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IF You Can Use It: The Effect of Work/Family Practices in Biotechnology Firms on Commitment and Performance

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Abstract

This paper presents original data linking family-responsive workplace policies to organizational commitment and self-reported productivity. Respondents include 500 professional and technical employees in small and medium-sized biotechnology firms. Only where employees felt "free to use" such policies are higher levels of organizational commitment found, but even the presence of policies may increase productivity. The paper contributes a new measure that allows better captures employees' perceived experiences and their impact on firm outcomes.

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> "How can we be # 1 in having a flexible work environment? This will help with both retention and recruitment of key people."
>
> *Vice President for Compensation and Benefits in a biotechnology firm*

> "How do we keep people? Through flexibility, in part. We particularly need to retain people while the primary product is being developed, and sometimes the managers continue to want to [retain them] because they want to maintain a pipeline…. In small biotech firms, you know everyone well, you know their personal situations, and you can make accommodations. I bend over backwards because individual people are our most important asset. I try to create an environment supportive of scientists, who are expressive and creative, like artists. Also, many managers are young, in their 40s but with young kids at home. When they are thinking of leaving, flexibility plays a big part. Also it helps me in hiring."
>
> *Human Resource Manager in a biotechnology firm*

Introduction

The managers quoted above believe that the skilled, scarce employees they want to recruit and retain are responsive to certain key, non-traditional management practices that give them the day-to-day flexibility they need to manage their demanding jobs along with their home lives. Yet many managers and researchers are understandably skeptical of the value of "work-family policies," especially those that exist mainly in employee handbooks. Studies have shown that many employees are loath to use such "benefits," even those who might need them most. These include younger employees with new families and women in particular (Bailyn 1993, Hochschild 1997). While many consultants market 'family-friendly' advice, relatively few researchers have studied the mechanisms through which these policies function to enhance firm performance (for exceptions, see Landers *et al* 1996, Drago *et al* 2000, MacDermid and Williams 1997).

Industrial relations researchers provide a model for evaluating such managerial programs in studies of "high performance" workplaces. For instance, many job enrichment and high performance policies seem to require a particular style of implementation, in a bundled fashion, to be effective (MacDuffie and Krafcik 1992, Ichniowski *et al* 1996, Appelbaum and Batt 1994). When employees are more involved in their development and evaluation, such policies also seem

to be more effective (Hackman and Oldham 1980, Appelbaum *et al* 2000). These studies help us to generalize the issue of whether and under what conditions work-family policies contribute to employee commitment, and productivity.

This paper uses original survey and interview data to test hypotheses from the work-family and industrial relations literature about the role of firm-level policies and practices designed to reduce work-family conflict of professional and technical employees in the biotechnology industry.[1] I focus specifically on policies having to do with flexibility and time, as studies of employee "benefits" and their cost are extensive. The key research question is: Are firm-level flexibility practices significant predictors of organizational commitment and individuals' productivity as reported by employees?

Research Framework:

The general framework of the hypotheses is summarized in Figure 1 (see Appendix). I propose that firm policies and practices addressing work-family flexibility, as measured in one or more of three ways (formal, informal, and perceived usable), will influence key organizational outcomes, even controlling for firm, individual and job characteristics. Specific outcomes of interest include organizational commitment and employee productivity, as reported by the employees.[2] The hypotheses are operationalized using methods and analytical techniques from industrial relations research.

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[1] Research cited in this paper on the biotechnology industry was conducted in part under a grant from the Alfred P. Sloan Foundation to the Radcliffe Public Policy Institute at Radcliffe College. The Sloan Foundation project team includes: Françoise Carré(Co-principal Investigator), Paula Rayman (Co-Principal Investigator), Lotte Bailyn (Study Director), Ann Bookman (Study Director), Constance Perin (Study Director), Susan C. Eaton (Senior Research Associate), Sandra Resnick (Research Associate), Wendy Jade Hernandez (Research Associate), and Pamela Joshi (Research Analyst).

[2] Productivity is notoriously hard to measure in non-manufacturing industries such as biotechnology. Research and development staffs typically measure their results by patents or publications achieved, experiments completed, and successful drug development—but all of these results require years of work, and the involvement of many people. When I asked managers in biotechnology firms how they measured their employees' productivity, they answered that they "knew" who was productive and who was not, but that there was no way to measure it specifically. In this case, I asked employees to evaluate their own productivity, by thinking of a time in their lives when they were most productive as a "10," and evaluating their productivity under current conditions on a scale of 1 to 10, and explaining "why" in a sentence or two. I went over some of these results with managers and found that they felt comfortable with these measures as reported by employees. Obviously this is not the ideal measure, but it was the best I could find, and as you will see, it appears to relate specifically to reasonable predictors in the rest of the data. I believe this amplifies the self-reports of satisfaction and of commitment that have been tested by other researchers. Finally, while there may be a self-serving bias among respondents (perhaps indicated by the mean of the productivity index being 7.6 instead of 5, as one might predict), at least one could assume that over such a relatively large sample, respondents would be reasonably equally biased.

The Research Literature

In investigating the value of work-family policies to companies and their employees, an open question is whether employee commitment to the organization is associated with the presence or availability of these policies. Professional workers are often more committed to their careers or their occupations than to their companies (Abbott 1988, Larson 1977), making this issue particularly salient for employers of professionals. Several reliable studies have shown that family-friendly policies can reduce absenteeism and turnover (Meyer and Allen 1997, Bailyn *et al*. 1996). Since turnover can be priced at salary plus 93% for higher-level employees, work-life programs “easily pay for themselves" if turnover can be sufficiently reduced, according to experts (Martinez 1997:111-2). At least two studies found that companies that offer access to work-family policies are more successful at retaining employees, even if individuals do not use the policies themselves (Grover and Crooker 1995; Thompson *et al* 1997). Although debate continues over the relationship between satisfaction and performance, a review of multiple studies finds a consistent relationship between organizational commitment and higher performance levels (Meyer and Allen 1997).

At the same time, there is skepticism that work-family policies, as implemented in the workplace, have much to do with productivity itself (Robinson and Godbey 1997). In part this is because there are few reliable measures of productivity in professional and white-collar workplaces, and fewer studies of work-family policies have been done in the blue-collar context (see Appelbaum *et al* 2000; Batt and Valeur 2000 for exceptions). Others argue that work-family policy effects are likely to be too small to show up as significant. I investigate productivity as employees themselves report it, compared to other work periods in their lives, among a group of well-educated scientists, researchers, and managers. Precedents for the self-report strategy exist in the absence literature (Drago and Wooden 1992). In the absence of a demonstrably better way to proxy productivity, the strategy is parsimonious and, in triangulation with qualitative interviews in this case, self-report employee data is consistent with managerial reports (Eaton 2000).

Despite the possibility that formal work-family policies alone are sufficient to generate significant benefits to firms, few studies have taken the next logical step to develop indicators of work-family policies that are meaningful from an employee perspective. While work is in progress on such measures, I use qualitative evidence in this study. I discover that formal policies do matter to employees, for if there is no policy, they are less likely to request an arrangement such as part-time or flexible hours. Informal policies also matter to employees, since these are the dominant determinant of many people’s actual day to day working relations. Finally, even where formal or informal policies exist, employees may feel discouraged from using them, and that their careers will suffer if they do. I call this the issue of whether employees “feel free” to use policies.

