pathway**

Self-Determination Theory (Deci & Ryan, 2000) can be helpful in explaining the positive relationship between telecommuting intensity and job performance. SDT is considered “one of the most comprehensive and empirically supported theories of motivation available today” (Pintrich & Schunk, 2002, p. 257). Some scholars (e.g., Rosen, Ferris, Brown, Chen, & Yan, 2014; Van den Broeck, Ferris, Chang, & Rosen, 2016) contend that SDT’s needs-based perspective may be more powerful in explaining performance outcomes when compared to resource-based perspectives involved in theories such as social-exchange (Blau, 1964; Cropanzano & Mitchell, 2005) and conservation of resources (Hobfoll, 2001), which have been previously applied to explain how telecommuting intensity relates to job performance (e.g. Gajendran et al., 2015; Golden & Veiga, 2008).

According to SDT, individuals have an innate drive towards optimal functioning, and this can be achieved through the satisfaction of three basic psychological needs: the need for autonomy, the need for belongingness or relatedness, and the need for competence (Deci & Ryan, 1985, 2000; Van den Broeck et al., 2016). The need for autonomy refers to the inherent need for individuals to feel responsible for their own actions and behavior, and to feel volition and psychological freedom when carrying out a task or activity (deCharms, 1968; Deci & Ryan, 2000). The need for belongingness or relatedness refers to the need for individuals to feel connected to others, to love and care for others, and to be loved and cared by others (Baumeister & Leary, 1995). The need for

competence<sup>2</sup> refers to the need for individuals to feel a sense of mastery, to have the ability to develop new skills, and to feel effective in interacting with the environment and experiencing opportunities to express one's capacities (Deci & Ryan, 2000).

Accordingly, SDT researchers have found that workplace features that support the satisfaction of these basic psychological needs often facilitate more autonomous or intrinsic forms of motivation, optimal functioning, and enhanced performance (Baard, Deci, & Ryan, 2004; Deci & Ryan, 2000; Deci et al., 2017; Van den Broeck et al., 2016). Indeed, a recent meta-analysis of 99 studies involving SDT applied in organizational settings demonstrated that satisfaction of basic psychological needs showed meaningful and positive relationships with aspects of job performance ( $.26 \leq \rho \leq .40$ ) (Van den Broeck et al., 2016).

### ***Telecommuting Intensity and Autonomy Need Satisfaction***

The need for autonomy is satisfied when individuals feel like they are acting with a sense of volition and choice (Deci et al., 2017), and research on SDT finds that various features of and elements associated with the workplace are critical in facilitating autonomy need satisfaction (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Deci et al., 2017). For example, Baard and colleagues (2004) found that when employees perceived their managers to be autonomy-supportive (i.e., understanding and acknowledging employees' perspectives, offering opportunities for choice, encouraging self-initiation), this predicted the satisfaction of their intrinsic needs for autonomy (see

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<sup>2</sup> Since most telecommuting decisions are often made at the discretion of the supervisor, it is reasonable to assume that these opportunities are afforded to individuals who are already competent. For this reason, in this dissertation I focus on telecommuter needs for autonomy and belongingness only and exclude the need for competence from my model.

also Chiniara & Bentein, 2016). Other research finds that employees' autonomy needs are satisfied when they perceive that their own values converge with those of their organization (Greguras & Diefendorff, 2009) and when their jobs provide them with greater task autonomy, opportunities for skill utilization, and positive feedback (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008).

There are three key aspects of telecommuting that make it likely to satisfy telecommuters' autonomy needs. First, telecommuting provides employees with locational flexibility (Kossek, Lautsch, & Eaton, 2006; Van Yperen, Rietzschel, & De Jonge, 2014), giving them the option of choosing *where* work gets completed. This means that telecommuters may choose to work from locations other than the central workplace like their homes, local cafes, satellite offices, shared workspaces, etc. Working away from a central workplace also means that employees are not as tightly bound by the typical workplace norms (Tietze, 2002). For instance, telecommuters, compared to their office-based counterparts, may have higher levels of control over when they take breaks and how they dress. Telecommuters may also have greater discretion over how they customize their workspaces (e.g., layout, lighting, music, etc.) (Lee & Brand, 2005, 2010). These aspects of locational flexibility, i.e., choice over where work gets completed and being unbound from workplace norms, provides telecommuters with greater psychological control, thereby enhancing their autonomy need satisfaction.

Second, relative to working at a central work location, telecommuting is also likely to provide telecommuters with more latitude in adjusting their work schedules in ways that suit their varying daily needs and demands (Allen et al., 2015; DuBrin, 1991). Telecommuters may often have greater choice over *when* they begin and end work as

they are no longer tied to the rhythms of a central workplace. This means that telecommuters may not have to adhere to a regular “core” work schedule (e.g. ‘nine to five’) but instead choose to start work early and end early or start work late and end late. They may also have the freedom to start work during regular work hours, take a break, and then continue working at a later point in time. This temporal flexibility provides telecommuters with control over their work schedule, allowing them to arrange their work activities around their nonwork-related demands (Lapeirre & Allen, 2006), thereby satisfying their autonomy needs.

Third, telecommuting provides employees with greater control over *how* their work is completed (Gajendran & Harrison, 2007). Since telecommuters are physically and psychologically disconnected from the direct supervision and scrutiny of their managers (Allen, Renn, & Griffeth, 2003; DuBrin, 1991; Golden & Fromen, 2011), they are likely to experience psychological control over their work, allowing telecommuters to adhere to their self-designated workflow (Feldman & Gainey, 1997; Fonner & Roloff, 2010, 2012; Kossek, Lautsch, & Eaton, 2006). This means that telecommuters are likely to have more independence in determining the order in which they complete their tasks. In addition, being able to work from locations other than the central workplace allows telecommuters to avoid distractions and hassles commonly associated with working in traditional office settings such as unplanned meetings, office gossip, and background noise (Duxbury, Higgins, & Mills, 1992; Konradt, Hertel, & Schmook, 2003). Telecommuters are also likely to experience fewer interruptions from coworkers as they have greater control over with whom, and when, they engage in social interactions (Gajendran et al., 2015; Golden & Veiga, 2008). This is because interactions between

telecommuters and their coworkers are expected to be mediated by communication technology (such as phone calls or email), allowing telecommuters to choose when and how they respond to others. Such control over their workflow can also be expected to enhance their autonomy need satisfaction.

Taken together, telecommuting can be expected to provide employees with greater flexibility and discretion over where, when, and how work is completed relative to working at an office location. Furthermore, the autonomy-related benefits are expected to increase with more extensive telecommuting. In other words, the greater the telecommuting intensity, the more the discretion employees experience over where, when, and how they work. Such enhanced experience of autonomy-related benefits is likely to result in higher autonomy need satisfaction. Therefore, I hypothesize:

*Hypothesis 1:* Telecommuting intensity will be positively associated with autonomy need satisfaction.

### ***Autonomy Need Satisfaction and Job Performance***

For telecommuters, higher levels of autonomy need satisfaction are expected to be positively related to higher levels of job performance. According to SDT, the satisfaction of individuals' autonomy needs is considered a psychological necessity and a requirement to foster intrinsic motivation and optimal functioning (Gagné & Deci, 2005; Ryan & Deci, 2006). The more an individual's work-related autonomy needs are satisfied, the more he or she feels responsible for their work and the greater the feeling that his/her work is meaningful and in accordance with their interests (Gagné & Deci, 2005). Such experiences increase the willingness for individuals to take initiative, be engaged in their work, and take pride in completing their tasks, leading to greater

performance. This idea has received support from a recent meta-analysis on SDT (Van den Broeck et al., 2016) where autonomy need satisfaction was positively associated with task performance. Further support for this notion comes from research on psychological empowerment, (Spreitzer, 1995) which argues that need for autonomy satisfaction (i.e., self-determination) is a critical driver of empowerment and has been linked to increased job performance (Liden, Sparrowe, & Wayne, 2000; Spreitzer, Kizilos, & Nason, 1997). Therefore, I posit the following:

*Hypothesis 2a:* Autonomy need satisfaction will be positively related to task performance.

Higher levels of autonomy need satisfaction is also expected to be related to higher levels of organizational citizenship behaviors. SDT suggests that the more individuals satisfy their innate need for autonomy, making them believe that they can make decisions and act autonomously, the more likely they will be motivated to preserve and strengthen contexts in which the feeling of autonomy was developed (Gagné & Deci, 2005). At work, this is likely to manifest as organizational citizenship behaviors (OCBs). Research shows that perceived organizational, supervisory, and coworker support play an important role in providing the conditions that allow employees to feel like they can act and decide autonomously (Thompson & Prottas, 2006). Thus, in line with SDT, the more that employees are able satisfy their need for autonomy, the more likely it is that they will participate in helping behaviors targeted at their organization, supervisors, and coworkers to preserve and strengthen the contexts (i.e. support from the organization, supervisors, and coworkers) that provide the feeling of autonomy. Consistent with this line of reasoning, past research has shown that increased perceptions of autonomy are positively



related to prosocial motivation (Spector, 1986), positive teamwork behaviors (Chen, Sharma, Edinger, Shapiro, & Farh, 2011), volunteerism (Gagné & Deci, 2005), and contextual performance (Gajendran et al., 2015). Meta-analytic evidence also suggests that autonomy need satisfaction is associated with increased participation in OCBs (Van de Broeck et al., 2016). Therefore, I posit that:

*Hypothesis 2b:* Autonomy need satisfaction will be positively related to organizational citizenship behaviors.

Taken together, SDT helps explain the positive link between telecommuting intensity and job performance via autonomy need satisfaction. Higher telecommuting intensity is likely to provide telecommuters with greater discretion over where, when, and how work is completed thus satisfying their autonomy needs. The more telecommuters satisfy their autonomy needs, the more they will be invested in accomplishing work tasks effectively and helping others. In line with this reasoning, I hypothesize the following:

*Hypothesis 3a:* Autonomy need satisfaction will mediate the relationship between telecommuting intensity and task performance.

*Hypothesis 3b:* Autonomy need satisfaction will mediate the relationship between telecommuting intensity and organizational citizenship behaviors.

## **Linking Telecommuting Intensity to Job Performance via Belongingness Need**

### **Frustration: The Negative Pathway**

Just as need-supportive environments facilitate need satisfaction, SDT posits that environments or conditions that fail to support (or actively obstruct the satisfaction of) the basic psychological needs engender need frustration (Vansteenkiste & Ryan, 2013). As discussed in the previous section, while telecommuting work arrangements are

expected to satisfy individuals' autonomy needs, these are also expected to frustrate their belongingness needs (for reasons discussed below). When individuals experience belongingness need frustration, it leads to ill-being, energy depletion, and suboptimal/malfunctioning (Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013). For example, research finds that feeling insecure about their job frustrates employees' belongingness needs which, in turn, not only impairs their work-related well-being (Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012) but also increases the likelihood of participating in counterproductive workplace behaviors (Van den Broeck, Sulea, Vander Elst, Rischmann, Iliescu, & De Witte, 2014). In line with SDT, scholars have also found that aversive experiences known to be linked to belongingness need frustration (e.g., social exclusion, Blackhart, Nelson, Knowles, & Baumeister, 2009; workplace ostracism, Robinson, O'Reilly, & Wang, 2013; workplace isolation, Marshall, Michaels, & Mulki, 2007; workplace loneliness, Ozcelik & Barsade, 2018) are, in general, negatively related to a variety of workplace outcomes.

### ***Telecommuting Intensity and Belongingness Need Frustration***

According to SDT, the need for belongingness is an innate need to feel connected to others – to love and be loved, to care and to be cared for (Deci & Ryan 2000) – and is among the most powerful sources of human motivation (Baumeister & Leary, 1995). At work, individuals can satisfy their need for belongingness through frequent social encounters and developing meaningful and high-quality relationships with others (Baumeister & Leary, 1995; Van den Broeck et al., 2016). In contrast, belongingness needs can be frustrated when individuals fail to develop and maintain positive interpersonal relationships (Deci & Ryan, 2000; Moller, Deci, & Elliot, 2010;

Vansteenkiste & Ryan, 2013) or when they are unsatisfied with their current relationships (Weiss 1973; Green, Richardson, Lago, & Schatten-Jones, 2001).

