Boundary Control and Employee Well-Being: The Mediating Role of Interruptions and Moderating Effect of an Office Space

by

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A thesis submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Master of Science

Auburn, Alabama
December 10, 2022

Keywords: remote work, well-being, boundary control,
COR, boundary theory, moderated mediation

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Abstract

Using boundary theory and COR as theoretical frameworks, the goal of this study is to propose and assess a moderated mediation model of boundary control as a predictor of stress and life satisfaction in involuntary remote workers, with interruptions from work by family as a mediator and a home office space as moderator. Participants for this three wave, time-lagged study (N = 278) were recruited during the COVID-19 lockdowns in Spring 2020 via MTurk. The findings indicated that interruptions mediated the relationship between boundary control and stress, but not life satisfaction. Additionally, having an office space served as a moderator for the boundary control and interruptions relationship. Lastly, I found moderated mediation effects for stress, but not for life satisfaction. The implications for individuals and organizations are discussed, as both consider adopting remote work in the future.

Table of Contents

Acknowledgements

This endeavor would have been impossible without my professor and the chair of my committee, Dr. Gargi Sawhney, who provided patient, timely, and meaningful feedback at every point; I am forever grateful for Dr. Sawhney's guidance. Additionally, I am deeply indebted to Dr. Jesse Michel and Dr. Ben Hinnant, the members of my defense committee, who taught me how to explore and analyze data with expertise, passion, and confidence.

I also thank Dr. Kamden Strunk, who helped demystify the academic writing process when I needed it most. I am also particularly grateful to my cohort member Kendall McGoey, who's consistent encouragement and valuable input was always impactful.

Lastly, I would like to acknowledge my friends and family, who have graciously applauded my efforts and inquired about my progress—even if at times they did not understand what I was researching. Their support was never taken for granted.

List of Tables

List of Figures

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The number of individuals and organizations that utilize remote work has been steadily increasing for decades (U.S. Department of Labor, 2021; U.S. Census Bureau, 2002; Gajendran & Harrison, 2007). In 2002, 15% of US employees worked remotely at least part-time (U.S. Census Bureau, 2002); by 2015, it had increased to 24% of U.S. employees (Bureau of Labor Statistics, 2016). In 2019, 4% of jobs that paid more than $100,000 a year were fully remote; today, 15% of high paying jobs are remote-only, and it's projected to increase to 25% of all high paying jobs within the next two years (Ladders, 2021). Of course, the meteoric rise in remote work seen in the past 2 years was largely due to factors beyond the benefits or perception of remote work. During the COVID-19 lockdowns, 48.51% of private sector businesses had to adopt remote work in some fashion, while 30.89% of private sector businesses increased the amount of remote work offered to their employees (Baker, 2020). In total, 80.95 *million* U.S. employees worked remotely in 2020, which was described as the largest societal change since WWII (Bureau of Labor Statistics, 2020; Ladders, 2021).

The previous understandings of remote work are as follows: typically, remote workers have more control over when, how, and by what modality they work, and more control over the interaction between their work and life domains (which is called "*boundary control*") (Ashforth et al., 2000; Gajendran & Harrison, 2007). Both forms of control were argued to explain some of the positive outcomes from remote work (Gajendran & Harrison, 2007). Specifically, existing meta-analytic evidence suggests that remote work, when compared with on-site work, is associated with increased organizational outcomes like job performance (Gajendran & Harrison, 2007). In terms of individual outcomes, remote workers have reported decreased role stress,

work-family conflict, family-work conflict, and turnover intent, as well as greater job satisfaction (Gajendran & Harrison, 2007). However, the majority of the literature around remote work has almost exclusively sampled voluntary remote workers (i.e., remote workers who could choose when to work remotely, or self-selected into remote-working positions).

As a result of the COVID-19 pandemic, millions of individuals found themselves working remotely regardless of choice (US Department of Labor, 2021). As argued by Gajendran & Harrison (2007, p. 1537), involuntary remote workers may have different associations with various individual and organizational outcomes, because involuntary remote workers may perceive less boundary control. The construct of boundary control may then be an important predictor of remote worker well-being, which has been shown to be positively associated with greater well-being (Gajendran & Harrison, 2007). Kossek et al. (2012) and Lapierre et al. (2015) similarly found that remote workers who used less boundary control activities reported more work family conflict, while Mellner et al. (2014) found that boundary control had a significant main effect on work-life balance. Indeed, at the beginning of the COVID-19 lockdowns, Shockley and Clark (2020) described boundary management—or having boundary control—as being "key" (para. 3) to responding to the unexpected stressors of involuntary remote work. Thus, do individuals with less boundary control—perhaps like involuntary remote workers—report worse well-being?

While many involuntary remote workers have returned to on-site work, many thousands are still working remotely or have a hybrid modality (U.S. Department of Labor, 2021). Therefore, a deeper understanding of the relationships between involuntary remote work and well-being is still salient. In fact, 69% of U.S. businesses have permanently closed some or all of their offices since March 2020, primarily as a means of saving money on renting the office

space(s) (Leng, 2022). Companies were even closing their offices and switching to a fully remote modality *before* the pandemic (Lapierre et al., 2015), and the pandemic has dramatically increased organizations' willingness and interest in closing their office spaces permanently (Leng, 2022). As companies continue to switch into fully-remote work—either in response to the current pandemic or as a cost-saving strategy—it is crucial to assess involuntary remote workers' perception of boundary control, and how that affects their well-being (Cho, 2020). While the majority of the research has highlighted the advantages of remote work, an examination of the potential downsides of involuntary remote work (via low boundary control) may be valuable for companies who are considering going fully remote.