Thus the independent variables I examine are the presence of formal, informal, and "perceived usable" work-family policies and practices.

As noted above, the dependent variables used are organizational commitment and productivity, as reported by employees at the time of the survey, compared to the most productive time in their lives. Appropriate control variables are added to ensure that the study does not mistakenly conflate work-family policies and practices with other possible contributing factors.[3]

What is the relationship between these dependent variables and issues of "work and family?" Past researchers (e.g., Gray 1989:810) have called for studies of organizational commitment to be broadened to account for the effect of family life on organizational commitment. This issue has been generally ignored in previous studies of male workers, and perhaps overemphasized in studies of women's organizational and work commitment. Feldberg and Glenn (1979) note that men are typically studied with respect to the job alone, while women are studied with respect to their gender roles, rather than focusing on the job alone. Other contemporary researchers have found evidence of a positive relationship between family-friendly policies and organizational commitment or citizenship behavior, in diverse settings.[4] Feldberg and Glenn (1979) recommend integrating the "job model" and "gender model" in future research. In response to these concerns, the present study provides joint and separate estimates of commitment and productivity for male and female employees at multiple levels of the occupational hierarchy.

Not all scholars agree that flextime and other "work-family friendly practices" are the solution to work-family conflicts.[5] First, there is skepticism about whether these policies have real effects in terms of utilization, an issue addressed in the construction of the present study. Second, there is concern that "mommy track" working arrangement will simply reintroduce and reinforce the sexual division of labor where women do most of the work at home and sacrifice their career and earnings prospects as a result. Jurczyk, for instance, argues that:

> .... solutions to these problems [of social inequity, including inequity at work] cannot be found in additional special social models for women such as mother-friendly working hours. Parents need parent-friendly work hours, and people need

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[3] As explained in more detail below, controls include sex, industry, firm size, age, education, and household income, managerial status, and in some cases level of control of work. I did investigate the influence of dispositional personality factors, through a question about life attitudes, and did not uncover any significant differences in my findings (results not shown).

[4] See for example Scheibl and Dex (1999) on female workers; and Lankau and Scandura (1997) specifically with respect to family-friendly policies for male and female managers across organizations. The existence of flexible work programs was shown to be significantly related to organizational commitment and job satisfaction of female managers (Lankau and Scandura, ibid: 387). Organizational commitment was higher whether or not employees used the program.

[5] It should be noted that several authors have noted the possibilities and even probabilities of synergies in the realm of work and family, not only conflict. (See e.g. Bailyn 1993, Barnett and Rivers 1996.) My study does not discount this possibility, though it is not the subject of investigation here.

> time structures which allow for a balance between the various things that matter in life.... These time structures must be flexible so that they allow for changes in working hours when certain life situations and phases require it and where phases of extensive professional involvement can alternate with phases of leisure time (1998: 303-4).

These disagreements in the research literature help explain why the present study offers a new contribution, both in distinguishing formal "flextime" from what is really experienced as control over flexibility, scheduling, etc., and in seeking to answer the question of what happens in real life, in practice at specific work places, rather than on the public relations front. I do not hypothesize a differential impact by sex, though this is a possibility if women have more home responsibilities than men. Biotechnology was chosen as the industrial sector for the study because of its potentially uniquely equitable gender conditions, at least in comparison with other scientific-professional workplaces.

Research Setting: Industry Background

Biotechnology includes companies that engage in the research, development, production, and commercialization of products using recombinant DNA, cell fusion, and novel bioprocessing techniques (Office of Technology Assessment 1991). Biotechnology came into being as a result of revolutionary advances in biology in the 1970s. While early success in actually “designing” drugs led to a rush of financing to the industry, the pace and productivity of development diminished as more complex diseases and product disappointments emerged in the 1980s and 90s (Resnick 1996). The U.S. population of biotechnology firms is about 1300, and they employ about 153,000 people (Biotechnology Industry Organization 1999). Three hundred of the 1300 firms are publicly traded. Total U.S. market capitalization is estimated to be approximately $80 billion (Feder 1997).

Today the biotechnology industry consists mainly of young, entrepreneurial, networked firms, with a high concentration of “knowledge workers.” Life sciences researchers now compose over one-third of all graduating PhDs in the natural sciences (National Science Foundation 1999). Nearly one-third of these go to work in industry. Women compose nearly 40% of life sciences graduates, even at the Ph.D. level, more than in any other natural science field (Valian 1999).

The biotechnology industry is composed mainly of small firms, with an average size of around 150 employees. On average, a new drug requires 15 years and more than $304 million to be brought from conception to market (Hewitt 1997; DiMasi *et al.* 1991). Pharmaceutical researchers estimate that only three of 10 drugs introduced from 1980 to 1984 had returns above the average after-tax research and development costs (Pharmaceutical Manufacturers’ Association 1997). Biotechnology is also characterized by competition. Firms logged 25 clinical trial failures in 1997, and layoffs are common, as smaller firms whose trials have failed rarely survive intact.

Professionals are employed in substantial numbers (at least 50% and up to 75% of the workforce, often including 20% or more PhDs: see Pharmaceutical Manufacturers' Association 1997). The firms are gender-balanced, as professionals are approximately 50% female (DeHaan 1997, Radcliffe Public Policy Institute 1999). This balance presents unusual opportunities for observing the effects of gender integration at the level of the job and the firm, where such balance is rare in other industries. The workforce is relatively young, with the average age in the mid-30s in many firms. Taken together, these conditions provide an ideal setting for examining one serious work-family dilemma: having young children and two full-time working parents.

The firms themselves are young: a 20-year-old company is considered 'old,' and many firms are less than 10 years old. Most biotech firms are networked in one form or another via partnerships, alliances, formal and informal collaborations and agreements with firms and universities, etc. (Powell *et al* 1996). This network increases labor market information and potential job-hopping. Yet firm-specific skills matter a great deal, in part because the advanced scientific work on any given project is highly specialized and takes significant experience to learn in detail. This unique set of conditions implies that firms wish to retain workers for as long as they need them, but cannot promise them security—since virtually no one can predict the results of novel genetic experiments with accuracy. Uncertainty is the watchword of the industry. "Job insecurity goes with the business," one scientist told me. "There is no such thing as a secure job."

In sum, biotechnology employees work in small to medium-sized, highly networked yet highly insecure firms. In the absence of collective organization or associations, performance is rewarded in a contingent way, with bonuses and stock options usually related to the performance of the firm. [6] Long-term compensation in these new firms is also virtually absent. Therefore, questions of organizational commitment, as well as productivity, are highly relevant to managers and firms.