Telecommuting work arrangements involve working under conditions that could hinder the development and maintenance of meaningful relationships that potentially frustrate employees' needs for belongingness in several ways. First, as telecommuting intensity increases, individuals spend more time away from their central office and may find themselves 'out of sight and out of mind' of coworkers working at the central office location (McCloskey & Igbaria, 2003). Consequently, telecommuters may often be left out of their information networks and feel isolated and shunned (Bartel, Blader, & Wrzesniewski, 2007; Farrer, 2019; Morganson, Major, Oborn, Verive, & Heelan, 2010). Furthermore, as telecommuting intensity increases, supervisors may also overlook 'out of sight' telecommuters for any special project or assignment in favor of coworkers who are available at hand in the office. In their study, Cooper and Kurland (2002) observed that telecommuters missed out on interpersonal networking, informal learning, and mentoring opportunities from their coworkers and supervisors, making it more difficult for telecommuters to integrate into their social groups at work and thus frustrating their needs for belongingness. In addition, not only are telecommuters often less connected with their coworkers and leaders, they also experience greater challenges in *actively* developing and maintaining high-quality relationships at work. As telecommuters spend more time working away from the office, they likely have fewer opportunities to develop connectedness and trust through informal social activities such as celebrations of significant personal or corporate events, lunches with coworkers, water-cooler chats, and

other face-to-face interactions (Bartel, Wrzesniewski, & Wiesenfeld, 2007; Golden et al., 2008), further frustrating belongingness needs.

Although it is possible for telecommuters to stay connected to their coworkers and managers using electronic communication media, interactions between telecommuters and others are more likely to occur over leaner media such as email, phone calls, or instant messaging (Sias, Pedersen, Gallagher, & Kopaneva, 2012). Interactions over electronic media contain less informational and contextual cues (Daft & Lengel, 1986), convey lower social presence (i.e., sociability, warmth, personalness, and sensitivity; Short, Williams, & Christie, 1976), and diminish perceptions of intimacy and immediacy. In addition, while chance encounters such as those that happen around elevators, water coolers, or breakrooms are common and more likely to happen in traditional office settings, such encounters are unlikely to occur in electronic contexts. In general, interactions over electronic media tend to be more deliberate, scheduled or planned, and task-focused (Bailey & Kurland, 1999), and therefore more formal in nature (Cooper & Kurland, 2002; Zack, 1993). Such interactions are less conducive to developing and maintaining high-quality relationships. Indeed, research suggests that extensive telecommuting is associated with diminished collegiality (ten Brummelhuis et al., 2010), poorer interpersonal relationship quality with coworkers, especially at high levels of telecommuting intensity (Gajendran & Harrison, 2007; Golden, 2006b), and perceptions of reduced respect from colleagues (Bartel et al., 2012). Taken together, telecommuters may experience significant challenges in developing meaningful interpersonal relationships because of their lack of social presence and intense use of lean media, thus frustrating their needs for belongingness (Golden et al., 2008; Sacco & Ismail, 2014).

Altogether, being excluded from critical informational and support networks, experiencing difficulty in transmitting and receiving symbolic and nonverbal, personalized cues through leaner media, as well as having impoverished interpersonal relationships at work are likely to frustrate telecommuters' belongingness needs (Golden et al., 2008). Therefore, I hypothesize:

*Hypothesis 4:* Telecommuting intensity will be positively associated with belongingness need frustration.

### ***Belongingness Need Frustration and Job Performance***

Higher levels of belongingness need frustration are expected to be negatively related to job performance. First, when belongingness needs are frustrated, individuals feel excluded and left out and are therefore less likely to accept the values, norms, and beliefs of their workgroup as their own (Gagné & Deci, 2005). As a result, they are less likely to come to view the goals of the group as being personally important, and therefore, more likely to pursue goals for external/compliance reasons such as feeling pressure to perform in order to avoid guilt or simply to get paid and avoid punishment (Ryan & Deci, 2000; Vansteenkiste, Lens, De Witte, & Feather, 2005). In other words, individuals' behaviors are more likely to be controlled by external factors (Deci & Ryan, 2000), meaning that performance is likely to be uninspired or lackluster, with minimum levels of effort necessary to fulfill obligations (Gagné & Deci, 2005). Such goal pursuit (for external reasons) is expected, and has previously been shown, to be related to poorer performance (Gagné & Deci, 2005; Grant, Nurmohamed, Ashford, & Dekas, 2011; Kuvaas, Buch, Weibel, Dysvik, & Nerstad, 2017; Ryan & Deci, 2008).

Second, belongingness need frustration is also expected to impair job performance as it generates feelings of social anxiety and deters individuals from seeking critical task-related information (Baumeister & Leary, 1995). When individuals' belongingness needs are frustrated, they tend to feel excluded from their social groups and fear that they will be judged negatively by others (Baumeister & Tice, 1990). Therefore, individuals are less likely to seek information from coworkers as they tend to believe that their coworkers would view their requests for help and information unfavorably and have low expectations of receiving a positive response (Nifadkar & Bauer, 2016; Schlenker & Leary, 1982). However, a significant amount of information in organizations is tacit and not documented, making coworkers important sources of for obtaining such knowledge and information (Bauer & Green, 1998; Morrison, 1993). Consequently, the social anxiety induced by frustrated belongingness needs puts at risk their own knowledge base essential for higher job performance (Golden et al., 2008; Golden & Raghuram, 2010).

Finally, belongingness need frustration conveys negative information about the self and undermines one's belief that he or she is socially valued (Aquino & Douglas, 2003; Baumeister & Leary, 1995). When belongingness needs are frustrated, individuals are likely to feel insecure about their interpersonal relationships (Leary & Downs, 1995; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000), threatening their perceptions of self-worth and damaging their self-esteem (Ferris, Brown, & Heller, 2009). Experiencing such insecurity influences the extent to which individuals believe that they are capable (Pierce, Gardner, Cummings, & Dunham, 1989), putting them at greater risk of committing mistakes and second-guessing their decisions (Baumeister & Tice, 1990; Leary &

Baumeister, 2000; Williams, 2007; Williams & Sommer, 1997). In addition, it impairs individuals' ability to self-regulate behaviors towards achieving goals as individuals may be distracted by thoughts on their personal deficiencies that undermined their social acceptance (Baumeister, DeWall, Ciarocco, & Twenge, 2005). Together, these consequences of frustrated belongingness needs not only cast doubt about one's own ability to perform, but also inhibits their ability to persist in attaining task-related goals, further detracting from their job performance.

In summary, frustrated belongingness needs promote externally-regulated or controlled behaviors, induce social anxiety that affects individuals' knowledge base, and puts individuals at risk of committing mistakes and second-guessing their decisions, all of which lead to poorer performance. Prior research also indirectly supports this notion through findings that other forms of frustrated belongingness needs – such as workplace ostracism (e.g. Ferris, Lian, Brown, & Morrison, 2013), professional isolation (e.g. Golden et al., 2008), and workplace loneliness (e.g. Ozcelik & Barsade, 2018) – are also negatively related to task performance. Therefore, I hypothesize:

*Hypothesis 5a:* Belongingness need frustration will be negatively related to task performance.

In line with the arguments made above, frustrated belongingness needs can also be expected to be negatively related to organizational citizenship behaviors. First, experiencing belongingness need frustration not only means that individuals are less likely to internalize the values of the group to which they belong (Gagne & Deci, 2005), but also, that they are less likely to identify with their groups (Cooper & Thatcher, 2010). Therefore, these individuals are likely to be less motivated to help group members and

behave pro-socially since they are less concerned with their group's welfare (Blader & Tyler, 2009). Second, belongingness need frustration often leaves individuals feeling socially anxious. When this happens, individuals can be expected to have fewer interactions with others out of fear of being judged negatively (Baumeister & Tice, 1990). However, workgroups are an important source of feedback about how one should behave, providing social information about the kinds of behaviors that the group considers appropriate and helpful (Rosen, Levy, & Hall, 2006; Seashore, 1954). Thus, the lack of such feedback may reduce the likelihood of individuals participating in OCBs (Thau, Aquino, & Poortvliet, 2007). Finally, belongingness need frustration makes individuals believe that they are less socially integrated and less likely to be socially accepted. This not only damages their self-esteem (Leary, Tambor, Terdal, & Downs, 1995), but also makes individuals believe that they are not worthy of attention and help from others (Nifadkar & Bauer, 2016; Schlenker & Leary, 1982), reducing the likelihood that they would respond pro-socially (Twenge, Ciarocco, Cuervo, Bartels, & Baumeister, 2005). Therefore, I hypothesize:

*Hypothesis 5b:* Belongingness need frustration will be negatively related to organizational citizenship behaviors.

The preceding arguments suggest that as telecommuting intensity increases, it hinders the development and maintenance of high-quality relationships between telecommuters and organizational members, leading to belongingness need frustration. Frustrated belongingness needs, in turn, impairs task performance as individuals may experience controlling behaviors, receive less instrumental feedback from coworkers, and suffer from damaged self-esteem. Further, belongingness need frustration may also lead



to lower levels of OCBs since individuals may be less inclined to participate in helping or pro-social behaviors as they have fewer meaningful connections with others. For these reasons, I hypothesize:

*Hypothesis 6a:* Belongingness need frustration will mediate the relationship between telecommuting intensity and task performance.

*Hypothesis 6b:* Belongingness need frustration will mediate the relationship between telecommuting intensity and organizational citizenship behaviors.

### **Resolving the Telecommuting Paradox – the Moderating Role of LMX**

The arguments leading to this point describe the telecommuting paradox, i.e. the mutually incompatible consequences that telecommuting has on the same set of outcomes (Gajendran & Harrison, 2007). On the one hand, higher telecommuting intensity is likely to satisfy individuals' autonomy needs by providing them with greater locational and scheduling flexibility, which in turn has beneficial downstream consequences for task performance and OCBs. On the other hand, higher telecommuting intensity also means that individuals spend more time in isolation, "out of mind and out of sight" of colleagues and managers, leading to belongingness need frustration. This, in turn, has detrimental downstream consequences for task performance and OCBs. When taken together, these simultaneous positive and negative pathways linking telecommuting intensity to job performance provide a reasonable explanation for the modest positive relationship between the two as revealed by the most recent meta-analysis (Gajendran & Harrison, 2007), such that the net positive effect of telecommuting on job performance via autonomy need satisfaction is offset by its negative effect on job performance via belongingness need frustration. Accordingly, organizational levers that could resolve the

paradox would need to either enhance telecommuters' autonomy need satisfaction or diminish their belongingness need frustration or do both. In this dissertation, I identify managerial leadership as a key lever that simultaneously does both: enhances telecommuting intensity's positive effect on telecommuters' autonomy need satisfaction and diminishes its negative effect on belongingness need frustration. Specifically, I argue that high-quality relationships between leaders and telecommuters can play a key role in resolving the telecommuting paradox. For this, I draw on Leader-Member Exchange theory (LMX, Dansereau, et al., 1975; Graen & Scandura, 1987; Graen & Uhl-Bien, 1995) and integrate it with SDT.

***The Moderating Role of LMX on the Telecommuting Intensity → Autonomy Need Satisfaction Relationship***

The higher the telecommuting intensity, the more telecommuters are likely to experience autonomy need satisfaction. However, telecommuters' relationship quality with their leaders (LMX) is expected to serve as an important boundary condition that influences the extent to which telecommuting intensity satisfies their autonomy needs. The fundamental premise of LMX theory is that leaders treat their followers differently through different kinds of exchanges, leading to different quality relationships between leaders and their followers (Dansereau et al., 1975). In other words, because of the various demands facing them, leaders develop high-quality (high LMX) and close relationships with only a few key followers (their in-group), while maintaining low-quality (low LMX) and formal relationships with others (their out-group) (Dienesch & Liden, 1986). High LMX relationships are characterized by high mutual trust, positive interactions, high degrees of support, and access to formal and informal rewards (Liden

& Maslyn, 1998). In high LMX relationships, the exchanges are more social and involve mutual respect, liking, affect, trust, loyalty, and felt obligation (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012; Uhl-Bien & Maslyn, 2003). Followers involved in high LMX relationships are likely to receive more challenging assignments, training, and promotional opportunities (Wayne, Liden, Kraimer, & Graf, 1999). Because of the high degrees of mutual trust afforded to these followers, leaders tend to feel more comfortable in delegating more work to them, allow them to participate in non-trivial decisions that affect the work unit (Bauer & Green, 1996; Scandura, Graen, & Novak, 1986), and allow followers to work on their own even when not being directly supervised (Liden & Graen, 1980). In contrast, low LMX relationships are based primarily on the employment contract and are transactional in nature (Blau, 1964; Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016). Low LMX relationships tend to be characterized by quid pro quo exchanges with leader-follower interactions being largely impersonal (Anand, Vidyarthi, Liden, & Rousseau, 2010). Followers in low LMX relationships suffer from lower trust and support, fewer rewards, and lower expectations from leaders as well as direct supervision and/or close monitoring of performance.

