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Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office) influence aspects of work and personal/family life

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Abstract

Millions use electronic tools to do their jobs away from the traditional office. Some labor in a “virtual office” with flexibility to work wherever it makes sense and others telecommute primarily from home. This IBM study compares how three work venues (traditional office, $n = 4316$, virtual office, $n = 767$, and home office, $n = 441$) may influence aspects of work (job performance, job motivation, job retention, workload success, and career opportunity) and personal/family life (work/life balance and personal/family success). Perceptions, direct comparisons, and multivariate analyses suggest that the influence of the virtual office is mostly positive on aspects of work but somewhat negative on aspects of personal/family life. The influence of the home office appears to be mostly positive and the influence of traditional office mostly negative on aspects of both work and personal/life. Implications of these findings are discussed.

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1. Introduction

We are in the midst of the most revolutionary transformation in the nature of work and family since the industrial revolution. For several decades the developed world has been shifting from industrial-based national economies to an information-based global economy. Telecommunications and computing costs have plummeted, while their power and function have increased. These trends facilitate dramatic new alternatives for where, when, and how work is accomplished and how employees are managed and treated on the job (Useem & Harrington, 2000).

Likewise, the ways mothers and fathers provide for and nurture children have evolved. The workforce now includes more dual-earner couples who have responsibility for the care of children or elderly dependents, as well as more dual-professional couples in which both partners have careers, not just jobs. The adoption of more egalitarian gender ideologies means that the proportion of time contributed by fathers to housework and child care has increased significantly from 53% in 1977 to 77% in 1997 (Bond, Galinsky, & Swanberg, 1998). For both men and women, juggling the demands of the workplace and the home has become more difficult.

Arrangements enabling flexibility in work venue are gaining acceptability at many companies as a “dual-agenda” way to both meet business objectives and provide greater opportunities to effectively integrate the escalating demands of work and personal/family life (Rapoport, Bailyn, Fletcher, & Pruitt, 2002). About half (55%) of US companies allow employees to work at home occasionally and one-third allow employees to work at home or off-site on a regular basis (Galinsky & Bond, 1998). About one-fifth of all employees report working some of their regularly scheduled work hours from home (Bond et al., 1998) and approximately 24 of the 65 million employed adults who use a computer to perform their job, do some of their work from home (US Department of Commerce, 2002). There are between 13 and 19 million workers in the United States who work at least one day a week from home during regular business hours (Kossek, 2001).

In the past flexible work arrangements, like other work and family programs, have been offered primarily as exceptions to expectations for the “ideal worker” (Meiksins & Whalley, 2002) to accommodate the needs of working parents, particularly to enable working mothers to balance occupational and family life. However, some now view these arrangements as a business imperative needed to achieve strategic business priorities, such as reducing costs, increasing job performance, enhancing job satisfaction and motivation, augmenting job retention, ameliorating stress caused by workload, and enhancing career opportunities (Clark, 2001; Hammer, Alan, & Grigsby, 1997; Hill & Weiner, 2003; Rapoport et al., 2002).

A vocabulary is developing to more precisely name different options in work venue. *Telework* is defined as: “ANY form of substitution of information technologies (such as telecommunications and computers) for work-related travel; moving the work to the workers instead of moving the workers to work” (Nilles, 1998, p. 1). *Telecommuting* is defined as: “Periodic work out of the principal office, one or more days per week either at home, a client’s site, or in a telework center” (Nilles, 1998, p. 1). To date, most telework research has focused on home-based telecommuters, and these studies have

generally had relatively small sample sizes, suffer from selection bias, and rarely use a traditional office comparison group (Dubrin & Barnard, 1993; McCloskey & Igarria, 1998; Ramsower, 1985). The *virtual office* is a non-telecommuting form of telework that has grown substantially in the past decade. In the virtual office employees are provided the portable means to accomplish their job and often granted the authority to work wherever it makes sense to accomplish business objectives. Very little research has been conducted with workers in the virtual office (Hill, Hawkins, Ferris, & Weitzman, 2001).

Many questions arise as all forms of telework are widely adopted. Though some well-designed studies are beginning to be reported, many questions remain. The purpose of this study is to empirically examine the influence of work venue on aspects of work and personal/family life. The data are from a work and life issues survey conducted by IBM in 2001 and compare employees from three work venues. Those in the *traditional office* ($n = 4316$) primarily work from dedicated space at an IBM facility. Those in the *virtual office* ($n = 767$) have the portable means to work from a variety of venues. Those in the *home office* ($n = 441$) practice an intense form of home-based telecommuting where the home is the primary work venue. Aspects of work and personal/family life examined include job performance, job motivation, job retention (intention to stay with the organization), workload success, career opportunity, work/life balance, and personal/family success.

The results of this study should be useful to business and government leaders as they make policy decisions regarding the implementation of programs that expand flexibility in where work is done. They should also help human resource professionals and family life educators as they design programs to help families find harmony between work and personal/family life.