The present study makes three contributions to the field of remote work. First, it seeks to assess the perceptions of boundary control in involuntary remote workers as an antecedent of employee well-being—specifically *stress* and *life satisfaction*. It is difficult to overstate the importance of understanding stress and life satisfaction, because stress annually costs the U.S. upwards of $190 *billion* in healthcare costs and is associated with 120,000 excess deaths annually (Goh et al., 2016); let alone multiple meta-analyses finding stress being associated with worsened job performance, job satisfaction, absenteeism, immune function, cardiovascular health, and more (Darr & Johns, 2008; Eddy et al., 2016, 2017; Faragher et al., 2013; Gilboa et al., 2008). Meanwhile, life-satisfaction, while less researched than stress, is also an important outcome for individuals and organizations alike. Life satisfaction is meta-analytically associated with less mortality (Chida & Steptoe, 2008), as well as less sleep complaints, less burnout, and lower turnover intentions (Brand et al., 2010; Haar & Roche, 2010; Rode et al., 2007). The literature on remote work has rarely addressed well-being, and concerningly, this research is concentrated on voluntary remote workers. If there is, in fact, a difference in perceptions of

boundary control among voluntary and involuntary remote workers (Gajendran & Harrison, 2007, p. 1537), then there is a need to delineate both the directionality and magnitude of the relationship between boundary control and well-being in involuntary remote workers to further advance theory. Second, this study tests the interruptions from work by family as the potential mechanism through which boundary control relates to stress and life satisfaction. While the relationships between boundary control and well-being constructs, such as depression and role stress, have been occasionally assessed, (e.g., Gajendran & Harrison, 2007; Kossek et al., 2012) the processes through which this relationship occurs remains to be explored. Third, this research explores the moderating effect of having a home office space on the association between boundary control and interruptions from work by family. Involuntary remote workers are expected to have varied work-from-home environments between individuals (Allen et al., 2021), and some environments may be better suited for remote work than others. Testing this effect can let organizations and individuals make a more informed decision when considering a transition to remote work, as well as suggest circumstances for whom may benefit more from remote work.

Theoretical Framework

Boundary Control

Boundary theory posits that all individuals attempt to place and maintain physical, social, and mental boundaries between their work and life roles, or a lack thereof (Ashforth et al., 2000; Clark, 2000; Nippert-Eng, 1996). For example, the physical space between an individual's on-site location and their home may serve as a physical boundary between the two roles, where individuals are able to enter or exit out of these locations to transition between their two roles (Allen et al., 2015; Ashforth et al., 2000, Nippert-Eng, 1996). Mentally, individuals have to enter into or out of certain work versus home personas, e.g., a police interrogator reported having to

mentally transition themselves from a calloused interrogator into a loving father during their commute home (Nippert-Eng, 1996). Socially, individuals may delineate their work and life social circles, such that they rarely interact (Ashforth et al., 2000).

Boundary theory asserts that individuals are never in complete control over their boundaries, as certain situations, circumstances, or events will demand the individual to transition from their work-role to family-role, and vice versa (Ashforth et al., 2000). In line with this theory, involuntary remote workers may be more susceptible to forced role-transitions (Ashforth et al., 2000; Golden et al. 2006), as their previously defined boundaries between their at-home life and on-site work were removed or altered when they transitioned from on-site to remote work (Allen et al., 2021; Eddleston & Mulki, 2017; Golden et al., 2006; Shockley & Clark, 2020). Indeed, the transition to remote work itself was a forced-role transition, at least physically—if not socially and mentally—as involuntary remote workers' home-space became their workspace (Allen et al., 2021; Golden et al., 2006). This may be a key difference between voluntary and involuntary remote workers, as voluntary remote workers may have already had social, mental, and/or physical boundaries (or the means to create boundaries) before choosing to work remotely, whereas involuntary remote workers had to rapidly create new boundaries, possibly without the resources to do so (Allen et al., 2021). The transition may have been further exacerbated by how sudden the transition to remote work was for the involuntary remote workers during the COVID-19 lockdowns; they had little to no time to adjust and adapt to the transition at the time of this study. The sample collected for this study all reported transitioning to remote work within a period of two weeks in March of 2020.

Conservation of Resources

This study will also use COR to explain the associations between boundary control and stress and life satisfaction (Hobfoll, 1989). COR is a stress and motivation theory, which posits that individuals seek to accrue and maintain resources, which are objects, characteristics, conditions, or energies that are valued by the individual (Hobfoll, 1989). Resources also include the means by which individuals obtain or maintain more/other resources. Stress occurs whenever there is a loss or threat of loss to any resource(s) (Hobfoll, 1989; Hobfoll et al., 2018). Grounded in a COR perspective, I argue that boundary control is a resource which may be associated with reduced stress and enhanced life-satisfaction.

Boundary Control as a Resource

In order for boundary control to be considered a resource, it must be valued, protected, and sought after by individuals, and/or be a means to gain or protect other resources (Hobfoll 1989; Hobfoll et al., 2018). Broadly speaking, most—if not all—individuals seek job autonomy and control over their work and life domains, as well as their general environments (Clark, 2000; Nippert-Eng, 1996; Spector, 1986). It has been well established via boundary theory that all individuals seek to control their work and life domains to allow/disallow certain levels of interaction between the two domains (Ashforth et al., 2000; Clark, 2000; Nippert-Eng, 1996). Specifically, individuals take deliberate actions to enact and maintain their boundaries and preferred level of boundary control (Allen et al., 2021; Ashforth et al., 2000; Clark, 2000; Kossek et al., 2006; Kossek et al., 2012; Nippert-Eng, 1996). As explored in Ashforth et al.,

> …[remote] workers carve out work boundaries by creating a physical workspace, marking the territory with equipment and furniture, restricting the access of others, rescheduling domestic tasks, and setting times when people can call or talk to them. …

> [Remote] workers, for example, sometimes strictly adhere to self-imposed work rules that appear to outsiders to be arbitrary and even silly (e.g., Christensen, 1993). (p. 482)

These deliberate actions, I assert, are indicative of boundary control being valued, protected, and sought after by individuals. Therefore, I argue that boundary control is a resource. Additionally, in order to protect and maintain their boundaries (i.e., resources), individuals will need boundary control (Ashforth et al., 2000; Shockley & Clark, 2020). This makes boundary control the means by which an individual obtains and maintains their valued boundaries, making boundary control again a resource in its own right (Hobfoll, 1989). In short, I argue that boundary control is both directly valued by individuals, since all individuals seek control and influence over their work and life domains, and indirectly valued, because it is the means by which individuals enact and maintain their specific boundaries—boundaries which are in themselves resources (Ashforth et al., 2000; Clark, 2000; Nippert-Eng, 1996).

Consistent with COR, those who perceive low boundary control (i.e., the lack of a resource) may perceive greater stress and reduced life satisfaction (Hobfoll et al., 2018). Starting with stress: individuals who perceive low boundary control or take less boundary control actions were theorized and empirically observed to report more forced role-transitions, which was associated with greater depression, work family conflict, and family work conflict (Allen et al., 2021; Ashforth et al., 2000; Kossek et al., 2012, Lapierre et al., 2015). This may be because remote workers with low boundary control are unable to create or maintain the necessary boundaries to prevent forced role-transitions (Ashforth et al., 2000; Allen et al., 2021; Golden et al., 2006). So, in terms of COR, remote workers reporting high boundary control may have the resources needed to protect their work and life domains from interfering with each other.