When telecommuting intensity is high and telecommuters are involved in high-quality LMX relationships, they are often trusted to accomplish work goals even when not being directly and closely supervised (Liden & Graen, 1980). High-quality LMX relationships typically involve the provision of more instrumental and socio-emotional resources (Graen & Scandura, 1987). In terms of instrumental resources, among the many benefits that followers receive in these kinds of relationships is greater decision-making latitude as well as greater degree of freedom in negotiating how and when work gets

executed (Graen & Uhl-Bien, 1995; Wayne, Shore, & Liden, 1997). Therefore, telecommuters involved in high LMX relationships are likely to experience greater discretion over their work and how it is completed. They may also experience greater control over their work hours when away from the office – this means that they may have the freedom of working early mornings or late nights without being restricted to a typical ‘nine-to-five’ schedule. They may also benefit from greater choice over the days on which they telecommute. Accordingly, when telecommuting intensity is high, a high-quality LMX relationship with their leader is likely to serve as an autonomy-enabling condition that grants them greater personal choice and control over their work and enhances their autonomy need satisfaction.

In contrast, when telecommuting intensity is high and telecommuters have low-quality LMX with their leaders, they are less likely to receive the same feeling of personal choice and volition which is required for autonomy need satisfaction (Graves & Luciano, 2013). Low-quality LMX relationships are transactional in nature and characterized by lower trust and support (Martin et al., 2016). As a result, rather than using social exchange, leaders use the logic of economic exchange by providing rewards for when work gets done and punishments if work suffers (Sparrowe & Liden, 1997). A transactional management style is likely associated with managers resorting to close monitoring to ensure that followers are on track with their work goals. In low LMX relationships, close monitoring means that managers may be less comfortable that telecommuters are working away, out of sight of their supervision and, therefore, they may impose restrictive rules and policies that likely reduce the autonomy that telecommuters might experience naturally from the flexibility offered by this work

arrangement. For instance, managers may set schedules for telecommuters to start and finish work; they may also ask them to track their work hours, provide daily reports of their progress, or even call them to ensure that they are working. In some extreme cases, managers may even require telecommuters to be electronically monitored via video calls (Green, 2020). By increasing monitoring in this way, which could reduce the autonomy benefits of telecommuting, low LMX relationships with leaders may leave telecommuters with having lower levels of autonomy need satisfaction. Accordingly, I hypothesize:

*Hypothesis 7:* The positive effect of telecommuting intensity on autonomy need satisfaction will be moderated by LMX such that the relationship will be stronger when LMX is high and weaker when LMX is low.

***The Moderating Role of LMX on the Telecommuting Intensity → Belongingness Need Frustration Relationship***

The higher the telecommuting intensity, the greater that telecommuters are likely to experience belongingness need frustration. As telecommuters spend extended periods of time working remotely from coworkers and managers, they are increasingly likely to feel like they are out of the loop and miss out on important information that both signals their value as well as their membership to their work units (Armstrong & Cole, 2002; Breu & Hemingway, 2004; Cramton, 2001). In addition, those who telecommute extensively have fewer opportunities to see the impact of their contributions, which may lead to feelings of uncertainty regarding the value they bring to their units (Tyler & Blader, 2003). However, through developing high-quality LMX relationships with followers, leaders could help overcome these challenges and make telecommuters feel more psychologically connected to their units (Gajendran & Joshi, 2012).

When telecommuting intensity is high and individuals experience high-quality LMX, their interactions with the leaders tend to be more positive and personal in nature and less bound to what is specified in the formal job description (Liden et al., 1997). As members of the leader's in-group, telecommuters with high LMX experience higher levels trust, support, acceptance, security, and identification with their leaders (Gerstner & Day, 1997; Graves & Luciano, 2013). Such advantages allow telecommuters to gain critical information that affects the unit as a whole (e.g., insights on leader's strategic goals and decision making process), allowing telecommuters to feel like they are in the loop and aware of happenings within the work unit despite having reduced opportunities to interact with coworkers face-to-face (Gajendran & Joshi, 2012). In addition, high-quality LMX relationships signal to telecommuters that they are worthy of the attention from their leaders (Graen & Uhl-Bien, 1995); this may enhance telecommuters' perceptions of self-worth and self-efficacy and empower them to proactively connect with their coworkers through sharing their expertise and knowledge (Tyler & Blader, 2003). Findings from research on globally distributed teams support this idea; high-quality LMX relationships were found to be effective in fostering members' inclusion and involvement in team-related decisions even when members are geographically separated (Gajendran & Joshi, 2012). In summary, even when telecommuting intensity is high, telecommuters experiencing high-quality LMX are more motivated and have more opportunities to develop stronger psychological connections with their leaders (Schyns & Day, 2010), work units (Tse, Ashkanasy, & Dasborough, 2012), and organizations (Fiol & O'Connor, 2005; Loi, Chan, & Lam, 2014), and therefore experience less belongingness need frustration.

In contrast, when telecommuting intensity is high and telecommuters have low-quality LMX relationships with their leader, their relationships are characterized by low levels of trust and support as they are part of the leader's out-group. This means that telecommuters are not only less likely to be involved in decisions pertaining to their work units, but also less likely to be informed about important happenings within their units, further eroding their sense of belongingness. Additionally, low LMX members' interactions with leaders tend to be more transactional in nature and focused on work and compliance (Graen & Scandura, 1987). As a consequence, telecommuters experiencing low LMX may feel a reduced sense of obligation to contribute to their units (Lee, Gerbasi, Schwarz, & Newman, 2018) and are less likely to identify with their leaders and work units (Tse et al., 2012). Therefore, high-intensity telecommuters who experience low LMX may not only feel excluded and isolated because they are not updated with workplace happenings, they may also lack the access, means, and motivation to become more socialized and stay connected with their leader and coworkers. In other words, individuals who telecommute extensively and experience low-quality LMX relationships are likely to feel more isolated and disconnected from their coworkers and managers, thus exacerbating their belongingness need frustration.

In sum, although frequent telecommuting makes it difficult for telecommuters to develop strong psychological connection to the work unit and thus experience belongingness need frustration, the relationship between telecommuting intensity and belongingness need frustration may be weakened when telecommuters experience high-quality LMX. The impersonal nature of low-quality LMX relationships, on the contrary, is likely to enhance the relationship between telecommuting intensity and one's feeling of

isolation and exclusion, leading to higher levels of belongingness need frustration.

Therefore, I hypothesize:

*Hypothesis 8:* The positive effect of telecommuting intensity on belongingness need frustration will be moderated by LMX such that the relationship will be weaker when LMX is high and stronger when LMX is low.



### III. METHOD

#### **Sample and Procedure**

I contacted individuals who were enrolled in an executive MBA program from a business school in India and who participated in this study in exchange for course credit. The timing of data collection for this dissertation coincided with the quick spread of the COVID-19 pandemic around the world, including in India. The COVID-19 pandemic created a new reality globally, one in which organizations around the world began adopting work-from-home policies to keep their employees safe and minimize the spread of the virus. Therefore, this context must be kept in mind as a backdrop to my data collection.

An *a priori* estimation of power for multiple regression based on assumed levels of  $\alpha$ -level (.05), magnitude of effect size ( $\rho = .15$ ; Gajendran & Harrison, 2007), desired power level (.80), and number of predictors (8) suggested a sample size of 208 individuals. This sample size was estimated using the G\*POWER 3 statistical tool (Faul et al., 2007). The data collection efforts for this dissertation, described below, resulted in a sample size that was close to the number recommended by the power analysis.

All participants in this study were working full-time while also working towards completing their MBA. As part of this study, participants were first asked to provide the names and contact information of their supervisors; this was true for all but two cases where participants requested to take the survey as supervisors and recruited one of their direct reports to complete subordinate surveys. This initial data gathering effort yielded information about 205 supervisor-subordinate dyads. Separate email invitations with a link to the surveys were distributed to the supervisors and subordinates; the supervisor

email included a reference to their direct report who had recruited them to participate in this study. A total of 194 responses were received from supervisors and 202 responses from the subordinates. This resulted in 194 supervisor-subordinate matched responses and a dyad-level response rate of 94 percent. During initial screening of the data, three subordinate responses were excluded for failing to respond to over 50 percent of the variables. Thus, the final sample size included responses from 191 supervisor-subordinate dyads.

Subordinates in this sample were predominantly male (77 percent). Sixty-eight percent were between 25-35 years old and 21 percent were between 35-44 years old. Twenty-seven percent of the sample had graduate degrees and 70 percent had bachelor's degrees. Subordinates reported having an average of 8.45 years' (SD = 5.92) work experience. Fifty-five percent of subordinates reported having worked remotely prior to the pandemic. Subordinates also reported working an average of 43.29 hours per week (SD = 17.60) and had spent an average of 2.51 (SD = 2.78) years working with their supervisors. Members in this sample represented major industries including information technology, financial services, energy, healthcare, telecommunication services, and other services (such as entertainment, education, and architecture).

Most of the supervisors in this sample were male (83.2 percent). Five percent of the sample had doctoral degrees, 57 percent had graduate degrees, and 37 percent had bachelor's degrees. Supervisor ages ranged between 25-35 (38.7 percent), 35-45 (37.7 percent), and 45-54 years (17.8 percent). Supervisors reported having 14.34 (SD=7.51) years of work experience and 3.42 (SD=7.39) years of experience working remotely at least part of the time. They also reported having an average of 9.60 (SD=7.37) years'

experience in a managerial capacity, leading an average of 12 ( $SD=12.68$ ) subordinates. Supervisors in this sample worked an average of 47 ( $SD=15.65$ ) hours per week. Twenty-nine percent of the supervisors belonged to upper management, 42 percent were in middle management, and 23 percent were first-line managers.

Informed consent was received from all subjects prior to beginning the survey. Participants were informed that their responses would be kept confidential and that they would eventually be anonymized through the use of a unique identifier. The subordinate survey included measures about their telecommuting behaviors, autonomy need satisfaction, belongingness need frustration, LMX, and demographic information. The supervisor survey included measures of task performance and OCBSs as well as demographic information.

## **Measures**

All the measures used in this study have previously been validated and employed extensively in prior research. These are described in detail below.

*Telecommuting Intensity.* Following prior research, telecommuting intensity was assessed by asking subordinates to report the average number of hours per week they worked remotely or from home during regular work hours (e.g., Gajendran et al., 2015; Golden & Veiga, 2005).

*Autonomy need satisfaction.* 6-items reflecting the autonomy subscale of the Work-related Basic Need Satisfaction scale (W-BNS; Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010) were used to capture autonomy need satisfaction. The W-BNS scale shows a psychometrically sound, three-factor structure that distinctly measures satisfaction of the three basic psychological needs with six items for each need.

Accordingly, the following items were used to capture autonomy need satisfaction. (a) “I feel like I can be myself at my job”, (b) “At work, I often feel like I have to follow other people’s commands (R)”, (c) “If I could choose, I would do things at work differently (R)”, (d) “The tasks I have to do at work are in line with what I really want to do”, (e) “I feel free to do my job the way I think it could best be done ”, and (f) “In my job, I feel forced to do things I do not want to do (R) ”. Responses ranged from “strongly disagree” to “strongly agree” on a seven-point Likert scale and the internal consistency (Cronbach’s alpha) was .81 for this sample.

*Belongingness Need Frustration.* 6-items relating to the belongingness subscale of the W-BNS were used to assess belongingness need frustration on 7-point Likert-type scale ranging from “strongly disagree” to “strongly agree”. The items are: (a) “I don’t really feel connected with other people at my job”, (b) “At work, I feel part of a group (R)”; (c) “I don’t really mix with other people at my job ”, (d) “At work, I can talk with people about things that really matter to me (R).”, (e) “I often feel alone when I am with my colleagues”, and (f) “Some people I work with are close friends of mine (R)”. This measure has been used successfully in prior research to measure belongingness need frustration (e.g. Vander Elst et al., 2012; Van den Broeck et al., 2014). Internal consistency of this measure for was .75.

