

Telecommuting's Differential Impact on Work–Family Conflict: Is There No Place Like Home?

Timothy D. Golden
Rensselaer Polytechnic Institute

John F. Veiga and Zeki Simsek
University of Connecticut

The literature on the impact of telecommuting on work–family conflict has been equivocal, asserting that telecommuting enhances work–life balance and reduces conflict, or countering that it increases conflict as more time and emotional energy are allocated to family. Surveying 454 professional-level employees who split their work time between an office and home, the authors examined how extensively working in this mode impacts work-to-family conflict and family-to-work conflict, as well as the contextual impact of job autonomy, scheduling flexibility, and household size. As hypothesized, the findings suggest that telecommuting has a differential impact on work–family conflict, such that the more extensively individuals work in this mode, the lower their work-to-family conflict, but the higher their family-to-work conflict. Additionally, job autonomy and scheduling flexibility were found to positively moderate telecommuting's impact on work-to-family conflict, but household size was found to negatively moderate telecommuting's impact on family-to-work conflict, suggesting that contextual factors may be domain specific.

Keywords: telecommuting, telework, work–family conflict

With recent estimates of over 28 million telecommuters in the United States (International Telework Association and Council, 2001) growing at a rate of 11% per year (Society for Human Resource Management Survey Program, 2001), telecommuting has become a ubiquitous alternative work mode. Just 15 years ago, telecommuters essentially performed relatively routine, clerical tasks on a computer and numbered less than 1 million (Pitt-Catsouphes & Marchetta, 1991). Now, because of rapid advances in information technology, their ranks have been swelled by a large number of professional-level employees who perform part of their roles outside the company's physical boundary using information technology as the main tool for operation and communication (Bailey & Kurland, 2002; Korte & Wynne, 1996). Although this work mode may also encompass, for example, working in multiple satellite offices or other remote locations away from home, telecommuters most commonly allocate their work time between an office and home (Madsen, 2003; Nilles, 1994; Pratt, 1999). Indeed, one of telecommuting's primary attractions as a work mode for companies and professional-level employees alike is that it is seen as a means of enhancing the fit between work and family life (Rau & Hyland, 2002) and increasing control over work demands (Kugelmass, 1995).

Despite the fact that telecommuting has been popularly viewed as a way to help balance competing work and family demands (Stephens & Szajna, 1998), evidence regarding its impact on work–family conflict is both scarce and inconsistent (Bailey &

Kurland, 2002). For example, some studies have suggested that telecommuting provides individuals with the opportunity to cope with the competing demands of work and family domains, thereby reducing conflict (e.g., Rau & Hyland, 2002; Stephens & Szajna, 1998). Others have countered that it gives rise to greater conflict because of additional family demands resulting from greater proximity and accessibility (e.g., Igarria & Guimaraes, 1999; Kurland & Bailey, 1999) or that it has no effect on work–life balance (Hill, Miller, Weiner, & Colihan, 1998).

In large part, this equivocality can be explained in two ways. First, extant telecommuting studies have generally ignored the bidirectional nature of work–family conflict (i.e., work-to-family versus family-to-work), focusing primarily on its unidirectional form (e.g., McCloskey & Igarria, 1998; Stephens & Szajna, 1998) or, to a lesser extent, on overall work–life balance (Hill et al., 1998). Second, because such studies have not explicitly specified the direction of conflict, their findings tend to be conceptually and empirically limited. To address these limitations, we developed and tested a model that concurrently examines the differentiated impact of extent of telecommuting on work-to-family conflict (WFC) and family-to-work conflict (FWC) within a population of professional-level telecommuters. Moreover, we expanded this model by including three salient contextual factors that may exacerbate or enhance this impact: job autonomy, scheduling flexibility, and household size. In so doing we hoped to reconcile inconsistencies and contribute to the broader understanding of this work mode's influence on the work–family interface.

Theory and Hypotheses

In the work–family conflict literature, the concept of family has been defined to include “persons related by biological ties, marriage, social custom or adoption,” including both immediate and extended family members (Edwards & Rothbard, 2000, p. 179).

Timothy D. Golden, Lally School of Management & Technology, Rensselaer Polytechnic Institute; John F. Veiga and Zeki Simsek, Department of Management, University of Connecticut.

Correspondence concerning this article should be addressed to Timothy D. Golden, Lally School of Management & Technology, Rensselaer Polytechnic Institute, 110 8th Street, Troy, NY 12180-3590. E-mail: GoldenT@rpi.edu

Given that this definition encompasses a significant number of potential family role senders (e.g., spouse, parent, child, sibling, in-law, and so forth) as well as an array of extended family members, most, if not all, working adults experience work-family conflict to some extent (Carlson, Kacmar, & Williams, 2000). Essentially, working adults experience work-family conflict when role demands, expectations, and pressures emanating from work and family role senders, as well as from the individual's internally held role expectations (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), are mutually incompatible (Edwards & Rothbard, 2000; Greenhaus & Beutell, 1985). As a consequence, "compliance with one [role] would make more difficult compliance with the other" (Kahn et al., 1964, p. 19), resulting in interrole conflict. Because role demands and expectations originate from both the work and family domains, researchers have begun to focus on the bidirectional nature of this conflict by distinguishing between work interfering with family, that is, WFC, and family interfering with work, that is, FWC (e.g., Carlson et al., 2000; Netemeyer, Boles, & McMurrian, 1996). Other researchers have also suggested that work-family conflict can take various forms (Greenhaus & Beutell, 1985), although the emphasis in the literature, often implicit, has been primarily on time- and strain-based forms of conflict (Adams, King, & King, 1996; Rotondo, Carlson, & Kincaid, 2003). Indeed, although such conceptual distinctions may prove useful, Greenhaus and Beutell (1985) noted that time-related and strain-related processes are often interwoven, asserting that "time involvement in a particular role also can produce strain symptoms" (p. 81). Therefore, although cognizant that most work-family conflict situations are likely to involve, at some level, both time and psychological strain, we focused primarily on the direction of conflict.