Theoretically, this is related to the 1st corollary of COR, which claims that individuals with greater resources are less vulnerable to resource loss (Hobfoll et al., 2018, p. 106).

In summation: as individuals lose boundary control, they lose a valued resource itself; this loss of a resource should be associated with an increase in stress (Hobfoll, 1989). This claim is supported by prior research, which found the boundary control is negatively related to role stress and depression (Gajendran & Harrison, 2007; Kossek et al., 2012). Furthermore, having more resources and greater perceived control over one's environment may be associated with increased life satisfaction, as individuals may find greater ability to function and fulfill the needs required of them in both their work and life domains, as well as experiencing less conflict or interference between the two (Allen et al., 2015; Allen et al., 2021; Ashforth et al., 2000; Specter, 1986). For example, Kerman and colleagues (2021) found that involuntary remote workers who experienced more family work conflict and work family conflict—which is theorized to be indicative of less boundary control (Ashforth et al., 2000)—were less satisfied with both their work and private life (Kerman et al., 2021). In light of the above-mentioned theory and extant empirical evidence, I pose the following hypothesis:

H1: *Boundary control at Time 1 will be negatively associated with stress at Time 3 and positively associated with life satisfaction at Time 3*.

Interruptions as a Mediator

Essential to the hypothesis that boundary control will predict stress and life satisfaction is that low boundary control should and will be associated with more forced role transitions from one domain to another (Ashforth et al., 2000). Indeed, the entire construct of boundary control is built around preventing or allowing forced role transitions (Ashforth et al., 2000). However, few

studies on remote work have outright measured perceived role transitions; as such, this study used a self-report of interruptions from work by family.

Theoretically, interruptions may positively predict stress and negatively predict life satisfaction because it threatens various resources; while not explicitly measured in this study, interruptions may threaten individually valued resources such as productivity, privacy, and work-life balance, among others (Hobfoll, 1989). Interruptions may be construed as resource loss or threat to existing resources, and should be associated with increased in stress and decreased life satisfaction.

Involuntary remote workers may be particularly susceptible to experiencing interruptions, because they unexpectedly started working remotely and may lack the means to create new boundaries (Golden et al., 2006). For example, involuntary remote workers may be perceived to be more physically available by their families, because the previously established physical boundary between on-site work and at-home life has been eroded into sharing the same physical space (Allen et al., 2021; Ashforth et al., 2000; Golden et al., 2006). This boundary erosion is expected to increase the number of forced-role transitions, or more specifically, the number of interruptions and individual experiences, and these interruptions are expected to increase role stress (Ashforth et al., 2000).

Previous meta-analytic findings on work family conflict—specifically, family interference with work—has found family interference with work to be a significant predictor of stress (r = .39, 95% CI [.36, .42]) and life satisfaction (r = -.22, 95% CI [-.25, -.18]) (Amstad et al., 2011). Furthermore, Shockley and Allen (2013) found that instances of family interference with work, and not work interference with family, was a significant predictor of increased heart rate, which itself is an indication of worsened cardiovascular health. Remote workers also

experienced more interruptions from work by family, even for minor requests, theoretically because the remote worker had less boundaries to prevent such interruptions (Delanoeije et al., 2019; Golden et al., 2006). Lastly, a recent study found involuntary remote workers who experienced more interruptions from work by their family/private life were less satisfied with their work and their private life (Kerman et al., 2021). These findings suggest that interruptions will positively predict stress and negatively predict life satisfaction.

H2a: *Interruptions from work by family at Time 2 will mediate the relationship between boundary control at Time 1 and stress at Time 3.*

H2b: *Interruptions from work by family at Time 2 will mediate the relationship between boundary control at Time 1 and life satisfaction at Time 3.*

As previously mentioned, involuntary remote work may have eroded the physical boundaries between work and life for involuntary remote workers. While this is true when comparing the differences between on-site to remote work, some individuals may have (or were able to create) a home-office space as a physical boundary while involuntarily working remotely (Allen et al., 2021; Ashforth et al., 2000; Clark, 2000). Creating and maintaining a home office space was even directly suggested to involuntary remote workers to assist with the unexpected transition by Shockley and Clark (2020).

In line with boundary theory and COR, an office space may be construed as a physical boundary that individuals could utilize as part of their boundary control strategies (see Allen et al., 2021; Clark, 2000), and a resource that individuals value and maintain in its own right as a reinstated physical boundary. For example, an office space could be used to protect involuntary remote workers from interruptions by family and offer a space to mentally/socially transition into their work role. Conversely, involuntary remote workers without a home office space could be

less able to protect against interruptions. Using the COR framework, I expected involuntary remote workers with a home office space to have greater resources and greater resource protections than involuntary remote workers without a home office space. In other words, individuals with a home office space should have had a stronger, more negative relationship between boundary control and interruptions than individuals without a home office space.

H3: *The relationship between boundary control at Time 1 and interruptions at Time 2 will be moderated by a home office, such that the negative relationship will be stronger when a home office is present.*

Together, hypotheses H1-H3 present a moderated-mediation model, which is shown in Figure 1. The final hypothesis assesses the overall model by testing the indirect effect (mediation) when a home office is or is not present (moderation) (Edwards & Lambert, 2007; Preacher et al., 2007). Individuals who had greater perceived boundary control and a home office space may have been more resilient to resource losses and/or threats, like interruptions, and may then have experienced less stress and greater life satisfaction. Vice versa, individuals without a home office may have had less resources, experienced more threats to resources (interruptions), and reported more stress and less life satisfaction.

H4: *Boundary control at Time 1 will be related to stress and life satisfaction at Time 3 via conditional indirect effects, such that the relationship will be moderated by a home office and mediated by interruptions at Time 2. Specifically, the relationship between boundary control at Time 1 and interruptions at Time 2 will be stronger when a home office is present, which will strengthen the indirect effects onto stress and life satisfaction at Time 3.*

Method

Procedure

In order to identify participants for this study, a qualification survey was posted on Amazon's Mechanical Turk (MTurk) where participants indicated whether they were employed, the number of hours they were employed, and whether they were working remotely due to COVID-19. Participants were retained if they 1) worked 30 hours or more per week and 2) were asked to work remotely due to COVID-19.