*Leader-Member Exchange.* Employees provided ratings of LMX using a modified version of the LMX-7 Scale (Graen & Uhl-Bien, 1995) developed by Hofmann, Morgeson, and Gerrass (2003). Seven items were rated using a 7-point Likert type scale ranging from “strongly disagree” to “strongly agree”. I decided to concentrate on employees’ interpretation of the quality of their relationship with the supervisors because:

a) employees are likely to actively interpret their leader behaviors and derive meaning from them; and b) employee LMX ratings, as opposed to supervisor LMX ratings, are most likely to directly influence their perceptions of whether their psychological needs are being satisfied or frustrated (Graves & Luciano, 2013). The items are: (a) “I know where I stand with my supervisor”, (b) “My supervisor understands my job problems and needs”, (c) “My supervisor recognizes my potential”, (d) “My supervisor would use his/her power to help me solve work related problems”, (e) “My supervisor would “bail me out” at his/her expense”, (f) “I defend and justify my supervisor decisions when he/she is not present to do so”, and (g) “I have an effective working relationship with my supervisor”. The internal consistency of this measure was .92.

*Task performance.* Supervisors were asked to rate their employee’s *task performance* using a six-item, seven-point Likert-type measure (from “very much does not meet performance expectations” to “very much exceeds performance expectations” introduced by Van Dyne and LePine (1998). Supervisors rated employees’ performance based on the following six items: (a) “Overall performance effectiveness”, (b) “Quality of work completed”, (c) “Quantity of work completed?”, (d) “Interpersonal relationships”, (e) “Initiative”, and (f) “Dependability and reliability”. Internal consistency of this measure for this sample was .94.

*Organizational Citizenship Behaviors.* Supervisors also reported on each subordinate’s OCBs using Van Scotter and Motowidlo’s (1996) 15-item measure of contextual performance on a 7-point Likert type scale ranging from “strongly disagree” to “strongly agree”. This measure consists of two dimensions: *interpersonal facilitation* (7 items) and *job dedication* (8 items). Interpersonal facilitation describes how likely an

employee is likely to behave in helpful, cooperative, and considerate manners. Items measuring this dimension include: How likely is this employee to... (a) "Praise coworkers when they are successful", (b) "Support or encourage a coworker with a personal problem", (c) "Talk to other workers before taking actions that might affect them", (d) "Say things to make others feel good about themselves or the work group", (e) "Encourage others to overcome their differences and get along", (f) "Treat other fairly", and (g) "Help someone without being". Job dedication represents the degree to which an employee shows persistence, self-discipline and effort at work. Items measuring this dimension include: How likely is this employee to... (a) "Put in extra hours to get work done on time", (b) "Pay close attention to important details", (c) "Work harder than necessary", (d) "Ask for a challenging work assignment", (e) "Exercise personal discipline and self-control", (f) "Take the initiative to solve a work problem", (g) "Persist in overcoming obstacles to complete a task", and (h) "Tackle a difficult work assignment enthusiastically". The internal consistency of the interpersonal facilitation dimension was .91 and job dedication was .90 for this sample.

*Control variables.* In line with Bernerth and Aguinis' (2016) recommendations for best practices when choosing and using control variables, I only controlled for variables that are theoretically relevant to the phenomena being studied. First, I controlled for subordinate telecommuting experience to capture one's experience with telecommuting by asking them to report how long they had been telecommuting. This is an important control variable for two reasons: a) for individuals with minimal experience with this work arrangement, the opportunity to telecommute may be novel and their newly found flexibility could affect their perceptions of autonomy need satisfaction. This

notion is in line with what Golden and Veiga (2005) termed as “honeymoon” effects of telecommuting and prior research has found that individuals who were new to telecommuting had higher job satisfaction that later tapered off after six months (Ramsower, 1993); b) greater experience with telecommuting is likely to account for meaningful variance in job performance. With greater experience, individuals may be able to grow accustomed to the practices and procedures involved with telecommuting, giving telecommuters greater clarity in how to approach and complete their work tasks (Raghuram, et al., 2001). Indeed, in their meta-analysis of telecommuting, Gajendran and Harrison (2007) noted that telecommuters who had greater than one year’s experience with telecommuting experienced lower role stress than those with less than a year’s experience.

I also used a 3-item measure of *task interdependence* adopted from Campion et al. (1993) to control for differences in autonomy across the various jobs, which may also influence autonomy need satisfaction (Gajendran et al., 2015). In addition, task interdependence may also influence telecommuters’ belongingness need frustration. Telecommuters who have a greater need to rely on their coworkers to accomplish work task may have more frequent interactions with them (Somech et al., 2009) which could alleviate (to a certain extent) the feeling of isolation. Items in the measure include: (a) “I cannot accomplish my tasks without information or materials from other members of my team”, (b) “Other members of my team depend on me for information or materials needed to perform their tasks”, and (c) “Within my team, jobs performed by team members are related to one another”. Because the internal consistency for this measure in this sample was .40 it was not included as a control variable in subsequent analyses.

## IV. RESULTS

### **Preliminary Analyses**

Prior to hypothesis testing, the data were screened for outliers as well as for univariate and multivariate normality. To check for non-model-based outliers, leverage indices for each datapoint were computed with an outlier being defined as having a leverage value greater than 4 times the mean leverage statistic of .051 (Jaccard & Wan, 1996; Rousseeuw & Van Zomeren, 1990). No outliers were detected as the maximum leverage value observed was .16. To check for model-based outliers, I computed standardized DfBetas for each datapoint using OLS regressions based on each relationship in the proposed model being tested in this dissertation. A model-based outlier was defined as having a standardized DfBeta greater than an absolute value of 1.96 (Bollen & Jackman, 1985). No model-based outliers were observed. Examination of univariate indices of skewness and kurtosis revealed no skewness values greater than an absolute value of 1.32 and no kurtosis value greater than an absolute value of 2.3 (both for the LMX construct), suggesting that univariate normality was not a major concern in this sample (Razali & Wah, 2011). Univariate normality, while necessary, is not a sufficient condition for multilevel normality. Therefore, I examined multivariate normality using Mardia's coefficient (Mardia, 1974). Mardia coefficient was not statistically significant ( $> 1.96$ ) suggesting the data were non-normal at the multivariate level. Accordingly, I applied a bootstrap using 1000 samples to all appropriate multivariate analyses to account for multivariate non-normality.

Confirmatory factor analyses (CFA) were conducted to ensure the discriminant validity of the constructs employed in this study. Per Hu and Bentler (1999), the



following fit indices were reported to ensure that there is good fit between the proposed model and the data: RMSEA ( $< .08$ ), TLI ( $> .95$ ), CFI ( $> .95$ ), SRMR ( $< .08$ ) and the chi-square tests of overall fit of the tested models. In the initial model, the three supervisor-rated measures (task performance, interpersonal facilitation, and job dedication) and three subordinate-rated measures (autonomy need satisfaction, belongingness need frustration, and leader-member exchange) were included in a model hypothesized to have six latent constructs, one for each of the hypothesized constructs. Results suggested that this model had good fit:  $\chi^2(725) = 1093.15$ , RMSEA = .05, TLI = .91, CFI = .92, SRMR = .06. However, examination of the factor loadings revealed that one item of the belongingness need frustration scale had a weak factor loading (.25 for item 6) and was subsequently dropped. When this revised model was re-analyzed, the model had improved fit:  $\chi^2(687) = 1035.32$ , RMSEA = .05, TLI = .92, CFI = .92, SRMR = .06. In addition, this model demonstrated superior fit when compared with a model hypothesized to have five latent constructs (task performance, interpersonal facilitation + job dedication, autonomy need satisfaction, belongingness need frustration, LMX):  $\chi^2(692) = 1244.00$ , RMSEA = .07, TLI = .87, CFI = .88, SRMR = .06, four latent constructs (task performance + interpersonal facilitation + job dedication, autonomy need satisfaction, belongingness need frustration, LMX):  $\chi^2(696) = 1657.61$ , RMSEA = .09, TLI = .78, CFI = .79, SRMR = .07, three latent constructs (task performance + interpersonal facilitation + job dedication, autonomy need satisfaction + belongingness need frustration, LMX):  $\chi^2(699) = 1776.41$ , RMSEA = .09, TLI = .75, CFI = .77, SRMR = .08, two latent constructs (task performance + interpersonal facilitation + job dedication, autonomy need satisfaction + belongingness need frustration + LMX):  $\chi^2(701) = 2031.58$ , RMSEA = .10, TLI = .69,

CFI = .71, SRMR = .09, and one latent construct in which all the items across the six measures (task performance + interpersonal facilitation + job dedication + autonomy need satisfaction + belongingness need frustration + LMX) were loaded onto one latent variable:  $\chi^2(702) = 3089.57$ , RMSEA = .13, TLI = .45, CFI = .48, SRMR = .16.

### **Hypothesis Testing**

Descriptive statistics for variables in the hypothesized models, as well as correlations among them, are presented in Table 1. I used multiple regression analysis to test the individual hypotheses and to assess interaction effects (Aiken & West, 1991). Multiple regression was chosen over SEM in this study since this study involves tests of moderating effects. While SEM allows for testing moderation, the use of SEM for such examinations is less common in the management sciences (Cortina et al., 2001). Instead, multiple regression is widely used for testing interaction effects (Aiken & West, 1991; Cohen et al., 2002).

Hypothesis 1, which predicted that telecommuting intensity would be positively related to autonomy need satisfaction, was not supported (Table 2, Model 2:  $b = .00$ ,  $p > .05$ ). Hypothesis 2a and 2b predicted that autonomy need satisfaction would be positively related to task performance and OCBs. I did not find support for hypothesis 2a; autonomy need satisfaction was not significantly related to task performance (Table 3, Model 3:  $b = .14$ ,  $p > .05$ ). I found partial support for hypothesis 2b; while autonomy need satisfaction was not significantly related to the interpersonal facilitation dimension of OCBs (Table 4, Model 3:  $b = .05$ ,  $p > .05$ ), it was significantly and positively related to the job dedication dimension, explaining an additional 4% of the variance (Table 4, Model 7:  $b = .15$ ,  $p < .01$ ,  $\Delta R^2 = .04$ ). Hypotheses 3a and 3b predicted that autonomy

need satisfaction would mediate the relationships between telecommuting intensity and task performance and OCBs. Tests of these hypotheses are presented in Tables 3 and 4. Telecommuting intensity was not significantly related to any of the dependent variables (task performance, Table 3, Model 2:  $b = .00, p > .05$ ; interpersonal facilitation, Table 4, Model 2:  $b = .00, p > .05$ ; job dedication, Table 4, Model 6:  $b = .00, p > .05$ ). Taken together, findings thus far fail to satisfy the conditions for mediation according to guidelines put forth by Baron and Kenny (1986). However, for the sake of completeness, I proceeded to test the indirect effects of telecommuting intensity on the three outcomes. In a model that included the control, independent, and mediating variables, autonomy need satisfaction was not a significant predictor of task performance (Table 3, Model 4:  $b = .14, p > .05$ ) and interpersonal facilitation (Table 4, Model 4:  $b = .05, p > .05$ ). However, autonomy need satisfaction was found to be significantly related job dedication (Table 4, Model 8:  $b = .14, p < .01$ ) in a full model that included both the predictor and control variables. Tests of the indirect effects in which 95% confidence intervals of the effects were obtained with 5,000 bootstrapped samples (MacKinnon et al., 2004; Preacher & Hayes, 2008) using the PROCESS macro (Hayes, 2018) revealed non-significant findings for the indirect effects of telecommuting intensity via autonomy need satisfaction on task performance ( $b = .00$ ;  $CI [-.001, .002]$ ), interpersonal facilitation ( $b = .00$ ;  $CI [-.001, .001]$ ), and job dedication ( $b = .00$ ;  $CI [-.001, .002]$ ). Therefore, hypotheses 3a and 3b were not supported.