Hypotheses concerning Commitment and Productivity

In general, I predict that organizations' policies and practices of assisting and supporting employees in integrating work and family are positively associated with employees' affective organizational commitment (Meyer and Allen 1997), and higher levels of productivity. But what is meant by "work-family" policies? As noted above, most companies measure their "family-friendliness" by whether they have a formal set of family-related policies in place. Certainly Working Mother magazine, Business Week, the Families and Work Institute, and Catalyst, Inc.,

[6] Many biotechnology professionals belong to professional associations, mainly for keeping up to date in their field and forming networks for information and job connections, according to their survey responses, rather than for any concerted action. There are no active unions in biotechnology firms, at least at the professional or technical level, to my knowledge.

among others, seem to define 'family-friendly' as congruent with the existence of a written set of policies and benefits intended to ease potential conflict and stress between work and family.[7] Some economic benefits are examined frequently in studies of work-family issues: these usually include only benefits specifically related to the presence of dependents in the household: e.g. child care subsidies, referral services for elder or child care, pre-tax payroll deduction plans, emergency care provision, providing household services or a child care center at or near work, etc. While such benefits can be extremely helpful to families, a good deal of prior research has focused on them (e.g. Osterman 1995). In contrast, I am investigating "flexibility" policies that affect day-to-day schedules, work practices, and the design of work for employees, rather than benefits that can be purchased and offered without changing work routines.

Flexible approaches provide an alternative to completing work in the traditional 8:30 to 5, five day a week, schedule. While these may or may not be company-wide policies, in most cases they require an employee's individual or work group supervisor to approve their use, either on a short-term or long-term basis. By "formal policies," I mean written, officially approved human resource policies, as well as any written policies that give supervisors discretion to provide flexibility.[8] By "informal policies," I mean flexible policies that are not official, and are not written down, but are nonetheless available to some employees, even on a discretionary or irregular basis.

I consider seven practices related to flexibility and combine them to make an index of flexibility-related policies.[9] The specific practices are: "flex-time" with flexible beginning or ending working time, sometimes with core hours required; part-time jobs; telecommuting or "flex-place," such that all or part of the work week occurs at home; job sharing where one job is jointly undertaken by two or more persons; compressed work weeks where employees compact total working hours into four days rather than five; unpaid personal leave in addition to the 12

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[7] Frequently these include policies related to changing the scheduling of traditional work arrangements, such as flextime (starting at non-standard or varying hours), flex place or telecommuting, job sharing, alternative work schedules (such as compressed work weeks, part-time jobs), family or personal leaves beyond what is required by the Family and Medical Leave Act or other applicable law, and the ability to use sick leave to care for dependent children as well as for oneself.

[8] These definitions were developed in part through interviews with HR personnel in this industry and others. Relatively few companies, particularly small companies, have extensive formal written policies on all these areas, or even one or two, but they do cluster together, and at least some biotech firms had formal or informal examples of each policy in effect.

[9] I also looked at the policies individually, but here present the findings for an aggregated index. Disaggregated analyses are available from the author. No significant differences in findings resulted, though for predicting productivity, feeling free to use part-time was singly significant, and for commitment, feeling free to use flex-time was individually significant. For individual firms, the most common formal practice is providing unpaid personal leave in addition to the Family and Medical Leave Act requirements of 12 weeks. Most firms formally or informally allow employees to use their own paid sick leave for sick dependents. The other practices are more rare, as I show in Table 4-4, Formal Work Family Practices.

weeks mandated by the Family and Medical Leave Act (FMLA) for the serious illness of a family member or self; and whether employees are free to use their own sick leave to care for ill children. While it is unlikely that any one person would use all of these policies, I asked if employees saw them as offered at all, whether formally through the firm's HRM department or documentation of rules, or informally by general understanding or agreement with supervisors.

I argue that such flexibility-related policies and practices will be associated with higher levels of organizational commitment and productivity. These policies can offer employees greater control of the pace, location, and timing of work, as well as greater flexibility on a day-to-day and year-round basis. My first hypothesis concerns the effect of formal written policies.

H1: Organizations' formal policies supporting employees' flexibility to manage work and family responsibilities will be positively related to employees' organizational commitment and self-reported productivity.

Research suggests that the company's informal culture is more important than formal policies in influencing and shaping employee behavior. Hochschild (1997) and other scholars have documented a low rate of utilization of work-family policies even when they do formally exist (see e.g. Bailyn *et al.*, 1996; Bond et al 1998).

My second hypotheses therefore concern the existence of "informal policies," which are not found in the formal written policies of a company, but which are permitted at an informal level, usually through managers' or supervisors' agreement. For instance, a company handbook might state that sick leave can only be used for employee illness, but an employee's supervisor might approve sick leave to care for an ill child. Aryee, Luk and Stone (1998), for instance, showed that satisfaction with work schedule flexibility and supervisor work-family support were related both to organizational commitment and reduced intention to leave. This and other studies suggest that supervisors can informally create or constrain work-family policies on a day-to-day basis, and therefore exert significant influence over the commitment and productivity effect of such policies.

My second hypotheses concern these informal policies, or "practices."

H2a: Organizations' informal policies (or practices) supporting employees' flexibility to manage work and family responsibilities will be positively related to employees' organizational commitment and productivity.

H2b: Organizations' informal policies (or practices) supporting employees' flexibility to manage work and family responsibilities will be more strongly related to employees' commitment and productivity than will formal policies.

Rhetoric or Reality: Feeling Free to Use Existing Policies

Even informal policies may not be enough to create flexibility, and thus influence employee commitment and productivity. Informal policies may not be applied consistently and employees

may still fear that policy use will generate reprisals. For example, a study of part-time work showed that supervisors sometimes apply policies inconsistently within their work groups (Eaton and Bailyn 2000). On a day-to-day basis, many managers express ambivalence about whether to promote flexible policies even informally. Managers often express concerns about "everyone" wanting to make use of formal or informal policies; they worry that this would put more control in the employees' hands and thus out of their hands. They often cite this as a reason not to permit a flexible schedule for an individual.

I hypothesize that flexible policies must be available, either formally or informally, to be used. In addition, the employee must feel free to use the policies without adverse consequences for her or his career or other work-related rewards (Bailyn 1993; Rapoport *et al* 1998, Bailyn *et al*. 1996). My third set of hypotheses concerns employee beliefs that they are free to use these policies.

I call this concept "Perceived Usability," and I use it as a new way to understand whether flexibility policies, either formal or informal, are meaningful to employees. If this concept is useful, it could be employed in future individual-level studies of work-family policies, particularly within firms. The hypotheses are:

H3a: Organizational commitment and productivity will be positively related to employees' perceptions of whether they are actually "free to use" existing formal or informal flexibility-related policies of the organization without negative consequences for their work lives.

H3b. Employee commitment and productivity will be more strongly related to employees' perceptions of whether they are free to use work-family policies than whether either formal or informal flexibility-related policies exist.

Research Design: The Study and Data

The data for this study are drawn from original interviews and surveys conducted in seven biopharmaceutical firms located in one state. The firms were picked to represent a cross-section according to size, age, and technologies within the biopharmaceutical sub-field of biotechnology. One firm was large, employing more than 1000 people, and the others had less than 200 and typically less than 100 employees. There may be some selection bias, because several firms declined to allow access for a more extensive interview study. However, 7 of the 8 firms invited to do so agreed to permit administration of an employee survey, resulting in a survey sample of 1035 employees.[10] In this sample, professionals make up more than 70% of the

[10] The single firm declining to participate had about 700 employees, many young and single, and did not offer any formal work-family policies, so it was not an ideal site for this study. All firm names are imaginary to provide confidentiality to respondents.

workforce, including BS, MS, and Ph.D. scientists, researchers, and managers, and doctors and veterinarians. Within the professional workforce, half the employees are men and half women.

