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THE PERCEIVED INFLUENCE OF MOBILE TELEWORK ON

ASPECTS OF WORK LIFE AND FAMILY LIFE:

AN EXPLORATORY STUDY

by

E. Jeffrey Hill

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Family and Human Development

Approved:

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Logan, Utah

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ABSTRACT

The Perceived Influence of Mobile Telework

on Aspects of Work Life and Family Life:

An Exploratory Study

by

E. Jeffrey Hill, Doctor of Philosophy

Utah State University, 1995

Major Professor: Dr. Brent C. Miller
Department: Family and Human Development

Telework is an emerging trend in the workplace today. According to recent estimates, almost nine million Americans work electronically from home and this number is expected to grow 10% to 20% per year for the next decade. The purpose of this study is to explore the perceived influence of mobile telework on aspects of work life and family life.

A group of mobile teleworkers and an equivalent group of nonmobile workers were asked to respond to questions about their work life and family life ($N=299$). The data were analyzed from four perspectives: (a) comparison of mobile teleworker and nonmobile groups, (b) comparison of mobile teleworker

subgroups, (c) perceptions of mobile teleworkers themselves, and (d) thematic content analysis of write-in comments.

Results from all four data perspectives pointed to the positive influence of mobile telework on most aspects of work life. The exploratory data suggested that productivity/job effectiveness, morale/organizational commitment, and customer relationships were all perceived to have been positively influenced by mobile telework. This perceived positive influence was particularly pronounced for mobile teleworkers who had a dedicated home office with a door. In contrast, the data pointed to a neutral or negative perceived influence of mobile telework on company relationships, especially camaraderie.

Exploratory data about the perceived influence of mobile telework on aspects of family life were also generally positive. However, the strength of this perceived influence was less than the influence reported on aspects of work. Though mobile teleworkers reported much greater flexibility in the timing and location of work, they did not report having an easier time balancing work life and family life. In write-in comments, some mobile teleworkers reported they were thriving because of the flexibility to balance their lives. Others reported they were struggling because flexibility blurred the boundaries between work life and family life. Overall, the perceived influence of mobile telework on home chores/child care, family relationships, and personal factors was somewhat

positive, but generally weak. Parents with preschool-aged children reported a more positive influence on these aspects of family life.

From this exploratory study it appears that, on the whole, mobile telework can positively influence aspects of both work life and family life. However, there are also potential pitfalls which must be dealt with if a mobile telework program is to be successful. Sound program design and training for employees and leaders are seen as essential and some suggestions are offered. The study of mobile telework is in its infancy, and additional research is needed to understand how this new work form may influence aspects of the work/family interface.

(236 pages)

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When I came to Utah State in 1991, getting a PhD was part of a cool morning's dream. What I find is that in the wakefulness of the hot afternoon sun, a PhD does not happen without the assistance of numerous associates, supporters, friends, and loved ones. In this section I want to recognize a few who have helped make this scholarly endeavor possible.

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suggesting the possibility of graduate education for us both, and for sharing the adventures of life with me ever since.

And, of course, I must also thank the Little Prince, who taught me many years ago "a very simple secret: It is only with the heart that one can see rightly; what is essential is invisible to the eye" (Saint Exupery, 1971, p. 87). My deepest thanks to all who have shared something of their heart with me.

Now, it's evening, and time to move on to a new dream. So in parting I share the words of Kahlil Gibran (1971), "Farewell to you and the youth I have spent with you. It was but yesterday we met in a dream. You have sung to me in my aloneness, and I of your longings have built a tower in the sky. But now our sleep has fled and our dream is over, and it is no longer dawn. The noontide is upon us and our half waking has turned to fuller day, and we must part. If in the twilight of memory we should meet once more, we shall speak again together and you shall sing to me a deeper song. And if our hands should meet in another dream we shall build another tower in the sky" (p. 95).

Peace be the journey.

E. Jeffrey Hill

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Watching masses of peasants scything a field three hundred years
ago, only a madman would have dreamed that the time would have
come when the fields would be depopulated, when people would
crowd into urban factories to earn their daily bread. And only a
madman would have been right. Today it takes an act of courage
to suggest that our biggest factories and office towers may, within
our lifetimes, stand half empty, reduced to use as ghostly
warehouses or converted into living space. Yet this is precisely
what the new mode of production makes possible: a return to
cottage industry on a new, higher, electronic basis, and with it a
new emphasis on the home as the center of society. (Toffler,
1980, p. 210)

Two Ages of Work

We are in the midst of a revolutionary transformation in the nature of

work. For several decades the United States has been shifting from an industrial-

based economy to an information-based economy (Hammond, 1994). This

fundamental change opens up dramatic alternatives for where, when, and how

work is accomplished. As work options become more varied, there are

significant ramifications for families (Alvi & McIntyre, 1993).

Work in the Industrial Age

In the industrial age, the nature of work generally required the physical

presence of workers, at specific places and for specific blocks of time, to

effectively manage the manufacturing and distribution of tangible goods. The

tools and means of production were usually located exclusively at the factory or at the office and were not generally portable. It was usually necessary for an employee to physically go to work to do the job, and this daily separation between work and home had a significant effect on families. To earn a living, one or both parents were required to leave the home every work day for substantial periods of time. Balancing this absence from home with the needs of the family became difficult, especially as dual-earner and single-parent families became more common (Hayghe & Bianchi, 1994; Zedeck, 1992).

Work in the Information Age

The goods produced and marketed in the information age are more and more frequently created and distributed electronically. With the advent of low-cost telecommunications equipment, the need to always go away to work at a factory or office has diminished (Hammond, 1994). The nature of work no longer demands the physical presence of the worker at a predetermined time. For many of these knowledge workers, the "anytime, anyplace office" (Galinsky, 1992) is technologically possible. Mason (1993) explained:

> The traditional office ... is going the way of the dinosaur ... In the coming millennium, the idea of arriving at an office at 9:00 a.m., parking yourself at a standard rectangular desk, and remaining confined there until the workday is complete will seem as archaic and incomprehensible as that of using an old IBM Selectric does today. (p. 14)

This flexibility in the timing and location of work may provide opportunities to balance work and family responsibilities in new and creative ways (Hill & Miller, 1993). For example, partners may facilitate dependent care by arranging their schedules so that at least one parent is home more frequently. It may also be easier to attend the activities of school-aged children (e.g., parent-teacher conferences, sporting events, etc.).

The Beginnings of Telework

The general term for doing work away from the office via telecommunications equipment is *telework*. Though telework was foreseen as early as 1950, it did not become practical until the advent of personal computers and portable modems in the early 1970s (U.S. Department of Transportation, 1993). In 1973, Jack Nilles coined the term *telecommuting* to emphasize that telework could eventually replace the daily commute to the work site (Nilles, 1994). Companies first seriously considered the possibility of telework as a means to make them less vulnerable to fuel shortages during the OPEC oil crisis in the early and mid 1970s (Tolbert & Simons, 1994).

Definition of Telework

Telework is a broad term that encompasses many kinds of work in many different settings. A hybrid definition is: *Work performed away from the*

conventional office through the use of telecommunications tools (see BNA, 1992; Callentine, 1995; Nilles, 1994; Olson, 1988; Pitt-Catsouphes & Marchetta, 1991; U.S. Department of Transportation, 1993).

As indicated in this definition, telework may be performed from home, from a satellite work space, from a customer location, from a cabin in the woods, from a condo on the ocean, or from anywhere else except a traditional office. Telecommunications tools may include computers, printers, facsimile machines, telephones, video-conferencing equipment, pagers, phone messaging systems, copiers, cellular phones, and a variety of other equipment. There are two general models of telework: telecommuting and the mobile office.

Telecommuting

In the telecommuting model (also known as work-at-home or home-work), some or all of the job is moved away from the office to another fixed site, usually to the home. A new office is set up at this alternate site with enough telecommunications and other office equipment to get the job done. A telecommuter often maintains a traditional office and generally works from home 1-3 days a week (Nilles, 1994). Initial implementations of telecommuting in the late 1970s and early 1980s were generally limited to data entry and programmer-type jobs. However, telecommuting has recently expanded into almost all kinds

of jobs done by information workers (Filipczak, 1992; U.S. Department of Transportation, 1993).

Mobile Office

In the mid 1990s, a new form of telework has emerged called the "mobile office" or the "virtual office" (Callentine, 1995). Workers are provided with highly portable telecommunications equipment to promote flexibility in work location. This portable equipment may include a laptop computer with a built-in modem and fax, a cellular phone, and an alphanumeric pager, all of which facilitate getting work done from a variety of venues outside the office (Greengard, 1994). Most of the equipment fits inside a briefcase and can be easily transported. Unlike traditional telecommuting that typically uses the home as a fixed alternative worksite, the mobile office facilitates the "anytime, anyplace office" (Galinsky, 1992). Employees may choose to work whenever and from whatever venue might best meet business, personal, and/or family needs (Illingworth, 1994).

Telework Today

During the last decade there has been a dramatic increase in the number of American teleworkers. Ten years ago there were fewer than one million employees who teleworked away from the office at least 8 hours per week during

normal business hours (Callentine, 1995). The number of teleworkers has grown more than eight-fold, to about 8.4 million (Henkoff, 1995), and the number is projected to grow about 10% to 20% per year through the end of the 1990s (Greengard, 1994).

Until the early 1990s, almost all telework arrangements had consisted of telecommuting programs designed to accommodate the personal and/or family needs of individual employees. Some common rationales for telecommuting included: to enable a parent caring for an infant or toddler to have the option of working from home (Nilles, 1994); to allow a valuable employee the option of taking a new job without physically relocating (Gordon & Kelly, 1986); or to accommodate a person with disabilities who is able to work well from home but who finds it difficult to get to the office (Chamberlain, 1992). These telecommuting programs had usually been voluntary and very limited in scope. They were generally a relocation or duplication of the traditional office environment in the home at the request of the employee (Nilles, 1994).

In the last few years, the number of employees with a mobile office work arrangement has grown exponentially, increasing most rapidly among large corporations. Aetna, American Express, Anderson Consulting, Apple Computer, AT&T, Chiat/Day, Compaq, Dun and Bradstreet, Ernst and Young, IBM, JC Penney, Pacific Bell, Panasonic, and The Travelers Insurance Companies are among the businesses that have implemented large-scale mobile telework

programs (see Flanagan, 1993; Greengard, 1994, 1995; Pacelle, 1993; Stamps, 1994; Sullivan, 1994; Weiss, 1994). It is estimated that between 1991 and 1993, the number of corporate teleworkers in the United States increased five-fold, and the greatest share of this increase came from companies implementing mobile telework programs (Greengard, 1994).

Bottom-line expense reduction for the company has been the major impetus for this large increase in the number of mobile teleworkers. In recent years the cost of traditional office space has skyrocketed while the cost of portable telecommunications equipment has plummeted (Nilles, 1994). By decreasing office space, significant cost savings can be realized. Less than a year is required to recover the expenditures of completely outfitting a mobile office worker. After the first year, the company realizes about $8,000 annual cost savings per mobile worker (Hequet, 1994). Unlike telecommuting programs, mobile telework programs are often mandatory and are not developed to accommodate the needs of employees (Shellenbarger, 1994). They are simply seen as a means to expense reduction (Martin, 1994).

Promises and Pitfalls of Telework

Many consider telework to offer tremendous potential for improving both work life and family life, and for improving the individual's ability to balance the two. There is a plethora of publicity in the popular press praising the promise of

telework, and very little about its potential pitfalls. For example, a leading

human resources publication (Greengard, 1994) introduced its cover story on the

virtual office with this paragraph:

> Both companies and employees are discovering the benefits of
> virtual arrangements. Businesses that successfully incorporate them
> are able to slash real-estate costs and adhere to stringent air-quality
> regulations by curtailing traffic and commuters. They're also
> finding that by being flexible, they're more responsive to
> customers, while retaining key personnel who otherwise might be
> lost to a cross-country move or a newborn baby. And employees
> who successfully embrace the concept are better able to manage
> their work and personal lives. Left for the most part to work on
> their own terms, they're often happier as well as more creative and
> productive. (p. 70)

Many other popular press articles express similar points of view (e.g.,

Farrah & Dagen, 1993; Fraser, 1993; Illingworth, 1994; Mason, 1993).

However, it is uncertain how many of these assertions are based upon sound

research. Unfortunately there have been very few peer-reviewed scholarly

articles on telework in any form, and none at all on mobile telework (Callentine,

1995). Huws (1991) speculated that telework is more a sentimental dream than a

reality, that the hype does not stand up to the scrutiny of research. Pitt-

Catsouphes and Marchetta (1991) reported that many popular press articles about

telework quote extensively from telework consultants who have a vested interest

in favorable results, and therefore their work should be suspect. Given these

caveats, what are the potential promises and pitfalls of telework to the company

and to the family?

Benefits and Drawbacks of Telework

to the Company

The limited research available has consistently documented that small-scale, voluntary telecommuting programs are generally beneficial to the company. Some specific benefits cited include increased productivity (Kelly, 1988; Sullivan, 1994); decreased expenses (Connelly, 1995; Hequet, 1994); increased job effectiveness (Atkinson, 1985; Greengard, 1994); higher morale (U.S. Department of Transportation, 1993); greater organizational commitment (Pitt-Catsouphes & Marchetta, 1991); and improved responsiveness to customers (Callentine, 1995).

There are a few cautionary voices that speak about the potential drawbacks of telework to companies. According to Gil Gordon, "We're on the verge of what is perhaps the most radical redefinition of the workplace since the Industrial Revolution, with some tremendous benefits involved .... Yet the early signs are that corporations are as likely as not to mess this up" (Shellenbarger, 1994, p. B1). The research available also documents that telework can cause problems such as less interaction among peers (Callentine, 1995; Young 1991), less camaraderie (Hill & Weiner, 1994; Shamir & Salomon, 1985), ineffective communication with management (Ramsower, 1985), inadequate socialization of new employees (Pitt-Catsouphes & Marchetta, 1991), increased burnout

(Shellenbarger, 1994), and worker exploitation (Foegen, 1984; Tomaskovic &
Risman, 1993).

<div align="center">Benefits and Drawbacks of Telework

to the Family</div>

Telework provides the opportunity for greater flexibility in the location
and timing of work. There is evidence that this flexibility is what employees
need to be able to constructively balance work and family responsibilities
(Jenson, 1994). With telework, "Instead of being like 'ships passing in the
night,' you can enjoy something that more closely resembles normal family life"
(Gordon & Kelly, 1986, p. 28). The major benefits are related to greater
flexibility in the time available for the family (Hill & Weiner, 1994; Weijers,
Meijer, & Spoelman, 1992) and the use of this flexibility to more effectively
perform household chores (Callentine, 1995) and enhance family relationships
(Greengard, 1994).

However, some reports suggest that telework may actually place additional
stress on family relationships with deleterious results. Some see mobile telework
as blurring the boundaries between work life and family life (Hill & Weiner,
1994). This lack of separation has been seen by some as leading to increased
levels of conflict in the family (Ahrentzen, 1990; Pitt-Catsouphes & Marchetta,
1991). Many articles point out that trying to combine dependent care with

telework is ineffective and puts tremendous pressure on the parent/employee who attempts to do so (e.g., Christensen, 1992; Riley, 1994; Rowe & Bentley, 1992; Shirazi & Nolan, 1991).

<div align="center">

Are Telecommuters and Mobile

Teleworkers Equivalent?

</div>

Almost all of the research documenting the benefits and drawbacks of telework came from studies conducted with telecommuters (Callentine, 1995). There is a big question about how generalizable research conducted with telecommuters would be to mobile teleworkers. Would the same benefits and/or drawbacks hold true for mobile teleworkers as well?

Some suggest mandatory mobile telework programs will have more negative influences on aspects of work life and family life than voluntary telecommuting programs did (Speeth, 1992). Teamwork may suffer when co-workers are scattered away from the office (Connelly, 1995). "Employees are finding that, unlike the voluntary part-time telecommuting programs of the past, plans forcing whole divisions into mobile offices can cause morale problems--and may even provoke valued employees to quit" (Shellenbarger, 1994, p. B1). Others maintain that the flexibility and trust built into this type of an arrangement will be a mostly positive influence (Greengard, 1994; Illingworth, 1994).

However, there is little research evidence one way or the other (Callentine, 1995).

Conceptual Framework

To make sense of the interrelationships between work concepts and family concepts in the context of the mobile office, it is necessary to define a conceptual framework as well as one or more substantive theories (Lavee & Dollahite, 1991). A conceptual framework answers the ontological question about what is real: what is on the map, and what is not. "Our task is to look at the world and see it whole" (Schumacher, 1977, p. 15). A framework provides a vocabulary of variables and a universe of possible relationships. In the case of work and family, the conceptual framework must be broad enough to put both domains on the same map.

Ecological Theory

This study uses ecological theory to examine the influence of mobile telework on aspects of work and family life. Ecological theory (Bronfenbrenner, 1979, 1986; Bubolz & Sontag, 1993; Santrock, 1992) adapts General Systems Theory (Bertalanffy, 1969) to a more specified set of relationships that is useful to understanding the relationship between work and family variables. The major

components include the individual, the microsystem, the mesosystem, the exosystem, and the macrosystem.

Individual

Ecological theory offers sociocultural contexts to explain different aspects of the human actor. In this study we are interested in the individual as he or she performs work tasks and family tasks, as well as how s/he balances scarcity of time to allocate to those tasks.

Microsystem

The concept of the microsystem puts on the conceptual map the groups of people with whom the individual personally and regularly interacts. The two microsystems that will be most salient in this investigation are the family and the department work-group.

Mesosystem

The mesosystem is the term for the interactions and relationships between microsystems. The essence of this study will be to examine the work/family mesosystem in light of the implementation of mobile telework. For example, does the flexibility of mobile telework enable teleworkers to better balance their work life and family life.

Exosystem

The exosystem is the word used to describe influences from a larger social setting in which the individual does not have a direct role. The formal rules, structure, policies, and human resources practices of a company related to mobile telework exemplify the role of the exosystem in this project.

Macrosystem

The macrosystem is the culture in which the individual lives. It involves basic assumptions about life and acceptable patterns of behavior which are handed down from generation to generation. American cultural assumptions about the nature of work are key to this scholarly venture. For example, one impediment to effectively implementing mobile telework could be the cultural assumption in the macrosystem that real work is done away from the home.

Chronosystem

The chronosystem accounts for changes over time. In this study, the rapid adoption of telework, and particularly of the mobile office, over a very short period of time is of key interest.

Work/Family Substantive Theories

Substantive theories specify the relationships between variables which are defined in a conceptual framework (Burr, Hill, Nye, & Reiss, 1979). Two

competing work/family substantive theories utilized to organize this research are segmentation theory and spillover theory (Zedeck, 1992).

Segmentation Theory

Segmentation theory postulates the efficacy of a very weak or nonexistent work/family mesosystem. It states that the work microsystem and the family microsystem are generally independent and it is best for everyone if they are kept that way. This theory traces its origin to the work of Blood and Wolfe (1960) and their study of the relationship between working-class jobs and the family life of the workers. It proposes that the relationship between work and family is most healthy when there are clear boundaries between the two. "The two environments exist side by side, and for all practical purposes, are divorced from each other. The separation in time, space, and function allows the individual to neatly compartmentalize his or her life" (Zedeck & Mosier, 1990, p. 241). Segmentation theory predicts that to the degree mobile telework makes work/family boundaries more permeable, it will negatively influence both work (e.g., poorer productivity, less job effectiveness, decreased morale, more tenuous organizational commitment, disrupted communications, etc.) and family (e.g., less ability to balance work and family, greater stress, lower quality family relationships, decreased ability to accomplish home responsibilities/chores, etc.).