Hypothesis 4 predicted that telecommuting intensity would be positively related to belongingness need frustration. Table 5, Model 2 presents the results of this analysis: telecommuting intensity was not significantly related to belongingness need frustration ( $b$

= .00,  $p > .05$ ), thus failing to support hypothesis 4. Hypothesis 5a and 5b predicted that belongingness need frustration would be negatively related to task performance and OCBs (respectively). While the observed effects were in the hypothesized direction, belongingness need frustration was not significantly related to task performance (Table 6, Model 3;  $b = -.08$ ,  $p > .05$ ), interpersonal facilitation (Table 7, Model 3;  $b = -.09$ ,  $p > .05$ ) or job dedication (Table 7, Model 7;  $b = -.08$ ,  $p > .05$ ), failing to support hypotheses 5a and 5b. Hypotheses 6a and 6b predicted that belongingness need frustration would mediate the relationships between telecommuting intensity and task performance and OCBs. Results of these analyses are presented in tables 6 and 7; belongingness need frustration, when included in a full model with all predictors, was not significantly related to task performance facilitation (Table 6, Model 4;  $b = -.08$ ,  $p > .05$ ), interpersonal facilitation (Table 7, Model 4;  $b = -.09$ ,  $p > .05$ ), or job dedication facilitation (Table 7, Model 8;  $b = -.08$ ,  $p > .05$ ). Further tests of the indirect effects of telecommuting intensity on the three outcomes via belongingness need frustration by computing the 95% confidence intervals of the effects using 5,000 bootstrapped samples revealed no significant findings (task performance,  $b = .00$ ;  $CI [-.001, .001]$ ; interpersonal facilitation,  $b = .00$ ;  $CI [-.001, .001]$ ; job dedication,  $b = .00$ ;  $CI [-.001, .001]$ ). Therefore, hypotheses 6a and 6b were not supported.

Hypothesis 7 predicted that LMX would moderate the positive relationship between telecommuting intensity and autonomy need satisfaction. To test this hypothesis, I first mean-centered the independent variables (telecommuting intensity and LMX) and multiplied them to form an interaction term. The independent variables and interaction were sequentially entered in a regression model predicting autonomy need satisfaction;

the results of this analysis are presented in Table 2, Models 3 and 4. While I observed a main effect of LMX on autonomy need satisfaction (Table 2, Model 3;  $b = .44, p < .001$ ), the interaction term was not significantly related to autonomy need satisfaction (Table 2, Model 4;  $b = .00, p > .05$ ), thus failing to support hypothesis 7.

Hypothesis 8 predicted that LMX would moderate the positive relationship between telecommuting intensity and belongingness need frustration. Once again, an interaction term between the independent variables was first computed which was then sequentially entered in a regression model predicting belongingness need frustration. The results of this analysis are presented in Table 5, Models 3 and 4. Once again, while I observed a main effect of LMX on belongingness need frustration (Table 5, Model 3;  $b = -.38, p < .001$ ), the interaction term between telecommuting intensity and LMX was not significantly related to belongingness need frustration (Table 5, Model 4;  $b = .00, p > .05$ ), thus failing to support Hypothesis 8.

Although not explicitly hypothesized, the theoretical model developed in this dissertation implies that the indirect effects of telecommuting intensity via autonomy need satisfaction and belongingness need frustration on the outcomes of task performance and OCBs would be moderated by varying levels of LMX. Table 8 presents the results of a full model regression analysis with task performance and OCBs as dependent variables. Results provide no evidence of a first-stage interaction effect (Edwards & Lambert, 2007) with task performance, interpersonal facilitation, or job dedication as dependent variables (Table 8, Model 2), reducing the likelihood of findings significant conditional indirect effects. To test the indirect effects of telecommuting intensity on the dependent variables via the two mediators, moderated-mediation tests with 5,000 bootstrapped samples were

conducted using the PROCESS macro (Hayes, 2018) for each combination of independent variables (telecommuting intensity, LMX), mediators (autonomy need satisfaction, belongingness need frustration), and outcomes (task performance, interpersonal facilitation, and job dedication) with LMX serving as the first stage moderator. A summary of these analyses along with the indices of moderated-mediation (Hayes, 2015) is provided in Table 9. Across all possible combinations of the independent variable, mediator, and outcome, LMX was found to not significantly moderate any of the indirect effects.

### **Exploratory Analyses**

Since participants in this sample were likely working from home full-time during the pandemic, it is possible that this resulted in little meaningful variance in the independent variable, telecommuting intensity. Therefore, in addition to the primary analyses conducted for this dissertation, I also explored an alternate model in which LMX would be the driver of the aforementioned mediation effects. Specifically, I examined the possibility that autonomy need satisfaction and belongingness need frustration would act as intervening variables for the effects of LMX on task performance and OCBs. I explored this model as leaders are often considered as being integral for shaping employees' work-related experiences (Avolio et al., 2004; Lowe et al., 1996). High-quality LMX relationships with leaders can serve as an autonomy-enhancing condition through increased discretion provided to telecommuters. In addition, high-quality LMX relationships with leaders can also increase telecommuters' psychological connection to their units, thus diminishing belongingness need frustration. In line with theorizing in SDT, leaders have been found to play critical roles in providing the conditions necessary

to support employees' basic needs' satisfaction (e.g., Baard et al., 2004; Leroy et al., 2015).

Table 11 presents the results of a regression analysis linking LMX to autonomy need satisfaction and belongingness need frustration. The results revealed findings in line with arguments made earlier. Specifically, LMX was significantly and positively related to autonomy need satisfaction (Table 11, Model 2:  $b = .43, p < .001$ ) and significantly and negatively related to belongingness need frustration (Table 11, Model 2:  $b = -.37, p < .001$ ). The results of the mediation analysis are presented in Table 12. LMX was found to be significantly and positively related to task performance (Table 12, Model 2:  $b = .22, p < .05$ ) and job dedication (Table 12, Model 2:  $b = .20, p < .01$ ), but was not significantly related to interpersonal facilitation (Table 12, Model 2:  $b = .07, p > .05$ ). Next, both autonomy need satisfaction and belongingness need frustration were included in a full model along with LMX and subordinate telecommuting experience to predict the three dependent variables. Results of this analysis revealed that neither autonomy need satisfaction nor belongingness need frustration were significantly related to either of the dependent variables (see Table 12, Model 3). Further tests of the indirect effects of LMX on the three outcomes were conducted by computing the 95% confidence intervals of the effects using 5,000 bootstrapped samples (Hayes, 2018). Neither autonomy need satisfaction (predicting task performance,  $b = .03$ ;  $CI [-.038, .106]$ ; interpersonal facilitation,  $b = .00$ ;  $CI [-.055, .056]$ ; job dedication,  $b = .03$ ;  $CI [-.025, .089]$ ) nor belongingness need frustration (predicting task performance,  $b = -.02$ ;  $CI [-.094, .039]$ ; interpersonal facilitation,  $b = .02$ ;  $CI [-.023, .068]$ ; job dedication,  $b = -.02$ ;  $CI [-.069, .026]$ ) was found to mediate the relationships between LMX and the three

outcomes. However, LMX was found to have a significant direct effect on task performance ( $b = .21$ ; CI [.05, .37]) and job dedication ( $b = .18$ ; CI [.06, .30]).



## V. DISCUSSION

The extant telecommuting literature consists of two key themes. One theme suggests that telecommuting enhances employee autonomy which in turn positively influences job performance (Gajendran et al., 2015; Gajendran & Harrison, 2007). At the same time and cutting against this theme is another that suggests telecommuting enhances feelings of isolation which in turn negatively influences job performance (Golden et al., 2008). When considered together, these two themes posit seemingly paradoxical effects on the same set of outcomes, a phenomenon that has been referred to as the telecommuting paradox (Gajendran & Harrison, 2007). Till date, however, no study has examined these two themes simultaneously, and little is known about ways of resolving the telecommuting paradox. In this dissertation, I sought to develop and test a theoretical framework that accounts for the simultaneous positive and negative pathways linking telecommuting to job performance. Using self-determination theory as the underlying theoretical framework, I argued that telecommuting intensity's positive effects on two key aspects job performance – task performance and OCBs – would come about via the satisfaction of employees' need for autonomy while the simultaneous negative effects of telecommuting intensity on job performance would come about via frustration of employees' need for belongingness. I further argued that through developing high-quality LMX relationships with telecommuters, leaders would play an important role in resolving the telecommuting paradox by enhancing telecommuters' autonomy need satisfaction while simultaneously reducing their belongingness need frustration. Below, I summarize the findings of this dissertation, discuss the contributions and address limitations of this research, and provide some directions for future research.

## Summary of Results

The first set of hypotheses posited that telecommuting intensity would be positively associated with autonomy need satisfaction which, in turn, would be positively related to task performance and OCBs. I did not find telecommuting intensity to be significantly related to autonomy need satisfaction. It is likely that telecommuting in the context of a nation-wide lockdown during a global pandemic may have influenced this finding. First, during the nationwide lockdown period, the Indian government restricted all individuals from stepping out of their homes. This meant that participants were all likely working from home full-time when the data were collected for this study, which may have limited the variance on the independent variable of telecommuting intensity. Second, participant perceptions of their autonomy need satisfaction may have also been influenced by the unique conditions associated with working from home during the pandemic. As mentioned above, because of the national lockdown, participants were likely restricted to staying indoors with their families – a drastic departure from what one would expect from traditional or “normal” telecommuting conditions. Such restrictions may have impacted participants’ ability to experience the autonomy-related benefits that are generally expected to come about from telecommuting. Indeed, the telecommuting literature suggests that the autonomy-related benefits one experiences when telecommuting typically come about from having the option of choosing to work in environments in which one would reasonably expect fewer distractions and interruptions, with the possibility of maintaining some degree of scheduling flexibility (Gajendran & Harrison, 2007). However, being locked-down during a global pandemic with kids and family meant that participants in this study may have experienced more interruptions to

their work from their kids and family. This may have been exacerbated by the fact that many Indians, if not most, live in cramped, joint family households often consisting of multiple generations in the family (i.e., grandparents, parents, children) (Biswas, 2020). Participants may have also experienced other family demands such as planning and preparing meals, entertaining young children, tending to household chores, etc. Such demands may have eroded any autonomy benefits offered by telecommuting, which could weaken the relationship between telecommuting and autonomy need satisfaction.

Next, I found autonomy need satisfaction to be significantly and positively related the job dedication dimension of OCBs; this finding is also supported by prior research suggesting that when one's autonomy needs are satisfied, they are more likely to invest themselves into their work roles (Chiniara & Bentein, 2016; Gillet et al., 2013; Van den Broeck et al., 2016). However, I found no significant relationships between autonomy need satisfaction and task performance or the interpersonal facilitation dimension of OCBs. It is possible that because supervisors were working in isolation and away from their employees during the pandemic, they simply did not have the opportunity to witness employee task-related and citizenship behaviors which may have influenced their subjective assessments of their employees' performance and OCBs. Indeed, OCBs are discretionary behaviors that are overall beneficial to the organization and often go unnoticed and are therefore likely to go unrewarded (Dalal, 2005). Limited exposure to employee behaviors would likely result in restricted variance on the dependent variables, reducing the likelihood of observing a significant relationship between autonomy need satisfaction and the dependent variables. Finally, I also found no significant relationships between telecommuting intensity and any of the dependent variables. The pattern of these

results also ruled out the possibility of a potential mediating effect of autonomy need satisfaction for the relationships between telecommuting intensity, task performance, and OCBs.

The second set of hypotheses posited that telecommuting intensity would be positively associated with belongingness need frustration which, in turn, would be negatively related to task performance and OCBs. I found no support for telecommuting intensity being positively and significantly related to belongingness need frustration. In addition to the lockdown restrictions limiting the variance on the independent variable, it is possible that managers and coworkers maintained higher degrees of virtual communication than would be expected while telecommuting during “normal” times to manage the sudden transition to remote work. This could have created a sense of belonging to the work unit and reduced the impact of telecommuting on belongingness need frustration. I also observed no significant relationships between belongingness need frustration and either task performance or OCBs. One potential reason for these findings could be that the timing of the data collection effort did not allow for some of the effects to truly manifest. The nationwide lockdown in India went into effect in late March 2020 and the data for this dissertation were collected in the middle of April, 2020. It is possible that this time period may not have been long enough for feelings of isolation to have emerged or become salient in the participants. As previously suggested, with the sudden and unprecedented move to full-time telecommuting, it is possible that supervisors and team members over-communicated virtually to ensure continuity of operations in the new fully-remote work environment. This may have reduced feelings of isolation that would be expected to develop due to telecommuting during more “normal” times leading to

limited variance on subordinates' belongingness need frustration, thus reducing the likelihood of observing a relationship between belongingness need frustration and the dependent variables. Once again, the pattern of these findings did not support the possibility of observing a mediation effect of belongingness need frustration for the relationships between telecommuting intensity, task performance, and OCBs.