The Differential Impact of Telecommuting

Telecommuting has been viewed as a means of reducing conflict such that it enables employees to better manage work demands in order to more readily accommodate family needs (Bailey & Kurland, 2002). However, others have viewed telecommuting as a source of conflict, as family role expectations due to closer proximity and greater accessibility (e.g., Igbaria & Guimaraes, 1999; Kurland & Bailey, 1999) result in greater family-role involvement at the expense of work (Aryee, Srinivas, & Tan, 2005). Although these two perspectives appear to be competing, they may simply be addressing different outcomes. In particular, effectively managing work demands in order to accommodate family needs implies a reduction in WFC, whereas greater family role involvement at the expense of work implies an increase in FWC. Moreover, the rationale underlying each perspective inherently captures two separate mechanisms (Greenhaus & Parasuraman, 1999) that link work and family when these domains are collocated, that have not been articulated (Edwards & Rothbard, 2000). First, by working at home telecommuters have the opportunity to alter the work patterns and associated strains of the workplace such that family needs might be better accommodated and, second, due to their increased presence at home, telecommuters may face additional pressures and expectations for greater family involvement that, if acted upon, could interfere with work.

By working at home, telecommuters are afforded the opportunity to alter their typical office-based work patterns and strains—

such as reducing or avoiding supervisory or coworker interruptions (Stephens & Szajna, 1998), not having to cope with the emotional immediacy of requests from supervisors and others that often are not urgent (Hartman, Stoner, & Arora, 1992), devoting less effort to preparing to go to work and commuting (Guimaraes & Dallow, 1999), and reducing the frustration associated with the admixture of an inability to concentrate, the impulse to socialize, and the strain of feeling less focused and unproductive. All of these save time and strain. Faced with how to use such savings, telecommuters are apt to experience pressures from different role senders to choose between work and family activities. Contrary to those who have theorized that such choices may be idiosyncratically driven by family or work role salience (Ashforth, Kreiner, & Fugate, 2000; Greenhaus & Beutell, 1985), researchers have found that irrespective of role salience "many individuals may be predisposed to select a family activity" (Greenhaus & Powell, 2003, p. 299). Indeed, this predisposition is likely to be especially pronounced for telecommuters who, in part, may have adopted this work mode in order to help balance work and family demands (Riley & McCloskey, 1997). Consequently, telecommuters are more likely to allocate some, if not most, of the additional time and emotional energy made available by telecommuting to family activities, while not compromising their work activities. For example, they may do a load of laundry or some other household chore, take a family member to a medical appointment, or perhaps spend a few extra minutes at breakfast to provide some emotional support to a family member. Therefore, the more extensively individuals telecommute, the less likely they are to experience office-based interruptions and strain, which provides them with more time and emotional energy to devote to family activities, reducing the extent to which work interferes with family.

Hypothesis 1: Extent of telecommuting will be negatively related to WFC.

Although better able to accommodate family needs through reallocation of time and emotional energy saved, telecommuters by working at home also face increasing pressures, some of which are self-imposed, for even more extensive family role involvement that could interfere with work. For instance, telecommuters may take responsibility for the coordination of home repairs or for a more extensive remodeling project or play a greater role in a child's after-school activities. Or they may feel that rather than simply dropping off a family member for a frequent medical procedure they should stay during treatment and even discuss the case with the physician, in order to provide greater emotional support. By accommodating such family activities, telecommuters may increasingly encroach upon work time or, because of the associated strain involved, find themselves distracted or preoccupied while performing work activities. Beyond accommodating such family pressures, the telecommuter may also be subject to additional strains that result because of the "immediate and often unpredictable needs of others" (Daly & Beaton, 2005, p. 241), such as caring for a child sent home sick from school.

Essentially, by working at home, telecommuters eliminate the social boundary that normally separates the work and family domains (Ashforth et al., 2000), making themselves more accessible in times of family need (Guimaraes & Dallow, 1999). Although a true family crisis knows no bounds, family members are

generally more inclined to interrupt telecommuters when they are at home, even for relatively trivial requests (Kurland & Bailey, 1999). Being perceived as more readily accessible, and therefore available to be called upon, the individual may find that the additional family pressures, expectations, and interruptions due to increased strain and/or lost time are likely to be greater when working at home (Igarria & Guimaraes, 1999), especially in cases in which family obligations are nearly always perceived as more salient and needful of attention (Hill et al., 1998; Riley & McCloskey, 1997). Moreover, because there are significant socio-emotional ties and enduring responsibilities underlying family support expectations (Allen, Fine, & Demo, 2000; Bengtson, 2001), such interruptions are likely to take precedence over work activities. Indeed, Greenhaus and Powell (2003) found that "family is most likely to interfere with work when the pressure to participate in the family domain is strong" (p. 300). In sum, given greater presence and accessibility at home, telecommuters face the possibility of additive emotional strain as well as numerous family interruptions that are likely to be perceived as more salient; some of these interruptions involve greater ongoing commitment and others involve an immediate yet indeterminate commitment of additional time and emotional energy. Consequently, the more extensively individuals telecommute, the more time and emotional energy they are apt to devote to family, resulting in work interruptions as well as lost productivity due to the added emotional strains of family involvement, increasing the likelihood of family interfering with work.

Hypothesis 2: Extent of telecommuting will be positively related to FWC.