An initial pool of 2437 participants completed the qualification survey. Of those participants, 1804 were employed and worked 30 hours or more per week, of which 880 were working remotely. Two days after the qualification survey, eligible participants received the Time 1 survey. Two and four weeks after completing the Time 1 survey, participants received the Time 2 and Time 3 surveys, respectively. At the beginning of each survey, participants were asked if they were employed remotely to ensure that only those who were working remotely were retained. Additionally, two attention checks were embedded in each survey. Only those who passed both checks at each time point were retained. At Time 1, 390 participants completed the survey and passed both checks. Of the 390 participants, 339 completed the Time 2 survey in its entirety, and 282 completed the Time 3 survey.

Participants

In the final sample of 282 participants, 54% self-reported their gender as male and on average were 39.34 (*SD* = 10.86) years of age. They were 79% white, 49% were married, and worked an average of 36.10 (*SD* = 10.04) hours of remote work per week. 44% of the sample reported an annual income (before taxes) below $74,999, meaning the majority of the sample had an annual income, before taxes, above $75,000; most cases reported a categorized annual income

between $100,000 and $149,999 (*n* = 57), followed closely by $75,000-$99,999 (*n* = 56) and $50,000-$74,999 (*n* = 53). The most common self-reported job title was teacher (*n* = 25), followed by manager (*n* = 24), and then software developer (*n* = 17). The rest of the jobs were almost exclusively white-collar positions (e.g., IT professionals, engineers, data analysts, etc.).

Measures

Boundary Control. Using a 3-item scale (Kossek et al., 2012), participants rated their perceived rate of control over combining or separating their work and personal life at Time 1 (α = .91). Items were rated on a 5-point scale ranging from 1 (*never*) to 5 (*very frequently*). A sample item is "How often have you felt that you control whether you are able to keep your work and personal life separate?"

Office Space. Whether or not a participant had an office space was measured during the qualification survey, with the item "Do you have a home office?" Participants could answer "Yes" or "No".

Interruptions. Using a 3-item scale (adapted from Prümper et al., 1995; Spector & Jex, 1998), participants rated how often their work was interrupted by their family at Time 2 on a 5-point scale ranging from 1 (*never*) to 5 (*very frequently*) (α = .92). A sample item is "How often do you keep getting interrupted by family while working on your work-related tasks?"

Stress. Using a 10-item scale (Cohen et al., 1983), participants rated their rate of overall feelings of stress at Time 3 on a 5-point scale ranging from 1 (*never*) to 5 (*very frequently*) (α = .92). A sample item is "How often have you been upset because of something that happened unexpectedly?"

Life Satisfaction. Using a 5-item scale (Diener et al., 1985), participants rated their agreement with statements pertaining to their ideal life at Time 3 (α = .93). This was measured

on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A sample item is "In most ways, my life is close to my ideal."

Control Variables

Demographic and Background variables: In the present study, I controlled for marital status ("1 = *single*, 2 = *married*, 3 = *widowed*, 4 = *separated*, 5 = *divorced*, 6 = *other*"), number of dependents that lived with the participant, and gender **(**"1 = *male*, 2 = *female*, 3 = *other*, 4 = *choose not to respond*"). The literature on remote work and boundary theory has repeatedly hypothesized that women—and mothers in particular—may experience worse work-family conflict and role-interruptions while remote working (Ashforth et al., 2000; Kossek et al., 2006). However, multiple meta-analyses and individual studies have found no differences between men/women and fathers/mothers in the expected outcomes, such as work-family conflict, family-work conflict, performance, and so on (Allen et al., 2015; Gajendran & Harrison, 2007; Kossek et al., 2006). In fact, women seemed to have *better* career prospects and supervisor rated performance than men (Gajendran & Harrison, 2007). Nonetheless, these are included as control variables in this study for the sake of exploring these relationships within the new context of sudden, involuntary remote work. Based on the null results from the past literature, no hypotheses were made for the effects of any of these variables, and discussion on these variables, if any, will be limited.

Additionally, I controlled for remote working experience prior to the coronavirus pandemic/COVID-19, as well as the number of hours per week that participants were presently dedicating to remote work. Gajendran & Harrison (2007) aptly discussed how remote work is more than a dichotomous variable. Remote workers (prior to the COVID-19 lockdowns) typically had a hybrid work schedule, where employees may have, for example, worked 2-3 days

remotely and the rest of the work-week on-site. Other employees may have worked the entire week remotely, and Gajendran & Harrison (2007) found that high-intensity remote workers (those who remote worked more than 2.5 days a week) had significantly less work-family conflict compared to low-intensity remote workers. While a full analysis of the possible effects of "telecommuting intensity," as Gajendran & Harrison (2007) defined it, is beyond the scope of this paper, it was important to control for the possible effects—both prior and current to the study (p. 1529).

Results

Prior to testing hypotheses, a descriptive analysis of the data was conducted to assess missing values, univariate and multivariate outliers, and assumptions of normality. SPSS MVA (Missing Values Analysis; SPSS Inc., 1997, as cited in Tabachnick & Fidell, 2001) indicated that no patterns occurred between any of the variables' missing values. Pairwise linearity was assessed using bivariate scatterplots, and all relationships appeared homoscedastic (Tabachnick & Fidell, 2001). All variables appeared to be normally distributed, according to their histogram and Q-Q plot; however, boundary control at Time 1 may be platykurtic (kurtosis = -1.07) (Cain et al., 2017). The driving concern with negative kurtosis is underestimating the variance of the variable (Tabachnick & Fidell, 2001, p. 73), but underestimates of variance tend to disappear when the sample size is greater than 200 (Waternaux, 1976, as cited in Tabachnick & Fidell, 2001).

Three cases for stress at Time 3 were considered univariate outliers because their value was beyond the upper fence for this variable (Q3 + 1.5 * IQR, Interquartile Range, Schwertman & de Silva, 2007). No multivariate outliers were detected, according to their Mahanolobis distances ($p < .001$). The results were analyzed with and without these three outliers; the pattern

and significance of results was similar across the sample with and without the outliers. Ultimately, the outliers were removed from the analysis for a final sample size $n = 278$.