This study uses an ecological conceptual framework (cf. Bronfenbrenner, 1986; Bubolz & Sontag, 1993) and a work/family substantive theory called *spillover theory* (Zedeck, 1992). An ecological perspective frames the idea of a work/family mesosystem composed of the work microsystem and the family microsystem. Research documents that these microsystems significantly influence one another through a permeable boundary to create an influential mesosystem (Bromet, Dew, & Parkinson, 1990). Spillover theory postulates the conditions under which the spillover between the work microsystem and the family microsystem is positive or negative. Research documents that if work \iff family interactions are rigidly structured in time and space, then spillover in terms of time, energy, and behavior is generally negative (Barnett, 1994; Williams & Alliger, 1994). Research also supports the notion that work flexibility, which enables individuals to integrate and overlap work and family responsibilities in time and space, leads to positive spillover and is instrumental in achieving healthy work and family balance (Barnett, 1994; Bond et al., 1998; Galinsky, Bond, & Friedman, 1993).

2. Review of literature

The literature and language around telework is imprecise. It is difficult to distinguish between the virtual office and varieties of telecommuting because terminology

differs from study to study. In this review we use the term *telework* unless we can determine a more specific form from the context of the study.

2.1. *Influence of telework on work*

Research shows that telework generally increases job performance and productivity (DiMartino & Wirth, 1990; Kossek, 2001; Neal, Chapman, Ingersoll-Dayton, & Emlen, 1993). Initially supervisors are often skeptical of telework because they cannot as easily observe work performance directly. This necessitates a shift from a “face-time culture” to a “results-oriented culture” (Hill & Weiner, 2003). With this additional emphasis on results, it is not surprising to find research documenting a link between telework and measurable productivity increases, less absenteeism, lower unit labor costs, and overall improvement in operating effectiveness (Kelly, 1988; Kraut, 1989). Kurland and Bailey’s (1999) review of research also revealed that telework, regardless of work venue, was related to improved workplace productivity and higher job performance ratings. They found that virtual office workers are better able to relate to customers and other stakeholders, thus benefiting the business and enhancing job performance. In addition, a study at IBM using a quasi-experimental research design found significantly higher performance evaluations for those working in the virtual office compared to the traditional one (Hill, Miller, Weiner, & Colihan, 1998). However, Kurland and Bailey (1999) found that telework may also lead to less synergy because of less informal learning, weaker organizational culture, less availability during regular business hours, and loss of non-verbal communication; all of which may lead to decreased job performance.

Research shows that telework increases motivation and job satisfaction, helps employees have higher dedication and morale, and a higher energy level on the job due to elimination of wasted time (DiMartino & Wirth, 1990; Hill et al., 1998; Kelly, 1988; Kurland & Bailey, 1999; Neal et al., 1993). However, other research (Kraut, 1989) has shown that job satisfaction did not differ between teleworkers and non-teleworkers. In addition, Kurland and Bailey (1999) identify several factors associated with telework that tend to negatively influence job motivation: negative impact on social networks, decreased teamwork, and resentment by those who do not telework.

Telework gives the organization the benefit of recruiting and retaining the best employees even though they may live far away or are unable or unwilling to commute (DiMartino & Wirth, 1990; Kelly, 1988; Kossek, 2001; Neal et al., 1993). Turnover of skilled workers is an expensive proposition for companies. Direct costs include separation costs (e.g., exit interviews, accrued vacation, and continued benefits), vacancy costs (e.g., temporary workers, overtime), recruiting, selection, and hiring costs (e.g., relocation or search fees), and new hire costs (e.g., orientation, training). In addition, there are indirect costs such as lost productivity of incumbents and other employees and the costs to the company during the time of the learning curve of new employees. Altogether, the Corporate Leadership Council (1998) estimated these direct and indirect costs sum to between 41% and 241% of annual salary depending on the type of job.

There is evidence that telework negatively influences career progress. Teleworkers are less likely to be in the same physical place and time as co-workers, supervisors, and mentors, so they may less likely be part of the informal political network necessary for career advancement. Some outcomes documented by the research are professional isolation (Kossek, 2001; Kurland & Bailey, 1999), career anxieties created by spending less time in the office and being passed over for a promotion (Judiesch & Lyness, 1999), overcompensating at work to get the promotion, and becoming a workaholic. Resentment is reported from colleagues whose jobs do not permit them to work at home (Neal et al., 1993), as well as exploitation (DiMartino & Wirth, 1990; Foegen, 1993; Rovi, 1997). Other outcomes include receiving less pay/benefits, having less job security than their counterparts working on-site (Rovi, 1997), changes in supervision and evaluation techniques when employees work at home, special safeguards needed to preserve job security, increased work–family conflict due to the physical boundaries between work and home, and a greater risk of burnout since start and stop times for work are not specified (Neal et al., 1993).

2.2. Influence of telework on personal/family life

The general assumption is that the flexibility inherent in telework generally benefits the family. Research confirms that telework enables increased autonomy in the scheduling of paid work, housework, and childcare responsibilities. Home-based telecommuting may also improve home communication and help families save on food, clothing, and transportation (Kelly, 1988; Kossek, 2001; McCloskey & Igbaria, 1998; Mirchandani, 1999; Sullivan & Lewis, 2001).

However, home-based telecommuters are more likely than office workers to mix paid employment with domestic labor, domestic chores, and child care during the conventional business hours and extend their paid employment to the early morning or evening hours (Kraut, 1989). They are also more likely to report blurred work and family boundaries (Kossek, 2001), more role overload, and stress (Duxbury, Higgins, & Thomas, 1996). Olson and Primps (1984) suggest that some home-based telecommuters exhibited characteristics of workaholism because of the lack of separation between work and family life.