Moderating Role of the Work–Family Context

Although our first two hypotheses suggest that extent of telecommuting is likely to differentially impact WFC and FWC, we have not fully accounted for the differences in the telecommuter's specific work–family context that may further enhance or exacerbate this impact. To that end, we examine the moderating role of three salient factors inherent in the work and family domains: job autonomy, scheduling flexibility, and household size.

Job autonomy. Job autonomy or discretion represents the amount of authority or control that individuals have to decide which tasks are to be done or what methods are to be used when performing their jobs (Langfred, 2000). Fundamentally, when individuals have greater autonomy, they are less likely to be dependent on others to perform their jobs (Pierce, Newstrom, Dunham, & Barber, 1989). In contrast, when they have less autonomy, their jobs are more constrained, proscribed, and routine and often necessitate greater coordination, as well as increased dependence on others for completion (Hackman & Oldham, 1976). By working at home, away from the interruptions and strain of the workplace milieu, telecommuters are able to work in a context in which they can more fully utilize the discretion afforded by job autonomy to "alter the components and relationships of their job" (Nicholson, 1984, p. 178). Put differently, while working at home, individuals with greater autonomy have more latitude to work on tasks that might otherwise be more exacerbated in the workplace, such as those which necessitate greater concentration without interruption, thereby furthering the savings of time and strain accrued through

extensive telecommuting. Given these additional savings, telecommuters are likely to be better able to switch cognitive and emotional gears (Rothbard, 2001) to further accommodate work and family demands (Stephens & Szajna, 1998). Consequently, the reduction in WFC achieved through extensive telecommuting should be enhanced by job autonomy, because greater autonomy affords the telecommuter even more time and emotional energy to devote to family activities, further reducing the likelihood of work interfering with family. Moreover, job autonomy should also attenuate the increase in FWC resulting from extensive telecommuting, because the additional savings of time and emotional energy enabled by autonomy should offset some of the increasing pressures from family that interfere with work. In sum, for individuals who telecommute more extensively, WFC should decline more rapidly and FWC should increase more slowly when they have greater job autonomy relative to individuals who have less autonomy.

Hypothesis 3a: The negative relationship between extent of telecommuting and WFC will be moderated by job autonomy such that WFC will decrease at a faster rate for telecommuters with greater autonomy.

Hypothesis 3b: The positive relationship between extent of telecommuting and FWC will be moderated by job autonomy such that FWC will increase at a slower rate for telecommuters with greater autonomy.

Scheduling flexibility. Scheduling flexibility refers to the degree of temporal flexibility the telecommuter has to adjust when work is done in order to meet family demands (Baltes, Briggs, Huff, Wright, & Neuman, 1999). Unlike autonomy, which influences the choice of task, method, and dependencies, flexibility influences the choice of when tasks must be performed. Consider, for example, technical support personnel, who generally enjoy considerable latitude in deciding task and method but must be on call to provide client support during normal business hours. In contrast, individuals performing more routine programming functions might have less say about the type or amount of work that has to be completed, but they are often free to determine when to complete their assignments. Here too, as with job autonomy, by working at home, away from the workplace milieu, telecommuters are able to work in a context in which they can more readily utilize and benefit from scheduling flexibility. Simply put, telecommuting makes those with comparatively higher scheduling flexibility even more likely to be able to conduct their work when it suits their needs (Hartman et al., 1992) and to respond more flexibly to work and family demands as the need arises (Baltes et al., 1999). Consequently, the reduction in WFC achieved through extensive telecommuting should be enhanced by scheduling flexibility because working at home, in conjunction with greater flexibility, affords the telecommuter even greater responsiveness to work and family demands, further reducing the likelihood of work interfering with family. In addition, more scheduling flexibility should also attenuate the increase in FWC resulting from extensive telecommuting, because greater responsiveness should offset some of the increasing family pressures that interfere with work. In sum, for individuals who telecommute more extensively, WFC should decline more rapidly and FWC should increase more slowly for

individuals who have greater scheduling flexibility relative to individuals who have less flexibility.

Hypothesis 4a: The negative relationship between extent of telecommuting and WFC will be moderated by scheduling flexibility, such that WFC will decrease at a faster rate for telecommuters with greater flexibility.

Hypothesis 4b: The positive relationship between extent of telecommuting and FWC will be moderated by scheduling flexibility, such that FWC will increase at a slower rate for telecommuters with greater flexibility.

Household size. Previous researchers have found that individuals with larger families tend to allocate more time and effort to their families and less to their jobs (Blau, Ferber, & Winkler, 1998; Martins, Eddleston, & Veiga, 2002). Not only do larger families require more time, attention, and emotional energy, they also entail more family role senders and their associated needs and expectations (Greenhaus & Beutell, 1985). Despite the fact that extended family members represent potential role senders, for the most part the most salient role senders are immediate family members living in the same household (Greenhaus & Powell, 2003; Kahn et al., 1964). Indeed, research has suggested that work-family conflict is higher among those who have family members in the same home (Behson, 2002; Carlson, 1999; Grzywacz & Marks, 2000). Consequently, when individuals with larger households telecommute extensively, they are more likely to face a greater number of demands, expectations, and strains due to their accessibility and proximity to household members (Hill et al., 1998; Kossek, Colquitt, & Noe, 2001), exacerbating the difficulty of accommodating work and family demands. Therefore, the reduction in WFC achieved through extensive telecommuting should be attenuated by household size, and the increase in FWC associated with extensive telecommuting should be worsened by household size. In sum, for individuals who telecommute more extensively, WFC should decline more slowly and FWC should increase more rapidly when they have larger households, relative to those with smaller households.

Hypothesis 5a: The negative relationship between extent of telecommuting and WFC will be moderated by household size, such that WFC will decrease at a slower rate for telecommuters with larger households.