Spillover Theory

The flip side to segmentation theory is called spillover theory. It proposes that there is a very strong work/family mesosystem. It assumes that the work microsystem and the family microsystem significantly influence one another through a permeable boundary (Bromet, Dew, & Parkinson, 1990; Staines, 1980). Research utilizing spillover theory has focused on what direction the flow of the influence is: from work to family, from family to work, or both (Crouter, 1984; Galinsky, Bond, & Friedman, 1993).

Research has extensively examined under what conditions the spillover between the work microsystem and the family microsystem is positive and under what conditions it is deleterious. Some research suggests that if the interactions between the work microsystem and the family microsystem are rigidly structured in time and space, then spillover in terms of time, psychological absorption, and amount of energy is generally negative (Small & Riley, 1990; Williams & Alliger, 1994).

Research also suggests that flexibility in work arrangements which enables individuals to integrate and overlap work responsibilities and family responsibilities in time and space leads to positive spillover and is the primary key to achieving a healthy work and family balance (Galinsky et al.,1993). According to this view the inherent scheduling flexibility of mobile telework would suggest positive spillover, which would lead to a positive influence on

work (e.g., increased productivity, greater job effectiveness, higher morale, stronger organizational commitment, enhanced communications, etc.) and on family (e.g., greater ability to balance work and family, less stress, higher quality family relationships, increased ability to accomplish home responsibilities/chores, etc.). According to spillover theory, the fundamental solution to the work/family dilemma faced by individuals today is to leverage flexibility in the work microsystem to meet the demands of the family microsystem for the benefit of both (Galinksy, 1992).

Problem Statement

More and more companies today are adopting the mobile office in order to reduce expenses and increase profits. The mobile office dramatically alters where, when, and how work can be performed. The problem is that little is known about how this radical redefinition of the location and timing of work may influence important aspects of work life and family life.

Statement of Purpose

The purpose of this research project is to explore mobile telework and how it influences the work life and the family life of the mobile teleworker.

Research Overview

Because little research has been conducted on mobile teleworkers to this point in time, this study is basically exploratory in nature. This study examines a sample of IBM employees in the western part of the United States. At the time of the study, IBM was in the process of adopting a pervasive mobile office strategy. Some employees in the study had been assigned to a mobile office environment and others had not. A major factor governing this assignment was whether or not the company could realize cost savings by either taking office space out of service at the expiration of a lease or by subletting space to another tenant in the case of a lengthy lease.

Both mobile teleworkers and nonmobile workers were asked a set of questions related to productivity/job effectiveness, morale/organizational commitment, customer relationships, and ability to balance work and personal home life. In addition, mobile teleworkers were asked to what degree they thought mobile telework had been a positive or negative influence on several aspects of work life and family life. They were also asked free-response questions about the benefits and drawbacks of mobile telework to their work life and family life (see Appendix A).

Four kinds of data analyses were used: (a) between-group comparisons of mobile teleworkers and nonmobile office workers, (b) between-group comparisons of mobile teleworker subgroups (e.g., men and women, presence or

absence of pre-school-age children, physical characteristics of the home office, and physical characteristics of the company office), (c) descriptive results about the perception of the influence of mobile telework by the mobile teleworkers themselves, and (d) thematic content coding to categorize write-in comments into themes related to the aspects of work life and family life being studied.

This research was sponsored by IBM as part of a general employee survey about morale and management. Question development had to balance IBM's need for corporate data with the scholarly needs of this dissertation.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

The purpose of this exploratory study is to examine the perceived influence of mobile telework on aspects of work life and family life. Unfortunately, the literature of peer-reviewed scholarly journal articles on mobile telework does not yet exist (Callentine, 1995). However, there are other sources (e.g., general and business periodicals, scholarly articles about telecommuting, documents with limited circulation, etc.) that may be useful to review as a background to understand the contemporary context of telework in the present study.

Current Context of Telework

There are many articles in general and business periodicals that provide a wealth of description and commentary about the contemporary context of telework, from both the telecommuting and the mobile office perspectives. These articles are useful to estimate the prevalence of present and future telework, to gather basic descriptive statistics, and to achieve a synthesis of **perceived** benefits and drawbacks of telework to aspects of work life and family life. However, this literature often uses telework consultants as primary sources

of information for its articles. Since these consultants often have a vested

financial interest in the success of telework, the concern has been expressed that

the popular press presents an unrealistically optimistic view of the benefits of

telework (Connelly, 1995; Huws, 1991; Pitt-Catsouphes & Marchetta, 1991).

Changes in the Nature of Work

A common theme in articles about telework from general and business

periodicals is that the nature of work in the United States is fundamentally

changing. Telecommuting and mobile telework are just two flavors of the

dramatic underlying metamorphosis of labor occurring as we get farther away

from the industrial age and move farther into the information age (Alvi &

McIntyre, 1993).

> The notion of a workday as we have known it is one of the first casualties
> ... nine-to-five is an artifact of Taylorist thinking when labor could be
> measured in the factory or office, and left there when evening came.
> (Kiechel, 1993, p. 52)

Greengard (1994) reported the dramatic shift in the nature of the work

engaged in by large Fortune 500 corporations from 1989 to 1994. The

percentage of firms doing significant amounts of office work rose from 33% in

1989 to 78% in 1994. The percentage of companies building geographically

dispersed work teams rose from 44% in 1989 to 89% in 1994. The percentage

regularly using telemetric (computer) systems rose from 33% in 1989 to 100% in

1994.

The following statement from a *Fortune* cover story highlights what these changes mean to the nature of work.

> Many of the walls we have traditionally built around work, in part to contain it, will tumble. The computational infrastructure will benefit us by allowing more people to live and work where they want to, probably far from cities, hooked up electronically to their market, their database, or the rest of the organization. (Kiechel, 1993, p. 52)

In summary, the general and business press report that the nature of work is changing in such a way that it makes more and more sense to do telework, especially mobile telework (see also, Calem, 1993; Illingworth, 1994).

Number of Teleworkers

The general press reports that the number of teleworkers in the United States has increased dramatically during the past decade, and is expected to continue to expand through at least the end of the century. It is reported that in 1988 there were about one million teleworkers in the United States (McGee, 1988). As of mid 1995, there were approximately 8.4 million employees who telework at least one day a week during regular working hours (Henkoff, 1995). This represents approximately 7% of the U.S. work force. This number is projected to grow to between 25 million and 40 million by the end of the 1990s (Callentine, 1995; Greengard, 1994; Tolbert & Simons, 1994). However, the methodologies used for calculating the number of teleworkers are suspect by some (Kraut, 1989).

Driving Forces Toward Telework

The four most frequently mentioned driving forces behind the phenomenal

increase in the number of teleworkers include: (a) enhanced and more inexpen-

sive technology, (b) a rapidly changing business environment, (c) changing

demographics of the workforce, and (d) environmentally sensitive legislation (see

Bronson, 1993; Cotler & Davenport, 1993; Gordon & Kelly, 1986; Nilles, 1994;

Pitt-Catsouphes & Marchetta, 1991; Tolbert & Simons, 1994; U. S. Department

of Transportation, 1993).

Technology for Telework

The technology needed for telework has become inexpensive, pervasive,

and powerful. The price performance of personal computers has been decreasing

approximately 40%-50% per year for the last decade, and this steep decline is

expected to continue (Nilles, 1994). Most office workers are now "computer

literate" and with the advent of multi-media computer functions, the doors have

been flung open to the vast home market. More than ever, it is likely that an

employee already has the tools in place to be able to accomplish many work tasks

via telecommunications equipment from home. "Today, high-speed notebook

computers, lightning-fast data modems, telephone lines that provide advanced

data-transmission capabilities, portable printers and wireless communication are

fueling a quiet revolution" (Greengard, 1994, p. 70).

Rapidly Changing Business Environment

The competitive demands of today's business environment emphasize corporate efficiency, cost containment, re-engineering, downsizing, and company survival. This creates a business environment conducive to experimenting with new ways of doing work. The possibility that telework might create greater productivity with less expense has encouraged many companies to experiment with the concept. Almost three fourths of American businesses officially offer telework programs (72%) and of these about two thirds (68%) cover the telecommunications and supplies costs involved (Greengard, 1994).

Changing Demographics

Increasing numbers of dual-career couples with children and/or dependent adults create a need for flexibility in the work place. The labor force participation rate for women with preschoolers has risen from 19% in 1960, to 60% in 1992 (Hayghe & Bianchi, 1994). In addition, baby boomers are seen as less likely to accept old ways of doing things and are more likely to desire more autonomy in the scheduling and location of work (Galinsky et al.,1993).

Environmentally-Sensitive Legislation

Environmentally sensitive legislation, such as The Clean Air Act, mandates that companies take proactive steps to reduce the number of employees driving to work in populated areas (Violino & Stahl, 1993). It is estimated that

each person who telecommutes reduces the amount of carbon monoxide released into the atmosphere by 276 pounds annually (Dutton, 1994). If current projected increases in the number of teleworkers materialize, it is estimated that by the year 2000 telework will have saved 1.5 billion gallons of gasoline and 3.5 million tons of carbon pollutants in the United States alone (Greengard, 1994). In some states, tax breaks are given to businesses that implement telework programs (Bureau of National Affairs, 1992).

Specific Telework Research

Sixteen specific telework research projects were identified in the search of the literature. They are listed in Table 1. This table includes the reference, the sponsoring organization, the number of participants, whether it was a mandatory or voluntary program, whether it was a telecommuting or mobile telework project, reported influence on aspects of family life, reported influence on aspects of work life, whether or not there was a control group, and whether or not there was a pretest/posttest design. The background of the three most extensive telework studies is presented below.

The most extensive scholarly study to date on mobile teleworkers has just been placed in the public domain (Callentine, 1995). This multi-method research used a case study methodology, which included survey questionnaires, telephone interviews, personal interviews, and photography to explore an IBM mobile

Table 1

Telework Programs Located in the Literature

Sponsoring Organization/ Reference	Partici- pants	Mandatory Voluntary	Telecomm/ Mobile Ofc	Influence on Aspects of Family Life	Influence on Aspects of Work Life	Ctl/ Grp	Pre/P ost
AT&T Kraut (1987)	n=153 n=169	voluntary	telecommute	none mentioned	job satisfaction =	yes	no
AT&T/State of Arizona Pitt-Catsouphes & Marchetta (1991)	n=134	voluntary	telecommute	less commuting + less expenses +	productivity + morale +	yes	no
California Telecommuting Proj U.S. Dept of Transportation (1993)	n=150	voluntary	telecommute	none mentioned	less sick leave +	no	no
Empirica Telework Survey (Europe) Huws, Korte, & Robinson (1990)	n=119 14 co's	voluntary	telecommute	flexible hours +	gender differences -	no	yes
Federal Flexiplace Project U.S. Dept of Transportation (1993)	n=700	voluntary	telecommute	quality of pers/life +	job performance + communications = less information -	yes	yes
Hughes Ground Systems Group U.S. Dept of Transportation (1993)	n=12	voluntary	telecommute	none mentioned	productivity + customer sat = morale +	yes	yes
Los Angeles County Telecommuting Pitt-Catsouphes & Marchetta (1991)	n=1500	voluntary	telecommute	less stress + work/family flexibility + reduced costs +	job satisfaction + productivity + work quality + reduced commute +	no	yes
Puget Sound Telecommuting Demo U.S. Dept of Transportation (1993)	n=24	voluntary	telecommute	reduced stress +	job performance +	no	no

(table continues)

Sponsoring Organization/ Reference	Partici-pants	Mandatory Voluntary	Telecomm/ Mobile Ofc	Influence on Aspects of Family Life	Influence on Aspects of Work Life	Ctl Grp	Pre/ Post
Ramsower (1985)	n=16 telecomm n=14 office	voluntary	telecommute	none mentioned	less communications - job satisfaction - productivity = absenteeism/turnover = work attitudes =	yes	yes
Sears U.S. Dept of Transportation (1993)	n=10	voluntary	telecommute	none mentioned	productivity + customer service +	no	no
Southern New England Telephone U.S. Dept of Transportation (1993)	n=100	voluntary	telecommute	none mentioned	none mentioned	yes	no
Compaq Computer Sullivan (1993)	n=238	mandatory	mobile office	no boundary - flexibility +	productivity +	no	no
IBM Canada Flexiplace Alvi & McIntyre (1993)	n=unkn	mandatory	mobile office	quality of life +	productivity + decreased costs + hardware -	?	?
IBM Midwestern Area Mobile Office Greengard (1994)	n=2500	mandatory	mobile office	family interaction + flexible hours +	decreased costs + higher morale + greater productivity +	no	no
IBM Midwestern Area Mobile Office Callentine (1995)	n=105	mandatory	mobile office	positive spillover + overwork -	social interaction - communication - work effectiveness + job satisfaction +	no	no
IBM Effective Mobile Management Hill & Weiner (1994)	n=39	mandatory	mobile office	blurred boundaries - flexibility +	communication - social interaction -	no	no

telework program in Indianapolis, Indiana. The study was conducted to complete

a thesis for a master's degree from Cornell University. Callentine studied 105

mobile teleworkers who were participants in one of the first mobile office

programs ever sponsored by IBM. When the study began, the term "mobile

teleworker" had not yet been defined, so the participants were simply called

telecommuters. However, it became readily apparent that the characteristics of

this group were so different from the traditional definition of telecommuting that

a new category of work needed to be defined. In a short time the popular press

was full of references to the "mobile office" and the "virtual office."

Ramsower (1985) used an experimental design to compare 16 teleworkers

with a matched control group of 14 office workers on dimensions of work

communication, job tasks, organizational behavior, job satisfaction, work

attitudes, and performance. Measures were taken before telecommuting began, 3

months after it began, and 6 months after it began. Since everyone in this study

volunteered to be in the telecommuting or control group, Ramsower recognized

that a self-selection bias may have affected the validity of the results. This is the

only study found that used an experimental design.

The Empirica Telework Survey was an extensive European study that

identified 4000 teleworkers in Germany and the United Kingdom. A random

sample was selected, and 119 teleworkers from 14 companies responded to a

very detailed questionnaire (Huws, Korte, & Robinson, 1990). The results of
this study are widely quoted internationally.

Influence of Telework on Aspects of Work Life

From these varied sources it is possible to categorize results related to
different aspects of work life. Below is a summary of key findings related to the
influence of mobile telework on the distribution of work time by work venue,
productivity/job effectiveness, morale/organizational commitment, and company
relationships.

Distribution of Time by Work Venue

There is little research about how mobile teleworkers distribute their time
among various work venues. Callentine (1995) conducted a study of 105 mobile
teleworkers in Indiana and found that in an average week they worked
approximately 21 hours from home, 16 hours from customer sites, 15 hours from
company locations, and about 8 hours from other locations. No other
information about distribution of work time among work venues was found.

Influence of Telework on Productivity/Job Effectiveness

Most studies and articles claim that both telecommuting and mobile office
telework programs positively influence productivity. Depending on the job,

productivity increases for those participating in telecommuting programs generally average between 10% and 30% (Pitt-Catsouphes & Marchetta, 1991). This means it may be possible for a telecommuter to accomplish a full day's office work in about 6 hours at home. Respondents in Callentine's (1995) study reported that the move to mobile telework increased their work effectiveness and facilitated greater productivity. Sullivan (1994) described the impressive productivity gains attributed to the mandatory mobile telework program implemented by Compaq Computer Corporation. After moving their sales people into home offices, Compaq was able to triple its revenue per person in 2 years. Results from the Federal Flexiplace Project (U. S. Department of Transportation, 1993) indicated improved job performance for most project participants. Finally, Pitt-Catsouphes and Marchetta (1991), summarizing a partnership telecommuting project between AT&T and the State of Arizona, reported that a large majority of telecommuters and telemanagers increased their work productivity.

Only one study was located that did not show an increase in productivity. Ramsower (1985) reported that a group of 16 teleworkers did not change nor differ from a control group of nonteleworkers on variables related to productivity, absenteeism, and turnover.

Many studies also report that telework has been a positive influence on job effectiveness. A common theme is that effectiveness is enhanced by the ability to do different kinds of tasks from different locations. One example is how the

flexibility of telework helps create "professional quiet time" to facilitate creative

solutions to business opportunities (Pitt-Catsouphes & Marchetta, 1991).

Employees in a mandatory mobile telework program instituted by IBM Canada in

the Toronto area reported they could do their job much more effectively from

home when the tasks required concentration (Alvi & McIntyre, 1993).

Professionals in a telecommuting program volunteered that they were more

effective on the job because they had a greater ability to concentrate and were

able to avoid office politics when they worked from home (Olson & Primps,

1984). Huws et al. (1990) reported that "reduction of distractions" was one of

the seven top perceived advantages to telework as described by teleworkers in the

European Economic Community. Evaluation of a telecommuting project by the

State of California revealed that increased employee effectiveness was one of the

major benefits of telework to business (U.S. Department of Transportation,

1993). Finally, it was also reported that in a telework environment,

nonproductive meetings tend to be shorter and less frequent (Hamilton, 1987).

Influence of Telework on Morale/Organizational Commitment

The literature appears to be more equivocal about the influence of

telework on morale/organizational commitment. The participants in Callentine's

(1995) study responded that job satisfaction had increased because of the adoption

of mobile telework. Likewise, an evaluation of the AT&T/State of Arizona

telecommuting project revealed that most telecommuters and telemanagers felt that the program had improved work morale (Pitt-Catsouphes & Marchetta, 1991). On the other hand, Kraut (1987) found that measures of job satisfaction did not differ significantly between a telecommuter group and a non-telecommuter control group. Finally, Ramsower (1985) reported lower teleworker job satisfaction related to office working conditions, amount of variety on the job, job security, and opportunities for advancement. Because there is less social interaction in a mobile environment, there is also a danger of less identification with the company. Less social interaction can translate into less loyalty and less organizational commitment (Hamilton, 1987).

Influence of Mobile Telework on Company Relationships

Most studies report that telework decreases the quantity and quality of communications between the teleworker and his or her co-workers; and between the teleworker and his or her manager. Callentine (1995) found that about 90% of her sample of mobile teleworkers reported that their communications with co-teleworkers were less effective than they had been in the traditional working environment. Hill and Weiner (1994) found that mobile telework strongly influenced communication and peer interaction with co-teleworkers and telemanagers. They concluded that managers must replace their ad hoc "management-by-walking-around" communication strategy of the traditional

environment with a disciplined and preplanned communication strategy in the mobile environment. The mobile telemanagers in this study also reported that when they first started working from home, they missed the social interactions of the office. However, as company social networks were replaced with social networks of friends and/or family outside of the company, this sense of loss was alleviated. Ramsower (1985) found that full-time telecommuters engaged in less upward, downward, and horizontal work communications with their co-workers and their supervisors.

Not all studies report a negative influence on company relationships. Results from the Federal Flexiplace Project (U.S. Department of Transportation, 1993) found that telework had little influence, positive or negative, on the quality of communications of the teleworker with supervisors and peers. In fact, according to the Olson and Primps (1984) study, telecommuters who were professional employees reported enhanced relationships with their supervisor though they were concerned about their chances for promotion in their company.

Influence of Telework on Customer Relationships

Many mobile teleworkers are in customer-contact positions in large corporations. The influence of mobile telework on customer relationships is a very important topic of study for companies like IBM, Xerox, and Anderson Consulting (Greengard, 1994). Hill and Weiner (1994) reported that some

telemanagers perceived that mobility had improved customer relationships because it allowed marketing specialists to be more responsive to their customers. Flanagan (1993) reported that mobile telework facilitated more customer face time for sales personnel.