The final set of hypotheses examined whether the relationships between telecommuting intensity, autonomy need satisfaction, and belongingness need frustration would vary based on the relationship quality between telecommuters and their leaders (LMX). I found no significant moderating effect of LMX on the relationships between telecommuting intensity and autonomy need satisfaction as well as telecommuting intensity and belongingness need frustration. The absence of a significant first-stage moderating effect of LMX also ruled out the possibility of observing moderated mediation with any combination of mediator (autonomy need satisfaction or belongingness need frustration) and dependent variable (task performance or OCBs).

As started earlier, because it is likely that everyone in my sample was working from home full-time due to the pandemic, there was likely limited variance on the independent variable. Therefore, I explored an alternate theoretical possibility guided by research suggesting that leaders are often influential in shaping employees' work-related experiences in virtual work contexts (Gajendran & Joshi, 2012). Specifically, instead of treating LMX as a moderator in my theoretical model, I tested an alternative exploratory model in which LMX was expected to play a key role in influencing the task performance and OCBs of high-intensity telecommuters (Gajendran & Harrison, 2007). In this alternate model, LMX was theorized to act as the independent variable influencing

telecommuters' task performance and OCBs via autonomy need satisfaction and belongingness need frustration. Indeed, telecommuters who have high-LMX with leaders are likely to experience greater discretion over their work and work schedules (Gajendran et al., 2015), thus enhancing their autonomy need satisfaction. Furthermore, telecommuters with high-LMX are part of their leader's in-group and therefore more likely to be psychologically connected to their work units (Gajendran & Joshi, 2012), reducing their belongingness need frustration. Results from tests of this alternate theoretical model revealed LMX to be significantly and positively related to autonomy need satisfaction and significantly and negatively related to belongingness need frustration. I also found LMX to be significantly and positively related to both task performance and job dedication, but not interpersonal facilitation. Although LMX was significantly related to both the mediators and the dependent variables, neither autonomy need satisfaction nor belongingness need frustration mediated the relationships between LMX, task performance, and OCBs.

I also explored the possibility of autonomy need satisfaction and belongingness need frustration acting as suppressor variables of the total effect of LMX on each of the dependent variables. Suppressor variables are predictors that contribute to a regression by removing error variance from another predictor, thus enhancing the latter's ability to predict variance in the criterion variable (MacKinnon et al., 2000; Velicer, 1978). To test this possibility, I computed semi-partial correlations for both autonomy need satisfaction and belongingness need frustration in regressions predicting each of the three dependent variables (task performance, interpersonal facilitation, and job dedication), controlling for other predictors in the model (i.e., subordinate remote work experience and LMX). I

defined a suppressor variable as having a squared semi-partial correlation greater than its squared zero-order correlation with a focal criterion variable (Smith et al., 1992; Velicer, 1978). I found no evidence of either autonomy need satisfaction or belongingness need frustration acting as suppressors when included in regressions predicting either of the dependent variables as the squared semi-partial correlations were lower than the squared zero-order correlations with each dependent variable (autonomy need satisfaction:  $sr^2_{task\ performance} = .004$ ,  $r^2_{task\ performance} = .20$ ;  $sr^2_{interpersonal\ facilitation} = .00$ ,  $r^2_{interpersonal\ facilitation} = .005$ ;  $sr^2_{job\ dedication} = .01$ ,  $r^2_{job\ dedication} = .04$ ; belongingness need frustration:  $sr^2_{task\ performance} = .002$ ,  $r^2_{task\ performance} = .005$ ;  $sr^2_{interpersonal\ facilitation} = .005$ ,  $r^2_{interpersonal\ facilitation} = .014$ ;  $sr^2_{job\ dedication} = .001$ ,  $r^2_{job\ dedication} = .012$ ).

## Research Contributions

Although I found little empirical support for the conceptual framework, this dissertation advances the telecommuting literature in three key ways. First, the theoretical framework developed in this dissertation integrates two key themes in the telecommuting literature that till date have only been explored independently. More specifically, I developed a framework that accounts for the simultaneous positive (via enhanced autonomy) and negative consequences (via enhanced feelings of isolation) that telecommuting has for job performance. Second, my theoretical framework may help provide some clarity on the nature of the relationship between telecommuting and job performance. Prior research on this relationship reveal mixed findings ranging from positive to negative to null relationships. The most recent meta-analysis suggests that the relationship between telecommuting and job performance is modest yet positive (Gajendran & Harrison, 2007). It is possible that the autonomy enhancing (positive)

effects of telecommuting compete against the isolation enhancing (negative) effects, with the positive effects slightly overpowering the negative. This has practical implications for organizations trying to manage remote workers as organizations may benefit from investing in strategies that may enhance telecommuter autonomy while simultaneously weakening the effects of isolation. Finally, my theoretical model positions leaders as being key players in resolving the telecommuting paradox. Specifically, I contend that through developing high-quality LMX relationships with telecommuters, leaders may not only enhance telecommuters' perceived autonomy but may also diminish feelings of isolation, thus resolving the telecommuting paradox.

### **Limitations and Future Research**

There are several limitations that likely influenced the findings in this dissertation. The first major limitation of this study is the context in which the data were collected. The timing of the data collection for this dissertation coincided with the COVID-19 pandemic experienced around the world. I sampled full-time working individuals in India who were all working from home during the COVID-19 global pandemic. Beginning on March 25<sup>th</sup>, the Indian government imposed a nation-wide lockdown of non-essential services and businesses to curtail the spread of the coronavirus that lasted for nine weeks. This drastic measure aimed at curtailing the spread of the coronavirus resulted in circumstances in which individuals across the country were not permitted to step out of their homes during the period of the lockdown (Times of India, 2020). Violators of the nation-wide lockdown mandate were punished and caned by law enforcement officials (CNN, 2020). In response to these restrictions, organizations were forced to abruptly adopt full-time telecommuting as a means of maintaining their operations while also



keeping their employees safe. This transition to telecommuting meant that almost all participants in the current sample were working from home full-time during the pandemic.

It is likely that the context of full-time telecommuting during a global pandemic influenced some of the constructs being measured in this dissertation. First, with the nationwide lockdown, all of the participants in this study were likely working from home full-time, thus limiting the variance in the independent variable. In addition, the way telecommuting intensity was measured may have also influenced participant responses. Although I found some variance on this measure, this should be interpreted with caution given the high likelihood that almost all participants were working from home full-time during the nationwide lockdown. To measure telecommuting intensity, participants were asked to report the average number of hours per week they spent working remotely or at home *during regular work hours*. Although this measure has been used in prior telecommuting research, participants may have misreported their experiences on this question given the unique nature of working from home full-time during the pandemic. Participants in this sample, on average, reported working about 28 hours per week remotely during regular work hours. It is possible that employees may have also worked from home outside of regular work hours, but did not reflect this in their responses to the question assessing telecommuting intensity. For example, on a given day, perhaps participants reported working 5 hours during their typical 9-5 schedule and worked an additional 3 hours outside of their regular work hours. Therefore, any variance observed on this measure could be unreliable as it may not reflect the total time that employees spent working from home each day during the pandemic.

In addition to limiting variance on the independent variable, the context may have also influenced the pattern of associations between variables in the proposed model. The restrictions imposed by the Indian government via a nationwide lockdown resulted in non-traditional work-from-home conditions. Participants in this study were restricted from leaving their homes, taking away their ability of choosing from where to work. Simultaneously, participants had to contend with and attend to various family interruptions and demands, which collectively likely influenced their autonomy need satisfaction. It is also possible that supervisors and subordinates may have engaged in higher levels of communication to overcome the challenges associated with the abrupt change to full-time telecommuting, which could have influenced participants' sense of belonging. Furthermore, participant responses to questions about their autonomy need satisfaction and belongingness need frustration may have been influenced by the conditions associated with the pandemic. The COVID-19 pandemic created novel, highly uncertain conditions in which participants may have been compelled to attend to their lower-order security needs and safety needs first rather than their higher-order needs such as their autonomy and belongingness needs (Ryan et al., 2020). Such prioritization of their lower-order safety and security-related needs may have influenced participant responses to measures of autonomy need satisfaction and belongingness need frustration, as these higher-order needs may have been less salient in this context.

Conditions associated with the pandemic may have also influenced supervisor-ratings of performance and OCBs. Indeed, supervisors' interpretation of what it means to be effective or helpful at work prior to the lockdown period is likely to be different from their interpretation of the same constructs during the lockdown period. Managers in this

sample are likely to have been sensitive to their subordinates having to adjust to the abrupt change to full-time telecommuting as well as the novel circumstances associated with the pandemic. Therefore, when rating employee performance and OCBs during the pandemic, supervisors may have accounted for their subordinates having to contend with working in isolation, managing their anxiety about the pandemic, attending to and contending with non-work demands, among other challenges. Such considerations may have influenced their assessment of employee performance during the pandemic. Further, supervisors likely had fewer opportunities to observe subordinates' task performance and OCBs since they too working in isolation and away from their subordinates. Future research should therefore examine these relationships outside the context of a global pandemic. While the most recent meta-analysis on telecommuting suggests that telecommuting has a modest yet positive relationship with supervisor-rated task performance, a fruitful avenue for future research would be to examine how telecommuting and telecommuting intensity relate to other aspects of job performance, i.e., OCBs and counterproductive workplace behaviors (CWBs). Prior research, while limited, suggests that telecommuters may partake in more OCBs to compensate for the fact that they are not as visible to others working from a central office (Gajendran et al., 2015). However, since telecommuters work at a distance from their coworkers and supervisors, helpful interactions among coworkers are likely to occur over electronic media thus limiting supervisors' ability to observe them. This raises the possibility of telecommuting being negatively related to OCBs and that the relationship may be stronger for high-intensity telecommuters. So far, only limited research has examined the

link between telecommuting and OCBs and future research should examine the possibility of a negative relationship.

Another aspect of telecommuter performance that has received little attention is counterproductive workplace behaviors (CWBs), i.e., behaviors that harm or are harmful to the organization and its stakeholders (Spector et al., 2006). A prevailing sentiment held by managers is that absent managerial oversight, telecommuters may ‘goof off’ (Farrer, 2019; Ogrysko, 2020; Sweeney, 2020), cyberloaf, or spend time on non-work tasks during work hours (Wong, 2012). Recently, scholars have developed a taxonomy of CWBs highly relevant to a telecommuting context (Holland et al., 2016) to include behaviors such as being abusive (e.g., cursing at or saying something hurtful toward coworkers or supervisors), intentional poor performance, work sabotage (e.g., destroying company documents, withholding information), purposeful misuse of company resources, being deceitful (faking illness or other emergencies), substance abuse (drinking alcohol or using drugs), and misuse of time (e.g., playing videogames, watching movies, attending to nonwork matters). However, virtually no telecommuting research links these kinds of behaviors to telecommuting and more research is needed to establish whether variations in the extent of telecommuting is associated with greater (or lesser) participation in such CWBs.

Although the use of multi-source data collected from individuals from a variety of organizations and industries is a strength of this study, another limitation was that the data were cross-sectional and collected at a single point in time. Notwithstanding the null findings, the independent variable and the mediators were collected at the same time from the same source which limits my ability to draw causal conclusions between the

variables. Future research would benefit from utilizing longitudinal designs where the variables are not only collected from separate sources but also at different points in time.

A final limitation was that one of the control variables used in this study, task interdependence, did not meet the reliability threshold of .70 (Nunnally, 1978) and was therefore excluded from the analyses. Task interdependence is not only likely to influence the degree to which telecommuters experience autonomy need satisfaction, but it may also influence their belongingness needs as jobs that require greater coordination to complete tasks often involve greater degrees of interaction. Future research should attempt to use alternate measures of task interdependence in examinations of this theoretical model.

## **Conclusion**

Earlier this year, in response to concerns over the spread of COVID-19, many organizations around the world adopted full-time telecommuting without a comprehensive understanding of the various challenges (and upsides) associated with it. However, several organizations have reported having positive experiences with full-time remote work which led to a growing number of organizations declaring their willingness to implement permanent telecommuting – i.e., making the option of working from home at least part of the week, permanent (e.g., Twitter, Microsoft, Slack, Nationwide, etc.). As this trend continues to grow, there is a greater need for management and organizational scholars to truly understand the upsides and downsides associated with this work arrangement. This dissertation contributes to the extant literature by not only developing a framework that accounts for the simultaneous positive and negative consequences that telecommuting has for employees, but also by identifying leaders as key factors that

could help enhance the upsides of telecommuting while simultaneously diminishing the downsides. A greater understanding of these paradoxical effects as well as ways of resolving them can help organizations plan and address potential challenges associated with telecommuting.