Hypothesis 5b: The positive relationship between extent of telecommuting and FWC will be moderated by household size, such that FWC will increase at a faster rate for telecommuters with larger households.

Method

Sample and Procedure

We sought to study telecommuters from one firm with a large, active telecommuting program as a way to control for organizational differences in telecommuting practices and work-family supportiveness (Thompson, Beauvais, & Lyness, 1999). The high-tech firm that agreed to participate in our study employs over 34,000 people, and corporate records indicated that 12,610 of its full-time professional employees were telecommuters. Of these, the company chose a random sample of 10% for our study. This

sample of 1,261 individuals was contacted via e-mail by a senior executive, told that we were seeking to survey individuals who were currently engaged in telecommuting from home on a regular basis, and encouraged to participate. We used an anonymous and confidential Web-based survey, residing on the first author's server, from which we received useable responses from 454 respondents, representing a 36% response rate. All respondents were college graduates; 65% were men, 35% were women; 54% were married; and their average age was 37 years. On average, those who responded had been telecommuting for 4 years (ranging from 1 to 10 years) and averaged 18.9 hr/week telecommuting from home (ranging from 3 to 43 hr) out of an average 45-hr workweek.

Measures

Work-family conflict. In order to more fully capture the nuances of time and psychological strain that are likely to be intertwined in work-family conflict, we used six items developed by Carlson et al. (2000) to measure WFC: three based on time and three based on strain. These items have been shown to possess adequate levels of internal consistency as well as discriminant and construct validity. For all items, participants responded on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Example items include "My work keeps me from my family activities more than I would like" (time), and "Due to all the pressures at work, sometimes when I am home I am too stressed to do the things I enjoy" (strain). Similarly, we used six of Carlson et al.'s items to measure FWC, such as "I have to miss work activities due to the amount of time I must spend on family responsibilities" (time), and "Tension and anxiety from my family life often weakens my ability to do my job" (strain).

Although the evidence of convergent validities of these 6-item measures has previously been demonstrated, for example, O'Driscoll et al. (2003) reported alphas of .85 and .81 for WFC and FWC, respectively, we sought additional evidence of their discriminant validity by conducting a series of confirmatory factor analyses (CFAs). We examined a single-factor model by combining all 12 items, and then we compared those results to a two-factor model. Results from the single-factor model indicated that a single construct composed of all 12 items, $\chi^2(54, N = 454) = 1,725.15$, $p < .001$; comparative fit index (CFI) = .56; incremental fit index (IFI) = .56; Tucker-Lewis index (TLI) = .37; normed fit index (NFI) = .56, was inferior to our two-factor model, in which each factor is composed of 6 items used to measure WFC and FWC, $\chi^2(53, N = 454) = 101.18$, $p < .001$; CFI = .98; IFI = .98; TLI = .97; NFI = .97. Given the significant chi-square difference ($p < .001$) and better fit of our two-factor model, we concluded that WFC and FWC are best captured as separate, overall constructs. Subsequently, all 6 items for WFC were averaged to produce an overall measure ($\alpha = .90$) and all 6 items for FWC were similarly averaged ($\alpha = .85$).

Extent of telecommuting. In order to assess extent of telecommuting, we asked respondents the following: "As a company telecommuter, in a typical week how many hours do you spend working from home?" Responses ranged from 3 to 43 hr/week. As a verification of reliability, respondents were also asked the proportion of an average workweek they spent telecommuting. Analysis revealed no discernable difference between these two measures ($\rho = .91$), so for the sake of clarity we report hours per week.

Job autonomy. Job autonomy was assessed using a four-item measure developed by Langfred (2000). Respondents evaluate the amount of discretion and control they have in the implementation of assigned work tasks on a 5-point scale (1 = *very little*, 5 = *very much*). For example, respondents were asked: "How much authority in determining tasks to be done do you have?" We dropped one item ("How many written rules and procedures do you have in your job?") to improve the measure's reliability. To verify that we did not change the meaning of this construct, we reran our regression analysis testing the hypotheses using the four-item measure and found no significant difference. Consistent with prior research, our measure was found to be reliable ($\alpha = .78$).

Scheduling flexibility. Scheduling flexibility was assessed using a five-item measure developed by Pierce and Newstrom (1983). Respondents

report on a 5-point scale (1 = *very little*, 5 = *very much*) how much flexibility they have in determining when they work and the extent to which their work schedule is independent of others (e.g., “To what extent are you able to define your work schedule independently of others?” and “How much are you left on your own to define your own work schedule?”). This measure was also found reliable ($\alpha = .91$).

Household size. Household size includes all the family members “who live in a specific home” (Demo, Aquilino, & Fine, 2005, p. 120). Although some researchers have only considered children and spouse as household members (Rothausen, 1999), the telecommuting context, in particular, requires assessing a complete picture of all family members in the household in order to assess the full range of potential role demands (Bailey & Kurland, 2002; Riley & McCloskey, 1997). Therefore, based on respondents’ reports, we calculated the total number of family members in the household, including spouse or significant other/partner, the number of children living at home, and the number of extended family members currently living in the home (e.g., an elderly family member).

Control variables. Based on previous research, we controlled for age, gender (1 = male, 2 = female), management level (1 = nonsupervisory, 2 = first-line manager, 3 = middle manager, 4 = upper/senior management; cf. Cannings & Montmarquette, 1991), and tenure (in years) so as to mitigate the possibility of spurious results. We controlled for age because it generally approximates career-life stage, which may play a role in the extent of work-family conflict experienced (Martins et al., 2002). Similarly, although our sample (65% men, 35% women) exactly mirrored the gender composition reported in the population of professional-level telecommuters at large (International Telework Association and Council, 2001), we controlled for gender because men and women may experience differing levels of work-family conflict (Parasuraman & Greenhaus, 2002). Moreover, we also controlled for differences in managerial level because some have suggested that telecommuting experiences may differ for individuals who are higher in the management ranks (Bailey & Kurland, 2002). Likewise, we controlled for differences in tenure because some have suggested that employees may need sufficient time to fully adapt to this work mode (Bailey & Kurland, 2002). Finally, when we tested the impact of extent of telecommuting on WFC, we controlled for the influence of FWC and vice versa. This was done to control for any generalized feelings of conflict that might spill over between these constructs.