Hill, Hawkins, and Miller (1996) found that virtual office workers at IBM perceived greater work and personal/family life balance, but in direct comparisons they reported no more balance than traditional office workers. And according to Kurland and Bailey (1999), those in the virtual office have more difficulty with work/life balance than do traditional office workers.

2.3. Research questions

This study will extend the literature on telework by exploring the influence of distinct work venues on aspects of work and personal/family life using a large data set. Because the literature is equivocal we will not use hypotheses but will attempt to answer the following research questions:

1. How do the perceptions of those in the virtual office and home office compare regarding the influence of telework on aspects of work and personal/family life?
2. How do workers in three different work venues (traditional office, virtual office, and home office) compare on measures of work (job performance, job motivation, job retention, workload success, and career opportunity) and measures of personal/family life (work/life balance and personal/family success)?
3. How do workers in these three different work venues compare on measures of time (household labor, paid work time, commuting time, and work-at-home time)?
4. Does the individual work venue significantly predict measures of work and measures of personal/family life after controlling for other variables in multivariate analyses?

3. Method

The data for this study came from a United States subset of a global work and life issues survey administered online by IBM in 2001. This survey was designed to gather data to help IBM's diverse workforce achieve its business objectives while successfully navigating the demands of work and personal/family life. During recent years, IBM has implemented numerous policies to enable its employees to better harmonize their personal and family needs with the needs of the business. Some of these policies include child and elder care referral services, financial support for near- and on-site-dependent care facilities, personal and parental leave policies, online and call-in parenting assistance, permanent part-time job opportunities for professionals and managers, job sharing, and domestic partner benefits.

Recent internal surveys revealed that IBM employees perceived the flexibility to choose when, where, and how work is done to be the most beneficial IBM initiative to enhance work/family balance (Hill, Campbell, & Koblenz, 1997). As a result, aggressive policies to enhance flexibility in the timing and location of work have been adopted. For example, individualized work schedules give employees the flexibility to start work up to 2 h before or after the normal start time at their location with stop times adjusted accordingly. Meal-break flexibility enables employees to take a minimum of 30 min, up to a maximum of 2 h. This window of time in an employee's workday can be used for personal choice activities, such as attending a child's school function, caring for an elderly relative, or participating in a sports activity. Compressed work weeks make it possible for employees to work their 40-h weeks in fewer than five work days, e.g., four 10-h days (Hill et al., 2001).

Likewise, other policies enable greater flexibility in the location of work. Beginning in the mid-1990s IBM began to supply many sales and service employees with the portable means to work from a variety of work locations. About 100,000 IBM employees worldwide no longer had individual company-provided office space (Hill, Ferris, & Mårtinson, 2002). Using this *virtual office*, IBM employees have the flexibility to work whenever and wherever it makes sense. Recent programs enable sub-

stantial numbers of IBM employees to be home-based telecommuters. In the *home office*, employees are not on the move but work most of the time from the fixed location of their home (Ferris, 2001).

3.1. Data collection and sample

The 2001 IBM Global Work and Life Issues Survey was conducted in 48 countries and 20 languages with 59,250 invited and 25,822 (44%) responding. Data for this paper examines a sub-sample of employees in the United States randomly selected and stratified by gender to assure sufficient female responses for statistically reliable results for smaller subgroups. Altogether, 15% of the female IBM population in the United States was invited with 47% ($n = 3337$) responding; and 7% of the male IBM population was invited with 42% ($n = 2796$) responding. Because the sample was stratified by gender, data were weighted so that men and women in the analyses matched the actual IBM population by gender. By doing so the descriptive data could be generalized to the company as a whole, and we could compare demographic information to workers in the United States as a whole.

The types of jobs were indicative of the high level of skills needed by IBM: I/T professionals, 21%; programmers, 18%; engineers, 12%; sales/marketing, 10%; product support, 10%; HR/Finance, 7%; consultants, 4%; manufacturing, 2%; and other job categories, 16%. To get a general sense for whether those who responded were systematically different from those who did not respond, the self-report demographics were compared to those in IBM's Human Resources database. Though statistically significant differences were found, the absolute sizes of the differences were relatively small.

The survey was administered on the Internet. IBM has conducted online surveys since 1986, and survey data indicate a high degree of confidence in the confidentiality and anonymity of the data. To preserve anonymity, the survey was conducted by a third party who did not communicate any personal identifying information to the IBM survey administrator. Electronic reminder notes were sent four times to all survey invitees to encourage participation. Compared to the pencil-and-paper method, online survey administration at IBM has yielded higher participation rates, more and longer write-in comments on open-ended survey items, quicker data analysis, and faster implementation of new policies based on the data (Hill et al., 1997).

4. Results

In order to explore our research questions three perspectives were examined: *perceptions* of the influence of telework as measured quantitatively by self-report questions by those in the virtual office or the home office; *direct comparisons* of employees in the traditional, virtual, and home office; and *multivariate analyses* to see if each work venue predicts dependent variables representing aspects of work and personal/family life after including other relevant variables.