Influence of Telework on Company Expenses

One of the major contributing factors to the increase in the number of corporate mobile teleworkers over the past 2 years has been the potential for significantly reducing expenses (Shellenbarger, 1994). As employees are given the portable means to do their jobs, office space can be taken out of service. After paying for all the costs associated with mobility, yearly cost savings are estimated to be about $8,000 per employee (Hequet, 1994). Greengard (1994) reported that between mid 1993 and the end of 1994 IBM's Midwestern Area implemented an ambitious mobile telework program affecting 2,500 of its 4,000 employees. In just 18 months they were able to slash real-estate space by 55% and increase the ratio of employees to work spaces from 4-to-1 to 10-to-1. This change resulted in millions of dollars in annual real-estate expense savings. Compaq computer has also reported lower office expenses as a result of implementing mobile telework (Sullivan, 1994). Total savings have been estimated to be between $4,000 and $21,000 per year (Matthes, 1992).

Influence of Telework on Aspects of Family Life

One of the great promises of mobile telework reported in the general and business press is that of giving dual-career couples flexibility to better meet the demands of their family life. However, research has not been extensive in this domain.

Influence of Telework on the Ability to Balance Work and Family Life

Huws et al. (1990) found that the top four advantages reported for telework all related to creating more and better time for the family. It is speculated that even though mobile teleworkers may work just as many hours as traditional office workers, the flexibility in their work venues may allow them to schedule more interaction with family members. Andre'a Cheatham, the manager of IBM's National Mobility Project Office, shared her perception about the positive spillover associated with mobility program as IBM employees try to balance work life and family life:

> People are happier and more productive because they can have breakfast with the family before they go off to client meetings. They can go home and watch their child's soccer game and then do work in the evening. They no longer are bound by a nine-to-five schedule. The only criterion is that they meet results. (cited in Greengard, 1994, p. 77-78)

Lack of Boundaries Between Work and Family

Segmentation theory would predict that moving work into the home would be intrusive to the family life of the teleworker and have a negative influence. There is some support in the literature for this position (Callentine, 1995). Hill and Weiner (1994) found that a major personal challenge to mobile telemanagers and teleworkers was the inability to separate work and family. Many reported that blurred work and family boundaries made it difficult to truly leave work behind at the end of the day. This problem became exacerbated because co-teleworkers were able to call any time of the day or night on the home business phone with work issues. It was suggested that mobile teleworkers turn off the ringer of their work phone at the end of the day. Another suggestion was to use the flexibility of mobility to increase quality family time (e.g., eat meals together, go to school activities in the afternoon, etc.) to compensate for some of the distractions. Sullivan (1994) reported that a drawback of the Compaq mobile telework program to some employees was their perception that the boundary between work life and family life had been blurred and that this loss of segmentation had negatively influenced their family life.

> There's the danger of putting in too many hours. 'You can't leave it behind, because it's always there,' says (Compaq) saleswoman Ann Bacon. She says her husband usually wanders in around suppertime and announces, 'The office is closed!'" (Sullivan, 1994, p. 213)

Similarly, Olson and Primps (1984) found that some telecommuters exhibited characteristics of workaholism because of lack of separation between work life and family life. This had a negative impact on their personal/home life. Gurstein (1991) summarized this pessimistic view of the influence of mobile telework on the ability to balance work life with family life.

> Contrary to the idealized vision of homework allowing for a greater balance between work and family life, many of those who work at home appear to work long hours and have little time to devote to their families and housework. (p. 170)

Influence of Telework on Household Tasks and Responsibilities

There is some support for positive spillover between telework microsystem and the home microsystem in terms of the ability to manage household tasks and child care arrangements. Dubrin (1991) found that telecommuters were more satisfied than nontelecommuters with their ability to schedule child-care arrangements. Gordon and Kelly (1986) speculated that one of the biggest benefits of telework is the ability to overlap some household chores with paid employment (e.g., putting in a load of laundry before sitting down at the computer for an hour). The flexibility of telework can also be used to facilitate child-care arrangements (Nilles, 1994). However, many sources caution teleworkers about the pitfalls of overlapping paid work with dependent care (e.g., Gordon & Kelly, 1986; Riley, 1994; Pitt-Catsouphes & Marchetta, 1991). The clerical employees in the Olson and Primps (1984) study often

telecommuted as a substitute for child care. They reported negative spillover both from the work microsystem to the family microsystem, as well as from the family microsystem to the work microsystem. This was manifest by less job autonomy, deteriorating relationships with their supervisors, and added individual stress.

> It was apparent that nonprofessional work-at-home mothers, typically with preschool children and no additional help, juggled work and family responsibilities throughout the day. Descriptions of the typical workday included playpens next to the work areas, interrupting work for car pools and lunchtime, and returning to work during children's naps. (Olson & Primps, 1984, p. 109)

Influence of Mobile Telework on Family Relationships

Teleworking typically increases the amount of interaction between the teleworker and his/her family members. If the family relationships have been positive, this may lead to the strengthening of the relationships. However, in some conflictual relationships, this will increase the opportunity for contention (Gordon & Kelly, 1986). Olson and Primps (1984) found that the telecommuters with professional positions reported improved relationships with their children. However, Gurstein (1991) speculated that the lack of spatial separation between family and work would increase the stress among family members. Hartman, Stoner, and Arora (1991) found a negative relationship between family relationships and satisfaction with telework.

It is speculated that a teleworker is better able to handle the mini-crises that occur with family members (e.g., last-minute child-care change, sick child, teacher conference, older parent's doctor's appointment, etc.). How to handle these situations is a major source of concern for many working parents (Galinsky et al., 1993).

The flexibility of telework provides more opportunity for the teleworker to interact with other family members. Teleworkers find that "water cooler" break times and meal times that used to be spent with co-workers are spent more frequently with family members (Nilles, 1994).

However, for some teleworkers, having all the tools available to do work from home makes it too easy to work longer hours than they would in a traditional office environment. This translates into fewer hours available for family members and time-poor relationships (Callentine, 1995).

Influence of Mobile Telework on Individual Factors

Alvi and McIntyre (1993) reported that IBM Canada's Flexiplace program had reduced some of the personal stress associated with work that could negatively spill over from the work microsystem to the family microsystem. They said:

> There is no question the quality of life has improved for many.
> Compare getting up in the morning, having a cup of coffee and
> sitting down at your computer, with a routine that used to include
> fighting rush-hour traffic just to get to the office. (Alvi &
> McIntyre, 1993, p. 22)

Olson and Primps (1984) found that the telecommuters with professional positions reported less individual stress because they avoided the daily commute. Participants in the Federal Flexiplace Project reported that their quality of personal life had generally improved because of their involvement with teleworking (U.S. Department of Transportation, 1993). However, some studies report that the extra work performed by teleworkers may contribute to employee burnout (Callentine, 1995).

Summary

Prominent in Callentine's (1995) research design was the influence of mobility on aspects of family life. The findings of her literature review are consistent with the findings of the literature review of this present study:

> All of the studies and readings previously cited fail to address at least one issue critical to the success of a mobile workplace, and that is, the recognition that to combine work and family life in ways not witnessed since the industrial revolution may favorably alter the relationships between work and family, or impose serious consequences to the individual, the family, and ultimately, the organization. (p. 22)

Research Questions

In light of the review of literature, the following research questions for this exploratory study were selected. There are seven research questions about the perceived influence of mobile telework on aspects of work life, and six

research questions about the perceived influence of mobile telework on family life.

Perceived Influence of Mobile Telework on Aspects of Work Life

1. What is the perceived influence of mobile telework on **work life in general?**

2. How do mobile teleworkers **distribute their work time among work venues** (i.e., company office, customer location, home, other location)?

3. Do mobile teleworkers work more **hours** than non-mobile workers?

4. What is the perceived influence of mobile telework on **productivity and job effectiveness?**

5. What is the perceived influence of mobile telework on **morale and organizational commitment?**

6. What is the perceived influence of mobile telework on **company relationships?**

7. What is the perceived influence of mobile telework on **customer relationships?**

Perceived Influence of Mobile Telework on Aspects of Family Life

8. What is the perceived influence of mobile telework on **family life in general?**

9. What is the perceived influence of mobile telework on **flexibility in the timing and location of work?**

10. What is the perceived influence of mobile telework on **work and personal/home life balance?**

11. What is the perceived influence of mobile telework on **the management of household chores and child care?**

12. What is the perceived influence of mobile telework on **family relationships?**

13. What is the perceived influence of mobile telework on **other personal factors?**

CHAPTER 3

METHODS

Exploratory Design

There is very little published research about the influence of mobile telework on aspects of work life and family life. The few articles about telework that have been published in peer-reviewed scholarly journals deal with narrow aspects of the influence of telecommuting on work life, and ignore the influence of telecommuting on family life. There are no peer-reviewed journal articles at all about the influence of mobile telework on either aspects of work life or aspects of family life. There are some reports of other kinds of research published in the popular press; however, these may be suspect because their methods are not open to public inspection and the researchers themselves may have a vested interest in the success of this new work alternative.

In short, because there is very little known about the influence of mobile telework on aspects of work life and family life, this study is exploratory in nature. Its purpose is to look at the perceived influence of mobile telework from a variety of perspectives to examine a broad set of research questions. This exploratory research design examines the perceived influence of mobile telework on aspects of work life and family life from four different perspectives.

First Perspective: Comparison of Mobile

Teleworkers with Nonmobile Workers

The first perspective compares the responses of a mobile teleworker group to the responses of an equivalent comparison group of nonmobile workers. Eighteen months ago, everyone in IBM's Western Area worked from a traditional IBM office. Over the past year and one-half, some IBM units have switched to a mobile telework arrangement and no longer work from a traditional IBM office. In this study, the mobile group consists of employees assigned to be mobile teleworkers. The comparison group consists of those individuals who continue to work from a traditional office. The major criterion for assignment to either the mobile group or the nonmobile comparison group was whether or not the office space of the employee could be taken out of service with financial advantage. Though it would appear that lease expiration date and the ability to sublet the space would not bias the assignment of one group when compared to another, there may be some systematic way the two groups differ. Statistically comparing the mobile and the comparison groups on key background variables helped determine that the two groups were equivalent. These background variables included gender, occupational category, length of service, and presence of dependents.

Second Perspective: Comparison of Mobile Teleworker Subgroups

The second perspective includes comparison of different mobile teleworker subgroups (i.e., male/female, presence or absence of preschool-aged children, whether or not the teleworker has a dedicated home office, and whether or not the teleworker still has access to a dedicated work space in an IBM office). A perspective of how the perceived influence of mobile telework on aspects of work life and family life differs according to these categories is presented.

Third Perspective: Perception of Mobile Teleworkers

The third perspective consists of data from questions which directly asked mobile teleworkers to evaluate the influence of mobile telework on specific aspects of work life and family life.

Fourth Perspective: General Perceptions of Mobile Teleworkers

The fourth perspective was achieved by asking the mobile teleworkers to write about their general perceptions of how mobile telework had influenced their work life and their family life in answer to free-response questions. All data were gathered from the same special topic survey from the same group of respondents. It was believed that the intersection of these four perspectives would strengthen the answers to the research questions proposed by this study.

Subjects

The subjects of this study included all marketing and service employees of IBM-United States working in the Intermountain, Northern California, and Pacific Northwest trading areas. These employees market, support, and service IBM products and serve as the direct personal interface between IBM and its customers. These three trading areas comprise the states of Alaska, Washington, Idaho, Montana, Wyoming, Oregon, Utah, and Nevada, as well as Northern California. Major branch offices are located in San Francisco, Sacramento, Portland, Seattle, Anchorage, Juneau, Boise, and Salt Lake City. According to IBM's Human Resources Data Base, there were 399 employees eligible to complete the survey. They had the following demographic characteristics: 85% were college graduates; 67% were males and 33% were females; and 85% were white and 15% were minorities. Based on similar special-topic surveys, a response rate of between 50% and 70% was anticipated.

Mobile Teleworker Group

Two naturally occurring groups were used for primary between-group comparisons in this study. The first group (approximately 60% of the sample) consisted of employees who were mobile teleworkers at the time of the study. IBM had supplied them the portable means to work electronically from a variety of locations. These means included an IBM ThinkPad notebook computer with

modem, fax card, and mobility software; two extra phone lines into the home of the mobile teleworker; and a letter quality printer. Some teleworkers were also supplied with cellular phones, alphanumeric pagers, facsimile machines, and personal copiers. IBM did not reimburse mobile teleworkers for their home office space, pay for incremental utility costs, nor allow personal tax deductions for office space. Almost all of these employees had given up their dedicated office space in an IBM facility, although most maintain some file storage space there.

Nonmobile Worker Comparison Group

The remainder of the sample (approximately 40%) comprised the comparison group that were still working from a traditional IBM office at the time of the survey. They were scheduled to become mobile teleworkers, but had not yet done so at the time of the survey due to corporate financial considerations. The start-up costs of the mobility equipment are generally paid for by savings in real-estate costs. If IBM had a lease on office space, it did not make financial sense to break the lease and pay termination charges. Mobility, therefore, was delayed until the lease expired or another tenant could be found to sublet the space. Then real-estate savings could fund the capital investment required to acquire the equipment needed for mobility.

Whether or not an employee worked in a location whose office space was taken out of service was capricious; meaning the assignment to mobile and traditional office groups was almost as effective as a random number table. One common threat to validity, selection bias, would appear to be less of a problem in this study because IBM employees did not volunteer for their current work site.

Data Collection

This survey was administered electronically utilizing IBM's Online Opinion Survey (OOS) program (Read, 1991). In order to facilitate greater survey participation, IBM's Western Area general manager announced the survey by personally sending an electronic mail message to all potential survey participants the day before the beginning of the survey period. His message explained the importance of the survey and gave participants the instructions needed for online access.

IBM employees are linked together in a worldwide mainframe computer network. To access the survey a respondent only needed to enter "FALL94" from the command line of the main menu screen of IBM's electronic office program. The respondent was then presented with the survey questions on specially designed online screens. Responses were given through the keyboard. The OOS program has built-in error checking that prompts the participant if an invalid response is entered.

It took approximately 15-20 minutes to complete the survey. A participant could take the survey all at once, or could choose to temporarily exit and resume several times. When the respondent completed the survey, the responses were automatically sent to the survey administrator. To preserve anonymity, all electronic identifying information (e.g., userid, electronic mail address, etc.) was stripped away from the data before the data were sent to the survey administrator. However, to assure that only those in the sample actually took the survey and that no one took it multiple times, there is an automatic indexing function to keep track of the electronic addresses of all eligible participants as well as who has already completed the survey. This tracking occurs internally within the program, and is designed to be inaccessible by the survey administrator. If an unauthorized employee attempts to access the survey, he or she receives a message, "You are not authorized to take the survey. Please call the survey help desk at xxx-xxxx."

A major advantage of the OOS is that survey respondents key-in their own write-in comments. This results in a greater volume of comments being written, as well as a greater facility for electronic comment processing (e.g., word searches, thematic content coding, etc.).

The participation rate was monitored daily during the course of the survey period. Three electronic reminders were sent to all potential survey participants. A total of 249 subjects elected to take the survey for a response rate of 62%.

Measurement

The primary independent variable was dichotomous and indicated whether or not the respondent was a mobile teleworker. There were also individual demographic variables and job-related demographic variables that served as controls for analyzing the influence of the independent variable.

The dependent variables included aspects of work life and family life. Aspects of work life included variables related to work in general, hours per week spent at different work venues, productivity/job effectiveness, morale/organizational commitment, company relationships, and customer relationships. Aspects of family life included personal/home life in general, flexibility of work, work and personal/home life balance, household responsibilities, family relationships, and personal factors.

Independent Variable

Whether or not an employee was a mobile teleworker was determined by defining mobility in the survey and then asking respondents directly to classify themselves. Mobility was introduced with the statement: "The following section contains pilot questions for a project about working effectively in a mobile environment, sponsored by Workforce Solutions, Leadership Development." Mobility was defined in this way: "For this study 'mobility' is defined as having the portable means to accomplish your work electronically

away from the office. This usually means having a ThinkPad with appropriate mobility software and usually includes giving up dedicated office space." The direct question used for self-classification as a mobile teleworker was: "Do you consider yourself 'mobile' (e.g., have a ThinkPad, able to connect to PROFS network from a variety of locations, perhaps have an extraphone line at home, etc.)?" The possible responses were yes and no (see Table 2).

Individual Demographic Variables

Individual demographic variables in this study included gender, education, number of co-resident children/adults, and the presence of preschool-aged children (see Table 2).

Gender

The gender of the respondent was determined by responses to the statement "Are you:" and presenting the options male and female.

Education

The level of education was determined by asking the close-ended question: "How much formal education have you had?" The options were: (1) Grade school or some high school, (2) High school or equivalent diploma, (3) Some college/technical school/two-year college, (4) College graduate (bachelor's degree), and (5) Master's degree/doctorate or more (including law degree).

Table 2

Independent and Demographic Variables

	Level of Measure	Range	Analysis
Independent Variable			
Are you mobile?	Nominal	0,1	I.V.
Individual demographics			
Gender	Nominal	0,1	Control
Education level	Ordinal	1-5	Control
Number of preschool-aged children	Ratio	0-n	Control
Presence of preschool age child(ren)	Nominal	0,1	Control
Number of elementary school age children	Ratio	0-n	Control
Number of secondary school age children	Ratio	0-n	Control
Number of post-secondary school age children	Ratio	0-n	Control
Number of dependent adults	Ratio	0-n	Control
Number of independent adults	Ratio	0-n	Control
Job-Related demographics			
Occupation	Nominal	70-74	Control
Length of service (years)	Ratio	0-n	Control
Type of home office (degree dedicated)	Ordinal	1-4	Control
Type of IBM office (degree dedicated)	Ordinal	1-6	Control
Length of time mobile	Ordinal	1-7	Control

Note. I.V. = Independent Variable

Number of Co-Resident Children/Adults

The number of co-resident children/adults was ascertained by asking in the survey: "Please indicate the number of children and/or adults that live with you in your home at least half of the time. (This is a pilot question for the mobility project. Should you prefer not to answer any part of this question, please leave it blank.)" The options included: # of preschool-aged children; # of elementary school-aged children (Grades K-6); # of secondary school-aged children (Grades

7-12); # of post-secondary school-aged children; # of dependent adults (eldercare, etc.); and # of independent adults (not children).

Presence of Preschool-Aged Children

This is a dichotomous variable based on responses to the question about the number of preschool-aged children living in the home at least half of the time.

Job-Related Demographics

Job-related demographic variables in this study include: occupation, length of service, type of home office, type of IBM office, length of time mobile (see Table 2).

Occupation

Respondents were asked to indicate to which of four occupational categories they belonged. Client representatives are responsible for managing the relationships between IBM and its customers. Marketing specialists are responsible for marketing specific hardware, software, services, and maintenance products. Consulting services employees sell their time to provide solutions to customers. Availability center personnel service IBM hardware and software, and market selected services. All occupational groups meet face-to-face with IBM customers frequently.

Length of Service

The length of service with IBM was determined by asking the open ended question: "How many years have you been employed by IBM? (Enter number of years, 00-99)."

Type of Home Office

The type of home office was ascertained by asking the question: "What best describes the area from which you work at home?" The possible answers were: "(1) Dedicated ROOM with a door (primarily or totally used for work purposes), (2) Dedicated AREA in a specific room (room primarily used for something other than work), (3) Nondedicated AREA (you do NOT have a dedicated area from which you work) (4) I do not ever work from home." A dichotomous variable was created indicating the presence or absence of a dedicated home office with a door.

Type of IBM Office

The type of IBM office was determined by asking the question: "What best describes your workspace at an IBM location?" The possible responses were: "(1) I have my own private office (with a door) at IBM, (2) I have my own desk in a cubicle at IBM, (3) I have my own desk in a common area (bullpen) at IBM, (4) I check out a desk or workspace when I work at IBM, (5) I find a desk or workspace on an ad hoc basis at IBM, (6) I do not ever work from

an IBM location." A dichotomous variable was created indicating the presence or absence of a dedicated work location at IBM. Those who answered from the first three options were coded "Yes." Those who answered one of the last three options were coded "No."