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**Table 1. Descriptive Statistics and Correlations between Study Variables**

	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Subordinate Telecommuting Experience (log) <sup>a</sup>	189	0.22	0.30	-							
2. Telecommuting Intensity	187	27.98	19.95	.12	-						
3. Autonomy Need Satisfaction	189	4.36	1.13	.04	.03	(.81)					
4. Belongingness Need Frustration	189	2.75	1.03	-.08	-.04	-.45**	(.75)				
5. LMX	189	5.39	1.11	.00	.09	.43**	-.40**	(.92)			
6. Task Performance	188	5.28	1.12	.15*	.08	.14*	-.08	.21**	(.94)		
7. Interpersonal Facilitation	189	5.79	0.78	.07	-.01	.08	-.12	.10	.57**	(.91)	
8. Job Dedication	189	5.69	0.84	.09	.06	.20**	-.11	.26**	.68**	.69**	(.90)

Note. *N* = 187-189. Table presents pairwise correlations. Reliabilities are presented along the diagonal in parentheses.

\*  $p < .05$ , \*\*  $p < .01$

<sup>a</sup> I used the (1+x) log transformation to account for skewness in subordinate telecommuting experience.



**Table 2. Multiple Regression Results for the Test of Hypotheses 1 and 7**

Variable	Autonomy Need Satisfaction							
	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	4.33***	.10	4.29**	.15	4.33***	.09	4.43***	.10
Controls								
Subordinate Telecommuting Experience (log)	.13	.28	.12	.27	.13	.25	.14	.25
Main Effects								
Telecommuting Intensity			.00	.00	.00	.00	.00	.00
LMX					.44***	.07	.44***	.07
Interaction								
Telecommuting Intensity * LMX <sup>a</sup>							.00	.00
<i>F</i>	.24		.19		13.62***		10.17***	
<i>Df</i>	1, 185		2, 184		3, 183		4, 182	
<i>R</i> <sup>2</sup>	.00		.00		.18		.18	
Adjusted <i>R</i> <sup>2</sup>	.00		.00		.17		.17	
$\Delta R^2$			.00		.18***		.00	

Note. *N* = 187. Regression coefficients are unstandardized.  $\Delta R^2$  shows increase in *R*<sup>2</sup> from the previous model.

\*\*\* *p* < .001

<sup>a</sup> Variables constituting the interaction term were mean-centered prior to entering it in the model.

**Table 3. Multiple Regression Results for the Test of Hypotheses 2a and 3a**

Variable	Task Performance							
	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.16***	.10	5.07***	.15	4.56***	.33	4.49***	.34
Subordinate Telecommuting Experience (log)	.55*	.27	.52	.27	.53	.27	.51	.27
Telecommuting Intensity			.00	.00			.00	.00
Autonomy Need Satisfaction					.14	.07	.14	.07
<i>F</i>	4.20*		2.42		4.01*		2.85*	
<i>df</i>	1, 185		2, 184		2, 185		3, 183	
<i>R</i> <sup>2</sup>	.02		.03		.04		.05	
Adjusted <i>R</i> <sup>2</sup>	.02		.02		.03		.03	
$\Delta R^2$			.00 <sup>a</sup>		.02 <sup>*a</sup>		.02 <sup>b</sup>	

Note. *N* = 187. Regression coefficients are unstandardized.

\*  $p < .05$ , \*\*\*  $p < .001$

<sup>a</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 1

<sup>b</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 2

**Table 4. Multiple Regression Results for the Test of Hypotheses 2b and 3b**

Variable	Interpersonal Facilitation								Job Dedication							
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.75***	.07	5.77***	.11	5.52***	.23	5.54***	.24	5.63***	.08	5.57***	.11	5.01***	.24	4.96***	.26
Subordinate Telecommuting Experience (log)	.19	.19	.19	.19	.18	.19	.18	.19	.24	.20	.23	.20	.22	.20	.21	.20
Telecommuting Intensity			.00	.00			.00	.00			.00	.00			.00	.00
Autonomy Need Satisfaction					.05	.05	.05	.00					.15**	.05	.14**	.05
<i>F</i>	1.00		.53		1.01		.72		1.44		.97		4.43*		3.05*	
<i>df</i>	1, 185		2, 184		2, 186		3, 183		1, 185		2, 184		2, 186		3, 183	
<i>R</i> <sup>2</sup>	.01		.01		.01		.01		.01		.01		.05		.05	
Adjusted <i>R</i> <sup>2</sup>	.00		.01		.00		.01		.00		.00		.04		.03	
$\Delta R^2$			.00 <sup>a</sup>		.01 <sup>a</sup>		.01 <sup>b</sup>				.00 <sup>c</sup>		.04** <sup>c</sup>		.04** <sup>d</sup>	

Note. *N* = 187. Regression coefficients are unstandardized.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

<sup>a</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 1

<sup>b</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 2

<sup>c</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 5

<sup>d</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 6

**Table 5. Multiple Regression Results for the Test of Hypotheses 4 and 8**

Variable	Belongingness Need Frustration							
	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	2.81***	.09	2.86***	.14	2.81***	.09	2.82***	.09
Controls								
Subordinate Telecommuting Experience (log)	-.28	.25	-.26	.25	-.28	.23	-.29	.23
Main Effects								
Telecommuting Intensity			.00	.00	.00	.00	.00	.00
LMX					-.38***	.06	-.38***	.06
Interaction								
Telecommuting Intensity * LMX <sup>a</sup>							.00	.00
<i>F</i>	1.25		.73		12.42***		9.58***	
<i>df</i>	1, 185		2, 184		3, 183		4, 182	
<i>R</i> <sup>2</sup>	.01		.01		.17		.17	
Adjusted <i>R</i> <sup>2</sup>	.00		.00		.16		.16	
$\Delta R^2$			.00		.16***		.01	

Note. *N* = 187. Regression coefficients are unstandardized.  $\Delta R^2$  shows increase in *R*<sup>2</sup> from the previous model.

\*\*\* *p* < .001

<sup>a</sup> Variables constituting the interaction term were mean-centered prior to entering it in the model.

**Table 6. Multiple Regression Results for the Test of Hypotheses 5a and 6a**

Variable	Task Performance							
	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.16***	.10	5.07***	.15	5.38***	.25	5.29***	.27
Subordinate Telecommuting Experience (log)	.55*	.27	.52	.27	.53	.27	.50	.27
Telecommuting Intensity			.00	.00			.00	.00
Belongingness Need Frustration					-.08	.08	-.08	.08
<i>F</i>	4.20*		2.42		2.58		1.91	
<i>df</i>	1, 185		2, 184		2, 185		3, 183	
<i>R</i> <sup>2</sup>	.02		.03		.02		.03	
Adjusted <i>R</i> <sup>2</sup>	.02		.02		.02		.01	
$\Delta R^2$			.00 <sup>a</sup>		.01 <sup>a</sup>		.01 <sup>b</sup>	

Note. *N* = 187. Regression coefficients are unstandardized.

\*  $p < .05$ , \*\*\*  $p < .001$

<sup>a</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 1

<sup>b</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 2

**Table 7. Multiple Regression Results for the Test of Hypotheses 5b and 6b**

Variable	Interpersonal Facilitation								Job Dedication							
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.75***	.07	5.77***	.11	6.00***	.17	6.03***	.19	5.63***	.08	5.57***	.11	5.87***	.18	5.81***	.20
Subordinate Telecommuting Experience (log)	.19	.19	.19	.19	.16	.19	.17	.19	.24	.20	.23	.20	.22	.20	.20	.20
Telecommuting Intensity			.00	.00			.00	.00			.00	.00			.00	.00
Belongingness Need Frustration					-.09	.06	-.09	.06					-.08	.06	-.08	.06
<i>F</i>	1.00		.52		1.83		1.23		1.44		.97		1.73		1.29	
<i>df</i>	1, 185		2, 184		2, 186		3, 183		1, 185		2, 184		2, 186		3, 183	
<i>R</i> <sup>2</sup>	.01		.01		.02		.02		.01		.01		.02		.02	
Adjusted <i>R</i> <sup>2</sup>	.00		.00		.01		.00		.00		.00		.01		.01	
$\Delta R^2$			.00 <sup>a</sup>		.01 <sup>a</sup>		.01 <sup>b</sup>				.00 <sup>c</sup>		.01 <sup>c</sup>		.01 <sup>d</sup>	

Note. *N* = 187. Regression coefficients are unstandardized.

\*\*\*  $p < .001$

<sup>a</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 1

<sup>b</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 2

<sup>c</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 5

<sup>d</sup>  $\Delta R^2$  shows increase in  $R^2$  from model 6

**Table 8. Results of Full Model Regression Analysis with Task Performance and OCBs as Dependent Variables**

Variable	DV: Task Performance					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.19***	.10	5.21***	.10	4.74***	.51
Subordinate Telecommuting Experience (log)	.54*	.26	.52	.26	.52*	.26
Telecommuting Intensity	.00	.00	.00	.00	.00	.00
LMX	.21**	.07	.20**	.07	.19*	.08
Telecommuting Intensity * LMX			.00	.00	.00	.00
Autonomy Need Satisfaction					.08	.08
Belongingness Need Satisfaction					.05	.09
<i>F</i>	4.59**		3.74**		2.63*	
<i>df</i>	3, 183		4, 182		6, 180	
<i>R</i> <sup>2</sup>	.07		.08		.08	
Adjusted <i>R</i> <sup>2</sup>	.06		.06		.05	
$\Delta R^2$			.01		.01	
Variable	DV: Interpersonal Facilitation					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.76***	.07	5.77***	.07	5.91***	.37
Subordinate Telecommuting Experience (log)	.20	.19	.19	.19	.17	.19
Telecommuting Intensity	.00	.00	.00	.00	.00	.00
LMX	.07	.05	.07	.05	.04	.06
Telecommuting Intensity * LMX			.00	.00	.00	.00
Autonomy Need Satisfaction					.01	.06
Belongingness Need Satisfaction					-.06	.06
<i>F</i>	1.03		.83		.76	
<i>df</i>	3, 183		4, 182		6, 180	

$R^2$	.02		.02		.03	
Adjusted $R^2$	.00		.00		.00	
$\Delta R^2$			.00		.01	
	DV: Job Dedication					
	Model 1		Model 2		Model 3	
	$b$	$SE$	$b$	$SE$	$b$	$SE$
Constant	5.66***	.07	5.66***	.07	5.19***	.37
Subordinate Telecommuting Experience (log)	.22	.19	.22	.19	.23	.19
Telecommuting Intensity	.00	.00	.00	.00	.00	.00
LMX	.19**	.05	.19**	.05	.17**	.06
Telecommuting Intensity * LMX			.00	.00	.00	.00
Autonomy Need Satisfaction					.08	.06
Belongingness Need Satisfaction					.05	.07
$F$	5.02**		3.78**		2.81*	
$df$	3, 183		4, 182		6, 180	
$R^2$	.08		.08		.09	
Adjusted $R^2$	.06		.06		.06	
$\Delta R^2$			.00		.01	

Note.  $N = 187$ . Regression coefficients are unstandardized.  $\Delta R^2$  shows increase in  $R^2$  from the previous model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Table 9. Summary Results of Moderated-Mediation Analyses**

Relationship Tested	Index of Moderated Mediation	95% Confidence Interval	
		LL	UL
Telecommuting Intensity*LMX → Autonomy Need Satisfaction → Task Performance	.000	-.001	.001
Telecommuting Intensity*LMX → Autonomy Need Satisfaction → Interpersonal Facilitation	.000	-.001	.001
Telecommuting Intensity*LMX → Autonomy Need Satisfaction → Job Dedication	.000	-.001	.001
Telecommuting Intensity*LMX → Belongingness Need Frustration → Task Performance	.000	-.001	.001
Telecommuting Intensity*LMX → Belongingness Need Frustration → Interpersonal Facilitation	.000	-.000	.001
Telecommuting Intensity*LMX → Belongingness Need Frustration → Job Dedication	.000	-.000	.001