Descriptive Statistics and Correlations

Means, standard deviations, reliabilities, and correlations for all study variables are presented in Table 1. Preliminary analyses suggested that boundary control at Time 1 was negatively correlated to interruptions at Time 2 ($r = -.30$, $p < .001$); negatively correlated to stress at Time 3 ($r = -.27$, $p < .001$); and positively correlated to life satisfaction at Time 3 ($r = .14$, $p = .03$). Meanwhile, interruptions at Time 2 was positively correlated to stress at Time 3 ($r = .27$, $p < .001$), but was uncorrelated to life satisfaction at Time 3 ($r = -.02$, $p = .70$). Lastly, office space was unrelated to interruptions at Time or stress and life satisfaction at Time 3.

Hypothesis Testing

I used Mplus (version 8.6) to test the study hypotheses via path analyses. I began by assessing Hypothesis 1 and 2 using a simple mediation model. Before running any path analyses, the predictor variable (boundary control) were centered, and office space was dummy coded to 0 = yes (has a home office) and 1 = no (does not have a home office) (Keith, 2019). The control variables remote hours *prior* and remote hours *current* were also centered to aid interpretation (L. Muthén & B. Muthén, 2017).

I began by regressing the outcome variables (stress and life satisfaction at Time 3) onto both the mediator (interruptions at Time 2) and predictor variable (boundary control at Time 1). Then the mediator (interruptions at Time 2) was regressed onto the predictor (boundary control at Time 1). This simple mediation model had satisfactory model fit, according to the recommended standards for model fit (Keith, 2019). The chi-square test was nonsignificant ($\chi^2 = 14.01$, $df = 10$, $p = .17$); the RMSEA (.04) and SRMR (.04) were both below .06; and CFI/TLI

(.98/.93) were greater than .90 (Keith, 2019). Results from the simple mediation model suggested that boundary control at Time 1 negatively predicted stress at Time 3 (β = -.18 p < .01) and positively predicted life satisfaction at Time 3 (β = .24, p < .05). Thus, Hypothesis 1 was supported.

Hypothesis 2a and 2b addressed interruptions mediating the relationship between boundary control, stress, and life satisfaction. To assess the indirect effects from boundary control to the outcome variables (stress and life satisfaction, both at Time 3) I used 10000 bias corrected bootstrapped samples. Boundary control at Time 1 negatively predicted interruptions at Time 2 (β = -.38, p < .01), and interruptions positively predicted stress at Time 3 (β = .18, p < .01), but did not predict life satisfaction at Time 3 (β = -.06, p = .60). Results suggested that the indirect effect of boundary control at Time 1 to stress at time 3 through interruptions at Time 2 was significant (β = -.05, p < .05), but the indirect effect to life satisfaction at Time 3 was not significant (β = .02, p = .54). Thus, Hypothesis 2a was supported but no support was found for Hypothesis 2b.

To test Hypotheses 3 and 4, I ran the full model shown in Figure 1; specifically, I added the moderator (office space) and the interaction term (boundary control x office space) to the mediation model described above. To test Hypothesis 4, the indirect effects of the independent variable onto the dependent variables were examined at high and low values of the moderator (Edwards and Lambert, 2007). Significance of the conditional indirect effects were tested directly and with the confidence intervals of 10000 bias corrected bootstrapped samples, shown in Table 3. Note that I did not need to run a separate simple moderation model (interruptions at Time 2 simultaneously regressed onto boundary control at Time 1, office space, and the

interaction term), because the results of such a model were given as part of the conditional indirect effect testing in the overall moderated mediation model.

The overall, moderated mediation model had marginally better model fit than the simple mediation model. The chi-square test was nonsignificant ($\chi^2 = 5.01$, $df = 4$, $p = .29$); the RMSEA (.03) and SRMR (.02) were both below .06; and CFI/TLI (.99/.96) were greater than .90 (Keith, 2019).

The standardized values from the simple mediation model (see Table 2) were nearly equal to the values found in the moderated mediation model (see Table 3). The results from the full moderated mediation model showed that the interaction term (boundary control x office space) predicted interruptions at Time 2 ($\beta = .27$, $p < .05$). Figure 2 shows this interaction. The negative relationship between boundary control and interruptions was stronger when individuals had an office space ($t = -5.10$, $p < .001$), and was non-significant when individuals did not have an office space ($t = -1.23$, $p = .22$). These results supported Hypothesis 3.

Table 4 reports the significance of the conditional indirect effects. The results suggest that the moderated mediation effect was significant in predicting stress at Time 3 when participants reported having a home office. However, no moderated mediation effect was observed for life satisfaction, so there was only partial support for Hypothesis 4.

Discussion

The purpose of this study was to explore the relationships between boundary control and well-being within a sample of involuntary remote workers, using COR and boundary theory as theoretical underpinnings for the hypothesized relationships (Ashforth et al., 2000; Hobfoll et al., 2018). Furthermore, this study explored interruptions from work by family as a mediator between boundary control and the well-being outcomes of stress and life satisfaction. Lastly, this

study explored whether an office space moderated the relationship between boundary control and interruptions, and whether the indirect effects of boundary control onto stress and life satisfaction through interruptions were conditional on having or not having a home office.

The results suggest that perceived boundary control is an important predictor of well-being in involuntary remote workers; boundary control negatively predicted stress and positively predicted life satisfaction. The results are in line with the COR framework, which suggests that a lack of a resource (such as a lack of boundary control) should increase stress (Hobfoll et al., 2018). Beyond well-being measures, prior studies have shown that perceived boundary control is related to greater work-life balance and less work-life conflict (Mellner, 2016; Mellner et al., 2014, 2021). In sum, boundary control may indeed be a resource for involuntary remote workers.

Results also revealed that interruptions mediated the relationship between boundary control and stress. Like Shockley and Clark (2020) recommended at the onset of the COVID-19 pandemic, involuntary remote workers may need to consciously attempt to create and maintain boundaries to prevent interruptions—understanding that preventing all interruptions is impossible. However, interruptions was not a significant mediator of the boundary control to life satisfaction relationship. Noting that boundary control was a significant predictor of life satisfaction, there may be other mechanisms that mediate the boundary control and life satisfaction relationship, such as one's sense of autonomy or work life balance (Deci & Ryan, 2012). For example, work-life balance is a known predictor of life satisfaction across multiple cultures (Haar et al., 2014). Perhaps having an adequate boundary control strengthens an individual's perceived work-life balance, resulting in greater life satisfaction. Alternatively, work-life balance and boundary control may work in tandem, or even reciprocally, to relate to

life satisfaction. Further discussion about the results of life satisfaction in this study are to follow, in the limitations and future research section.