Results

Table 1 presents means, standard deviations, and correlations for each of the measures. Before testing our hypotheses, we also

sought to ensure the discriminant validity of our independent variables by conducting nested CFAs in which we compared a model with one overall factor with a four-factor model representing each variable. We found the worst fit involved a single-factor model that combined data from all four independent variables, $\chi^2(35, N = 454) = 247.09, p < .001$; CFI = .63; IFI = .64; TLI = .42; NFI = .61, whereas the best fit was found with our four-factor model, $\chi^2(31, N = 454) = 69.19, p < .001$; CFI = .94; IFI = .94; TLI = .91; NFI = .90. Hence, our theorized four-factor model fit the data best, evidencing the discriminant validity of our measures. As an additional test of construct distinctiveness, we also sought to use CFA to verify that our individual latent constructs were distinct from one another by conducting pairwise tests of all theoretically related constructs (Anderson & Gerbing, 1988). The pairwise analysis tests whether a CFA model representing two measures with two factors fits the data significantly better than a single-factor model. For example, given the correlation between job autonomy and scheduling flexibility, we conducted a CFA to demonstrate their discriminant validity. Fit indexes were superior for a two-factor model, $\chi^2(19, N = 454) = 145, p < .001$; CFI = .95; IFI = .95; TLI = .91; NFI = .94, as compared to the single-factor model, $\chi^2(20, N = 454) = 282, p < .001$; CFI = .87; IFI = .87; TLI = .80; NFI = .86, with a significant chi-square difference ($p < .01$). Taken together, these results provide further support that our measures are not only theoretically, but also empirically, distinguishable.

To test our hypotheses, we used hierarchical stepwise regression. All variables were centered prior to conducting regression analyses (Cohen, Cohen, West, & Aiken, 2003). As a further check for multicollinearity, we also calculated variance inflation factors during each of our regressions and found them all to be below 2.3, well below the cutoff of 10 (Cohen et al., 2003). We separately regressed WFC (Model 1) and FWC (Model 2) on our control variables as a block in Step 1. In Step 2, we entered extent of telecommuting, then in Step 3 the three moderators, and finally in Step 4 the three cross-product terms. The changes in multiple correlation squared (ΔR^2) at each step and the standardized regression coefficients are presented in Table 2.

Hypothesis 1 predicted a negative relationship between the extent of telecommuting and WFC. As shown in Table 2 (Model

Table 1
Descriptive Statistics and Correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age (years)	37.39	8.79	—									
2. Gender	1.31	0.46	.11*	—								
3. Tenure (years)	4.14	2.32	.39**	.22**	—							
4. Management level	1.82	1.27	.39**	.26**	.30**	—						
5. Work-to-family conflict	3.05	1.09	-.04	-.09	-.22**	.15**	—					
6. Family-to-work conflict	2.12	0.79	-.01	-.07	-.06	.21**	.38**	—				
7. Extent of telecommuting	18.91	8.86	.15**	.21**	.24**	.07*	-.27**	.15**	—			
8. Job autonomy	3.51	1.11	.09	-.05	-.01	.53**	.04	.17**	-.01	—		
9. Scheduling flexibility	4.08	0.96	.03	-.04	-.03	.54**	.09*	.20**	.03	.68**	—	
10. Household size	3.65	1.06	.07	-.06	-.07	.38**	.13**	.15**	-.03	.27**	.40**	—

Note. N = 454. Gender: male = 1, female = 2; Management levels: nonsupervisory = 1, first-line manager = 2, middle manager = 3, upper/senior management = 4; Conflict: 1 = lowest, 5 = highest. Extent of telecommuting is in hours per week. Job autonomy: 1 = very little, 5 = very much. Scheduling flexibility: 1 = very little, 5 = very much.
* p < .05. ** p < .01.

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Table 2
Hierarchical Regression Analysis for All Moderators

Variable	Model 1: Work-to-family conflict		Model 2: Family-to-work conflict	
	β	ΔR^2	β	ΔR^2
Step 1: Controls		.20***		.16***
Age (years)	.05		-.03	
Gender	-.01		-.06	
Tenure (years)	-.22***		-.02	
Management level	.25***		.09	
Family-to-work conflict	.33***			
Work-to-family conflict			.36***	
Step 2		.06***		.03***
Extent of telecommuting	-.27***		.19***	
Step 3		.01*		.01
Job autonomy	-.13*		.07	
Scheduling flexibility	-.03		.05	
Household size	.01		.06	
Step 4		.02*		.02*
Telecommuting \times Job Autonomy	.15***		.06	
Telecommuting \times Scheduling Flexibility	-.12*		-.01	
Telecommuting \times Household Size	.02		.12**	
R^2		.29		.22
Adjusted R^2		.27		.20
F		14.86***		10.58***

Note. $N = 454$.

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

1, Step 2), this hypothesis was supported ($\beta = -.27, p < .001$), suggesting that the more extensively individuals telecommute, the lower their WFC. Moreover, as shown in Model 2 (Step 2), Hypothesis 2, which predicted a positive relationship between the extent of telecommuting and FWC, was also supported ($\beta = .19, p < .001$), suggesting that the more individuals telecommute, the higher their FWC.