**Table 10. Summary of Hypotheses Tested**

Hypotheses	Findings
Hypothesis 1: Telecommuting intensity will be positively associated with autonomy need satisfaction.	Not Supported
Hypothesis 2a: Autonomy need satisfaction will be positively related to task performance.	Not Supported
Hypothesis 2b: Autonomy need satisfaction will be positively related to organizational citizenship behaviors.	Partially Supported
Hypothesis 3a: Autonomy need satisfaction will mediate the relationship between telecommuting intensity and task performance.	Not Supported
Hypothesis 3b: Autonomy need satisfaction will mediate the relationship between telecommuting intensity and organizational citizenship behaviors.	Not Supported
Hypothesis 4: Telecommuting intensity will be positively associated with belongingness need frustration.	Not Supported
Hypothesis 5a: Belongingness need frustration will be negatively related to task performance.	Not Supported
Hypothesis 5b: Belongingness need frustration will be negatively related to organizational citizenship behaviors.	Not Supported
Hypothesis 6a: Belongingness need frustration will mediate the relationship between telecommuting intensity and task performance.	Not Supported
Hypothesis 6b: Belongingness need frustration will mediate the relationship between telecommuting intensity and organizational citizenship behaviors.	Not Supported
Hypothesis 7: The positive effect of telecommuting intensity on autonomy need satisfaction will be moderated by LMX such that the relationship will be stronger when LMX is high and weaker when LMX is low.	Not Supported
Hypothesis 8: The positive effect of telecommuting intensity on belongingness need frustration will be moderated by LMX such that the relationship will be weaker when LMX is high and stronger when LMX is low.	Not Supported

**Table 11. Multiple Regression Results for LMX Predicting Autonomy Need Satisfaction and Belongingness Need Frustration**

Variable	Autonomy Need Satisfaction				Belongingness Need Frustration			
	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	4.33***	.10	2.03***	.37	2.81***	.09	4.80***	.35
Subordinate Telecommuting Experience (log)	.13	.27	.13	.25	-.28	.25	-.27	.23
LMX			.43***	.07			-.37***	.06
<i>F</i>	.24		20.19***		1.26		18.47***	
<i>df</i>	1, 187		2, 186		1, 187		2, 186	
<i>R</i> <sup>2</sup>	.00		.18		.01		.17	
Adjusted <i>R</i> <sup>2</sup>	.00		.17		.00		.16	
$\Delta R^2$			.18***				.16***	

Note. *N* = 189. Regression coefficients are unstandardized.  $\Delta R^2$  shows increase in *R*<sup>2</sup> from the previous model.

\*\*\* *p* < .001

**Table 12. Results of Mediation Analyses with LMX as Predictor and Autonomy Need Satisfaction and Belongingness Need Frustration as Mediators**

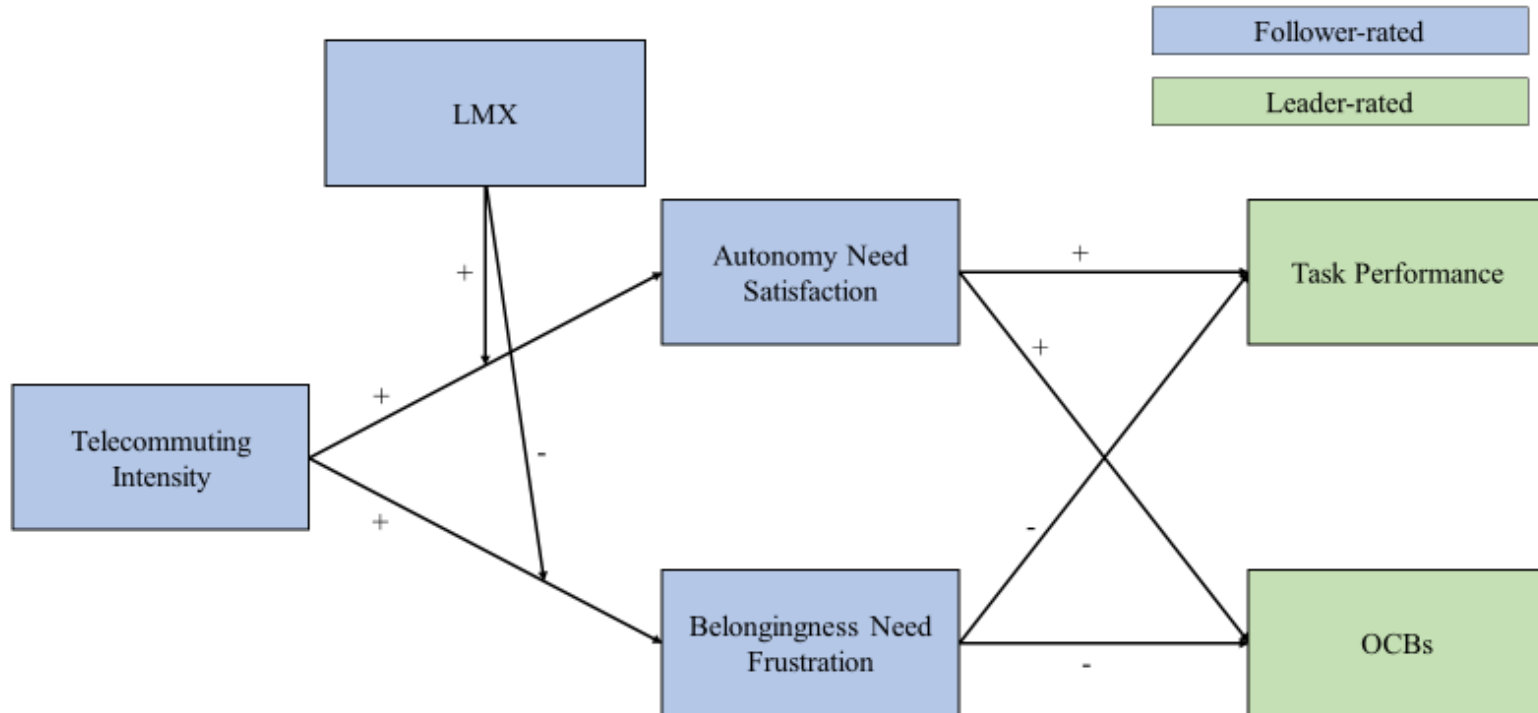
Variable	DV: Task Performance					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.19***	.10	4.02***	.39	3.61***	.64
Subordinate Telecommuting Experience (log)	.55*	.27	.55*	.26	.57*	.26
LMX			.22**	.07	.21*	.08
Autonomy Need Satisfaction					.07	.08
Belongingness Need Frustration					.06	.09
<i>F</i>	4.22*		6.83**		3.62**	
<i>df</i>	1, 186		2, 185		4, 183	
<i>R</i> <sup>2</sup>	.02		.07		.07	
<i>Adjusted R</i> <sup>2</sup>	.02		.06		.05	
$\Delta R^2$			.05**		.01	
Variable	DV: Interpersonal Facilitation					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.75***	.07	5.37***	.29	5.66***	.47
Subordinate Telecommuting Experience (log)	.19	.19	.19	.19	.17	.19
LMX			.07	.05	.05	.06
Autonomy Need Satisfaction					.01	.06
Belongingness Need Frustration					-.06	.07
<i>F</i>	1.01		1.48		1.02	
<i>df</i>	1, 187		2, 186		4, 184	
<i>R</i> <sup>2</sup>	.01		.02		.02	
<i>Adjusted R</i> <sup>2</sup>	.00		.01		.00	
$\Delta R^2$			.01		.01	

	DV: Job Dedication					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Constant	5.63***	.08	4.57***	.30	4.24***	.48
Subordinate Telecommuting						
Experience (log)	.24	.20	.24	.19	.24	.20
LMX			.20***	.05	.17**	.06
Autonomy Need Satisfaction					.09	.06
Belongingness Need Frustration					.03	.07
<i>F</i>	1.46		7.50**		4.25**	
<i>df</i>	1, 187		2, 186		4, 184	
<i>R</i> <sup>2</sup>	.01		.08		.09	
<i>Adjusted R</i> <sup>2</sup>	.00		.07		.07	
$\Delta R^2$			.07***		.01	

Note. *N* = 188. Regression coefficients are unstandardized.  $\Delta R^2$  shows increase in *R*<sup>2</sup> from the previous model.

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001

**Figure 1. Conceptual Model**



## APPENDIX

### Measures used in this study

#### *A. Telecommuting Intensity*

1. Currently, what is the average total number of hours per week you spend telecommuting or working from home during regular work hours?

#### *B. Telecommuting Experience*

1. Including all of your prior and current job(s), how long have you been working remotely for at least part of the work week?

#### *C. Autonomy Need Satisfaction*

Using the rating scale below, please rate your agreement with the following statements.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree nor Disagree
- 5 = Somewhat Agree
- 6 = Agree
- 7 = Strongly Agree

1. I feel like I can be myself at my job
2. At work, I often feel like I have to follow other people's commands (R)
3. If I could choose, I would do things at work differently (R)
4. The tasks I have to do at work are in line with what I really want to do
5. I feel free to do my job the way I think it could best be done
6. In my job, I feel forced to do things I do not want to do (R)

#### *D. Belongingness Need Frustration*

Using the rating scale below, please rate your agreement with the following statements.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree nor Disagree
- 5 = Somewhat Agree
- 6 = Agree
- 7 = Strongly Agree

1. I don't really feel connected with other people at my job (R)
2. At work, I feel part of a group
3. I don't really mix with other people at my job (R)
4. At work, I can talk with people about things that really matter to me
5. I often feel alone when I am with my colleagues (R)
6. Some people I work with are close friends of mine

#### *E. Leader-Member Exchange*

Please rate your agreement with the following statements about your relationship with your manager.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree nor Disagree
- 5 = Somewhat Disagree
- 6 = Agree
- 7 = Strongly Agree

1. I know where I stand with my manager.
2. My manager understands my job problems and needs.
3. My manager recognizes my potential.
4. My manager would use his/her power to help me solve work related problems.
5. My manager would "bail me out" at his/her expense.
6. I defend and justify my manager decisions when he/she is not present to do so.
7. I have an effective working relationship with my manager.

#### *F. Task Interdependence*

Using the rating scale below, please rate your agreement with the following statements.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree nor Disagree
- 5 = Somewhat Disagree
- 6 = Agree
- 7 = Strongly Agree

1. I cannot accomplish my tasks without information or materials from other members of my team.
2. Other members of my team depend on me for information or materials needed to perform their tasks.



3. Within my team, jobs performed by team members are related to one another.

### *G. Task Performance*

Think about your subordinate's performance since the COVID-19 pandemic. With this in mind, please evaluate your subordinate's performance using the rating scale provided below:

- 1 = Very Much Does Not Meet Performance Expectations
- 2 = Moderately Does Not Meet Performance Expectations
- 3 = Slightly Does Not Meet Performance Expectations
- 4 = Meets Performance Expectations
- 5 = Slightly Exceeds Performance Expectations
- 6 = Moderately Exceeds Performance Expectations
- 7 = Very Much Exceeds Performance Expectations

1. Overall performance effectiveness
2. Quality of work completed
3. Quantity of work completed
4. Interpersonal relationships
5. Initiative
6. Dependability and reliability

### *H. Interpersonal Facilitation*

To what extent do you agree with the following statements about your subordinate based on your impressions of him/her:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree nor Disagree
- 5 = Somewhat Agree
- 6 = Agree
- 7 = Strongly Agree

1. Praises coworkers when they are successful
2. Supports or encourages a coworker with a personal problem
3. Talks to other workers before taking actions that might affect them
4. Says things to make others feel good about themselves or the work group
5. Encourages others to overcome their differences and get along
6. Treats others fairly
7. Helps someone without being

### *I. Job Dedication*

To what extent do you agree with the following statements about your subordinate based on your impressions of him/her:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Somewhat Disagree
- 4 = Neither Agree nor Disagree
- 5 = Somewhat Disagree
- 6 = Agree
- 7 = Strongly Agree

- 1. Puts in extra hours to get work done on time
- 2. Pays close attention to important details
- 3. Works harder than necessary
- 4. Asks for a challenging work assignment
- 5. Exercises personal discipline and self-control
- 6. Takes the initiative to solve a work problem
- 7. Persists in overcoming obstacles to complete a task
- 8. Tackles a difficult work assignment enthusiastically

## VITA

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