Length of Time Mobile

Those who had coded themselves as mobile teleworkers were asked: "How long have you been mobile?" The possible responses were: "(1) Less than a month, (2) 1-2 months, (3) 3-4 months, (4) 5-6 months, (5) 7-12 months, (6) 13-24 months, (7) More than 24 months."

Aspects of Work Life: General

Data related to the influence of mobility on general aspects of work life were gathered by asking closed-ended questions about the overall influence of mobility on work life, whether or not IBM had benefited from mobility, and how mobility had affected the amount of time spent working. In addition, two open-ended questions were asked soliciting general comments about the benefits and drawbacks of mobility to work life and why or why not IBM had benefited from mobility (see Table 3).

Overall Influence of Mobility on Work Life

The influence of mobility on several aspects of work life was measured by asking the question: "What has been the influence, if any, of mobility on the following aspects of your work life at IBM?" These questions have a response scale of: (1) very positive, (2) somewhat positive, (3) no influence, (4) somewhat negative, and (5) very negative. The first aspect was: "Overall influence of mobility on your work life." This question was asked of all respondents, even those who were not yet mobile. The reason was that even the nonmobile employees still deal on a daily basis with other employees who are mobile, and would have an opinion about the overall influence of mobility on their nonmobile work life.

Benefit of Mobility to IBM

To explore the employees' perception of the benefit of mobile telework to the company, both mobile and nonmobile workers responded to this question: "Overall, do you believe IBM has benefited from mobility?" The possible responses were: (1) yes, (2) unsure, (3) no.

Effect on Total Time Spent Working

There were several questions about how mobility had increased or decreased the amount of time spent by mobile teleworkers on various work

Table 3

Variables to Measure Aspects of Work Life

	Level of Measure	Range	Type of Analysis[a]
General Influence on Work Life			
Overall influence of mobility on work life	Ordinal	1-5	1,2,3
IBM has benefited from mobility	Ordinal	1-3	1,2,3
Effect on time spent working	Ordinal	1-3	1,2
Benefits and drawbacks of mobility to work life	Write-in	0-60 lines	4
Why IBM has benefited from mobility	Write-in	0-60 lines	4
Hours Per Week Spent Working			
From customer office	Ratio	0-n	1,2,3
From home office	Ratio	0-n	1,2,3
From IBM office	Ratio	0-n	1,2,3
From other location	Ratio	0-n	1,2,3
Total (customer + home + IBM + other)	Ratio	0-n	1,2,3
Productivity/Job Effectiveness			
Current appraisal	Ordinal	1-5	1,2,3
Results-oriented leadership	Ordinal	1-5	1,2,3
Willing to make extra effort for IBM success	Ordinal	1-5	1,2,3
Influence of mobility on:			
- Productivity	Ordinal	1-5	1,2
- Ability to concentrate	Ordinal	1-5	1,2
- Ability to meet deadlines	Ordinal	1-5	1,2
- Access to information needed for your job	Ordinal	1-5	1,2
Influence on productivity index	Interval	1-5 (mean)	1,2
Effect on amount of non-productive work time	Ordinal	1-5	1,2
Morale/Organizational Commitment			
Rate own morale at present time	Ordinal	1-5	1,2,3
Proud to tell others I am part IBM	Ordinal	1-5	1,2,3
Optimistic about long-term future in IBM	Ordinal	1-5	1,2,3
Influence of mobility on:			
- Morale	Ordinal	1-5	1,2
- Commitment to IBM	Ordinal	1-5	1,2
Influence on morale/commitment index	Interval	1-5 (mean)	1,2

(table continues)

	Level of Measure	Range	Type of Analysis[a]
Company Relationships			
Feel part of work group	Ordinal	1-5	1,2,3
Evaluation of peer feedback	Ordinal	1-5	1,2,3
Rating of manager	Ordinal	1-5	1,2,3
Influence of mobility on:			
- Relationship with manager	Ordinal	1-5	1,2
- Feedback on performance	Ordinal	1-5	1,2
- Camaraderie in the department	Ordinal	1-5	1,2
- Communications within the company	Ordinal	1-5	1,2
Influence on company relationships index	Interval	1-5 (mean)	1,2
Time interacting with teammates	Ordinal	1-3	1,2
Time interacting with manager	Ordinal	1-3	1,2
Time in social interaction at work	Ordinal	1-3	1,2
Customer Relationships			
Influence of mobility on:			
- Customer satisfaction	Ordinal	1-5	1,2
- Customer communication	Ordinal	1-5	1,2
- Ability to close business	Ordinal	1-5	1,2
Influence on customer relationships index	Interval	1-5 (mean)	1,2
Face time with the customer	Ordinal	1-3	1,2

[a]Type of Analysis:

1 = Comparison of Mobile Teleworker Group and Nonmobile Worker Group

2 = Comparison of Mobile Teleworker Subgroups

3 = Perceptions of Mobile Teleworkers

4 = Thematic Content Coding of Write-in Comments

activities. These questions were prefaced with: "How has mobility affected the amount of time you spend in the following activities?" The response scale used was: (1) more time spent on this activity due to mobility, (2) about the same amount of time spent, and (3) less time spent on this activity due to mobility. For analysis, all these items were reverse coded so that the higher the response the greater affect on lengthening the amount of time spent on this activity. The

first measurement was: "Total time working for IBM." This question was asked because some sources speculate that because mobile telework may reduce travel time, it may also lead to an increase in the amount of time worked (Gordon & Kelly, 1986; Nilles, 1994).

Open-Ended Write-in Comments about Mobility

In order to gather data for thematic content coding, two open-ended write-in comments were asked about the influence of mobility on work life. The first was: "What are some specific examples of the benefits and/or drawbacks of mobility to your work life at IBM?" The second question was: "Please comment about why you do or do not believe that IBM has benefited from mobility."

Aspects of Work Life: Number of Hours Spent Working

In a mobile telework environment employees have been provided the portable means to do their work from a variety of different locations. However, there are very limited data about how mobile teleworkers choose to distribute their time among several work venues (Callentine, 1995). To collect data about this distribution, respondents were asked to complete this open-ended item: "Please divide up this total number of IBM work hours per week and estimate how many hours you typically work at the following locations (use two digits,

i.e., 00-99)" The four possible locations listed were: (1) customer location, (2) home, (3) IBM facility, and (4) travel/other. A constructed variable aggregated the time from these four work venues to create a total hours per week worked variable. Respondents were also asked for the total number of hours worked per week directly: "How many hours per week do you typically work for IBM? (Please make an average per week estimate covering the last three months.)" (See Table 3).

Aspects of Work Life: Productivity/Job Effectiveness

The perceived influence of mobility on aspects of productivity and job effectiveness was measured by asking all respondents to provide their current performance appraisal rating, to evaluate the degree of results-oriented leadership, and whether or not they were willing to make an extra effort for IBM's success. In addition, mobile teleworkers were asked directly what kind of influence mobility had been on productivity, their ability to concentrate, their ability to meet deadlines, and their access to information needed on the job. These latter four items were combined into a productivity index. Finally, mobile teleworkers were asked about the effect mobility had on the amount of non-productive work time (see Table 3).

Current Performance Appraisal

All respondents were asked to provide their current performance appraisal rating. These ratings are used in conjunction with IBM's compensation system, and so they are carefully considered. The appraisal ratings are on a five point scale: (1) far exceeded the requirements of the job, (2) consistently exceeded the requirements of the job, (3) exceeded the requirements of the job at times, (4) met the requirements of the job, (5) did not meet the requirements of the job. For analysis, this item was reverse coded so that the higher the value the more positive the appraisal rating. In previous IBM surveys of this type the distribution of performance ratings reported by respondents has not differed significantly from the performance distribution on file in the Human Resources Data Base.

Results-Oriented Leadership Practices

The degree to which results-oriented leadership is practiced was measured by answering with a range of agreement to the single item: "People in my trading area are rewarded based on results achieved rather than some other basis." This item was originally developed for an IBM survey of the IBM-US headquarters organization in the summer of 1994. Results-oriented leadership practices are considered to be very important for a mobile telework program to succeed (see Greengard, 1994; Riley, 1994).

Influence of Mobility on Productivity/Job Effectiveness

Mobile teleworkers were asked to rate the influence of mobility on their productivity, their ability to concentrate while working, their ability to meet deadlines, and their ability to access the information needed for the job. To rate these items a five-point scale ranging from very positive to very negative was used. These four items were combined into an influence on productivity index.

Effect on Nonproductive Work Time

Mobile teleworkers were also asked to rate how mobility had affected the amount of nonproductive work time. Again, this was on a three-point scale ranging from "more time spent" to "less time spent."

Aspects of Work Life: Morale and Organizational Commitment

The perceived influence of mobility on aspects of morale and organizational commitment was measured by asking all respondents to directly rate their morale, to reply if they are proud to tell others they are part of IBM, and to indicate how optimistic they are about their long-term future in IBM. In addition, mobile teleworkers were asked directly what kind of influence mobility had been on their morale and on their commitment to IBM. These last two items were combined into a morale/organizational commitment index (see Table 3).

Morale

Morale was measured by asking all respondents to directly rate their own morale on a five-point scale ranging from "very good" to "very poor."

Pride in Company

Another dimension of morale was measured by asking all respondents the degree to which they agreed with the statement, "I am proud to tell others I am part of IBM." This item was on a five-point scale ranging from "strongly agree" to "strongly disagree."

Optimism

The degree of organizational commitment was measured by asking all respondents the degree to which they agreed with the statement, "I am generally optimistic about my long-term future in IBM." This item had a five-point response scale ranging from "strongly agree" to "strongly disagree."

Influence of Mobility on Morale and Organizational Commitment

Mobile teleworkers were asked to rate the influence of mobility on their overall morale and on their commitment to IBM. To rate these items a five-point scale ranging from very positive to very negative was used. These two items were combined into an influence on morale/commitment index.

Aspects of Work Life: Company Relationships

The perceived influence of mobility on aspects of company relationships was measured by asking all respondents to indicate the degree to which they feel part of the group of people they work with, their evaluation of the peer feedback process, and their rating of their manager. In addition, mobile teleworkers were asked directly what kind of influence mobility had been on their relationship with their manager, the feedback they receive about their performance, the camaraderie of their department, and their ability to communicate with others within the company. These latter four items were combined into a company relationships index. Finally, mobile teleworkers were asked about the effect mobility had on the amount of time they spent interacting with teammates, time interacting with their manager, and time in social interaction at work (see Table 3).

Aspects of Work Life: Customer Relationships

The perceived influence of mobility on aspects of customer relationships was measured by asking mobile teleworkers what kind of influence mobility had been on the customer satisfaction of their clients, their ability to communicate with their customers, and their ability to close business transactions. These three items were combined into a customer relationships index. Finally, mobile

teleworkers were asked about the affect mobility had on the amount of time they spent in face time with their customers (see Table 3).

Aspects of Family Life: General

Data related to the perceived influence of mobility on general aspects of family life were gathered by asking all respondents closed-ended questions about whether or not they have sufficient time for their personal/home life, about the overall influence of mobility on family life, whether or not they had personally benefited from mobility, and how mobility has affected the amount of time spent working. In addition, two open-ended questions were asked soliciting general comments about the benefits and drawbacks of mobility to personal life and why or why not they personally had benefited from mobility (see Table 4).

Aspects of Family Life: Flexibility.

Flexibility in the timing and location of work is seen as key for families to flourish. Flexibility was measured by two items with a five-point response scale ranging from no flexibility to complete flexibility. The two questions were: "How much flexibility do you have in selecting the location of your work?"; and "How much flexibility do you have in scheduling when you do your work (e.g., scheduling the hours you work, the time of day, etc.)?" These items are based on items developed for the National Study of the Changing Workforce (Galinsky

et al., 1993). The two items were combined into a flexibility index (see Table 4).

Aspects of Family Life: Work and Personal/Home Life Balance

All respondents were asked: "How easy or difficult is it for you to balance your work and your personal/home life?" A five-point response scale ranging from "very easy" to "very difficult" was provided. In addition mobile teleworkers were directly asked to rate the influence of mobility on their ability to balance work and personal/home responsibilities on a five point scale ranging from very positive to very negative (see Table 4).

Aspects of Family Life: Household Chores/Child Care

The perceived influence of mobility on household chores/child care was measured by asking mobile teleworkers what kind of influence mobility had been on their management of home chores and their management of childcare/eldercare responsibilities. These two items were combined into a household tasks index. Finally, mobile teleworkers were asked about the effect mobility had on the amount of time they spent in household tasks (see Table 4).

Table 4

Variables to Measure Aspects of Family Life

	Level of Measure	Range	Type of Analysis[a]
General Influence on Family Life			
Sufficient time for personal/home life	Ordinal	1-5	1,2,3
Personal benefit from mobility	Ordinal	1-5	1,2,3
Overall influence of mobility on personal/home	Ordinal	1-5	1,3
Time for personal/home life	Ordinal	1-3	1,3
Benefits/drawbacks of mobility to personal/home	Write-in	0-80 lines	4
Why you personally have benefited from mobility	Write-in	0-80 lines	4
Flexibility			
Flexibility in the location of work	Ordinal	1-5	1,2,3
Flexibility in the timing of work	Ordinal	1-5	1,2,3
Flexibility index	Interval	1-5 (Mean)	1,2,3
Work and Personal/Home Life Balance			
Ability to balance work and personal/home life	Ordinal	1-5	1,2,3
Influence of mobility on ability to balance	Ordinal	1-5	1,3
Household Chores/Child Care			
Influence of mobility on:			
- Management of home chores	Ordinal	1-5, 9	1,3
- Management of childcare responsibilities	Ordinal	1-5, 9	1,3
Influence on household tasks index	Interval	1-5 (Mean)	1,3
Time for household tasks	Ordinal	1-3, 9	1,3
Family Relationships			
Influence of mobility on:			
- Relationship with spouse/partner	Ordinal	1-5, 9	1,3
- Relationship with child(ren)	Ordinal	1-5, 9	1,3
Influence on family relationships index	Interval	1-5 (Mean)	1,3
Time for social interaction at home	Ordinal	1-3	1,3
Personal Factors			
Influence of mobility on:			
- Personal interests/recreation	Ordinal	1-5	1,3
- Community involvement	Ordinal	1-5	1,3
Personal factors index	Interval	1-5	1,3

[a]*Type of Analysis.*
1 = Comparison of Mobile Teleworker Group and Nonmobile Worker Group
2 = Comparison of Mobile Teleworker Subgroups
3 = Perceptions of Mobile Teleworkers
4 = Thematic Content Coding of Write-in Comments

Aspects of Family Life: Family Relationships

The perceived influence of mobility on family relationships was measured by asking mobile teleworkers what kind of influence mobility had been on their relationship with their spouse or partner and their relationship(s) with their child(ren). These two items were combined into a family relationships index. Finally, mobile teleworkers were asked about the effect mobility had on the amount of time they had for social interaction at home (see Table 4).

Aspects of Family Life: Personal Factors

The perceived influence of mobility on personal factors was measured by asking mobile teleworkers what kind of influence mobility had been on their ability to pursue personal interests/recreation and their community involvement. These two items were combined into a personal factors index (see Table 4).

Threats to Validity

This exploratory study attempts to ameliorate some threats to validity by looking at the data from four different points of view. However, there are still several threats to validity that deserve to be mentioned.

<div align="center">Threats to Internal Validity</div>

By introducing a comparison group, several time threats to internal validity (e.g., history and maturation) are controlled for. However, diffusion of treatment and mortality are two group threats to internal validity that may pose a problem.

Diffusion of Treatment

Work at IBM has recently become very project oriented. Cross-functional and cross-department teams come together to meet an opportunity. It is very common for mobile and nonmobile IBMers to work together on the same projects. As they do so, it is possible that a diffusion-of-treatment effect may take place. In addition, just before the survey it was announced that ThinkPads would be available to anyone with a business need, not just to mobile teleworkers. This could have enabled some nonmobile workers to soon gain the software advantages that the mobile teleworkers already had.

Mortality

IBM has experienced rapid downsizing in recent years. It is possible that nonmobile workers might be overrepresented in layoffs when compared to mobile teleworkers because they have fewer technical tools with which to be successful on the job. This might mean that though the mobile teleworker group and traditional office group were comparable at the time of assignment to different

work sites, through differential mortality they might systematically differ at the time of the survey.

An equally plausable mortality scenario could be that mobile teleworkers might be overrepresented in layoffs when compared to nonmobile workers because they are physically seen less frequently by those making downsizing decisions.

History

During the past few years IBM has undergone dramatic changes. It is possible that respondents would incorrectly ascribe changes to mobility, when really they were influenced by something else. This threat is controlled for by the use of a comparison group. However, it would still be a threat for those analyses in which subgroups of mobile teleworkers are compared on questions that ask respondents to rate the perceived influence of mobility on aspects of work life and family life.

Demand Characteristics

It is possible that respondents might be motivated to give certain answers because of their interpretation of cues about the study's meaning rather than answering with their true opinion. For example, some may interpret the meaning of this study as an evaluation of whether or not to continue the mobile telework program. It is possible that some personally like the freedom and autonomy

occasioned by mobility, but do not really believe it enhances productivity. However, they might answer that mobility did positively influence productivity because they felt this response would contribute to the continuation of the program. Because of demand characteristics, an instrumental response might be given instead of a candid one.

<u>Threat to External Validity</u>

The mobile telework program at IBM is very different from most other telework programs to date. Almost all implementations of telework have been small-scale voluntary programs. IBM's is a large-scale pervasive program. The findings of this study may not be able to be generalized to other populations outside of IBM.

CHAPTER 4

RESULTS AND DISCUSSION

Overview

The results of this exploratory study concerning the perceived influence of mobile telework on aspects of work life and family life are framed by presenting four kinds of data in relationship to each of the research questions posed at the end of Chapter 2. First, where available, results comparing the mobile teleworker group and the nonmobile worker group are presented. Because these two groups were part of the same population less than 18 months ago, and their assignment into the two groups used a capricious criterion (i.e., whether or not the office lease was expiring or whether or not a tenant could be found to sublet the space), statistically significant differences between the means of these two groups should be indicative of the influence of mobile telework. Tables comparing these two groups include means (M), standard deviations (SD), t values (t), and effect size (ES). Because this study uses an exploratory design and there are no directional hypotheses, the more conservative two-tailed t test is used to determine statistical significance.

The effect size is calculated by dividing the difference between the two means by the average of the standard deviations (Shaver, 1991). The purpose of the effect size is to provide a measure of the magnitude of the difference between

two means apart from simple statistical significance. Without such a measure it is more likely that statistically significant but irrelevant findings will be accorded unwarranted importance.

The second section of the results presented for each research question reports significant differences between subgroups of mobile teleworkers. The key subgroups analyzed include gender (male/female), presence or absence of preschool-aged children in the home, whether or not the mobile teleworker had a dedicated home office with a door, and whether or not the mobile teleworker still had dedicated space at an IBM office. The statistically significant differences are presented in terms of means and percentages. Again, the more conservative two-tailed t tests are used because no directional hypotheses are being tested.

A note of explanation about the statistics presented in these first two sections of results is warranted. Because the study of mobile telework is in its infancy, the present research uses an exploratory design, not a correlational or experimental design. Its purpose is to explore general research questions, not to test research hypotheses. The t tests used for these analyses are more as a garnish, rather than being fundamental to drawing statistically sound empirical conclusions. It is recognized that because more than 300 t tests were used, up to 15 of the statistically significant differences at the $p < .05$ level could be expected by chance. If this study used a correlational or experimental design, there would be an even greater concern with alpha inflation. However, this exploratory design

merely attempts to "become familiar with the basic facts" of mobile telework in order to "refine issues for more systematic inquiry" (Neuman, 1994, p. 19).