No systematic bias in size or age was found in comparing my sample to a larger stratified random sample of firms in the state.[11] A summary of the demographic characteristics of the surveyed employees is shown in the Appendix, as **Table 1.**

The overall survey response rate of 44% within the organizations ranged from a low of 35% in the smallest and largest companies to 50 to 70% in the mid-sized companies. Those who responded were not significantly different from the total workforce in demographic characteristics, with an exception. A higher proportion of managers than existed in the firm (they were 33% of the sample compared to 20% in the workforce) responded to the survey at GeneCo.[12]

The respondents overall were 56% female, and included 37% scientists, 27% other professionals, and 18% managers, with an average age of 37 and average tenure of 4.7 years. The employee survey included 105 items, and 220 variables.[13]

One contribution of this study is the multi-level character of the data. The data permit evaluation of within-organization differences as well as between-organization differences and trends in the entire sample.[14] Most studies collect data either at the individual or organizational level, but not both simultaneously (MacDermid *et al* 1999).

I also develop a new measurement construct for use in this study. "Perceived Usability" (USABLE) indicates employees' self-reported experience of work-family policies in the workplace. USABLE may provide a more valid research construct than measures used in other studies.[15]

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[11] I stratified the population of firms into large and small-to-medium groups, and in age groups by 5 year intervals.

[12] GeneCo was different in its population than the other firms surveyed because it was actively in "production" mode, with a higher percentage of blue collar workers. In general, we suspect that work-family policies are more often available to professionals, relative to blue collar workers, which may lead to overstatement of our results relative to those from a random national sample of biotech employees, though relatively few are employed in production jobs at this stage of the industry's development.

[13] It is available, but is not reproduced here for reasons of space. The survey was administered in the seven companies over a total six-month period, but never for longer than four weeks in a single company. Only 29 respondents (6.3%) used the Internet version of the survey, and their responses were integrated with the other data produced by handwritten responses. For more detail on the survey methodology and the cross-level design, see Eaton 2000.

[14] See Kalleberg and Mastekaasa (1994: 283) for one explanation of why this strategy is useful.

[15] See for example a widely-cited study at the establishment level (Osterman 1995), which relies mainly on plant and HR managers' reports, and also the Families and Work Institute's 1997 *National Study of the Changing Workforce* (Bond *et al.* 1998), which relies on telephone interviews without collecting samples at workplaces).

Variation in Firm Practices

Differences among the seven firms whose employees I surveyed may provide insight into firm practices in general, and the biotech industry in particular. The seven formal work-family flexibility policies studied are detailed in **Table 2: Companies' Formal Flexibility Policies.**

Table 2: Companies' Formal Flexibility Policies.

Formal/Written Work-Family Policies							
Company	**BioCo**	**ImmuCo**	**GeneCo**	**Quattro**	**Pente**	**Octo**	**Nente**
Policy							
Flextime	Yes	No	yes, limited	no	no	no	yes
Job sharing	No	no	no	no	no	no	no
Flex place	no	limited	limited	no	no	no	yes
Compressed work week	no	no	yes, req'c	no	no	no	no
Parental Lve. Beyond FMLA	no	no	no	no	no	no	no
Use sick days for kids	yes	yes	yes	yes	yes	no	no
Part time available	mixed	no	no	no	yes	no	no

We find a large variation both in formal policies and in informal policies and practices among the firms. None of the firms permits all seven flexibility-related policies and one, Octo, a start-up firm, has no formal policies. The others are mixed, with Quattro having only one policy and GeneCo having three. These results cast doubt on national statistics on flexibility, in that they have rarely been matched specifically with first-hand employee accounts or site-specific researcher documentation.[16] The problem with most national statistics is that we do not know to whom these options are offered, nor can we know how they are implemented in practice.[17] The present study avoids these problems through the use of matched organizational and individual

[16] See Bond *et al.* (1998) for an employee survey; see Osterman (1995) for a variety of benefits. When a company representative is asked, two-thirds say their firms offer flextime, and half say they permit telecommuting, according to a recent USA Today poll conducted by Hewitt Associates (1999). Another example is a report that: "eighty percent of employees who work for small companies say they have job flexibility, compared with 30 percent of corporate workers," according to Linda Duxbury, a professor and researcher at Carleton University in Ottawa, Ontario (Amy Gage column, St. Paul Pioneer Press, 10/20/99). All these are probably inflated estimates compared to research studies.

[17] Researchers have found that firms adopting "high performance work practices" are more likely to have certain work-family policies in place, at least in a national survey of representative establishments with more than 50 employees (Osterman l995). Thirty-three biotech firms that responded to a 1998 statewide survey by the Radcliffe Public Policy Institute and the Massachusetts Biotech Council reported great variation as well, from having virtually no policies to having extensive flexibility-related benefits (RPPI 1999).

level data, plus managers' data collected at the work group level matching to responses from employees in those work groups.

In addition, I wanted to know whether employees felt free to use the policies if they needed them. Employees through the survey itself report reasons they might not

use them. A summary of survey responses is given below in **Table 3** below. Employees were asked to choose up to two reasons why they had not used the policies.

Some employees said in interviews they do use a flexible schedule, informally, but do not view it as a "flextime" policy of the company. Rather, they might view it as an individually negotiated "perk." Fully 62% of the professional employees surveyed said they could change the start and end times of their work, which is higher than the percent who said they used or even were aware of a flextime policy. So this response gives us a conservative view of the policies they believe are "usable." Still, from the data above, a clear majority of interested employees noted that there were at least some culture-related reasons why they could not use the policies. The most common responses were that using flexible policies might hurt their future with the company, or that their current workload or work structure did not permit it. Women were 30% more likely to say they thought using the policies might hurt their future with the company than men.

Table 3 : Why Work-Family Policies/ Options Were Not Used:

	Men	Women	Total
	(n=200)	(n = 240)	(n = 440)
Do not need the policy	58%	51%	53%
Cannot use and also get work done	24%	27%	25%
Feel it might hurt future w/company	19%	25%	22%
Options do not interest me	22%	15%	18%
Not deemed appropriate for people in my situation	15%	18%	17%
Supervisor might disapprove	13%	15%	14%
Might put pressure on colleagues	12%	14%	13%

Other Factors Influencing Employee Outcomes

The size, demography, and age of a firm could be related to work-family related policies reported by a company's employees (including the age and tenure of its workforce), but my interviews led me to believe that no structural factor alone was determinative. Much more important was the company's overall culture. For instance, one CEO believed that written policies

squelched scientific creativity, so the company made almost no rules regarding flexibility. In another case, a small firm did address the issue in its policy manual, but the ability to use flextime was carefully restricted:

> "Flextime is available, with the agreement of the supervisor, the department supervisor, and the human resources manager, only for 40-hour employees. Requests for flextime must be in writing, and must meet the requirements of business interests, convenience, and necessity. Once flextime has been negotiated and approved, the hours are considered fixed, and a minimum of six months must elapse before any change will be considered."