4.1. Perceptions (see Table 1)

To answer the first research question, respondents in the virtual office and home office were asked to rate the impact of telework on aspects of work and personal/family life using a 5-point Likert scale ranging from very negative to very positive. Single items representing the aspects of work and personal/family life were selected and the data were analyzed by these two work venues. A *t* test was run to compare the virtual office and the home office. An effect size comparing the home office to the virtual office was determined by calculating the difference between the means and dividing by the average of the two standard deviations. These data represent what teleworkers perceive the impact of work venue has been on these aspects of work and personal/family life. Many evaluations of telework programs do not go beyond this level of analysis (Dubrin & Barnard, 1993; Ramsower, 1985) (see Table 1).

Table 1

Comparison of the perceptions of home office workers to perceptions of virtual office workers about the influence of telework on aspects of work and personal/family life: means, standard deviations, effect sizes, and *t*-values

Variable	Virtual office, <i>n</i> = 786		Home office, <i>n</i> = 451		<i>ES</i> ^a	<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
<i>Aspects of work</i>						
Teleworkers' perception of impact of telework on aspects of work at IBM:						
Productivity	4.09	0.93	4.57	.74	.57	9.614*
Morale/motivation	3.80	1.12	4.37	.89	.57	9.427*
Commitment/loyalty to IBM	3.87	1.01	4.40	.83	.58	9.605*
Teamwork	3.05	1.06	3.47	1.09	.39	6.713*
Career advancement within IBM	2.98	.89	3.00	.96	.02	0.246
Job satisfaction	3.79	1.04	4.34	.82	.59	9.913*
Connectedness you feel to IBM	2.66	1.15	3.10	1.16	.38	6.504*
Overall impact of telework on work at IBM	3.75	.99	4.30	.87	.59	10.148*
<i>Aspects of personal/family life</i>						
Teleworkers' perception of impact of telework on aspects of personal/home life:						
Management of home chores	3.38	1.07	3.97	.91	.60	9.880*
Management of child care/elder care responsibilities	3.45	.98	4.13	.85	.74	10.391*
Relationship with your spouse/partner and/or children	3.30	1.10	4.01	.93	.70	11.237*
Personal stress level	3.33	1.06	3.98	1.00	.63	10.799*
Ability to balance work and personal/home responsibilities	3.43	1.10	4.09	1.02	.62	10.596*
Overall impact of telework on personal/family life	3.45	1.09	4.29	0.84	.76	12.391*

* *p* < .001.^a *ES* (Effect size) = $\frac{M_2 - M_1}{(SD_1 + SD_2)/2}$.

Results for research question 1. Perceptions of home-based telecommuters about the impact of telework were much more positive than the perceptions of virtual office workers on all categories except for career advancement within IBM ($p < .001$). Almost all effect sizes were greater than 0.50. To put this in perspective, 93% of those from the home office responded that telework had a positive impact on their productivity, while 74% of those from the virtual office responded the same. In addition, those in a home office were more favorable in their perception of how telework had influenced personal/family life success (88% positive compared to 61% positive in the virtual office). Both groups responded favorably on most items, but the responses from the home office group were most positive.

4.2. Direct comparisons (see Table 2)

To answer research questions 2 and 3, respondents were asked to select their primary work venue from among seven choices. For analyses these were collapsed into three categories. *Virtual office* employees reported that in their primary work loca-

Table 2
Comparisons among employees in the traditional office, virtual office, and home office: Means, standard deviations, and effect sizes

Variable	Traditional office, <i>n</i> = 4315		Virtual office, <i>n</i> = 767		Home office, <i>n</i> = 441		<i>ES</i> ^a		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Virtual vs. traditional	Home vs. traditional	Home vs. virtual
<i>Aspects of work</i>									
Job performance	3.02	.54	2.99	.57	3.07	.51	-.05	.09	.15*
Job motivation	3.80	.65	3.90	.64	3.99	.64	.15***	.29***	.14
Job retention	3.66	.96	3.72	.95	3.85	.96	.06	.20***	.14
Workload success	2.07	.53	2.02	.55	2.06	.55	-.09	-.02	.07
Career opportunity	3.33	.85	3.42	.85	3.46	.90	.10*	.15*	.05
<i>Aspects of personal/family life</i>									
Work/life balance	2.93	.93	2.69	.97	3.21	.94	-.25***	.30***	.54***
Personal/family success	4.94	1.17	4.78	1.17	5.20	1.14	-.14***	.22***	.36***
<i>Time (h/week)</i>									
Household labor time	24.05	21.78	19.84	19.24	25.89	22.63	-.20***	.08	.29***
Paid work time	48.94	8.05	52.67	9.62	50.62	9.69	.42***	.19***	-.21***
Commuting time	5.31	3.24	5.02	4.94	1.48	3.22	-.07	-1.18***	-.87***
Work at home time	8.19	9.68	22.90	16.67	44.72	14.79	1.12***	2.98***	1.39***

* $p < .05$ (one-way ANOVA, Scheffe post hoc test).