The third kind of data presented for each question focuses on the perceptions of the mobile teleworkers themselves. These are the descriptive results of questions asking mobile teleworkers to directly evaluate how mobility has influenced aspects of their own work life and family life. The results are often presented in terms of percentages of mobile teleworkers perceiving mobility to be a positive, neutral, or negative influence. Graphic charts are included to give a visual representation of these distributions.

The fourth and final way of addressing each research question presents thematic content coding of write-in comments. All 129 pages of written comments from the survey were coded into discrete themes. Each theme was categorized and is presented with the research question to which it can most readily be assigned (see Appendix B for complete listing). In addition, the number of favorable and unfavorable comments is reported, along with sample comments to capture the texture of the themes.

It was believed that the varied perspectives represented by presenting four different kinds of data for each research question would more fully meet the study objective to explore the perceived influence of mobile telework on aspects of work life and aspects of family life.

The descriptive data for all study variables are presented in Table 5.

Table 5

Descriptive Data for All Study Variables

Variable	N	Mean	Std Dev	Minimum	Maximum
Independent Variable					
Are you mobile?	246	1.64	0.48	1.00	2.00
Individual Demographics					
Gender	237	1.31	0.46	1.00	2.00
Education level	243	4.15	0.58	2.00	5.00
# of preschool age children	241	0.32	0.63	0.00	4.00
Presence of preschool child(ren)	241	1.24	0.43	1.00	2.00
# of elem. school age children	242	0.41	0.74	0.00	3.00
# of sec. school age children	242	0.32	0.68	0.00	4.00
# of post-sec. school age children	242	0.15	0.46	0.00	3.00
# of independent adults	242	0.59	0.49	0.00	1.00
General Influence on Work					
Overall infl on work life index	195	3.43	0.65	1.71	5.00
Affect on time spent working	155	2.58	0.53	1.00	3.00
IBM has benefited from mobility	246	2.63	0.58	1.00	3.00
Hours Per Week Spent Working					
Total Work Time	248	51.50	13.48	22.00	100.00
Customer Office	248	20.55	14.54	0.00	85.00
Home Office	249	7.86	7.51	0.00	45.00
IBM Office	249	17.36	13.94	0.00	65.00
Other Locations	249	5.61	5.07	0.00	33.00
Productivity/Job Effectiveness					
Appraisal	236	4.05	0.58	2.00	5.00
Rewarded for results	243	3.04	1.00	1.00	5.00
Extra effort for company success	247	4.11	0.94	1.00	5.00
Infl on productivity index	228	3.74	0.78	1.50	5.00
Infl on productivity	230	4.00	0.95	1.00	5.00
Infl on ability to concentrate	234	3.69	1.04	1.00	5.00
Infl on ability to meet deadlines	235	3.82	0.88	1.00	5.00
Infl on access to information	236	3.39	1.07	1.00	5.00
Non-productive work time	153	1.56	0.67	1.00	3.00

(table continues)

Variable	N	Mean	Std Dev	Minimum	Maximum
Morale/Organizational Commitment					
Rate own morale	248	3.02	0.99	1.00	5.00
Proud to tell others about company	249	3.61	0.95	1.00	5.00
Optimistic about future in company	248	2.50	1.09	1.00	5.00
Infl on morale/commitment index	228	3.59	0.87	1.00	5.00
Infl on morale	232	3.70	0.98	1.00	5.00
Infl on commitment to company	230	3.48	0.92	1.00	5.00
Company Relationships					
Feel part of work group	249	3.57	1.13	1.00	5.00
Peer feedback	232	3.67	1.18	1.00	5.00
Rating of manager	243	3.52	1.22	1.00	5.00
Infl on company relationships index	206	2.90	0.74	1.00	5.00
Infl on relationship with manager	219	3.10	0.79	1.00	5.00
Infl on performance feedback	216	3.04	0.81	1.00	5.00
Infl on camaraderie in department	227	2.47	0.98	1.00	5.00
Infl on company communications	238	2.97	1.12	1.00	5.00
Time interaction with teammates	155	1.46	0.67	1.00	3.00
Time interacting with manager	155	1.38	0.51	1.00	3.00
Time in social interaction at work	155	1.28	0.48	1.00	3.00
Customer Relationships					
Infl on customer relationships index	223	3.57	0.72	1.00	5.00
Infl on customer satisfaction	230	3.70	0.83	1.00	5.00
Infl on customer communication	234	3.53	0.85	1.00	5.00
Infl on ability to close business	229	3.52	0.79	1.00	5.00
Face time with Customer	155	2.53	0.54	1.00	3.00
General Family Life Perceptions					
Sufficient time for family life	248	2.83	1.13	1.00	5.00
Overall infl on family life index	156	3.47	0.94	1.00	5.00
Personal benefit from mobility	156	2.65	0.61	1.00	3.00
Time for personal/home life	155	1.97	0.61	1.00	3.00
Flexibility					
Flexibility index	244	3.41	0.98	1.00	5.00
Flexibility in location of work	246	3.48	1.13	1.00	5.00
Flexibility in timing of work	244	3.33	1.02	1.00	5.00

(table continues)

Variable	N	Mean	Std Dev	Minimum	Maximum
Work/Family Balance					
Ability to balance work/family	248	2.63	1.04	1.00	5.00
Infl on ability to balance	155	3.40	1.01	1.00	5.00
Household Chores/Child Care					
Infl on household tasks index	119	3.32	0.80	1.00	5.00
Infl on household chores	154	3.31	0.90	1.00	5.00
Infl on child care	119	3.34	0.89	1.00	5.00
Time for household chores	155	1.98	0.54	1.00	3.00
Family Relationships					
Infl on family relationships index	117	3.23	0.83	1.00	5.00
Infl on relationship with spouse	145	3.21	0.88	1.00	5.00
Infl on relationship with child(ren)	121	3.26	0.87	1.00	5.00
Time for social interaction at home	155	2.01	0.61	1.00	3.00
Personal Factors					
Infl on personal factors index	154	3.15	0.71	1.00	5.00
Infl on personal interests/recreation	155	3.26	0.85	1.00	5.00
Infl on community involvement	154	3.04	0.69	1.00	5.00

Perceived Influence of Mobile Telework on Aspects of Work Life

Overall, the concordance of all four kinds of data indicate that mobility has

had a generally positive perceived influence on most aspects of work life,

particularly productivity/job effectiveness, morale/organizational commitment, and

customer relationships. However, its influence is perceived to have been less

positive on company relationships. What follows are the specific results related to

the seven research questions about the influence of mobile telework on aspects of

work life.

Research Question 1:

What Is the Influence of Mobile Telework

on Work Life in General?

Both mobile teleworkers and nonmobile workers generally responded that the influence of mobility on work in general has been more positive than negative. However, mobile teleworkers answered these questions significantly more favorably than nonmobile workers.

Comparison of Mobile Teleworker and Nonmobile Groups

Even though the nonmobile worker group had not yet gone mobile themselves at the time of this survey, they still had experience interacting with other parts of the organization that had implemented the program. Both the mobile and nonmobile groups had access to experiences from which to form opinions about the influence of the mobility program on work in general.

Mobile teleworkers rated the influence of the company's mobility program on general aspects of work significantly more positively than the nonmobile group. Mobile teleworkers were much more likely to agree that IBM had benefitted from mobility (77%) than were their nonmobile counterparts (52%). As measured by a scale of 14 work-related variables, the mean of the mobile teleworker group was significantly more favorable than the mean of the nonmobile group (see Table 6).

Table 6

Work in General: Comparison of Mobile Teleworkers and Nonmobile Workers

Variable	Mobile ($n=157$)		Nonmobile ($n=89$)			
	M	*SD*	*M*	*SD*	*t*	*ES*
Influence of mobility on work life	3.94	0.84	3.31	0.92	5.25**	.72
Company benefits from mobility	2.74	0.51	2.43	0.66	4.07**	.53
Influence on work index	3.57	0.62	3.15	0.64	4.40**	.67

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

Comparison of Mobile Teleworker Subgroups

As measured by a composite of 14 work-related variables, mobile teleworkers with preschool-aged children in the home rated the influence of mobility on work significantly more positively than did their counterparts who did not have preschool children.   Likewise, mobile teleworkers who reported having a home office with a door also rated the influence of mobility on work significantly more positively than mobile teleworkers who did not have such a home office. There were no other significant differences in any of the subgroups on these general work dimensions (see Appendixes B-2 and B-3).

Perceptions of Mobile Teleworkers

In general, mobile teleworkers responded positively about the influence of mobility on their work life. More than four out of five (82%) responded that the overall influence of mobility on their work life had been positive or very positive (see Figure 1).
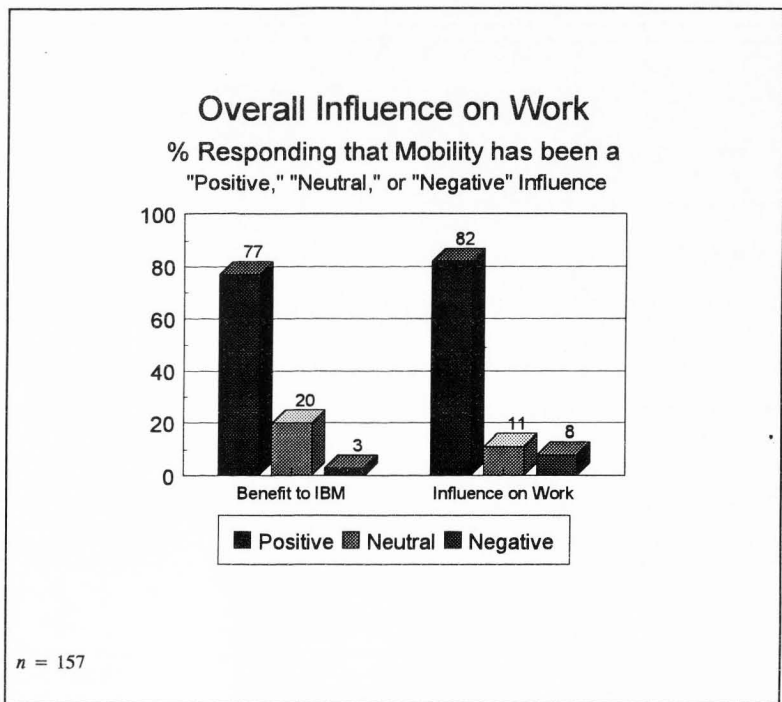
Figure 1. Perceptions of mobile teleworkers about the influence of mobility on work life in general.

<u>Thematic Content Analysis</u>

Most comments about the influence of mobility on work in general were positive (see Table 7). Altogether, 23 comments were positive and 4 comments were negative. One employee wrote, "The mobility is great. I would not [have] survived without it." Another reported, "I am more productive, more dedicated, happier, less stressed ... more creative." One example on the negative side was this comment, "...this direction has probably cost [the company] its soul."

Table 7

General Mobility Theme

Theme	Fav	Unfav
1. Mobility is good for me and for IBM.	23	4
Total distribution of comments related to work in general	23	4

Note.   Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your work life?" and "Please comment about why you do or do not believe IBM has benefited from mobility." The numbers of favorable and unfavorable comments are reported.

Research Question 2:

How Do Mobile Teleworkers Distribute Their Work

Time among Work Venues (i.e., Company Office

Customer Location, Home, Other Location)?

On the average, both mobile teleworkers and nonmobile workers reported

working considerably more than 40 hours per week. The range was between 100

hours a week on the high side, and 22 hours a week on the low side. IBM offers

a flexible work leave-of-absence program, which could explain the eight

individuals who reported working 30 hours a week or less. Almost 9 out of 10

(89%) reported working more than 40 hours per week, and almost one fourth

(24%) reported working 60 hours or more per week.

Comparison of Mobile Teleworker and
Nonmobile Groups

On the average both mobile teleworkers and nonmobile workers reported

working about 52 hours per week. As expected by definition, the mobile telework

group reported working significantly more hours from the customer location (22.9

vs. 16.9) and from home (9.9 vs. 4.3) than the nonmobile work group. The

nonmobile group reported working significantly more hours from an IBM office

(24.4 vs. 13.6) than the mobile group (see Table 8). Overall, though, it is

interesting that the two groups reported the same number of total hours worked per

week.

Table 8

Number of Hours Worked per Work Venue: Comparison of Mobile Teleworkers and Nonmobile Workers

	Mobile ($n=157$)		Nonmobile ($n=89$)			
Variable	M	SD	M	SD	t	ES
Total Work Time	52.10	13.43	51.53	11.43	0.34	.05
Customer Office	22.88	14.26	16.93	14.24	3.14**	.42
Home Office	9.89	8.01	4.31	4.72	6.00**	.88
IBM Office	13.59	12.12	24.42	14.30	-6.02**	.82
Other Locations	5.55	4.86	5.87	5.47	-0.47	.06

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

Comparison of Mobile Teleworker Subgroups

Those with a dedicated home office with a door reported working from home almost twice as many hours per week as those who did not have a dedicated home office with a door (see Appendix B-3). Not surprisngly, mobile teleworkers who still had a dedicated work place at IBM reported working from IBM twice as many hours per week and half as many hours from home, as their counterparts who no longer had a dedicated place at IBM to work (see Appendix B-4). There were no other significant differences among subgroups.

Perceptions of Mobile Teleworkers

Mobile teleworkers reported that implementing the virtual office had enabled them to spend more "face-to-face" time with the customer, and more total

time working for IBM (see Figure 2). They also responded that because of mobility they are spending less time in nonproductive work activities, and less time interacting with teammates and their manager.

<u>Research Question 3:</u>

<u>Do Mobile Teleworkers Work Longer Hours</u>

<u>Than Nonmobile Workers?</u>

The results, as indicated previously, show that the mobile teleworker group and the nonmobile group worked almost exactly the same number of hours per week. The time spent working in each venue varied considerably, but the total time worked did not. Mobile teleworkers did not work more hours than nonmobile workers.

<u>Research Question 4:</u>

<u>What Is the Perceived Influence of Mobile Telework</u>

<u>on Productivity and Job Effectiveness?</u>

The comparison of the mobile-teleworker group and the nonmobile group, the perceptions of mobile teleworkers, and the thematic content coding of write-in comments all point to a very positive influence of mobile telework on productivity and job effectiveness.
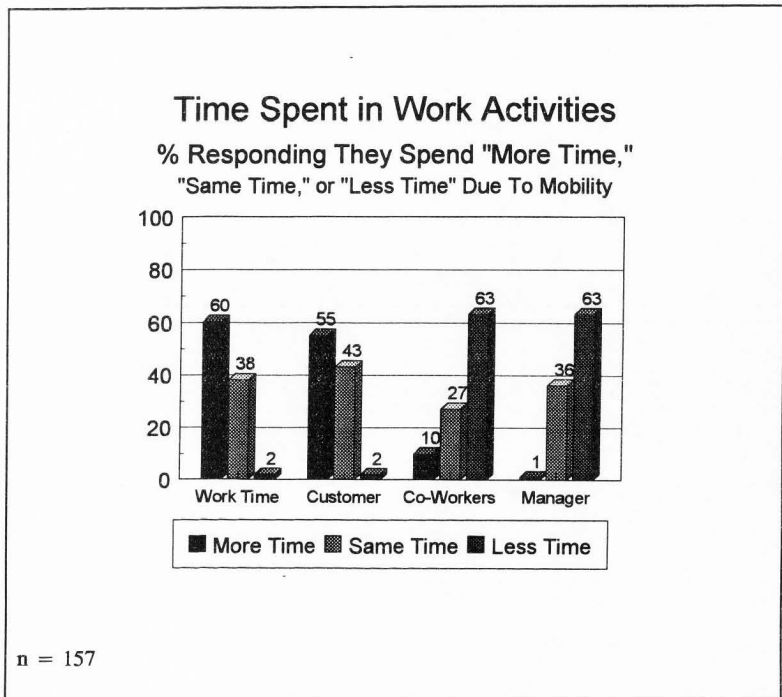
Figure 2. Perceptions of mobile teleworkers about the influence of mobility: How time is spent on selected activities.

Comparison of Mobile Teleworker and
Nonmobile Groups

As predicted by spillover theory, the mobile teleworker group responses

were more favorable on all three productivity/job effectiveness measures than the

nonmobile comparison group. They reported higher appraisals, were significantly

more likely to report results-based rewards, and were more apt to answer that they

were willing to put in a great deal of effort beyond that normally expected to help the company be successful. All three differences were at the $p < .05$ level of significance or better (see Table 9).

Table 9

Aspects of Productivity and Job Effectiveness: Comparison of Mobile Teleworkers and Nonmobile Workers

Variable	Mobile ($n=89$)		Nonmobile ($n=157$)		t	ES
	M	SD	M	SD		
Appraisal	4.12	0.56	3.92	0.59	2.57**	.35
Rewarded for Results	3.13	0.91	2.86	1.13	2.06*	.26
Willing Put in Extra Effort	4.18	0.82	3.97	1.12	1.76*	.22

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

Comparison of Mobile Teleworker Subgroups

On the whole, participants from all subgroups reported that mobility had positively influenced their productivity. However, this view was particularly pronounced among mobile teleworkers who had a dedicated home office (see Appendix B-3). As measured by a composite of four productivity variables, the subgroup with a dedicated home office rated the influence of mobility on productivity significantly more positively than the group without a dedicated home office. The biggest difference was on the item asking about the influence of mobility on the ability to concentrate.   Of those with a dedicated home office,

78% indicated mobility had been a positive influence on their ability to

concentrate. In comparison, 60% of those without a dedicated home office

responded that mobility had been a positive influence on their ability to concentrate

while working. The dedicated home office group was also significantly more

likely to report they spend less time in nonproductive work activities because of

mobility (64%) than their counterparts without a dedicated home office (45%).

In addition, mobile teleworkers with preschool-aged children in the home were

significantly less likely than their counterparts who did not have preschool-aged

children in the home to answer that they were willing to put in a great deal of

effort beyond that normally expected in order to help IBM be successful (see

Appendix B-2).

Perceptions of Mobile Teleworkers

 Mobile teleworkers reported that mobility had positively influenced all four

productivity/job effectiveness aspects of work life. Almost 9 out of 10 (89%)

mobile teleworkers responded that mobility had positively influenced their

productivity. Nearly three fourths (74%) of mobile teleworkers answered that

mobility had positively influenced their ability to concentrate on the job. More

than two thirds (69%) reported a greater ability to meet deadlines due to the

influence of mobility. Finally, slightly more than one half (55%) responded that

mobility had positively influenced their ability to access the information needed in

their job. Very few mobile teleworkers (less than 15% in every case) expressed

that mobility had negatively influenced them in any of these areas (see Figure 3).