The negative relationship between perceived boundary control and interruptions was more pronounced in those who had an office space, and individuals' stress was conditionally moderated by having a home office and mediated by interruptions. As expected by the first corollary of COR, individuals with more resources seem to be less vulnerable to resource loss and less stressed (Hobfoll et al., 2018, p. 106). Together, these may suggest that a home office is a resource that assists involuntary remote workers' well-being, such that a home office could be utilized to help prevent interruptions and reduce stress.

Theoretical Implications

This study presents a tangible link between COR and boundary theory, which expands the scope of both. The concepts within boundary theory may be able to address more than just work and life boundaries and work-life conflict. Work life balance, boundary control, and indeed boundary preferences may all be resources that are valued, sought after, and defended by individuals; the threat or loss of any of these resources may induce stress in individuals (Hobfoll, 1989). While not explored in this study, there may be more ways to interlink boundary theory and COR: individuals may also value the specific work and home personas that they enter into/transition out of, and seek to define and defend these personas (Ashforth et al., 2000; Nippert-Eng, 1996). Perhaps some individuals disproportionately value one persona over the other, and will react accordingly to threats to one persona, but not another.

Based on the findings of this study and from Kossek et al. (2012), perceived boundary control *and*, perhaps, interruptions themselves are salient constructs when researching remote workers' boundaries. Research that addresses boundary theory typically assesses boundary

preference rather than perceived boundary control, as the theory was first described using individuals' boundary preferences (Ashforth et al. 2000). However, Kossek et al. (2012) claimed and found that "…what matters more for positive work-family outcomes than the mere act of integrating or separating [work-roles] is whether one *feels in control of boundaries* [emphasis added]" (p. 124). Measuring boundary preferences alone may not be enough to capture the experience(s) of involuntary remote workers (e.g., Allen et al., 2021) (Kossek et al., 2012), so researchers should ideally attempt to capture boundary preference, control, and interruptions.

Practical Implications

Individuals considering remote work should perhaps give consideration towards which modality allows greater perceived boundary control. It was typically found that remote work is associated with greater boundary control (Gajendran & Harrison, 2007), but this cannot be assumed to apply to involuntary remote workers, as this study and Lapierre et al. (2015) have shown. Individuals that are currently in/voluntarily working remotely should attempt to create and maintain boundaries between their work and life. While not all individuals may prefer to have many, strong boundaries (Ashforth et al., 2000; Nippert-Eng, 1996), having *control* over those boundaries seems nonetheless important for well-being. Remote workers should also specifically attempt to reduce family interruptions during work, perhaps by enacting and codifying physical and social boundaries with their family and in their homes (Shockley & Clark, 2020).

Meanwhile, organizations that are considering switching their employees to remote work may benefit from educating individuals on work-life boundaries and how to enact them when working remotely (Kossek et al., 2012). Individuals may not have ever contended with the concept of work-life boundaries, let alone boundary control. Educating employees about

boundary control and boundary theory may itself empower them to explore their own boundary preferences and perceived boundary control (Nippert-Eng, 1996). In short, individuals cannot attempt to improve or even take stock of their perceived boundary control until they are first *aware* of work-life boundaries. Once they become aware of their boundaries and preference, they may take more actions to create and maintain their boundaries as a valued resource (Hobfoll, 1989).

Now that remote work is much more prevalent and still on the rise (U.S. Bureau of Labor Statistics, 2020), organizations should prepare their employees to work well in either on-site or remote modalities. Better yet, organizations would likely benefit most from simply offering remote work and letting their employees decide when and how much they work remotely, rather than forcing exclusively remote or on-site work (Allen et al., 2015; Gajendran & Harrison, 2007). The extant data appears to suggest that in general, remote work is associated with greater, better outcomes for individuals and organizations (Allen et al., 2015; Gajendran & Harrison, 2007). However, remote work—like most every other work modality—is not simply an upgrade over onsite work, and the reported benefits of remote work seem to curtail when an organization widely adopts it and/or individuals become used to it (Gajendran et al., 2015). Letting employees have the autonomy to choose between both modalities, or define their weekly hybrid schedule, may capture the best benefits of remote work.

Lastly, the moderating effect of a home office onto interruptions and conditionally onto stress have important considerations for future research. Allen et al. (2021) found that a home office space was a significant predictor of work-nonwork balance, and their drop-out analysis revealed that involuntary remote workers' likelihood to continue remote working may have been influenced by whether they had a home office. As millions of employees continue to work

remotely or transition into in/voluntary remote work arrangements (U.S. Bureau of Labor Statistics, 2020), understanding the experiences of in/voluntary remote workers in greater nuance becomes more salient. Practicing I/O psychologists, supervisors, and organizations need to make informed, wary decisions about working remotely, as it may not be the ideal work modality for every employee (Allen et al., 2021; Lapierre et al., 2015), and should be especially wary about transitioning suddenly into remote work.

Limitations and Future Research Directions

A limitation of this study was that I did not capture boundary preferences (see Ashforth et al., 2000), and its effects could not be controlled for in this study. Some individuals prefer fewer, weaker boundaries between work and life—and experience more interruptions as a result (Ashforth et al., 2000). However, individuals with these preferences may not have perceived interruptions as a threat to their resources if they did not first value the boundaries themselves. In other words, boundary preference might have acted as a moderator between the boundary control to well-being outcomes. See Allen et al. (2021) for a study that did measure boundary preferences as a moderator in involuntary remote workers; boundary preference was not found to be a moderator in their sample. This finding gives more support to my prior claim about measuring perceived boundary control versus just boundary preferences. In summation, a future study should consider measuring boundary preferences, boundary control, and an office space to see if there is a three-way interaction onto interruptions.

A second limitation of this study was the inclusion of only full-time, involuntary remote workers during COVID-19. The findings of this study may not be generalizable to hybrid workers—individuals who spend some of the week working on-site and some of the week working remotely. As mentioned previously, the outcomes explored in the literature about

remote work have found “telecommuting intensity” to moderate some of the relationships (Gajendran & Harrison, 2007, p. 1529; Gajendran et al., 2015). While this study did control for the number of hours an individual worked remotely (see Table 1), none of this sample had a hybrid work schedule. Future research should make sure to study the growing population of hybrid workers, alongside full-time and occasional remote workers (U.S. Department of Labor, 2021).