** $p < .01$ (one-way ANOVA, Scheffe post hoc test).

*** $p < .001$ (one-way ANOVA, Scheffe post hoc test).

^a ES (Effect size) = $\frac{M_2 - M_1}{(SD_1 + SD_2)/2}$.

tion they were provided the portable means to do their job and did not generally have a dedicated desk or office at any IBM facility. They reported being on the move and working from a variety of locations. *Home office* employees reported that their primary workplace, with management approval, was at their home residence. However, they could occasionally attend meetings at a traditional IBM office or at an alternate site facility. *Traditional office* employees reported they had a dedicated workspace at IBM or at an IBM customer location. They spent a major portion of their workday at this workspace, be it an enclosed office or open landscape cubicle. All workers could work occasionally from the traditional office or from the home office. To answer research question 2, respondents were asked many questions about work and personal/family life using 5-point Likert scales, recoded 1–5 so the higher the rating the more favorable the response. These questions were mapped to the categories of job performance (one item: What was your most recent PBC rating?), job motivation (6 items, $\alpha = .82$), job retention (2 items, $\alpha = .72$), workload success (2 items, $\alpha = .82$), career opportunity (3 items, $\alpha = .84$), work/life balance (3 items, $\alpha = .83$), and personal/family success (1 item: How successful do you feel with your personal and/or family life?). Because this was a corporate study, the number of questions was limited and we could not create scales for all aspects of work and personal/family life. This necessitated the scales to be created post hoc. The ideal would have been to use established scales, but this was not possible. To answer research question 3, questions were asked measuring the number of hours typically spent per week in household labor, paid work, commuting, and working at home. Means (M) and standard deviations (SD) were calculated for all scales and items, along with effect sizes (ES) showing the magnitude of the difference between the three work venues. A Scheffe post hoc test was used to judge whether differences among those from different work venues were significant (see Table 2).

Results for research question 2. Virtual office workers responded more positively than traditional office workers on the job motivation ($p < .001$) and career opportunity ($p < .05$) scales; and more negatively on the work/life balance scale ($p < .001$) and the personal/family success item ($p < .001$). Home office workers responded more positively than traditional office workers on the job motivation ($p < .001$), job retention ($p < .001$), career opportunity ($p < .05$), and work/life balance scales ($p < .001$) and to the personal/family success item ($p < .001$). Home office workers reported higher performance appraisals ($p < .05$) than virtual office workers. It should be noticed that the effect size for this difference was a modest 0.15. Home office workers responded more favorably than virtual office workers on the work/life balance scale ($p < .001$) and more positively to the personal/family success item ($p < .001$).

Results for research question 3. Virtual office workers, compared to traditional office workers, averaged fewer weekly household labor hours (20 vs. 24, $p < .001$), longer weekly work hours (53 vs. 49, $p < .001$), and more weekly hours working from home (23 vs. 8, $p < .001$). Home office workers, compared to traditional office workers, averaged longer weekly work hours (51 vs. 49, $p < .001$), shorter weekly commute hours (1.5 vs. 5.3, $p < .001$), and more weekly hours working from home (45 vs. 8, $p < .001$). Those in the home office, compared to those in the virtual office,

averaged more weekly household labor hours (26 vs. 20, $p < .001$), shorter weekly work hours (51 vs. 53, $p < .001$), shorter weekly commute hours (1.5 vs. 5.0, $p < .001$), and more weekly hours working from home (45 vs. 23, $p < .001$).

4.3. Multivariate analyses (see Table 3)

To explore research question 4, multivariate analyses were constructed for each work venue. The independent variables were dummy variables constructed for the virtual office, the home office, and the traditional office. Dependent variables were job performance, job motivation, job retention, workload success, career opportunity, work/life balance, and personal/family success. In addition *work environment* control variables included scales measuring the perceived supportiveness of personal/family life by the company's culture (*supportive organizational culture*) and perceived supportiveness by first-line manager for personal/family life needs (*supportive management*). These have been shown to influence many of the dependent variables named above (Bond et al., 1998). *Time* variables included weekly unpaid domestic labor hours, including household chores and maintenance, and child care (*household labor time*), and weekly paid work hours at IBM (*paid work time*). *Demographic* variables included the *gender* of the respondents (male or female) and *presence of preschoolers* (whether or not the respondent had a child 5 years old or younger living at least 50% of the time in the respondent's home). It is commonly assumed that because of the "second shift" (Hochschild, 1989), women with greater household responsibilities will find it more difficult to balance work and personal/family life. Betas for the regression tables of all three venues are summarized in Table 3. The complete tables are found in Appendices A–C.

Results for research question 4. Working in the virtual office was a significant predictor of greater job motivation ($p < .001$), better job retention ($p < .01$), more workload success ($p < .01$), and increased career opportunity ($p < .001$) in a model including the variables of work environment, time spent in paid and household work, and demographic variables. It was not a significant predictor of personal/family success and was a predictor of lower performance ratings ($p < .01$) and less work/family balance ($p < .001$).

Working in the home office was a significant predictor of greater job motivation ($p < .01$), improved work/life balance ($p < .001$), and greater success in personal/family life ($p < .001$). It was not a significant predictor of job performance, job retention, workload success, or career opportunity.

Working in the traditional office was a significant predictor of improved job performance ($p < .05$), decreased job motivation ($p < .001$), less job retention ($p < .001$), less workload success ($p < .01$), and less career opportunity ($p < .001$). It was not a significant predictor of work/life balance or personal/family success.

It should be noted that the largest Beta weights for work venues were in the area of work/life balance. Though often significant, the Beta weights were modest. In addition, variables such as work hours, the supportiveness of the organizational culture, and the support of the first-line manager had larger Beta weights than did work venue.