Productivity/Job Effectiveness
% Responding that Mobility has been a
"Positive," "Neutral," or "Negative" Influence

Productivity: Positive 89, Neutral 5, Negative 6
Concentrate: Positive 69, Neutral 22, Negative 9
Deadlines: Positive 74, Neutral 25, Negative 1
Access Info: Positive 55, Neutral 30, Negative 15

■ Positive ▨ Neutral ■ Negative

$n = 157$
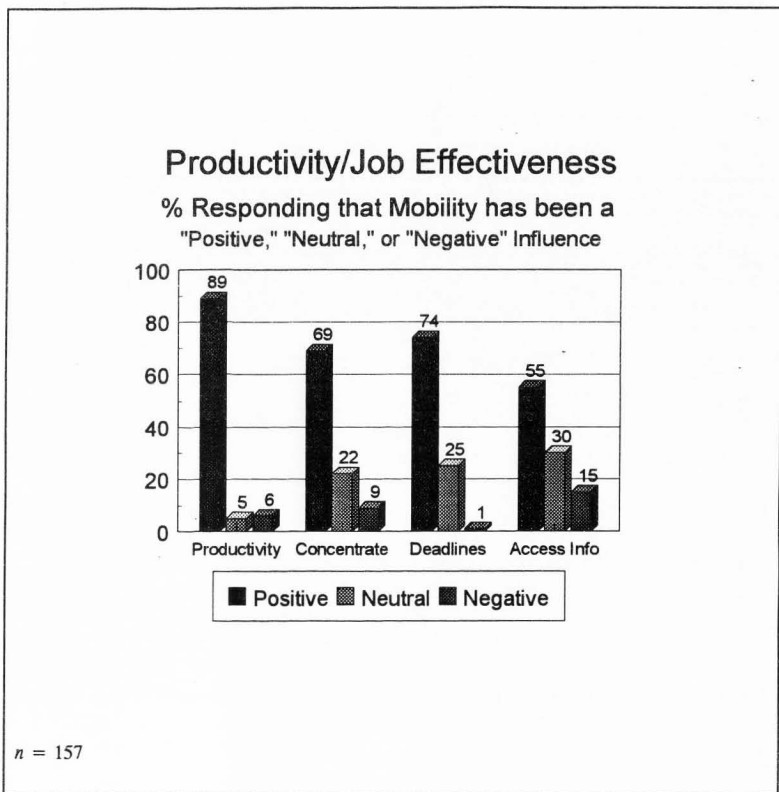
Figure 3. Perceptions of mobile teleworkers about the influence of mobility:
Productivity/job effectiveness.

Thematic Content Analysis

Thematic content coding of the responses to two write-in questions revealed "productivity and job effectiveness" to be the aspect of work life and family life to be most frequently mentioned. Altogether 233 comments were coded into this category, by far the largest number of any aspect of work or family life (see Table 10). About 7 out of 10 (71%) of the comments were coded as favorable. Most of the unfavorable comments related to the difficulty in not having all work materials in one place, and how productivity could be improved if the mobile teleworkers did not have to go into the office to do letter-quality printing (see Table 10).

Theme 1: I work more productively in a mobile environment. There were 34 comments expressing in general terms that mobility helped the employee get more work done more productively. This comment was typical, "IBM has gained much, much more productive time from employees." Several other mentioned that mobility enabled them to work at times and places that previously would have been wasted. For example, "Mobility ... allows me to be productive all day from any location or while traveling." Several others wrote that the reduction in commuting time translated specifically into greater productivity, "Mobility has helped employees be more productive by cutting down on commute."

Table 10

Productivity/Job Effectiveness Themes

Theme	Fav	Unfav
1. I work more productively in a mobile environment.	34	6
2. Mobility's flexibility makes it easier to get the job done.	38	0
3. The mobile environment enhances my job effectiveness.	24	25
4. Interrupted less, fewer distractions, better concentration.	17	2
5. Mobility enables me to work longer hours.	14	0
6. Mobility's technology/tools benefit my work	13	33
7. Mobility reduces the company's expenses, especially in real estate.	23	2
Total distribution of comments related to Productivity/Job Effectiveness	165	68

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your work life?" and "Please comment about why you do or do not believe IBM has benefited from mobility." The numbers of favorable and unfavorable comments are reported.

A few comments (6) centered around mobility negatively influencing productivity. One wrote directly, "I have lost a lot of productivity." Another responded, "[We] spend more time ... tinkering with ThinkPads than using them to be more effective."

Theme 2: Mobility's flexibility makes it easier to get the job done. Thirty-eight participants wrote comments indicating that the flexibility in timing and location of work inherent in this mobile telework program, enabled them to be more productive and/or effective on the job. One parent reported, "I find that the

time from 5:00 AM - 7:00 AM (before everybody wakes up) is one of the best

times to be productive." Another respondent mentioned, "Mobility allows me to

immediately work with an idea or inspiration that doesn't always come between 8

and 5 when there is a lot of activity going on." Several people wrote that they got

more done because they could continue working from home after dinner, without

having to make a special trip to the office. An example: "I am able to continue

work from home ... without having to return to the office."

    Theme 3: The mobile environment enhances my job effectiveness.

Comments on the influence of the mobile working environment on job

effectiveness were almost equally distributed between positive and negative

categories. Several of the 24 positive comments mentioned that the physical tools

of mobility enabled them to do their job more effectively. One wrote, "I've been

able to write and deliver proposals to customers while on the road." Another

lauded the capabilities of his laptop computer, "The ThinkPad allows me to give

high quality presentations at the customer location."

    Twenty-five comments expressed the theme that mobility had created

obstacles to job effectiveness. The most frequently mentioned obstacle was the

inability to easily carry everything needed from place to place. Mobile

teleworkers tend to carry some things with them, leave some things at home, and

maintain some information at the office. Wrote one: "It is difficult to have half

your files at work and half at home." Another: "I have no desire to carry the

ThinkPad around. I see some of my colleagues who are mobile and they look like pack animals with two or three bags over their shoulders. That's much more trouble than it's worth."

Theme 4: Interrupted less, fewer distractions, better concentration. Seventeen participants wrote that mobility increased their productivity and job effectiveness because, compared with the office, the home provided a working environment where they were interrupted less frequently, dealt with fewer distractions, and were able to better concentrate. One respondent wrote:

Due to the nature of the consulting work I am doing, I can accomplish A LOT more at home than in the office. The writing and research is better done in quiet space that just doesn't exist in the office.

Another responded succinctly, "I can concentrate better when not interrupted by chit-chat in the office." Two made comments that they were interrupted more at home. One wrote: "My household is very noisy with kids continuously coming and going. It is difficult to get anything done in that environment."

Theme 5: Mobility enables me to work longer hours. Fourteen comments indicated that the most salient influence on productivity/job effectiveness identified was the ability to work longer hours. One wrote:

"We put in tremendous hours of work each week, and sometimes I need to get home earlier in the day to take care of personal business, and then am able to continue work from home afterwards without having to return to the office. I believe that in itself has greatly improved my morale...ability to perform my job more effectively.

Another explained:

> I think when a person is working from home they tend to put in
> more hours doing IBM work because of the ease of getting on
> PROFS, HONE, etc. from home to accomplish work without having
> to stay late at the office or go in to the office over the weekend.

Theme 6: Mobility's technology/tools benefit my work. The theme of 13

comments was that the tools of mobility are beneficial to the work itself. For

example, one mobile teleworker wrote, "Mobility gives us the tools to do our job

on the spot. We don't have to wait to go to an office to complete customer

proposals, requests, processing orders. etc. We are constantly productive."

However, there were 33 comments indicating that better tools are needed

for mobility to truly reach its potential. By far, the most frequently mentioned

deficiency was a lack of a letter quality printer in the home office. One wrote,

"The lack of printing capability at home creates a need for unnecessary trips to the

office."

Theme 7: Mobility reduces company expenses, especially real estate.

Most comments related to expenses recognized the fact that mobility decreases

company costs by reducing the need for office space. Altogether there were 23

positive comments and 2 negative comments related to this theme. A common

comment was: "IBM has benefitted from a financial standpoint, less real estate

needed per employee."

Research Question 5:

What Is the Perceived Influence of Mobile Telework

on Morale/Organizational Commitment?

Comparisons between the mobile teleworker group and the nonmobile

worker group revealed no statistically significant differences. However, mobile

teleworkers reported that mobility had been a strong positive influence on morale

and organizational commitment. In addition, very few respondents mentioned

morale or organizational commitment in their write-in comments.

Comparison of Mobile Teleworker and
Nonmobile Groups

There were no significant differences between the mobile teleworker group

and the comparison nonmobile group on any of the three general questions about

morale (see Table 11).

Table 11

*Aspects of Morale and Organizational Commitment: Comparison of Mobile
Teleworkers and Nonmobile Workers*

Variable	Mobile ($n=89$)		Nonmobile ($n=157$)			
	M	SD	M	SD	t	ES
Rate Your Own Morale	3.07	0.95	2.96	1.04	0.86	.11
Proud to Tell Others	3.66	0.97	3.54	0.91	0.95	.13
Optimistic about long-term	2.52	1.13	2.45	1.08	0.49	.06

Comparison of Mobile Teleworker-Teleworker Subgroups

Mobile teleworkers with preschool-aged children were significantly more likely to agree that they were proud to tell others they work for IBM. More than four out of five (81%) of those with preschoolers strongly agreed or agreed that they were proud to tell others they work for IBM. In comparison, only a little more than half (57%) of those without preschool-aged children agreed or strongly agreed with this statement (see Appendix B-2).

Mobile teleworkers who had a home office with a door rated the influence of mobility more positively on morale and commitment to the company than did the subgroup without a home office with a door. In addition, mobile teleworkers who maintain some kind of dedicated work-space at the company office rated their morale significantly higher than those who no longer have any type of dedicated workspace at the company office (see Appendix B-4).

Perceptions of Mobile Teleworkers

Mobile teleworkers reported that mobility had positively influenced their morale and organizational commitment. More than three fourths (76%) responded that mobility had positively influenced their overall morale. The majority (56%) also responded mobility had positively influenced their commitment to the company. Very few (10% or less) answered that mobility had been a negative influence in either of these areas (see Figure 4).

Morale/Organizational Commitment

% Responding that Mobility has been a
"Positive," "Neutral," or "Negative" Influence
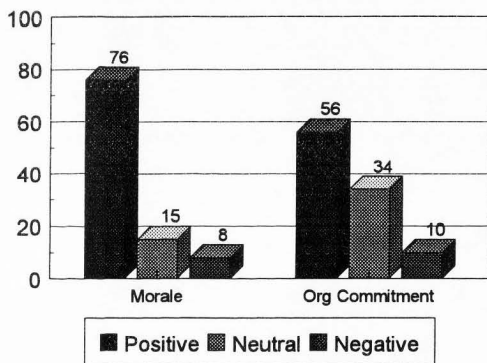
$n = 157$

Figure 4. Perceptions of mobile teleworkers about the influence of mobility: Morale/organizational commitment.

Thematic Content Analysis

There were very few comments that were content-coded into the morale/organizational commitment category. Most of these comments (9 out of 10) were positive. There were not enough comments to develop multiple themes in this area (see Table 12). One respondent expressed that flexibility may be one reason for the increased morale: "The flexibility to do the work where it is most convenient has helped my attitude."

Table 12

Morale and Organizational Commitment Themes

Theme	Fav	Unfav
1. Mobility has boosted my morale.	9	1
Total distribution of comments related to Morale/Organizational Commitment	9	1

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your work life?" and "Please comment about why you do or do not believe IBM has benefited from mobility." The numbers of favorable and unfavorable comments are reported.

Research Question 6:

What Is the Perceived Influence of Mobile Telework

on Company Relationships?

The survey results bearing on this research question were equivocal.

Mobile workers themselves perceived that mobile telework had been a negative

influence on camaraderie and a neutral influence on other aspects of company

relationships. Similarly, thematic content coding of write-in comments also

revealed generally negative reactions to how mobile telework as influenced

company relationships. In contrast, mobile teleworkers rated their manager

significantly more favorably than the nonmobile comparison group.

Comparison of Mobile Teleworker and Nonmobile Groups

Mobile teleworkers were significantly more likely than their nonmobile

counterparts to report that their manager was doing a good job. Other differences

were not statistically significant (see Table 13).

Comparison of Mobile Teleworker Subgroups

Females rated the influence of mobility significantly lower than males on

two aspects of company relationships. About two thirds (66%) of the female

mobile teleworkers reported that mobility had been a negative influence on

department camaraderie compared to less than half (45%) of the males who

Table 13

*Company Relationships: Comparison of Mobile Teleworkers and
Nonmobile Workers*

Variable	Mobile ($n=157$)		Nonmobile ($n=89$)			
	M	*SD*	*M*	*SD*	*t*	*ES*
Feel part of the group at work	3.52	1.19	3.73	1.00	-1.50	.19
Rate peer assessment	3.71	1.16	3.58	1.21	0.83	.11
Rate manager	3.66	1.13	3.31	1.33	2.08*	.28

* $p < .05$

reported a negative influence on department camaraderie. Female mobile
teleworkers (89%) were also more likely than males (66%) to report that mobility
had decreased the time spent in social interaction at work (see Appendix B-1).

There were also four differences between the preschool subgroup and the
no-preschool subgroup in the area of company relationships. As measured by a
composite of four variables related to company relationships, mobile teleworkers
with preschool children in the home rated the influence of mobility on company
relationships less negatively than did their counterparts without preschool children.
Those with preschool children also rated the influence of mobility on performance
feedback more positively (42% positive) than their counterparts without preschool
children (15% positive). The preschool group was also less likely than the
nonpreschool group to report that mobility had caused a decrease in time

interacting with teammates and a decrease in time interacting with the manager (see Appendix B-2).

Mobile teleworkers who still had a dedicated workspace at the IBM office were more likely than those who do not have a dedicated workspace at the company office to agree or strongly agree that they felt a part of the group of people they work with. This group also rated their manager higher, had a significantly more favorable mean on the company relationship index, and were significantly more likely to report that mobility had been a positive influence on their relationship with the manager, than the mobile teleworkers who no longer had any dedicated workspace in a company office (see Appendix B-4).

Perceptions of Mobile Teleworkers

Mobile teleworkers reported diverse opinions about the influence of mobility on aspects of company relationships. A slight majority (51%) responded that mobility had been a negative influence on camaraderie within their department. This was the largest proportion responding negatively to any question in the survey. Most mobile teleworkers responded that mobility had no influence at all on their relationship with their manager (61%) and on the feedback they receive from their manager about their performance (65%). In contrast, almost equal proportions answered that mobility had been a positive influence (38%) and a negative influence (40%) on their ability to communicate with co-workers (see Figure 5).
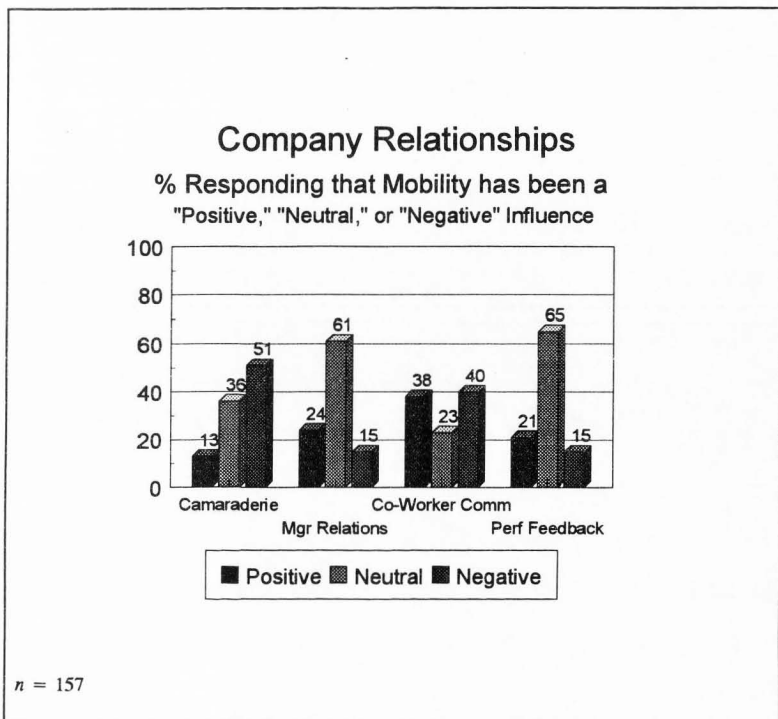
Figure 5. Perceptions of mobile teleworkers about the influence of mobility: Company relationships.

Thematic Content Analysis

The strong message from the thematic content coding of the write-in comments was that mobility had negatively influenced company relationships. Altogether, more than 90% of the comments were negative in this area.

Theme 1: Teamwork and camaraderie have suffered.   There were 33
comments expressing the perception that mobility had negatively influenced
teamwork and camaraderie in the relationships of those in the company. One
summarized it this way, "[There is a] lack of connection with the people side of
things. I don't know the power structure anymore, nor do I even have the ability
to connect with some of my friends cuz I don't see them. The networking is not
there." Another put it this way, "The drawback is that you don't have as much
contact with your team or manager. You don't know what's going on in the other
product areas or even within your product group because you are not in contact
with your teammates as much." No one wrote that mobility had enhanced
teamwork and/or camaraderie.

Theme 2: Informal networks and mentoring flounder in a mobile
environment. Another 12 comments expressed that a major drawback of mobility
is the way it negatively influences informal networks and/or mentoring within the
company. Wrote one employee, "Individuals who work for IBM will lose any
group culture and sharing and any new employees will not pick up any benefits of
others' experiences." Another wrote: "Lack of teamwork, idea sharing, awareness
of marketing situations--the subtle, on-going exchange of marketing ideas that take
place when people physically work together, especially in a technical marketing
environment."   No one wrote that mobility had enhanced informal networks or
facilitated mentoring.

Theme 3: Mobility is an obstacle to internal communications. There were another 12 comments expressing the theme that mobility in general is an obstacle to communications with co-workers and management. Said one mobile teleworker, "[Mobility] does tend to restrict the overall interaction with other IBMers." Another wrote, "To discuss something with a [co-worker] really means leaving phonemail messages."

Table 14

Company Relationships Themes

Theme		Fav	Unfav
1.	Teamwork and camaraderie have suffered as a result of mobility	0	33
2.	Informal networks and mentoring flounder in a mobile environment.	0	12
3.	Mobility is an obstacle to internal communications.	5	12
	Total distribution of comments related to Relationships within the Company	5	57

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your work life?" and "Please comment about why you do or do not believe IBM has benefited from mobility." The numbers of favorable and unfavorable comments are reported.

Research Question 7:

What Is the Perceived Influence of Mobile Telework

on Customer Relationships?

Both the perceptions of mobile teleworkers and thematic content coding of

write-in comments supported the positive spillover notion that mobility had a

positive influence on customer relationships.

Comparison of Mobile Teleworker and Nonmobile Groups

Unfortunately, there were no questions related to customer relationships that

were asked to both the mobile teleworker and the nonmobile worker groups.

Comparison of Mobile Teleworker Subgroups

There were no statistically significant differences among any of the

subgroups on any of the customer relationship variables.

Perceptions of Mobile Teleworkers

Mobile teleworkers reported that mobility had been a generally positive

influence on customer relationships. Nearly two thirds (63%) reported that

mobility has been a positive influence on customer satisfaction. A majority (56%)

answered that mobility has been a positive influence on their ability to close

business transactions with customers. Slightly less than half (49%) reported that

mobility had been a positive influence on their ability to communicate with their

customers. Approximately the same proportion (44%) reported that mobility had

no influence on their ability to communicate with their customers. Very few

mobile teleworkers (less than 7% in every case) expressed that mobility had been a

negative influence on any dimension of customer relationships (see Figure 6).
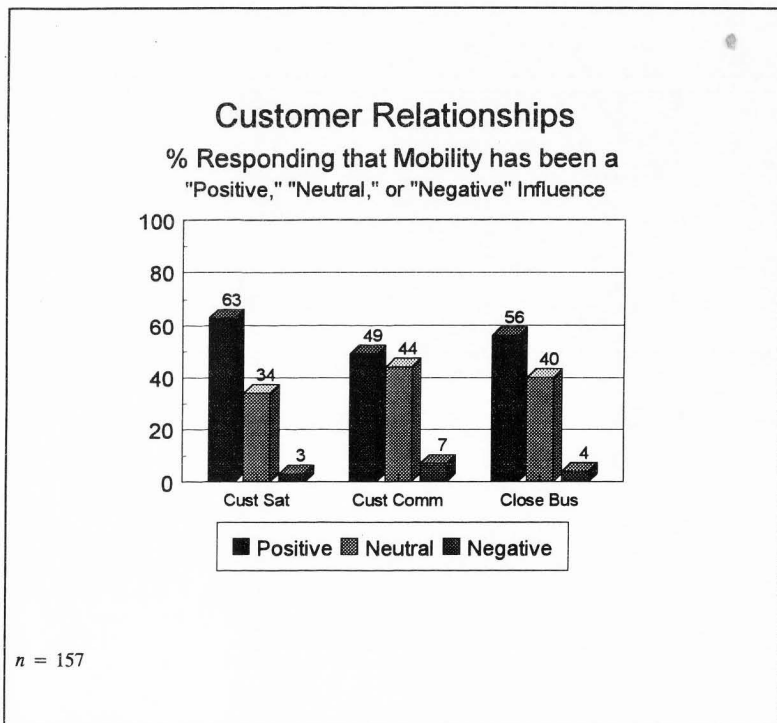
Figure 6. Perceptions of mobile teleworkers about the influence of mobility:
Customer relationships.