Some employees thought this a particularly inflexible definition of flextime! In the least flexible company, no one was actually allowed to work nonstandard hours, though a policy existed. The CEO refused to allow a secretary to adjust her working hours by one half hour a day to accommodate childcare for the employee's newborn child. This demonstrates again that while policies are important to measure, so is the perceived ability to use such policies.

Measuring Independent Variables: Formal, Informal and Usable Policies

A. Formal Policies

I measured formal policies by constructing an "Index of Formal W/F Policies," which included the seven flexibility policies listed in Table 2. Concerning each item, employees responded "Yes" or "No" to four questions: "Are these policies formally available?" was one of them. If the employee did not respond, I counted the policy as not available formally.[18] I constructed an index by adding the seven individual responses on the separate policies, so that each individual was associated with a score on "formal policies" from 0 to 7. The mean score on "formal" policies was 2.24 (s.d. 1.66), which fits in general with the data recorded in Table 3 above.

B. Informal Policies

I measured whether the same seven policies were available at an informal level from the employee's perspective.[19] Employees circled "yes" or "no" as to whether each policy was available informally. The mean score on the Informal Index of work-family policies was 3.10

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[18] I count missing data as indicating the policy was "not available" because both in pilot and actual survey administration, some individuals told me they did not know whether particular policies were available or not. I told them to leave it blank in that case. That individual does not know that the policy "is" available, so he or she should be counted as saying it is not available, at least to his or her knowledge at the time of the survey. While this undoubtedly lowers the overall scores of the companies, my decision to require an affirmative sign that policies were available seems conservative and thus appropriate.

[19] I piloted this question with 8 biotechnology employees and they had no problem understanding the question's meaning. The survey takers understood that a policy might either be available both formally and informally, or just one or the other.

(s.d. 2.47), which is higher than for formal policies. This is reasonable in terms of face validity, since it seems likely that more employees perceive the existence of some flexibility-related benefits in their own informal work setting, even if they are not part of formal company policy. This might include using sick leave for sick children, for example, or an informal agreement for flexible hours, between an employee and a supervisor. It is reasonable too that the standard deviation is greater, since informal policies are more likely to be experienced in a variety of ways, even within the same company.

C. Usable Policies: Developing and Measuring "Perceived Availability"

The third independent variable is also an index compiled of seven items. I call this variable "Perceived Availability of Work-Family Policies (USABLE)." Recall that one-quarter of respondents said that they could not complete all their work if they took advantage of the policies. A similar number were concerned that their careers would be affected negatively. Both responses suggest problems with how policies are implemented in real life, since this means that some people do not feel free to use them. So the variable "USABLE" is constructed from the combined individual responses to the question, if the employer offers from one to seven benefits, formally or informally, does the employee feel free to use those benefits? The employee must respond that the employer offers the benefit(s), and she or he feels free to use the benefit(s), before the employee is included on the scale of positive responses. So the range of the scale, like the others, is 0 to 7.

The average "USABLE" score on a scale of 7 was 1.46 (s.d. 1.52). Managers were more likely to give their firms high scores ($p<.05$), while no other demographic characteristics were significantly associated with "perceived usability." This is reasonable, again on face value, because managers are likely to feel more free to control their schedules. A list of the firms with their mean scores is found in **Table 4**, in order of increasing perceived flexibility (the smallest three firms, all with fewer than 20 employees surveyed, have been grouped together as "Small Companies").

Dependent Variables

The dependent variables include self-reported organizational commitment and productivity. Mowday, Porter and Steers (1982) defined OC as:

> the relative strength of an individual's identification with and involvement in a particular organization. Conceptually, it can be characterized by at least three factors: a) a strong belief in and acceptance of the organization's goals and values; b) a willingness to exert considerable effort on behalf of the organization; and c) a strong desire to maintain membership in the organization. (1982:27)

Table 4. Mean Scores of Companies on Work-Family Policies (n = 461)			
Company	Formal	Informal	Perceived Usability
Small Cos. (n=26)	1.54	2.42	1.12
ImmuCo (n=36)	1.50	2.81	1.28
Quattro (n-311)	2.34	3.18	1.47
BioCo (n=37)	1.84	3.24	1.59
GeneCo (n=51)	2.80	3.00	1.63
All Cos. Avg.	**2.24**	**3.10**	**1.47**

While researchers agree that performance is influenced by many considerations (see e.g. Hackman and Oldham 1980), organizational commitment is one factor in altering overall performance in contexts where loyalty and extra effort matters.

The organizational commitment scale is drawn from Lincoln and Kalleberg (1990). It is a five-item scale consisting of a subset of items developed by Mowday, Steers and Porter (1979). Applied to our data set, the alpha is .62. Although a higher alpha is desirable, this level is acceptable.[20] The mean commitment score on this scale was 3.67 (s.d. 0.66) on a scale of 5, which is close to the mean from other samples (Kalleberg and Mastekaasa 1994).[21]

Experts measure productivity in complex ways, but in an industry where managers do not have a single measure (or even a composite) for measuring productivity, self-report is one accepted method.[22] I measured productivity by asking employees to think of a time in their lives when they had been most productive, and to evaluate how productive they were under their present conditions if the former time had been a "10" on a scale of 1 to 10. The mean of 426 respondents' scores was 7.61, and the distribution skewed slightly to the right.

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[20] These items may no longer accurately reflect the context of the professional workforce. For instance, one of the items states, "I would turn down another job for more money to stay with this organization." While the item might have measured organizational commitment some years ago, it is not a popular answer in our sample, as many respondents disagreed, while agreeing on the other commitment items. A factor analysis of the five items produced only one factor with an Eigenvalue in excess of 1.0 (see also Marsden, Kalleberg and Cook 1993).

[21] Where the employee answered four of the items, I averaged the responses to impute the answer to the fifth; where s/he did not answer at least four, I discarded the data. The final sample for this scale was 453 respondents.

[22] While some controversy exists about using self-report data to measure productivity, in this industry there was no alternative. For one example evaluating absenteeism, using a similar measure, see Drago and Wooden (1992). As long as biases in self-report data are consistent across respondents, the results will be unaffected except for the intercept.