Table 3
Summary of multivariate analyses: Standardized coefficients–Betas

	Dependent variables						
	Aspects of work					Aspects of family	
	Job performance	Job motivation	Job retention	Workload success	Career opportunity	Work/life balance	Personal/family success
<i>Independent variables</i>							
<i>Venue (a)</i>							
Virtual (0 = n, 1 = y)	-.037**	.060***	.043**	.038**	.042***	-.044***	-.025
Home (0 = n, 1 = y)	.006	.032**	.015	-.001	-.010	.079***	.048***
Traditional (0 = n, 1 = y)	.027*	-.071***	-.046***	-.031**	-.029*	-.016	-.011

For work venue independent variables: After controlling for work environment, time, and demographic variables (see Appendices A–C).

$N = 5915$; See Appendices A–C for complete results for all three work venues.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

5. Discussion

Millions of employees in the United States now use electronic tools to do their jobs away from the traditional office. Some labor in a virtual office with extensive flexibility to work wherever and whenever it makes sense. Others telecommute primarily from a home office. Many organizations are considering what kind of alternative work venues might make sense for them and wonder what the benefits and drawbacks are to the business and to the employee's personal/family life.

Data from this study show that alternative work venues are not a panacea for work and personal/family life troubles. They reveal that each work venue has its benefits and challenges. The perceptions of the impact of telework by those in this study are quite positive. However, quantitative comparison of those working from these venues as well as multivariate analyses reveal that such is not necessarily the case.

5.1. Influence of work venue on aspects of work

Job performance. These data show the relationship between telework and job performance to be equivocal. The perception of both virtual office workers and home office workers was that telework had enhanced their productivity, and those in the home office were the most positive. However, direct comparisons showed no significant difference between the reported performance appraisals of the virtual office and traditional office workers, or between reported performance appraisals of the home office and traditional office workers. Virtual office workers did report significantly higher performance appraisals than those in the home office. Counter-intuitively, multivariate analyses actually showed being in the virtual office, as opposed to being in a different work venue, to be a significant predictor of *poorer* job performance.

Why would the perceptions be so much more positive than the direct comparisons and multivariate measures? One possibility is that respondents like the flexibility provided by these alternative venues and this acts as a positive halo effect. Another might be that because the respondents expect results of the survey to affect future decisions about flexibility, they answer perception questions positively to make it more likely the flexibility will be maintained. Why would multivariate analyses show being in the virtual office to be a significant predictor of poorer performance appraisal? One possible explanation is that working virtually enables employees to work longer hours. In this survey virtual office workers reported working 53 h/week, 2 h/week longer than those in the home office, and 4 h/week longer than those in the traditional office. When we removed job hours from the regression equation the Beta for the virtual office became insignificant, changing from $-.037$ ($p < .01$) to $-.013$ (NS).

Job motivation. The results for job motivation were less ambiguous. Perceptions, direct comparisons, and multivariate analyses all agreed that being in an alternative work venue, either the virtual office or the home office, was a positive influence on job motivation. One reason for this unambiguous finding may be the sense of autonomy engendered when working away from the traditional office. Giving an employee the flexibility to choose where work is done, also leads to more autonomy in when it is done, how it is done, and what work is done. Implementing alternative work

venues may also be symbolic of the trust employers have in employees. Other studies have found that greater autonomy is associated with greater motivation on the job (Bond et al., 1998).

Job motivation is seen by organizations as a strategic priority strongly linked with organizational success (Hill & Weiner, 2003). A motivated employee will be more likely to use individual talents and discretionary time to achieve organizational objectives. Employees in both the virtual office and home office were more likely than those in the traditional office to report that they would be willing to put in extra effort to help the company succeed. Coupled with the fact that it is often less expensive for organizations to have employees in the virtual and home office, this greater job motivation is a powerful argument for investigating and adopting these work venues.

Job retention. Companies in the growing sectors of the economy are engaged in a “talent war” to attract, motivate, and retain employees with key skills (Barnett & Hall, 2001). Turnover of skilled workers is an expensive proposition for companies. Most data from this study show that being in either the virtual office or home office has a positive influence on job retention. Autonomy is probably a key factor in job retention as well.

Workload success. One rationale for implementing alternative work arrangements is to provide the flexibility for employees to better handle high workload. The results from this study were ambiguous. Direct comparisons did not reveal any significant difference between the virtual office and home office workers and the traditional office workers. However, multivariate analyses revealed that being in the virtual office was a significantly positive predictor of workload success and being in the traditional office was a significantly negative predictor of the same.

Career opportunity. One of the objections to working away from the traditional office is the fear that employees will lose contact with the informal networking and mentoring relationships necessary to progress in their careers. The perception of respondents was that telework was neither a positive nor a negative influence on career opportunity. Direct comparisons revealed virtual office workers and home office workers were *more* likely than traditional office workers to view their opportunity for career advancement optimistically. In addition, being a virtual office worker was a significant predictor of career optimism in the multivariate model as well.

These results are contrary to findings from other studies (e.g., Kossek, 2001; Kurland & Bailey, 1999). One possible explanation is that flexible work arrangements have been used in IBM so extensively, and for so long, that they have been normalized. So many employees work in the virtual office and the home office that work venue no longer is seen as an impediment to career development. Also, IBM is a technology company and its employees are provided with tools to effectively reduce the need for face-to-face interaction (e.g., video-conferencing, wide bandwidth, excellent computing resources).