<u>Thematic Content Analysis</u>

The strong message from the thematic content coding of the write-in comments was that mobility has positively influenced customer relationships. Altogether more than 90% of the comments were positive in this area.

<u>Theme 1: I spend more time with my customer in a mobile environment.</u> The flexibility to choose the customer location more frequently as a work venue in a mobile environment was seen by many to be a positive influence on customer relationships. Thirteen comments reflected this view. For example, one mobile marketing specialist wrote, "I am more in touch with my customers. I am better prepared to give them the information they need when I talk with or meet with them." Another expressed, "Mobility has meant more customer face time ... a positive effect." No one wrote that spending more time with the customer was a negative influence on customer relationships.

<u>Theme 2: Flexible access to information means I can be more responsive.</u> There were 23 comments expressing the theme that the flexible access to company information that comes with mobility has enabled them to be more responsive to their customers. A mobile consulting services specialist wrote, "I think we benefit from being on-site much more of the time during projects -- we are productive and can access the IBM wealth of information right from our customer sites, instead of saying, 'I'll get back to you on that.'" Another wrote, "Tools available on an enhanced mobile platform ... have had a very positive influence on client

satisfaction and productivity." However, three comments expressed the opposing counter-theme that mobility has made them less responsive to customer. For example, one wrote, "I have had a client call my phonemail, receive my message, press 0# for a receptionist, and then be told I no longer work for IBM."

Theme 3: ThinkPads provide additional marketing opportunities. Part of this mobile telework implementation was to provide ThinkPad laptop computers to all mobile teleworkers. Because IBM sells ThinkPad computers, it is not surprising that nine comments indicated that this had been a positive influence on marketing opportunities. Wrote one mobile teleworker, "It is a tremendous testimony to our customers when we use our own latest technology."

Table 15

Customer Relationships Themes

Theme		Fav	Unfav
1.	I spend more time with my customer in a mobile environment.	13	0
2.	Flexible access to information means I can be more responsive.	23	3
3.	ThinkPads provide additional marketing opportunities.	9	0
Total distribution of comments related to Customer Relationships		45	3

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your work life?" and "Please comment about why you do or do not believe IBM has benefited from mobility." The numbers of favorable and unfavorable comments are reported.

Perceived Influence of Mobile Telework on Aspects of Family Life

Exploratory data about the perceived influence of mobile telework on aspects of family life are also generally positive, but not as pronounced as the perceived influence of mobile telework on aspects of work life. Mobile telework is shown to be associated with much greater flexibility in the timing and location of work. The results also indicate that this flexibility does not necessarily mean greater ability to balance work life and family life. It appears that some thrived on flexibility to balance their lives while others struggled with flexibility because it blurs the boundaries between work life and family life. Overall, the influence of mobile telework on home tasks/responsibilities, family relationships, and personal factors is somewhat positive, but generally weak. Parents with preschoolers see a much more positive influence on these aspects of family life. The results generally show that mobile telework has had a mildly positive perceived influence on aspects of family life.

Research Question 8:

What Is the Perceived Influence of Mobile Telework

on Family Life in General?

The overall perceived influence of mobile telework on family life in general appeared to be inconclusive. The perceived influence appeared to be most positive for parents of preschool-aged children. All groups perceived that they had

personally benefited from mobility, but mobile teleworkers were no more likely than nonmobile workers to report that they had sufficient time for their personal/family life.

Comparison of Mobile Teleworker and Nonmobile Groups

Both mobile teleworkers and nonmobile workers were unlikely to agree that they had sufficient time to balance work and personal/home life. There was not a statistically significant difference between the two groups on this question (see Table 16).

Comparison of Mobile Teleworker Subgroups

Mobile teleworkers with preschool-aged children tended to view the influence of mobile work on general aspects of family life more favorably than their counterparts who did not have preschool-aged children. They were

Table 16

Family Life in General: Comparison of Mobile Teleworkers and Nonmobile Workers

Variable	Mobile ($n=157$)		Nonmobile ($n=89$)			
	M	SD	M	SD	t	ES
Sufficient time for personal/ family life	2.78	1.15	2.92	1.10	0.92	.12

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

significantly more likely to report that they had sufficient time for their personal/home life than those without preschool-aged children at home. They were also more likely to report that mobility had been a positive influence on their personal/home life and that mobility had increased the amount of time they had for family and friends (see Appendix C-2). Those with a dedicated home office with a door were significantly less likely to report that they had sufficient time for their personal/home life than their counterparts who did not have a home office with a door (see Appendix C-4).

Perceptions of Mobile Teleworkers

Almost three fourths (72%) of mobile teleworkers responded that they had personally benefitted from mobility. About half (51%) indicated that mobility had generally been a positive influence on their home life. Most of the rest (35%) reported that mobility had no influence on their home life, and only 15% reported that mobility had been a negative influence. About 6 in 10 (63%) responded that mobility had not altered the amount of time that they spend with friends and family members (see Figure 7).

Thematic Content Analysis

In general, there were far fewer written comments dealing with the influence of mobile telework on aspects of family life than there were dealing with
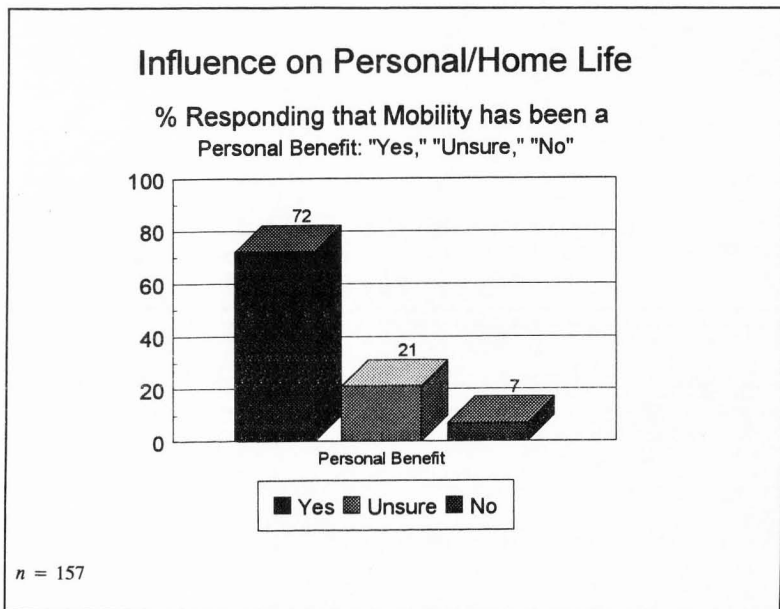
Figure 7. Perceptions of mobile teleworkers about the influence of mobility: Personal/home life in general.

the influence of mobile telework on aspects of work life. About 60% were

positive and 40% were negative. For specific comments see the different

categories of this section.

Research Question 9:

What Is the Perceived Influence of Mobile Telework

on Flexibility in the Timing and Location of Work?

Flexibility in the timing and location of work is advocated by many work

and family scholars as necessary for dual-career couples to effectively manage

their family life (Galinsky et al., 1993). Spillover theory would predict that this

integration of the venues and scheduling of work tasks and family tasks would lead

to better management of both.

Comparison of Mobile Teleworker and Nonmobile Groups

The mobile teleworker group reported significantly more flexibility in the

timing and location of work than the nonmobile worker group. This is not

surprising considering the characteristics of the mobile work environment.

Table 17

Flexibility in the Timing and Location of Work: Comparison of Mobile Teleworkers and Nonmobile Workers

	Mobile $(n=157)$		Nonmobile $(n=89)$			
Variable	M	SD	M	SD	t	ES
Flexibility in location of work	3.63	1.05	3.12	1.21	2.96**	.45
Flexibility in the timing of work	3.49	0.98	3.05	1.04	3.27**	.44

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

Comparison of Mobile Teleworker Subgroups

Mobile teleworkers with preschoolers in the home reported significantly more flexibility in selecting the location of work than their counterparts (see Appendix C-2). Mobile teleworkers who still had a dedicated workspace at the company office reported significantly more flexibility in selecting the timing of their work than their counterparts who did not (see Appendix C-4).

Perceptions of Mobile Teleworkers

About half (52%) of the mobile teleworkers answered that they have either "a great deal" or "complete" flexibility in scheduling *when* they do their work. About 6 out of 10 (60%) replied that they have either "a great deal" or "complete" flexibility in scheduling *where* they do their work (see Figure 8).

Thematic Content Analysis

There were several comments related to the benefits and drawbacks of mobility as it is perceived to affect the flexibility in the timing and location of work. Wrote one mobile teleworker, "Mobility is the wave of the future. With the amount of time one must spend commuting, traffic and responsibilities to family and IBM, it is essential to have a choice of where we can do our work. Mobility provides that choice." Another commented, "I can work more hours with less disruption to my family." Still another expressed, "[It gives me] the flexibility to meet family and IBM needs, i.e., I can work at home at night."

There were also several who commented that this flexibility actually was a negative influence on their family lives. For example, one mobile teleworker wrote, "I cannot leave the office anymore ... my home life is suffering." Because comments were categorized into the "Ability to balance work and personal/home life" area there is not a table of frequencies for this research question.
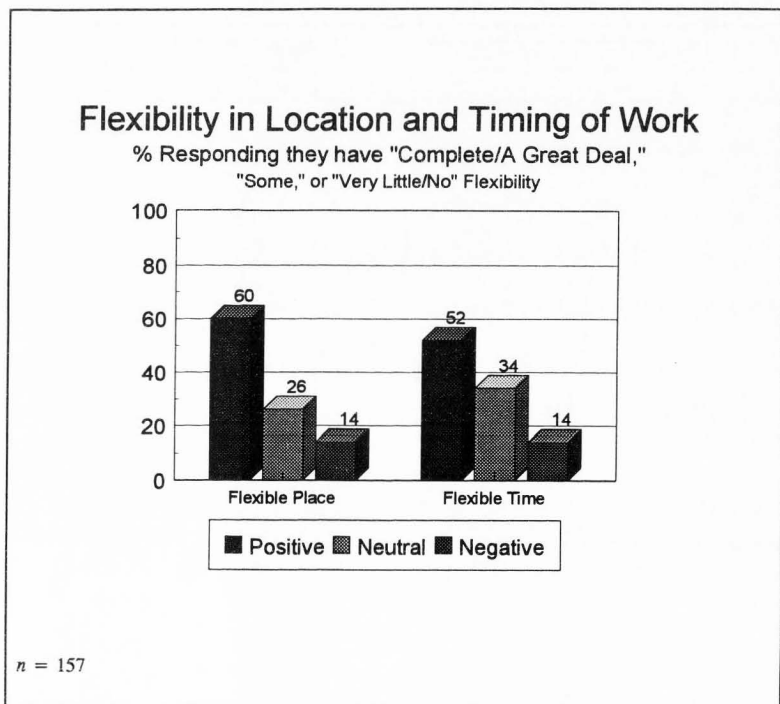
Figure 8. Perceptions of mobile teleworkers about the influence of mobility: Flexibility in the location and timing of work.

Research Question 10:

What Is the Perceived Influence of Mobile Telework

on Work and Personal/Home Life Balance?

The data were unclear as to the perceived influence on balancing work life
and family life. Though there was not a statistically significant difference between
the mobile and nonmobile group, a majority reported that mobile telework had
been a positive influence. Thematic content coding of write-in comments revealed
a dichotomy. Some felt mobile telework's flexibility facilitated work and family
balance, whole others reported that it blurred the boundaries between work and
family and was therefore a negative influence.

Comparison of Mobile Teleworker and
Nonmobile Groups

Both the mobile teleworker group and the nonmobile worker group reported
that on the average it was moderately difficult to balance work and personal/home
life. Differences were not statistically significant (see Table 18).

Comparison of Mobile Teleworker Subgroups

Mobile teleworkers with preschool-aged children reported that mobility had
a significantly more positive influence on their ability to balance work and
personal/home responsibilities (66% positive) than their counterparts without
preschool-aged children (46% positive). This subgroup with preschool-aged

Table 18

Work and Personal/Family Life Balance: Comparison of Mobile Teleworkers and Nonmobile Workers

Variable	Mobile ($n=157$)		Nonmobile ($n=89$)			
	M	SD	M	SD	t	ES
Ability to balance work and personal/family life	2.59	1.06	2.72	1.01	-0.93	-.13

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

children also reported having a significantly easier time balancing work and personal/home responsibilities (see Appendix C-2).

The ratings of mobile teleworkers who still have a dedicated workspace at the IBM office of the influence of mobility on the ability to balance work and personal/home responsibilities were higher than their counterparts who do not have a dedicated workspace at the company office (see Appendix C-4).

Perceptions of Mobile Teleworkers

A slight majority (51%) of mobile teleworkers reported that mobility had been a positive influence on their ability to balance their work and personal/home life. Most of the rest (31%) responded that mobility had no influence on their ability to balance work and personal/home life. Less than one in five (18%) answered that mobility had negatively influenced their ability to balance their work and personal/home life (see Figure 9).
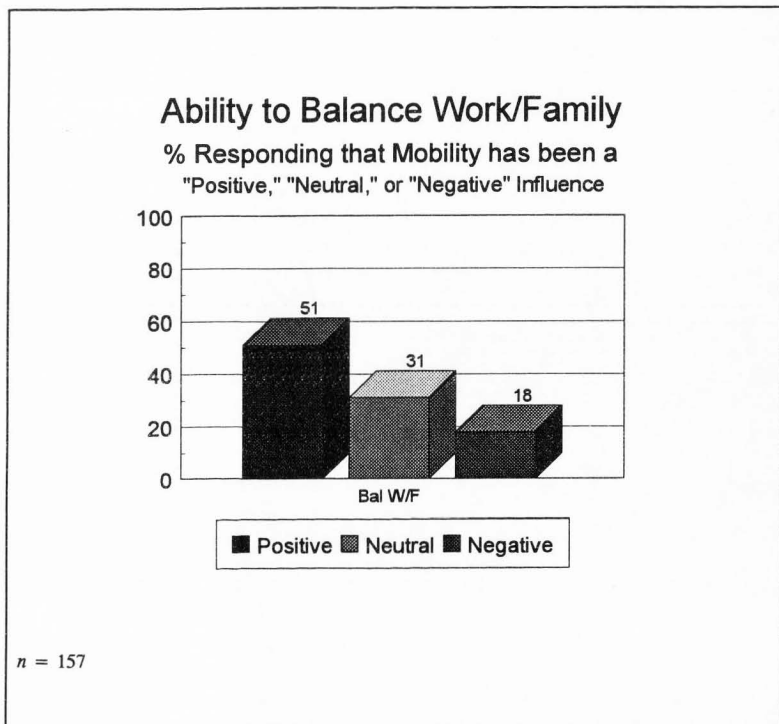
Figure 9. Perceptions of mobile teleworkers about the influence of mobility: Ability to balance work and personal/home life.

Thematic Content Analysis

     Thematic content coding grouped write-in comments in three very different

themes related to the ability to balance work and personal/family life.

Theme 1: Mobility's flexibility helps me balance work and personal/family life. Twenty-seven comments specifically mentioned how mobility had positively influenced their ability to balance work and personal/family life. Physically working from home was seen as a major benefit. One mobile teleworker commented, "I can do much of the work at home and not be away from my family." Wrote another, "I can easily start work early and take a few minutes to drive my child to school." And another, "If I need to work extra hours, I can do this after my children's bed time."

Theme 2: Mobility blurs the boundary between work and family life. On the flip side there were 23 comments specifically mentioning how mobility had blurred the boundary between work and family life in a negative way. One mobile teleworker wrote, "Lack of [a defined workspace at home] is a negative effect on my family life." Another responded, "[Now] I must cut myself off from my family." A third expressed, "It is as hard, or harder to balance home and work."

Theme 3: In the mobile environment I feel like I am always working. There were 16 comments related to how the mobile environment can consume all of one's physical and emotional time. One mobile teleworker expressed it this way, "I am always at work ... between 5:00 a.m. and Midnight, seven days a week." Another wrote, "With longer work days I have less time to spend with my family." And a third expressed, "I seem to be working all of the time now: vacation, late nights, weekends."

Table 19

Work and Personal/Family Life Balance Themes

Theme		Fav	Unfav
1.	Mobility's flexibility helps me balance work and personal/family life	27	0
2.	Mobility blurs the boundary between work and family life	0	23
3.	In the mobile environment I feel like I am always working	0	16
	Total distribution of comments related to Work and Personal/Family Balance	27	39

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your personal/home life?" and "Please comment about why or why not you have benefited from mobility." The numbers of favorable and unfavorable comments are reported.

Research Question 11:

What Is the Perceived Influence of Mobile Telework

On Management of Household Chores and Child Care?

There has been speculation in the literature that one of the major benefits of mobile telework might be a greater flexibility to better manage household chores and child care. Women, who bear the brunt of household and childcare responsibilities, would be expected to benefit most from this flexibility (Galinsky et al., 1993). Though on the whole the data showed little perceived influence of mobile telework on the management of household childcare, there was evidence that mobile telework positively influenced the management of child care for those with preschool-aged children.

Comparison of Mobile Teleworker and
Nonmobile Groups

Unfortunately, there were no questions related to household chores and responsibilities that were asked to both the mobile teleworker and the nonmobile worker groups.

Comparison of Mobile Teleworker Subgroups

Not surprisingly, mobile teleworkers with preschool-aged children in the home reported a significantly greater positive influence of mobility on their management of child-care responsibilities than reported by mobile teleworkers with children older than preschool age. Also the mobile teleworkers with preschool-aged children had a significantly more positive mean on a two-item scale that measured the influence of mobility on household chores/responsibility than their mobile teleworker counterparts who did not have preschool children (see Appendix C-2). There were no other significant differences among the subgroups of mobile teleworkers.

Perceptions of Mobile Teleworkers

Segmentation theory would predict that mobile telework would be a negative influence on the ability to manage household responsibilities. On the other hand, spillover theory would predict that the flexibility in the timing and location of work would lead to a positive influence on the ability to manage household responsibilities. The results support neither of these predictions.

Mobile teleworkers reported that mobile telework had little influence on their ability to perform household responsibilities. More than half (58%) of mobile teleworkers with children reported that mobile telework had no influence on their ability to manage child care. Almost half (46%) reported that mobile telework had no influence on their ability to manage household chores (see Figure 10).