Control Variables

Various factors might contribute to employees' organizational commitment and productivity, according to previous studies: tenure, satisfaction with the intrinsic work, supervisory relationships, co-worker relations, and educational level, and psychological predisposition.[23] I included four types of potential control variables in the analysis: home, job, individual, and firm. Naturally, the need for work-family policies is related to demands at home.[24] A family with higher income (and more reliable or long-hour childcare) might feel less interested in flexible policies. Thus I controlled for household income and the presence of children. I also tested all the equations with a control for marriage, and found no significant effects. I also examined interactions between marriage and parenting status, and gender and family status, but found no important effects for these firm-level outcomes (Eaton 2000).[25]

Characteristics of the individual might affect whether work-family policies are associated with commitment and productivity. Gender is a definite possibility. Schor estimates that women on average perform up to a month's more full time home and paid work per year (1991), and other studies have also shown women generally have more dependent care responsibility. Although men's hours devoted to housework and child care are increasing and women's are decreasing slightly, men's total hours are still substantially below women's on average. I included the employee's sex as a potential control factor. Longer tenure in the organization is likely to be related to higher organizational commitment, if from nothing else than from "sunk costs" and benefits tied to the organization. I also added a control variable called "Years of Service." Finally,

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[23] Aside from stress levels and the importance of work to the person (work identity), I am unable to measure directly and independently any psychological traits in this survey, so these factors are pooled in with other results. This is also true of many other organizational researchers with a background in sociology and organizational behavior rather than clinical psychology (see Marsden, Kalleberg and Cook, 1993). The psychological literature does not find large effects on this specific type of organizational commitment. However, I did include the respondents "satisfaction with level of fun and pleasure" in life as a control variable in all the equations for productivity in order to avoid conflating dispositional happiness with my measures of commitment and productivity. No differences were found for these outcomes.

[24] If someone does not have children, for instance, he or she is less likely to know, or to care, whether he or she can take sick leave to care for children. Although eldercare responsibilities could also enter into the value of work-family policies for employees, relatively few employees currently had eldercare responsibilities (13%), and those who did generally spent less than 1 hour a week on them. For this reason I did not include eldercare as a control variable.

[25] Some employees might value flexibility more at particular times in their lives (Moen 1996). I controlled in my analyses not only for age, having children, and marital status, but specific combinations of household groups. **Table 10** (Appendix) shows means for each of five family groupings on key variables. Differences are not great, but single parents and married parents with support at home have the highest levels of commitment. Married parents perceive work-family policies as most "usable" while single parents feel least "free to use" policies (even though they might need them the most). Single parents say they feel least productive, while married people in a two-career couple feel the most productive. These differences were not significant in final outcomes.

given the possibility that older employees might have more negative commitment, I included an "age" control.

Structural demands and prerogatives of the person's work or job may influence his or her relationship to work-family policies, as well as to the company. I included a dummy variable for managerial status, since managers often report higher organizational commitment, and also have more ability to construct their own schedules without need of policies. I also included a measure of the employee's education, often associated with higher job status and greater ability to schedule one's own time.

All the companies surveyed here operate in the same sector and in the same geographic area and general regulatory arena. The major difference in the companies for which employees who responded to the survey worked is in their size. Basically, they divided into two groups: small (less than 250 employees) and large (one company with more than 1,000 employees). Small companies tend to generate lower commitment than large companies (Kalleberg and Reve 1993) so I included a "small company" dummy variable. None of these control variables are highly correlated; **Table 5** in the Appendix shows the correlations between them.

One other variable seemed important as a potential moderating variable. Many studies have focused on the importance for employees of controlling their environment. White-collar jobs have been held to be better than blue-collar jobs because they often are seen as offering employees more control of their day-to-day environment, as well as more pleasant physical settings and the chance not to be paced by an assembly line. One key factor might well be related both to employees' productivity and commitment, as well as to work-family sensitivity. I call it "CONTROL," meaning particularly control over the time, pace, place, and scheduling of work. I created an index called "CONTROL-Time/Flex" that averaged the responses to three survey questions, asking about their influence or control over the scheduling, pacing, timing and location of work (Cronbach's alpha for the scale = .68).[26] Being able to use work-family flexibility should give employees a greater sense of control over the timing, pacing, and location of work. CONTROL might also influence employees' perceptions of being able to use work-family policies, which raises a question of influence direction I cannot answer definitively with these data. But my interview data show that being able to choose flexible arrangements gives employees a greater sense of control, so directionality is at least one way.

Coding procedures for these variables and their measures are presented in **Table 6**. Descriptive data for the control variables are shown in **Table 7 (Appendix)**. Correlations between dependent and independent variables are shown in **Table 8 (Appendix).**

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[26] Factor loadings for this scale are: control over locale and time of work: 0. 79, control over pace of work: .81, and control over breaks: .74. There is one Eigenvalue over 1: it is 1.8, accounting for 63% of variance.

I used multivariate regression analysis to test my five hypotheses. Although all the data do not precisely conform to assumptions of normality, the survey sample size is large enough (n =461) and the deviations slight enough that this method is appropriate (Kleinbaum, Kupper, and Muller 1988). [27]

Table 6: Measures of Control Variables

Education -measured from 0 to 5, with less than HS =0, HS degree = 1, Associates degree = 2, Four year college degree = 3, Master's degree = 4, and Doctoral degree + = 5

Age – measured in years

Female person - 0 = male, 1 = female

Manager – 0 = non-manager, 1 = manager

Household Income – 1= less than $20K, 2 = $20 - 39,999K, 3 = $40 -49,999K, 4 = $50 - 74,999K, 5= $75 - 99,999K, 6 = $100-149,999K, 7 = $150K +

Years of Service - measured in years

Small Company – 0 = large company, 1 = small company

Have Children - 0 = no children, 1 = have children

Control - 1 = no influence, 5 = complete control of time/flex/pace of work

Findings: Predicting Commitment and Productivity

I present the analysis by outcome, so the first models (**Table 10- OC**) test hypotheses 1, 2a and b, and 3a and b, concerning organizational commitment. The second set (**Table 11-P**) tests these same hypotheses concerning self-reported productivity. For all the analyses, I used listwise deletion of missing data, resulting in a number of responses ("n") that varied from 394 to 407 depending on the particular combination of variables. Specifics for each model are noted in the tables. For Organizational Commitment, I present models testing all three types of work-family policies without CONTROL, and a fourth model with USABLE only, testing it with CONTROL. For Productivity, I follow the same pattern; other possible models are similar though not shown.

I find that "perceived usability" of work-family policies does have a small, positive, statistically significant effect (*Beta* = .118, $p < .05$) on organizational commitment, where all the controls (excluding "CONTROL") are included. The only other statistically significant predictor

[27] I have considered other methods of data analysis, such as ordered probit, but the dependent variables are continuous and reasonably normally distributed, since one is an index that combines multiple Likert scales while the other is a distribution skewed slightly right.

is working for a small company, which is associated with lower levels of commitment.[28] This is reasonable in this industry, since small companies offer far less job security than large ones, and a lack of job security is often associated with lower levels of commitment. None of the other control variables are significant, most are small in effect, and several of them (education, income, and years of service) may have a negative relationship with commitment.[29]

Disconfirming **Hypotheses 1 and 2a and b**, neither the presence of formal nor informal work-family policies seems to be related to organizational commitment of the affective variety. However, confirming **Hypotheses 3a and 3b**, the variable intended to capture the actual "perceived usability" of work-family policies, is associated positively with organizational commitment. This means that employees who feel free to use the flexibility policies are more likely to show organizational commitment than those who do not-- but that flexibility policies alone, even informal ones, are not sufficient to be associated with a positive commitment state. This could help explain some previous studies that did not uncover positive links between work-family policies and commitment, since perhaps the appropriate level of usability was not tested.