Another limitation of this sample was that it was exclusively pulled from MTurk. While this sample represented a healthy mix of occupations, they seemed to predominately be occupations that involved education, management, or technology—which is similar to what other researchers have reported about the labor distribution of Turkers (Michel et al., 2018). Reassuringly, Michel et al. (2018) also reported comparable effect sizes to published standards and high test-retest reliability from Turkers who took organizational and occupational health surveys, so this study should be considered generalizable. However, this specific sample was also 79% white, so this study was unable to explore how ethnicity and culture could affect involuntary remote workers’ experiences. Admittedly, this may point to a deeper issue than a mere sampling limitation; for example, Moen et al. (2020), in a study on disproportionate effects from the COVID-19 lockdowns on subpopulations, found that black men with a college degree aged 20-29 were 12% more likely to not be in the labor force for other reasons (NILF-other). Attempting to sample a more ethnically diverse sample of involuntary remote workers may be difficult due to larger social and societal factors (Moen et al., 2020). There may exist a much-needed area of research that explores disparate remote work experiences based on racial, ethnic, and cultural norms or expectations.

Returning to the results about life satisfaction in this study, there may have been a methodological reason for life satisfaction being unrelated to interruptions. The construct of life satisfaction may be too broad to be affected within merely four weeks. Individuals may be stressed during the unexpected shift to remote work but may not have perceived it as affecting their entire life trajectory or experience up to that point. For example, two of the five total items for life satisfaction read as follows: "*So far, I have gotten the important things I want in life*," and "*If I could live my life over, I would change almost nothing*" (Diener et al., 1985). These items assess individuals about their entire life experience and not in terms of their experience(s) in the past four weeks at the time of the survey, so the relationships between life satisfaction and any of the other constructs may be moot. That being said, it is worth noting that boundary control *was* a significant direct predictor of life satisfaction in this sample. A future study would benefit from assessing involuntary remote workers' job satisfaction and life satisfaction, ideally before, during, and sometime after transitioning to remote work, as well as other related constructs like work-life balance, job performance, perceived autonomy, and so on (Deci & Ryan, 1985; Haar et al., 2014).

Lastly, this study and Allen et al. (2021) measured a home office space with a single, dichotomous item. Much remains unexplored about *how* individuals utilize their home offices, or even if individuals utilize their home office. A future study could potentially use some sort of mixed-method approach to qualitatively assess how individuals use (or don't use) their home office space, and/or how their family does or does not respect a home office as a physical boundary.

Conclusion

This study explored the relationships between boundary control, stress, and life satisfaction—mediated by interruptions and moderated by a home office—in a sample of involuntary remote workers. Boundary control was a significant predictor of stress and life satisfaction, and interruptions mediated the relationship between boundary control and stress. A home office space moderated the relationship between boundary control and interruptions, and conditionally moderated the mediated relationship between boundary control and stress through interruptions. Individuals who are involuntarily working remotely should be mindful of their boundary control for the sake of their well-being and attempt to create a secluded office space if possible, while organizations should take actions and make decisions for their employees that empower (or at least do not hinder) their employees' perceived boundary control.

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Figure 1

Theoretical Model

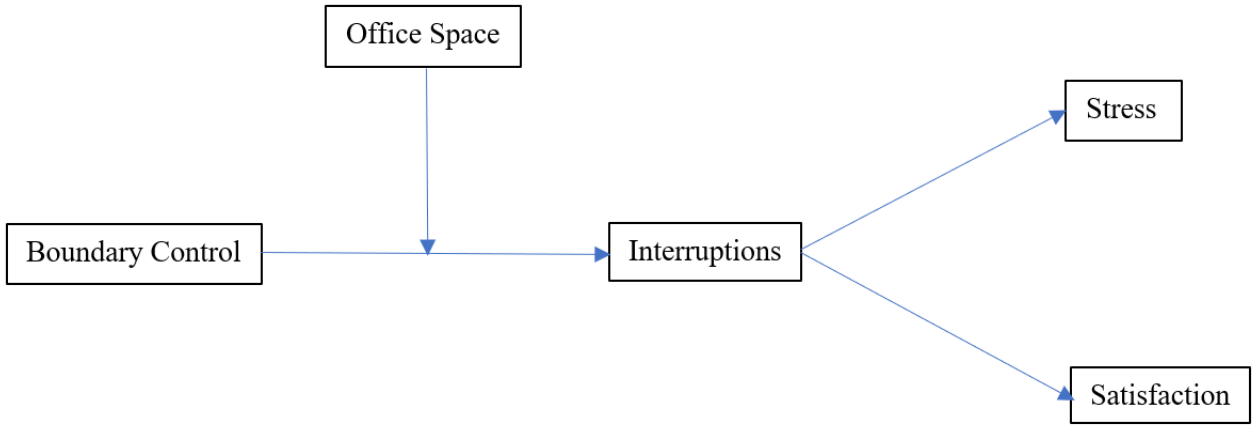


Table 1

Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1.	Boundary Control (T1)	3.65	1.01	(.91)										
2.	Interruptions (T2)	2.22	1.04	-.30**	(.92)									
3.	Stress (T3)	2.32	0.84	-.27**	.27**	(.92)								
4.	Life Satisfaction (T3)	4.76	1.45	.14*	-.02	-.52**	(.93)							
5.	Office Space (Qual)	0.41	0.49	-.03	-.01	.07	-.07	N/A						
6.	RWHP (T1)	17.52	17.87	.05	-.02	-.04	.03	-.16*	N/A					
7.	RWHC (T1)	36.05	10.10	-.01	-.09	-.06	.07	-.08	.02	N/A				
8.	Age (T1)	39.48	10.86	.17**	-.12*	-.07	-.11	-.11	.08	-.03	N/A			
9.	Gender (T1)	1.46	0.50	-.04	.07	.09	-.03	.03	.05	-.23**	.15*	N/A		
10.	Marital Status (T1)	2.00	1.26	.13*	.05	-.001	-.002	-.04	-.07	-.17**	.32**	.16**	N/A	
11.	Dependents (T1)	1.95	1.24	-.09	.33**	.02	.11	-.03	.01	-.07	.08	.05	.08	N/A

Note. n = 278. Cronbach's alphas are presented in parentheses along the diagonal. Office space: *yes = 0, no = 1*. RWHP = remote work hours prior; RWHC = remote work hours current. T1 = Time 1; T2 = Time 2; T3 = Time 3; Qual = qualification survey. *$p < .05$, **$p < .01$.