5.2. Influence of work venue on personal/family life

A common rationale for implementing alternative work venues is to enhance work/life balance. This study shows variation by the type of alternative work venue. The perception of virtual office workers was that telework had a neutral influence on

work/life balance. However, virtual office workers reported significantly less work/life balance and less personal/family success than traditional office workers or home office workers. Multivariate analyses also confirmed a negative relationship between being a virtual worker and work/life balance. Why would work/life balance be problematic for these virtual workers? One possible reason is the lack of externally imposed physical boundaries. Virtual office workers may have difficulty knowing when they are at work and when they are home. Another explanation is that giving virtual office employees work-enabling tools may increase their *time density* or ability to do multiple disparate things at the same time (Robinson & Godbey, 1997). This also may negatively impact virtual office workers' view of work/life balance.

For home-based telecommuters, the data unambiguously showed working in the home office was associated with greater work/life balance. One explanation may be foregoing the daily commute. This amounts to a time savings of 3–4 h/week. In addition, they work fewer hours than the virtual office workers. All this enables them to spend about six hours more per week on household chores than virtual office workers. Home workers were not generally provided with the portable means to do their job, nor with pagers and cell phones. This better enabled them to establish boundaries in where they work and reduced time density problems.

5.3. *Organizational implications*

These data show that the influence of the virtual office and home office on aspects of work are generally positive. Given that it is likely that alternative work arrangements reduce expenses (Apgar, 1998), this makes a strong business case for their adoption.

If flexibility programs are so beneficial and cost effective, why are they not more widely used? Friedman, Christensen, and DeGroot (1998) report that many leaders of organizations see this type of program as a zero-sum game in which “every time an employee's personal interests ‘win,’ the organization pays the price in its bottom line” (p. 119). It takes hard data, such as provided in this study, to overcome this cultural baggage.

Another implication for business relates to the performance evaluation systems of those who consistently work away from the traditional office. Adoption of these programs means that employees will be much less likely to work at the same time and place as the manager. This potential for change points out the need for careful consideration of performance evaluation systems to assure they are based on the measurable results delivered, rather than just on the subjective view of the manager. Some managers hold the attitude, “If I don't see my employees, how do I know if they are working?” The company that embarks on the path to the virtual office and home office should also move away from a “face-time” business culture to a “results-oriented” business culture (Friedman et al., 1998), and performance evaluation systems must adapt to include more specifically measured objectives.

Another implication is that companies that implement the virtual office should note the tendency for these employees to work so many hours that their personal/family life suffers. It might be well to incorporate training for those entering this work arrangement emphasizing how to manage the boundaries in this environment.

5.4. *Personal/family implications*

These findings indicate that working primarily from the home office was linked to more positive perceptions of work/life balance and greater perception of personal/family success. The literature indicates that possible benefits of successful work/life balance include less marital conflict, better monitoring of children, less depression, etc. (Beatty, 1996; Bolger, DeLongis, Kessler, & Wethington, 1989; Bumpus, Crouter, & McHale, 1999; Crouter, Perry-Jenkins, Huston, & Crawford, 1989).

By working from home, employees have more flexibility in when their work is done. The highest quality work hours are not always between the hours of 8–5. It may be that the best strategic ideas come to one at 5:00 a.m. or at 11:00 p.m. Perhaps an important report can be better written between 9:00 p.m. and midnight than it would be during normal work hours when interruptions occur frequently. Likewise, the highest quality personal/family hours may not always be outside the regular work day. Putting one's time to its best use, regardless of the hour, may translate into better work/family balance.

Many jobs include periods of peak work demands. In a rigid work environment, these times make it extremely difficult to simultaneously meet the demands of work and family life because the work has to be done physically from the work location. In such times, a worker might go to the office early in the morning, eat breakfast, lunch, and dinner at the work place, and return home late at night, never participating in family life at all. Employees in such conditions could go weeks with little quality family time. By contrast, in a flexible work environment, an employee can work the same long number of hours, but intersperse several hours of quality family time each day. For example, the individual may arise early and work from home for a few uninterrupted hours at the beginning of the day. Then he or she could be available to provide family members breakfast and to get the children off to school or to other care arrangements. In the evening, the flexible worker could be at home for a couple of hours with the family during the dinner hour, and then continue work for several hours from home after the children are in bed. This flexibility might explain the results suggesting that workers with flexibility in the location of work can work more hours without impacting work/family balance.

5.5. *Limitations*

The respondents in this survey all worked for IBM in the United States. IBM employees, in general, are more highly educated, have higher salaries, and have more experience with computer technology than the general population (Hill et al., 2002). For these reasons, the degree to which these results may be generalized to other companies and in other parts of the world is uncertain. Even if the IBM sample is representative of employees working for large corporations, it may not be representative of the majority of employees who work for smaller firms or are self-employed. In addition, the years of experience IBM has with flexible work arrangements means they have had time to work through effective telework policies and practices. Other companies just beginning to implement flexible work

arrangements may not see the same levels of benefits reported in this study for some time. This survey is one of many surveys that IBM has used over the past 30 years to make changes in the work environment. One limitation to self-report data in this survey-taking environment may be the tendency for respondents to answer questions to advance the changes they want, rather than answering the questions at face value. There is also a question of how more than 50% non-respondent employees might systematically differ from those who responded. Though respondents seemed to be demographically representative, they may differ in other ways. Perhaps those who work the longest hours did not have the time to respond, so those with the most workload may be under-represented here. On the other hand, it may be that those with the fewest work/family issues chose not to invest time in taking this survey, because they did not have a felt need to participate.