To assess moderation of the relationship between the extent of telecommuting and WFC, we entered variables into the regression model following procedures outlined by Baron and Kenny (1986). All moderators were entered as a block into the regression analysis because entering them as a block takes into account their simultaneous effects and therefore represents a more conservative and robust approach (Kohler & Mathieu, 1993). As shown in Table 2 (Model 1, Step 4), Hypothesis 3a, which predicted that job autonomy would moderate the negative relationship between extent of telecommuting and WFC, was partially supported ($\beta = .15, p < .001$). To further interpret the interaction effect, we followed the procedure recommended by Cohen et al. (2003) by creating two simple regressions of WFC on extent of telecommuting, given conditional values of job autonomy (mean plus or minus one standard deviation). As shown in Figure 1, when job autonomy is high, WFC does not decrease at a faster rate, contrary to Hypothesis 3a's prediction. For those with high autonomy, the reduction in WFC associated with differing levels of telecommuting is not significant ($b = -.01, ns$). However, for those with low autonomy, extent of telecommuting has a negative relationship with WFC ($b = -.03, p < .05$), reflecting a decline for each additional hour of telecommuting. These findings suggest that, although lower levels of autonomy enhance the effects of extent of telecommuting on WFC, higher levels do not. With respect to Hypothesis 3b,

which predicted that job autonomy would moderate the positive relationship between telecommuting and FWC, no support was found (Model 2, Step 4).

As shown in Table 2 (Model 1, Step 4), Hypothesis 4a, which predicted that scheduling flexibility would moderate the negative relationship between extent of telecommuting and WFC, was supported ($\beta = -.12, p < .05$). For telecommuters with high flexibility, extent of telecommuting has a significant negative relationship with WFC ($b = -.03, p < .05$), and for those with low flexibility, a similar relationship was also found ($b = -.02, p < .05$). Further, as shown in Figure 2, when scheduling flexibility is high, WFC decreases at a faster rate, as expected. Hypothesis 4b predicted that scheduling flexibility would moderate the positive relationship between extent of telecommuting and FWC, but this hypothesis was not supported (Model 2, Step 4).

Hypothesis 5a, which predicted that household size would moderate the negative relationship between extent of telecommuting and WFC, was not supported (Table 2, Model 1, Step 4). However, Hypothesis 5b (Model 2, Step 4), which predicted that household size would moderate the positive relationship between extent of telecommuting and FWC, was supported ($\beta = .12, p < .01$). As shown in Figure 3, when household size is large, FWC increases at a faster rate, as expected. Further, for those with large households, extent of telecommuting has a significant positive relationship with FWC ($b = .03, p < .05$); however, for those with small households, although the relationship appears negative, the decrease in FWC associated with differing levels of telecommuting is not significant ($b = -.01, ns$). These findings suggest that, although larger households exacerbate the effects of telecommuting on FWC, smaller households do not.

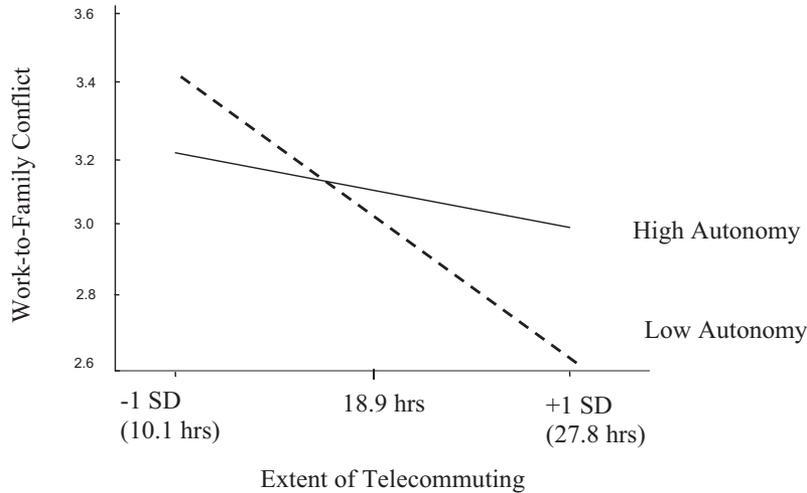


Figure 1. The moderating role of job autonomy on the extent of telecommuting–work-to-family conflict relationship.

Discussion

Although there are contradictory perspectives in the literature as to whether telecommuting positively or negatively impacts work–family conflict, we maintain that these perspectives can be reconciled by viewing them through the bidirectional lens of work–family conflict. In particular, when telecommuting is viewed by researchers in the literature as a means of enhancing the individual’s ability to balance work life and family life, such that family demands are better accommodated (Bailey & Kurland, 2002), its primary directional focus is on reducing work interfering with family (WFC). On the other hand, when telecommuting is viewed by researchers in the literature as a work modality that increases family role expectations (Igarria & Guimaraes, 1999; Kurland & Bailey, 1999), such that telecommuters increase their family role involvement at the expense of work (Aryee et al., 2005), its primary directional focus is on increasing the extent to which family interferes with work (FWC). Hence, in this study, we

develop a more complete model of telecommuting’s impact on work–family conflict by examining its differential impact on WFC and FWC. Consistent with our hypotheses, we found that the more extensively individuals telecommute, the less work interferes with family—reducing WFC—and the more family interferes with work—increasing FWC.