In addition, the variable "CONTROL" does directly predict both outcomes, and it also absorbs some of the effect of "USABLE" when it is added to the model in the cases of Commitment (although it is not the same as USABLE). The positive associations with work-family policies are smaller in Model 4, Table 10-OC, and even USABLE work-family policies are only marginally significant predictors here (*Beta* = .093, $p < .10$). Small company remains significant and negative, and “control” is positive and significant in the model (Beta = .142 to .157, $p < .01$). Thus, one mechanism for the apparent effect of "perceived usable" work-family policies may be through increased control of work time, place, and schedules. However, this does not account for the entire effect, as usable work-family policies still have their own salience in predicting commitment, even when used with “control.”

The regression analysis explained up to 7.4% of the variation in organizational commitment among the biotechnology employees surveyed. While this is modest in terms of explanatory power, it is consistent with other studies that examine the effect of structural variables on organization commitment (Gray 1989, Angle and Perry 1981, Aranya *et al* 1986, Chusmir 1986). Gray notes that including a measure of job satisfaction in the equation could have increased the R-squared, but in this case as in his study, the purpose is not to maximize the variance explained, but to examine carefully an important predictor of organizational

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[28] Age is the only other variable that is marginally statistically significant (Beta = .108, $p<.10$), which is consistent with prior research concerning the positive relationship between age and commitment.

[29] The only surprising negative result seems to be "years of service," suggesting that the longer one works for a biotechnology company, the less committed one is, which flies in the face of other evidence in other industries. But it is not statistically significant here.

commitment. Similarly, in my tests and Gray's, neither personal characteristics such as degree of education, nor organizational ones such as length of service were significant. This contradicts other research suggesting these two variables are significantly related to organizational commitment (see Marsden, Kalleberg, and Cook 1993, Angle and Perry 1981). Perhaps this is because average length of service is relatively short in this emerging industry, at less than 5 years. Further, this is a highly educated sample-- whereas 75% of Americans have a high school degree or less, only 15% of this sample have a high school degree as their highest educational credential. The typical range of variation on these areas may be absent, or tenure and education may not matter as much with this population as the "usability" of flexibility-related policies.

In predicting **productivity (Table 11-P)**, the story is somewhat different. Hypotheses 1 and 3 are confirmed. All three types of work-family policies are positively associated with higher productivity, with or without CONTROL. However, the difference is greatest with USABLE policies *(B*= .18, p<.01), explaining 4.4% of the variance in Productivity outcomes. When CONTROL of time, pace, and place is added, the influence of PERC falls a bit *(B*=.157, p<.01), years of service is negative and marginally significant, and CONTROL is positive but smaller in effect than PERC (B=.157, p<.05). These findings suggest that work-family policies, whether formal, informal or perceived usable, are associated with higher levels of productivity as employees report it, making a greater difference than even having control of the time and place and pace of their work. This finding coincides with some managers' beliefs and research findings (Bailyn 1993) that providing work-family flexibility will not only help with recruitment and retention, but actually helps employees become more productive as well. Even if the reverse is true, that more productive workers are drawn to firms with more flexible policies, firms can rely on a positive association, whether focusing on recruitment or on retention, commitment, and productivity.

Limitations of the research

Because the study is cross-sectional, as noted above, I cannot demonstrate causal direction of the impact of the policies I examine; at most, I have shown demonstrable systematic relationships between flexible work-family policies and these two outcomes. Given other research in this field, it seems unlikely that the most committed and productive workers would choose firms with extensive usable work-family policies-- but it is hypothetically possible, and could even be a desirable finding from a firm's perspective. Also, it is possible that supervisors could extend the most informal flexibility to workers they perceived as most productive, but my qualitative interviews suggested that flexibility varied more by work group than within a single supervisor's control in these settings. This study is also cross-level, which is at once a strength and a limitation of the analysis (Rousseau 1985). While I show patterns for a population of

individuals, they are not randomly distributed but are grouped by firm, a fact that I acknowledge by adding variables with the effect of controls for firm effect.[30] The results are still useful, but these cautions should be kept in mind in evaluating them.

Conclusion

What I find in this study is first, that the perceived usability of flexible work- family policies is important to both male and female employees, more important than either the presence of formal or informal policies alone for both commitment and productivity. If you can't use them, they don't help you. Commitment but not productivity (as reported by employees) is also associated with working for a larger company. When adding necessary controls, perceived usability retains its strength. Second, if policies are perceived as usable by employees, they appear to make a positive difference in organizational commitment and productivity for all employees, male and female. Even the presence of work-family policies (formal or informal) seems to contribute to higher productivity, though this is true to a greater extent where they are perceived as usable. In addition, a related variable, "control over time, flexibility, and pace" of work, turns out to be important in predicting higher levels of commitment, and productivity, for all employees. Employers who wish to increase commitment among professional and technical employees might wish to consider these factors in designing their work-family programs, their work structures, and the amount of control employees have over the pace and place of their work. Though the "USABLE" effects are small, they are robust, which suggests that implementing truly accessible work-family policies may be necessary to induce valuable knowledge workers to become committed to a firm, as well as being associated with a higher level of productivity at work.

While this study has limited generalizability because of its grounding in the biotechnology industry, it is broadly consistent with other findings for different populations in the area of organizational commitment, adding a new view of work-family intersection as being an important determinant in this desired firm outcome. The study indicates a new contribution of work-family flexibility policies to perceived productivity. Further, it may contribute a new concept of "perceived usability" to the work-family research field, as well as linking usability positively to control of time and work flow.

[30] Two-thirds of the responding and surveyed employees work at one firm, but even these employees were located in three geographically distinct establishments, and surveys obtained from all three.

APPENDIX

Table 1: Characteristics of Biotechnology Employees Surveyed

(n= 461)*

Sex

	no.	**%**
Male	200	**44**
Female	253	**56**

Highest Degree Obtained

	Female	Male	**Totals**	%
PhD or equiv	30	42	72	**16%**
Master's	56	34	90	**20%**
BA/BS	118	88	209	**46%**
Less than BS	48	34	82	**18%**

Position in Co

	Female	Male	**Totals**
Manager (sci)	38	47	85
Scientist*	101	68	169
Administrative	29	9	38
Professionals	63	61	124
Manufacturing	20	15	35

* Note that many scientists have at least one employee to manage

Full or Part Time Status

	Female	Male	**Totals**
Full time	235	197	432
Part time	14	0	14

Length of Service

	Female	Male	**Totals**
Median	4.6	4.76	4.7
Shortest	0	0	0
Longest	14	16	16

Age (est. in years)

	Female	Male	**Totals**
Oldest	59	68	68
Youngest	22	19	19
Median	35.6	37.7	36.5

Family Status

		Female	Male	**Totals**	**% women**
	Single - no children	83	41	124	67%
	Single - w/children	15	1	16	94%
At home spouse	Married - w/children	0	19	19	0%
PT partner	Married - w/children	7	42	49	14%
2 FT job/career	Married/Ptnrd- no children	81	43	124	65%
2 FT job/career	Married- w/children	88	47	135	65%

* not every employee answered every question; therefore, the totals are not all 461.