Table 2

Results of the Simple Mediation Analysis

	Mediator variable		Dependent variables			
	Interruptions (T2)		Stress (T3)		Life Satisfaction (T3)	
	(R^2 = .20**)		(R^2 = .12**)		(R^2 = .07*)	
Predictor variables	*β*	*SE*	*β*	*SE*	*β*	*SE*
Constant	1.99	0.28	1.89	0.26	5.30	0.45
RWHP (Qual)	.001	.003	-.001	.003	.003	.01
RWHC (Qual)	-.01	.006	-.003	.01	.01	.01
Age (T1)	-.01*	.005	-.001	.01	-.02*	.01
Gender (T1)	.09	.12	.11	.10	.03	.18
Marital Status (T1)	.07	.05	.01	.04	.04	.08
Dependents (T1)	.26**	.05	-.05	.05	.18*	.07
Boundary Control (T1)	-.26**	.07	-.18**	.06	.24*	.10
Interruptions (T2)	-	-	.18**	.06	-.06	.09
Indirect effect	-	-	-.05**	.02	.02	.03

Note. *n* = 278. Indirect effects are based on 10,000 bootstrapped samples. RWHP = remote work hours prior; RWHC = remote work hours current. T1 = Time 1; T2 = Time 2; T3 = Time 3; Qual = qualification survey. *p < .05, **p < .01.

Table 3

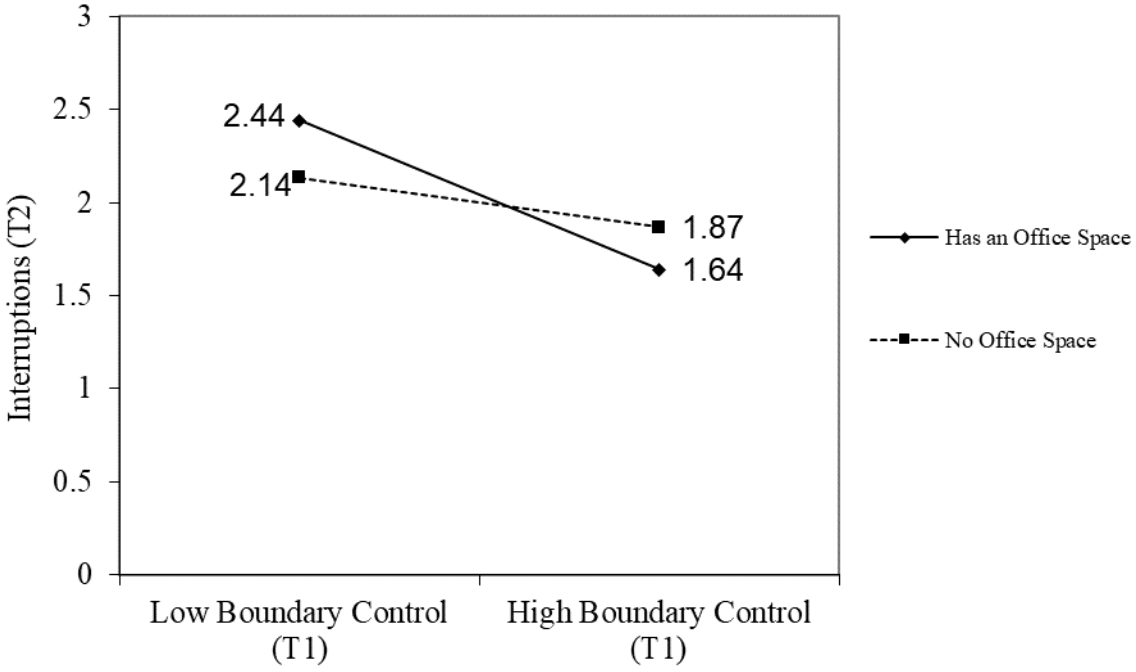
Results of the Moderation Mediation Analysis

	Mediator variable		Dependent variables			
	Interruptions (T2)		Stress (T3)		Life Satisfaction (T3)	
	(R^2 = .22**)		(R^2 = .12**)		(R^2 = .07**)	
Predictor variables	*β*	*SE*	*β*	*SE*	*β*	*SE*
Constant	2.04	.29	1.89	.26	5.30	.45
RWHP (Qual)	-.01	.01	-.003	.01	.01	.01
RWHC (Qual)	.001	.003	-.001	.003	.003	.01
Age (T1)	-.01*	.005	-.001	.01	-.02*	.01
Gender (T1)	.07	.12	.11	.10	.03	.18
Marriage Status (T1)	.08	.05	.01	.04	.04	.08
Dependents (T1)	.25**	.05	-.05	.05	.18*	.07
Boundary Control (T1)	-.38**	.07	-.18**	.05	.24*	.10
Office Space (Qual)	-.04	.12	-	-	-	-
Interaction Term (BC × OS)	.27*	.12	-	-	-	-
Interruptions (T2)	-	-	.18**	.06	-.06	.09
Indirect effect	-	-	-.07**	.02	.02	.03

Note. n = 278. Indirect effects are based on 10,000 bootstrapped samples. RWHP = remote work hours prior; RWHC = remote work hours current. BC × OS = boundary control × office space. T1 = Time 1. T2 = Time 2. T3 = Time 3. Qual = qualification survey. *p < .05, **p < .01.

Figure 2

Moderating Effect of Home Office on Boundary Control (T1) and Interruptions (T2) Relationship



Note. n = 278. T1 = Time 1; T2 = Time 2.

Table 4

Bootstrapping Results for Test of Conditional Indirect Effects at Specific Values of the Moderator (Office Space): Yes (0) or No (1)

				95% CI	
Dependent variable	Moderating variable	Conditional indirect effect	*SE*	Lower	Upper
Stress (T3)	Low Office Space (0, "Yes")	-.07*	.02	-.12	-.03
	High Office Space (1, "No")	-.02	.02	-.07	.01
Life Satisfaction (T3)	Low Office Space (0, "Yes")	.02	.03	-.04	.09
	High Office Space (1, "No")	.01	.01	-.01	.06

Note. n = 278. Results are based on 10,000 bootstrapped samples. Low office space represents an individual with an office space (0.00), while high office space represents an individual without an office space (1.00). CI = confidence interval. T3 = Time 3.

*p < .05

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