Beyond reconciling these previously underspecified perspectives, our findings also enrich current understanding of the work–family interface for telecommuters in several ways. Our findings support Edwards and Rothbard’s (2000) depletion argument, which states that the resources to cope with work and family demands are finite, so that when an individual expends too much energy in one domain, the other domain suffers. As such, telecommuters may simply be faced with a zero-sum trade-off such that as they reallocate the additional time, attention, and emotional energy made available by telecommuting to accommodate family pressures, work interferes less with family, but family interferes more

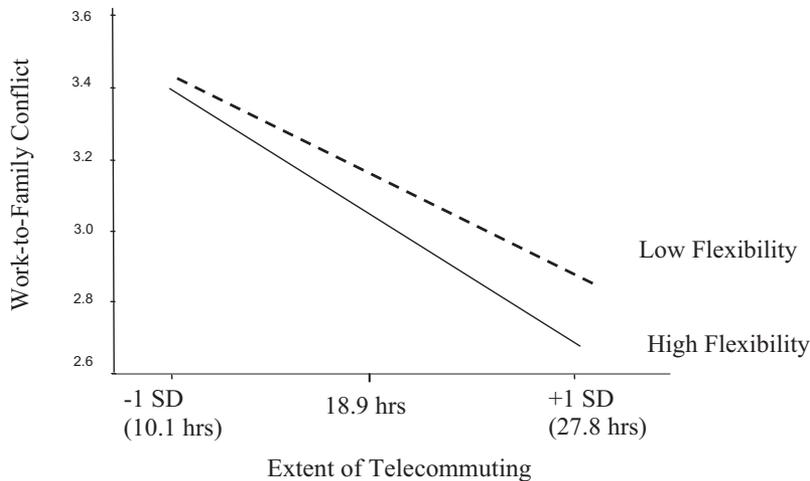


Figure 2. The moderating role of scheduling flexibility on the extent of telecommuting–work-to-family conflict relationship.

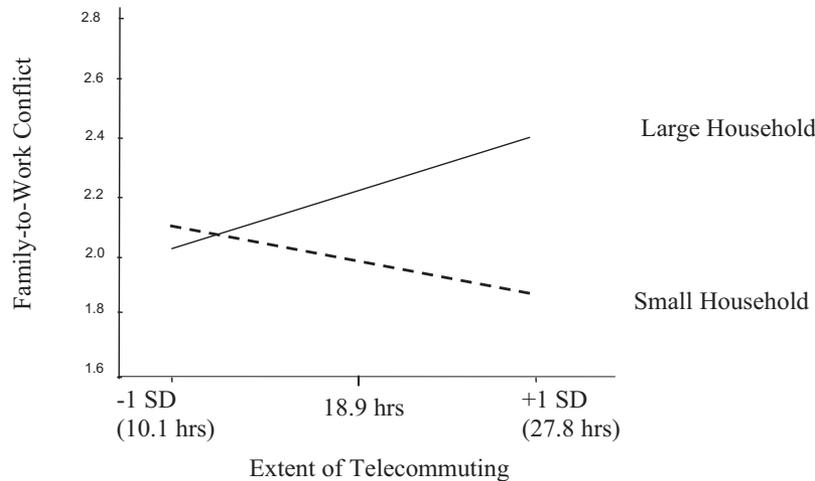


Figure 3. The moderating role of household size on the extent of telecommuting-family-to-work conflict relationship.

with work. Unlike Rothbard's (2001) findings, which showed more limited evidence to support the depletion argument and concluded that it occurred only for women in the work-to-family direction, our findings suggest that the depletion argument may encompass both directions of conflict irrespective of gender. Whereas Rothbard surveyed university employees who worked in traditional office settings and held jobs ranging from hourly to salaried, we focused on professional-level telecommuters. Consequently, the tradeoff we uncovered may be unique to professional-level telecommuters who collocate work and family domains. Thus, although the validity of the depletion argument still remains an open question, we believe it may be particularly salient to understanding the telecommuter's work-family interface.

Our findings also raise questions regarding Ashforth et al.'s (2000) contention that individuals who work at home are better able to integrate work and family roles. Although telecommuters in our study were able to significantly reduce WFC with more extensive telecommuting, that reduction was accompanied by a significant increase in FWC, suggesting that full integration did not occur. Indeed, if full integration had occurred, we would have expected a reduction in both directions of conflict. On the other hand, increasing levels of FWC may simply reflect the price paid by those who telecommute extensively who are unable, or unwilling, to effectively manage the collocated boundaries of work and family. Fundamentally at issue here is the extent to which work and family roles can be integrated without paying a price. Indeed, we join Rothbard (2001) as well as Aryee et al. (2005) in their call for future research to examine "individual initiatives that enhance control over work and family roles that lead to facilitation" (p. 143).

In addition, our findings suggest that further investigation of the two underlying linking mechanisms that we identified is warranted. Indeed, although Edwards and Rothbard (2000) precluded the existence of such mechanisms "when work and family are too closely intertwined" (p. 180), we believe, consistent with Greenhaus and Parasuraman (1999), that until mechanisms within this context are fully elaborated, the dynamics of this work-family interface will not be completely understood. Essentially, we need

to learn more about how altered work patterns and family expectations actually mediate the impact of extent of telecommuting on work-family conflict. And finally, we believe it may be fruitful for future researchers to focus more deeply on the underlying time and strain processes to determine how they actually contribute to the conflict experienced. Although our focus here is primarily on the direction of conflict rather than on unraveling underlying processes, additional research on time and strain is needed to clarify these relationships, as well as to more fully assess the scope and scale of each.