Another concern is the nature of self-report data, especially when survey takers are asked to estimate weekly hours in work activities. Robinson and Godbey (1997) have shown that self-report data of time in work activities are substantially inflated. It is possible that even though this is an anonymous survey, employees may overestimate their hours to appear to be working hard or to encourage the company to hire more employees to share the workload. These limitations point to the need for robust research on the influence of work venue on aspects of work and personal/family life, instead of relying solely on self-report data with its inherent monomethod bias. This research should expand to a variety of groups and include the use of non-survey (e.g., interview and observation) methodologies.

6. Summary

In summary, the results of this study indicate that telework offers the potential for enabling employees to better balance work and family life while at the same time enhancing business performance. The present study finds little evidence that telework has any negative business ramifications at all. This, coupled with cost savings often realized by replacing brick-and-mortar office space, makes a compelling business case for investigating and adopting telework programs. However, this study also reveals that the benefits depend on the type of telework adopted. The findings that the virtual office is associated with lower work/life balance and less success in personal/family life is cause for personal and family concern. It is likely that those who wish to work successfully from the virtual office will need to find ways to better establish boundaries between work and personal/family life.

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Appendix A

Virtual office multivariate analysis: Standardized coefficients—Betas

	Dependent variables						
	Aspects of work					Aspects of family	
	Job performance	Job motivation	Job retention	Workload success	Career opportunity	Work/life balance	Personal/family success
<i>Independent variables</i>							
<i>Venue</i>							
Virtual office (0 = n, 1 = y)	-.037**	.060***	.043**	.038**	.042***	-.044***	-.025
<i>Work environment</i>							
Supportive organizational culture	-.021	.167***	.164***	.111***	.160***	.227***	.119***
Supportive management	.120***	.331***	.233***	.112***	.295***	.202***	.130***
<i>Time</i>							
Household labor time	-.020	-.048***	.006	-.042***	-.097***	-.104***	-.020
Paid work time	.211***	.059***	-.045***	-.470***	.042***	-.377***	-.171***
<i>Demographics</i>							
Gender	.027*	.077***	.055***	-.035**	.092***	-.038***	-.018
Presence of preschool children	.035*	.053***	.043**	.001	.113***	-.047***	.020
<i>Adjusted R-squared</i>	.05	.18	.12	.27	.16	.31	.08

N = 5915.

* p < .05.

** p < .01.

*** p < .001.

Appendix B

Home office multivariate analysis: Standardized coefficients—Betas

	Dependent variables						
	Aspects of work					Aspects of family	
	Job performance	Job motivation	Job retention	Workload success	Career opportunity	Work/life balance	Personal/family success
<i>Independent variables</i>							
<i>Venue</i>							
Home office (0 = n, 1 = y)	.006	.032**	.015	-.001	-.010	.079***	.048***
<i>Work environment</i>							
Supportive organizational culture	-.023	.166***	.164***	.113***	.164***	.216***	.112***
Supportive management	.122***	.327***	.230***	.110***	.293***	.203***	.131***
<i>Time</i>							
Household labor time	-.019	-.051***	.004	-.043***	-.098***	-.104***	-.020
Paid work time	.206***	.065***	-.040**	-.465***	.048***	-.388***	-.177***
<i>Demographics</i>							
Gender	.029*	.071***	.052***	-.037**	.090***	-.042***	-.020
Presence of preschool children	.035*	.053***	.043**	.001	.113***	-.047***	.020
<i>Adjusted R-squared</i>	.05	.18	.11	.27	.16	.31	.08

N = 5915.

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

Appendix C

Traditional office multivariate analysis: Standardized coefficients—Betas

	Dependent variables						
	Aspects of work					Aspects of family	
	Job performance	Job motivation	Job retention	Workload success	Career opportunity	Work/life balance	Personal/family success
<i>Independent variables</i>							
<i>Venue</i>							
Traditional office (0 = n, 1 = y)	.027*	-.071***	-.046***	-.031**	-.029*	-.016	-.011
<i>Work environment</i>							
Supportive organizational culture	-.020	.161***	.160***	.109***	.159***	.224***	.117***
Supportive management	.121***	.330***	.232***	.111***	.293***	.205***	.132***
<i>Time</i>							
Household labor time	-.019	-.050***	.006	-.043***	-.098***	-.102***	-.019
Paid work time	.210***	.056***	-.046***	-.470***	.043***	-.385***	-.176***
<i>Demographics</i>							
Gender	.030*	.073***	.052***	-.038**	.089***	-.036**	-.016
Presence of preschool children	.035*	.052***	.043**	.001	.113***	-.047***	.020
<i>Adjusted R-squared</i>	.05	.18	.12	.27	.16	.31	.08

N = 5915.

* p < .05.

** p < .01.

*** p < .001.

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