APPENDIX

Table 5: Correlations Between Control Variables

	Age	Education	Female	Have Children	Hsehold Inc	Yrs Service	Mgr Dummy	Small Co	Control/Time
Age	1.000								
Education	.150**	1.000							
Female	-.126 **	-0.070	1.000						
Have Children	.445***	.082~	-.143**	1.000					
Hsehold Inc	.369***	.346***	-0.016	.247***	1.000				
Yrs Service	.324***	0.119	-0.024	.178***	.224***	1.000			
Mgr Dummy	.277***	.156***	-.107*	.183***	.277***	.210***	1.000		
Small Co.	.180***	0.026	-0.063	.168***	-0.03	.137**	0.159***	1.000	
Control/Time	.082~	.133**	-0.039	0.048	.106*	0.078	0.044	0.046	1.000

*** t-test for each item is significant at p<.001
** t-test for each item is significant at p< .01
* t-test for item is significant at p<.05
~ t-test for item is significant at p<.10

2-tailed tests
Pearson's Correlation Coefficient

APPENDIX

Table 7: Descriptive Information on Control Variables

Control Variables	No. Responses	Mean	Std. Dev	Min.	Max
Age	449	36.6	8.34	19 yrs	68 yrs
Education	450	3.18 (college+)	1.24	Less than HS	Doctoral+
Sex/Female	453	0.56	0.5	Male= 0	Female = 1
Have Children	461	0.52	0.5	No = 0	Yes = 1
Household Income	439	4.94 ($70K)	1.47	Less than $20K=1	More than $200K = 8
Yrs. Service	446	4.7	3.39	0	16
Manager Dummy	460	0.18	0.39	Non-Mgr=0	Manager=1
Small Co.	461	0.33	0.47	Large = 0	Small = 1
Control-- of Time, Pace, Flexibility	452	3.81	0.8	No Control 1	Total Control 5

APPENDIX

Table 8: Correlations between Dependent and Independent Variables

	Org Comm	**Productivity**	**Formal W/F** Practices	**Informal W/F** Practices	**Perc Usable** (PERC)	**Control/** Time-Flex
Organizational Commitment	1.000					
Productivity	.264**	1.000				
Formal W/F practices	0.086	.100*	1.000			
Informal W/F practices	0.062	.314**	.314**	1.000		
Perceived Usability (PERC)	.124**	.153**	.241**	.473**	1.000	
Control/ Time-Flex	.145***	.149**	0.065	.101*	.191***	1.000

APPENDIX

Table 9: Means of Family Groups

	CONTROL	PERC	Commitment	Productivity
FAMILY STATUS				
Sing Parent	3.63	1.06	3.78	6.79
Sing No Kids	3.76	1.48	3.61	7.81
Marr No Kids	3.74	1.4	3.59	7.68
Marr, K, Support	3.99	1.59	3.77	7.47
Marr, 2 Jobs, Kids	3.79	1.59	3.72	7.61

Note: Married includes living with partner

APPENDIX
Table 10-OC: Predicting Organization

Dep Var **Organizational COMMITMENT**	**Model 1 Formal** n = 407	**Model 2 Informal** n = 405	**Model 3 Perceived Usable** n = 397	**Model 4 w/ Control** n = 394
	Beta	Beta	Beta	Beta
Constant	3.49	3.74	3.73	3.37
IND VARIABLE				
Formal Policies	0.061			
Informal Policies		0.052		
Perceived Usable Policies (PERC)			.118**	.093*
MODERATING VARIABLES				
Age	.113*	0.112*	0.108	0.09
Education	-0.021	-0.022	-0.015	-0.023
Female	0.038	0.037	0.036	0.034
Have Children	-0.089	-0.089	-0.087	-0.086
Household Income	-0.08	-0.079	-0.092	-0.093
Yrs of Service	-0.042	-0.044	-0.039	-0.048
Manager Dummy	0.069	0.066	0.062	0.07
Small Company	- .147 ***	- 0.15 ***	-0.152	- .157 ***
Control/ Time				.142***
R-SQUARE		0.046	0.057	0.074

*** t-test for each item is significant at p<.01
** t-test for each item is significant at p< .05
* t-test for item is significant at p<.10 (2-tailed tests)

(a) Organizational commitment is defined by a five-item scale that includes measures of loyalty, willingness to exert effort, identity with company values, and intent to stay.

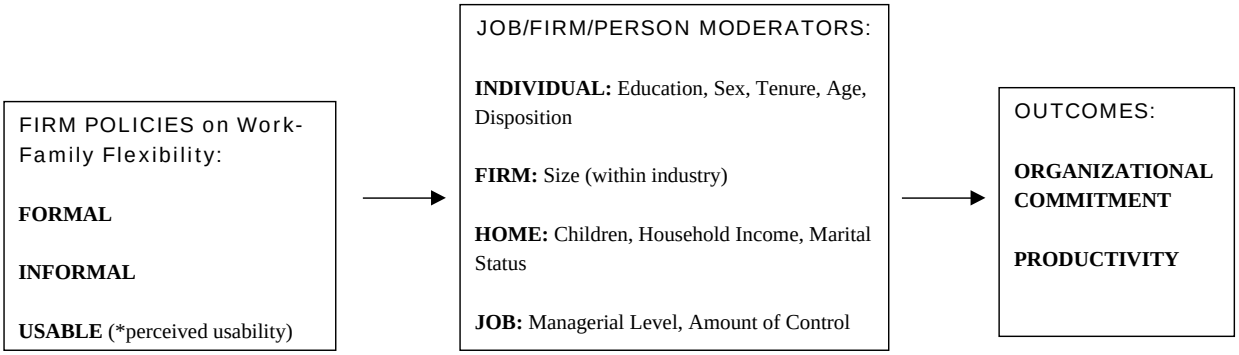
Table 11-P: Predicting Productivity

Dep Var **PRODUCTIVITY (Self-Reported)**	**Model 1 Formal** n =386	**Model 2 Informal** n = 386	**Model 3 Perceived Usable** n = 386	**Model 4 w/ Control** n = 382
	Beta	Beta	Beta	Beta
Constant		7.675	7.751	7.7727.413
IND VARIABLE				
Formal Policies	.110**			
Informal Policies		.102**		
Perceived Usable Policies (PERC)			.180***	.157 ***
MODERATING VARIABLES				
Age	0.22	0.012	0.008	-0.013
Education	-0.025	-0.028	-0.016	-0.02
Female	0.017	0.013	0.01	0.004
Have Children	-0.054	-0.054	-0.069	-0.062
Household Income	-0.015	-0.013	-0.03	-0.029
Yrs of Service	-0.086	-0.091	-0.081	-0.089 *
Manager Dummy	0.068	0.062	0.055	0.062
Small Company	0.012	0.009	0.002	-0.001
Control/ Time				.127**
R-SQUARE	0.025	0.022	0.044	0.062

*** t-test for each item is significant at p<.01
** t-test for each item is significant at p< .05
* t-test for item is significant at p<.10 (2-tailed tests)

APPENDIX

Figure 1: Research Framework



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