Work-Family Context

Our findings also suggest that differences in the telecommuter's specific work-family context, as reflected in job autonomy, scheduling flexibility, and household size, play a significant role. In particular, although we found that job autonomy moderates the negative relationship between telecommuting and WFC, contrary to expectations, we found that telecommuters with more job autonomy experienced no appreciable decline in WFC no matter how extensively they telecommuted. On the other hand, we found that those with less autonomy experienced a significant reduction in WFC, such that at extensive levels of telecommuting their WFC was lower than it was for those with greater autonomy. One plausible explanation for this anomaly could be that because individuals with less job autonomy are less likely to be involved with their jobs and experience less intrinsic motivation (Hackman & Oldham, 1976), they may be more predisposed to invest the saved time and strain afforded to them by extensive telecommuting to reduce WFC. In contrast, perhaps because of their potential to be more involved in their jobs and intrinsically motivated, individuals with greater job autonomy may simply be more inclined to invest such savings into their jobs rather than into their families.

We also found that scheduling flexibility moderates the telecommuting-WFC link, and consistent with expectations, our results suggest that the rate of decrease in WFC associated with more extensive telecommuting is further enhanced when telecommuters have more flexibility in choosing when work activities are

to be performed. Our results also show that household size moderates the link between telecommuting and FWC, such that the rate of increase in FWC associated with more extensive telecommuting is further amplified when telecommuters have larger households; however, there is no significant change in FWC for those with smaller households irrespective of the extent to which they telecommute. Clearly, additional research is needed on each of these differences in a telecommuter's specific work-family context. For example, researchers need to know more about the precise nature and frequency of family demands in order to determine whether greater household size is the primary contingency or whether family demands and expectations simply continue to escalate in the absence of barriers between the work and family domains. In addition, and perhaps more important, we need to know more about how these conditions offset or complement each other.

As a case in point, the significant positive correlations between contextual differences that we found indicate that some individuals are likely to experience high job autonomy and scheduling flexibility and live in a larger household. Although our findings could be dismissed as anomaly or as a hybrid case, we believe that one avenue of fruitful research would be to examine how contextual differences interact. Furthering this line of reasoning, we note that although we posited that job autonomy and scheduling flexibility would moderate the relationship between extent of telecommuting and FWC and that household size would moderate the relationship between extent of telecommuting and WFC, these expectations were not supported. Given these results, coupled with our more conservative test of all three moderators entered as a block, it is possible that contextual differences are more salient in a specific domain. In particular, we found that job autonomy and scheduling flexibility, which emanate from the work domain, played a more dominant role with WFC, whereas household size played a more dominant role with FWC. Although existing work-family literature has not addressed domain specificity (e.g., Ashforth et al., 2000), our results suggest that this could further theory development.

Limitations and Future Direction

With respect to limitations, although we believe our findings are fairly robust, because the study was correlational rather than a manipulation of variables, causality cannot be inferred. For example, we cannot definitively conclude whether telecommuting reduces WFC conflict per se, we can conclude only that extent of telecommuting is negatively associated with WFC. In addition, our research design cannot rule out the possibility of reverse/reciprocal causality between extent of telecommuting and work-family conflict. Specifically, individuals may choose to vary how extensively they telecommute depending upon the degree of WFC and/or FWC they experience. Although this is a plausible alternative, Rau and Hyland (2002) found that individuals with high role conflict were indifferent about choosing organizations that offered telecommuting opportunities, suggesting that other factors beyond role conflict per se drive the choice to telecommute. Nevertheless, examining the variables in this study in a longitudinal design, or using experimental manipulations, will likely yield further insights.

Another potential limitation of our design is its reliance on the self-report method, although some have argued that perceptual inflation is more the exception than the rule (Crampton &

Wagner, 1994). Similarly, because the variables were measured at the same time from the same source, common method variance cannot be fully ruled out. However, our findings from CFA reduce this potential concern. In addition, and perhaps equally important, after conducting an extensive Monte Carlo study examining whether method variance might generate artifactual interactions, Evans (1985) concluded that "The results are clear-cut. Artifactual interactions cannot be created; true interactions can be attenuated" (p. 305). Nevertheless, we are mindful that the self-report and cross-sectional facets of our design place limits on the extent to which we can place confidence in the interpretations offered.

We believe our study helps shed insight into the differential impact of telecommuting on work-family conflict and provides a useful platform for additional research that could further extend and clarify its many facets. For example, although our study identifies a potential tradeoff between WFC and FWC, by design it remains silent with respect to the other benefits of combining work and family that role enhancement theory suggests may outweigh the strains (e.g., Barnett & Hyde, 2001). Several theorists have suggested that in order to have a complete picture of the tradeoffs involved, the potential for enrichment (Rothbard, 2001) or positive spillover (Grzywacz & Marks, 2000) must also be considered. Perhaps in so doing, researchers might discover that although FWC increases as individuals telecommute more extensively, telecommuters also experience greater family enrichment that offsets FWC. On the other hand, consistent with Aryee et al. (2005), we believe that assuming conflict and enrichment are substitutable tradeoffs may not fully capture the true nature of the tradeoffs involved for telecommuters. Consequently, although creating a more integrated and fully specified model of such costs and benefits for telecommuters could prove enlightening, for a deeper understanding one would need to consider Aryee et al.'s contention that the antecedents of those costs and benefits may be distinct.

Conclusion

Given the popularity of telecommuting, researchers and practitioners clearly need to know more about the full extent of the trade-offs involved in everyday practice, as our findings suggest an upside and a downside. Although we are only able to speculate on whether the trade-offs involved are zero-sum, we would at this point caution that telecommuting might not be the panacea that popular convention contends, especially when done extensively. However, because we were unable to assess a priori each individual's level of work-family conflict prior to starting telecommuting, we cannot accurately assess the absolute benefits derived, only the relative change. And, despite the fact that individuals with larger households pay a greater price in the form of increased FWC the more they telecommute, we are hesitant to recommend cessation of this work modality for them, because they may also be experiencing the benefits of greater family enrichment.

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Received November 24, 2004

Revision received October 13, 2005

Accepted November 10, 2005 ■