Household Responsibilities
% Responding that Mobility has been a "Positive," "Neutral," or "Negative" Influence

Home Chores: Positive 40, Neutral 46, Negative 14

Child Care: Positive 34, Neutral 58, Negative 8

■ Positive ▨ Neutral ■ Negative

n = 157
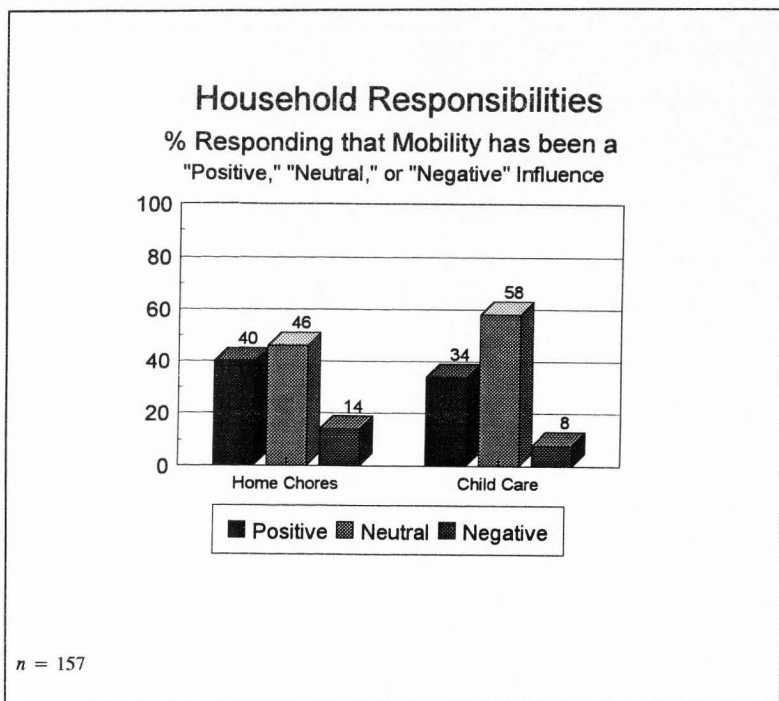
Figure 10. Perceptions of mobile teleworkers about the influence of mobility: Ability to manage household responsibilities.

<u>Thematic Content Analysis</u>

Very few mentioned the ability to manage household chores or child care responsibilities as a benefit or drawback of mobile telework to their personal/home life or as a reason that they had personally benefited from mobility. However, those that did were overwhelmingly positive and supported the spillover prediction. There were 13 positive comments and only 1 negative comment. One mobile teleworker wrote, "I can take care of the sick child and get my work done. A win-win situation." Another expressed, "I can do laundry while writing a report." A third said, "I have more time for domestic chores."

Table 20

Household Chores and Responsibilities Theme

Theme	Fav	Unfav
1. Mobility enables me to better fulfill household/childcare responsibilities	13	1
Total distribution of comments related to Household Chores/Responsibilities	13	1

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your personal/home life?" and "Please comment about why or why not you have benefited from mobility." The numbers of favorable and unfavorable comments are reported.

Research Question 12:

What Is the Perceived Influence of Mobile Telework

on Family Relationships?

Spillover theory would predict that mobile telework would have a positive influence on family relationships, while segmentation theory would predict mobile telework would have a negative influence. There is evidence that the spillover perspective better fits the perception of those with preschool-aged children. However, on the whole, respondents reported that mobile telework had little influence on family relationships.

Comparison of Mobile Teleworker and Nonmobile Groups

Unfortunately, there were no questions related to family relationships that were asked to both the mobile teleworker and the nonmobile worker groups.

Comparison of Mobile Teleworker Subgroups

A significantly greater proportion of mobile teleworkers with preschool children reported that mobility had positively influenced the relationship with their spouse and their child(ren) than mobile teleworkers who did not have preschool children. In addition, this group with preschool children was more likely to respond that mobility had enabled them to spend more time in social interaction at

home than was the group that did not have preschool children (see Appendix C-2). There were no other significant differences.

Perceptions of Mobile Teleworkers

Mobile teleworkers reported that mobility had little influence on their family relationships. About half responded that mobility had no influence on their relationship with their children (50%) nor on their relationship with their spouse (47%). Most of the remainder indicated that mobility had been a positive influence on both their relationship with their children (34%) and their relationship with their spouse (35%) (see Figure 11).

Thematic Content Analysis

Few mobile teleworkers mentioned family relationships when asked open-ended questions about benefits and/or drawbacks of mobility to their personal/home life. Altogether there were 20 comments content-coded into the family relationships category. These were split 70% favorable and 30% unfavorable.

Most of those making favorable comments lauded their ability to be with their children more frequently and in a wider variety of activities due to the flexibility of mobility. One parent reported, "I can take my son to his basketball games in the middle of the afternoon." Another wrote, "[I am] able to see my

kids off to school more than ever this year." It was summed up this way by a

third participant, "I enjoy working from home! It strengthens the family bond."
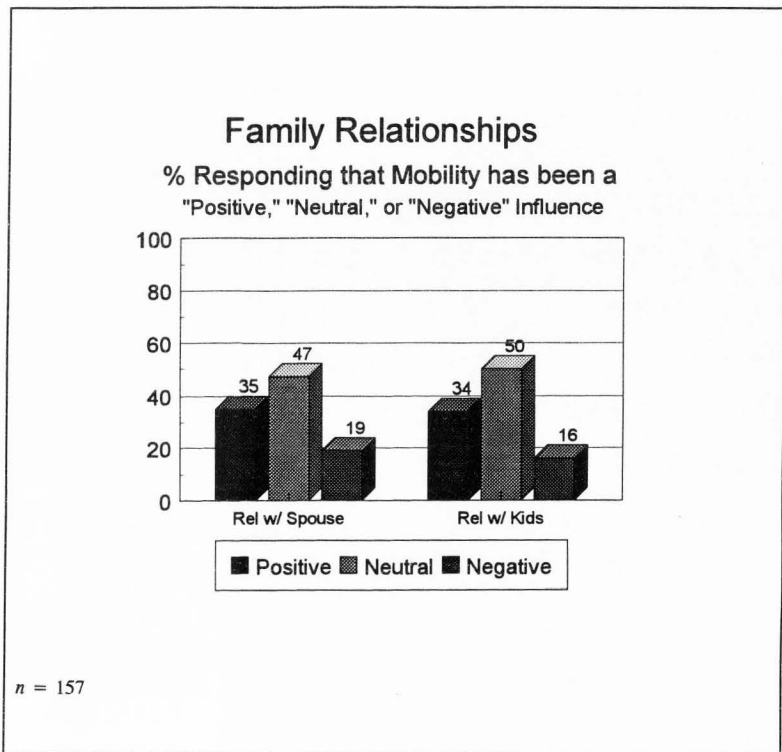
Figure 11. Perceptions of mobile teleworkers about the influence of mobility: Family relationships.

Table 21

Family Relationships Theme

Theme	Fav	Unfav
1. Mobility strengthens my family relationships	14	6
Total distribution of comments related to Family Relationships	14	6

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your personal/home life?" and "Please comment about why or why not you have benefited from mobility." The numbers of favorable and unfavorable comments are reported.

One person mentioned the benefit of working from home in order to be accessible to a nondependent child, "My teenager knows where I am -- greater accessibility." Commented another, "[I am able to] have dinner with family, run errands before stores close, and finish work later at home."

Research Question 13:

What Is the Perceived Influence of Mobile Telework

on Other Personal Factors?

Again, mobile teleworkers with preschool children reported that mobile telework had been a more positive influence on personal factors. On the whole, there was little evidence that mobile telework had any significant perceived influence one way or the other on personal factors.

Comparison of Mobile Teleworker and
Nonmobile Groups

Unfortunately, there were no questions related to personal factors that were

asked to both the mobile teleworker and the nonmobile worker groups.

Comparison of Mobile Teleworker Subgroups

Mobile teleworkers with preschool-aged children were more likely to report

that mobility had positively influenced their community involvement than mobile

teleworkers without preschool-aged children. The mean of the preschool group on

the individual factor index was also significantly higher than the mean of the non-

preschool group (see Appendix C-2).

Perceptions of Mobile Teleworkers

Most mobile teleworkers responded that mobility had no influence on

personal factors. Almost three fourths (73%) responded that mobility had no

influence on their involvement in community activities. More than half (52%)

answered that mobility had no influence on their ability to pursue personal or

recreational interests (see Figure 12).

Thematic Content Analysis

Most comments relating to the influence of mobile telework on personal

factors were positive.

Personal Factors

% Responding that Mobility has been a
"Positive," "Neutral," or "Negative" Influence
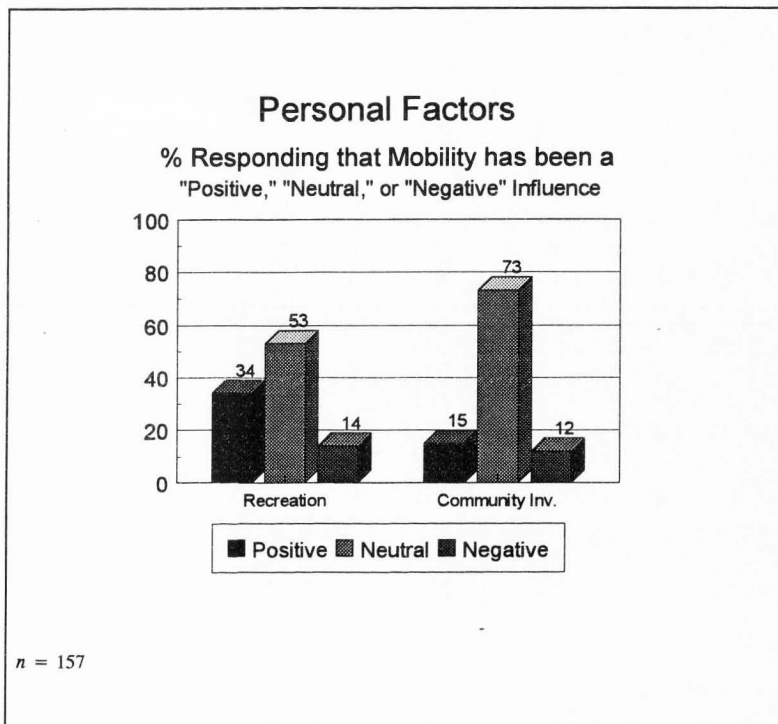
Figure 12. Perceptions of mobile teleworkers about the influence of mobility: Personal factors.

Theme 1: Mobility benefits me personally in some unique ways. There was a potpourri of seven comments expressing this theme. One mobile teleworker wrote, "It reduces a big safety concern, my customer's office is not in the best part of town." Another expressed, "[Mobility offers me] the psychological benefit

of knowing I can work whenever I need to." A mobile teleworker who related that he was answering the survey in pajamas from home late at night wrote, "I can sleep in longer!"

Theme 2: Mobility reduces commuting time. There were 18 comments that mentioned the benefit of reduced commuting time. Several mentioned this theme, "I am not forced to go into the office after hours and on weekends to use the IBM systems." Another wrote, "Avoiding traffic ... in the morning helps improve the disposition." A third expressed, "I can avoid traffic jams at peak commute hours."

Theme 3: Mobility personally saves me money. There were just two comments where respondents specifically mentioned that mobility personally saved them money. One wrote, "I can also dress casually more often, so my budget for clothing has been reduced." The second, "[It is] cost effective. I can eat lunch at home."

Counter Theme 3: Mobility personally costs me money. There were three comments reflecting respondents' perception that mobility had been a financial disadvantage to them. One went so far as to write, "I view the 'mobile experiment' as a $10,000 unreimbursed expense." Another commented, "IBM has used mobility as a way of transferring expenses ... to the employee." Another responded, "IBM has used mobility as an excuse to float expenses through my wallet."

Table 22

Personal Factors Themes

Theme	Fav	Unfav
1. Mobility benefits me personally in some unique ways.	7	0
2. Mobility reduces my commuting time.	18	0
3. Mobility personally saves me money.	2	4
Total distribution of comments related to Personal Factors	14	6

Note. Based on thematic content coding of free-response answers to the questions: "What are some specific examples of the benefits and/or drawbacks of mobility to your personal/home life?" and "Please comment about why or why not you have benefited from mobility." The numbers of favorable and unfavorable comments are reported.

CHAPTER 5

SUMMARY AND CONCLUSIONS

In the absence of a developed scholarly literature on mobile telework, this study was necessarily exploratory. Its purpose was to explore the perceived influence of mobile telework on aspects of work life and aspects of family life. To explore this perceived influence, a group of mobile teleworkers ($n = 157$) and an equivalent group of nonmobile workers ($n = 89$) were asked to respond to questions about their work life and family life. The data were analyzed from four perspectives: (a) comparison of mobile teleworker and nonmobile worker groups, (b) comparison of mobile teleworker subgroups, (c) perceptions of mobile teleworkers themselves, and (d) thematic content analysis of write-in comments. This research used an ecological framework with two competing ecological substantive theories: segmentation theory and spillover theory.

Perceived Influence of Mobile Telework on Aspects of Work Life

Overall, in harmony with spillover theory, results from all four data perspectives pointed to a positive influence of mobile telework on most aspects of work life. The exploratory data suggested that productivity/job effectiveness, morale/organizational commitment, and customer relationships were all perceived to have been positively influenced by mobile telework. This perceived positive influence was particularly pronounced for mobile teleworkers who had a

dedicated home office with a door. In contrast, and more in harmony with segmentation theory, the data pointed to a neutral or negative perceived influence of mobile telework on within company relationships, especially camaraderie (see Table 23).

Table 23

Summary of Perceived Influence of Mobile Telework on Aspects of Work Life

	Mobile/Non-Comparisons	Mobile Subgroups	Mobile Perceptions	Thematic Content Coding
Time Spent Working	Same Total Hours	Total Hours: No Significant Differences	Longer Hours	Longer Hours
Productivity/ Job Effectiveness	Greater Productivity	Home Office: Greater Productivity	Much Greater Productivity	Much Greater Productivity
Morale/Org Commitment	No Significant Differences	Home Office: Enhanced Morale	Enhanced Morale	Positive, But Weak Influence
Company Relationships	Mixed: Rate Mgr Higher, No Other Significant Differences	Parents of Preschoolers: Less Negative Women: More Negative	Negative Influence	Very Negative Influence
Customer Relationships	No Data	No Significant Differences	Positive Influence	Very Positive Influence

Research Question 1:

What Is the Perceived Influence of Mobile Telework

on Work Life in General?

Consistent with the limited research available, both mobile teleworkers and nonmobile workers reported that the influence of mobility on work in general had been more positive than negative. However, mobile teleworkers answered these questions significantly more favorably than nonmobile workers. This is the first study of its kind to compare mobile teleworkers and an equivalent group of nonmobile workers (see Callentine, 1995). These results may indicate that the more experience one has working in a mobile telework environment the higher one's evaluation of it.

What is not known is how much of this perceived positive influence really comes from implementing mobile telework and how much might merely be a reflection of an improving business environment. In 1993, the year before mobile telework was rolled out, IBM lost $7.99 *billion* and cut its workforce by tens of thousands, including first-ever layoffs. However, 1994 (the year large numbers of IBMers became mobile workers) saw remarkable financial recovery. IBM made $3.02 billion profit and few additional lay-offs were required (IBM, 1995). It is possible that respondents may have attributed positive influence to mobile telework, when the underlying influence was simply the improvement in the overall business environment.

Research Question 2:

How Do Mobile Teleworkers Distribute Their Work

Time among Work Venues (i.e., Company Office

Customer Location, Home, Other Location)?

The mobile teleworker group reported working significantly more hours

from the customer location (22.9 vs 16.9) and from home (9.9 vs 4.3) than the

nonmobile worker group. The nonmobile worker group reported working

significantly more hours from an IBM office (24.4 vs 13.6) than the mobile

teleworker group. These findings highlight that this implementation of mobile

telework in IBM was not predominantly a work-at-home program. These results

contrast with another study of IBM mobile teleworkers in the Midwest that

reported an average of 21 hours of work per week from home (Callentine, 1995).

It appears that the acceptability of working from home in IBM may vary

in different geographies. It is likely that where work at home is discouraged,

the strength of the influence of mobile telework on family variables will be

weaker. The relatively small amount of time working from home in this sample

may be a reason for why the relationship between mobile telework and family

variables was not as strong as had been anticipated. More research needs to be

done to see how the amount of time working from home may moderate the

influence of mobile telework on aspects of family life.

Research Question 3:

Do Mobile Teleworkers Work Longer Hours

Than Office Workers?

Both mobile teleworkers and nonmobile workers in this study reported working about 52 hours per week. This finding is different from the findings of some other telecommuting studies, which show that teleworkers tend to work longer hours than those who work from a traditional office (Nilles, 1994).

However, the perception of mobile teleworkers was that they were working more hours than they did before becoming teleworkers. Also, there were numerous write-in comments referencing increased workload, long hours, and the potential for burn out.

One possible explanation for this difference is that the business environment within IBM at the time of the survey was so competitive that it demanded longer hours from everyone, both mobile teleworkers and nonmobile office workers. Since the beginning of the implementation of mobility, the marketing and services employee population had been reduced 30%-40%. During the same time period revenues had increased. That combination translated into a heavier workload for everyone. Mobile teleworkers may have incorrectly attributed the increase to mobility, when it may just have been a condition of the business environment.

Research Question 4:

What Is the Perceived Influence of Mobile Telework

on Productivity and Job Effectiveness?

Like previous findings, the results from this study unambiguously
indicated that mobile telework had an overall positive perceived influence on
productivity and job effectiveness. In descriptive measures, mobile teleworkers
themselves overwhelmingly reported that their productivity and job effectiveness
had improved due to the influence of mobility. These perceptions were
corroborated by comparing mobile teleworkers with nonmobile workers on
several measures related to this domain. In each case the mean of the mobile
teleworker group was significantly more favorable than the nonmobile worker
group. In addition, thematic content coding of write-in comments showed the
influence of mobile telework on productivity/job effectiveness to be both salient
and positive. This category of themes garnered a greater number of comments
than any other category, and most of the comments were positive.

However, thematic content coding of the write-in comments also pointed
out some issues with productivity/job effectiveness. First, the effectiveness of
the technology and tools employed in a mobile setting was perceived to make a
difference in the degree to which productivity gains were realized. For example,
the mobile teleworkers in this study were generally provided dot matrix printers
to satisfy their home printing needs. Several respondents volunteered in their

write-in comments that the productivity gains occasioned by mobility had been diminished because they frequently had to drive into the office to print laser-quality documents. Apparently the technology used to implement mobile telework may play an important role in the actual amount of productivity gains realized. This is an area to which a company thinking of implementing mobile telework should pay close attention.

Another issue to be solved for an optimal implementation of mobility is how to make the documentation associated with the job accessible to employees without having them feel like a beast of burden. Several in this study commented that they felt like they were packing a physical library with them wherever they went. This problem may become less severe as more documentation becomes available on laptop CDs instead of being printed out on paper. For example, Apple Computers has begun providing their mobile teleworkers with a quarterly information update packaged on CDs. Most of the technical and customer-support information that their technical support staff requires can be accessed from their laptop computer, without carrying bulky manuals and paperwork (Willmore, 1995).

The ability to select the optimal work venue for the kind of job task was another skill mentioned in this study as necessary to maximize productivity gains. For example, several respondents reported that they saved work requiring concentration until they were able to work from home. One of the major

benefits cited for mobile telework was the ability to do work from a wide variety

of locations. How to choose which work venue is most appropriate to which job

task might be a subject to included in the training of new mobile teleworkers.

Mobile teleworkers that had a dedicated home office with a door reported

a more positive influence of mobility on productivity than those without a

dedicated home office. This highlights the importance of teaching mobile

teleworkers how to create an effective environment in the home. One of the

biggest advantages of working from home is the ability to concentrate. This can

only happen when a home work area is free from distractions.

Research Question 5:

What Is the Perceived Influence of Mobile Telework

on Morale/Organizational Commitment?

The results of this study indicating a positive perceived influence of

mobile telework on morale/organizational commitment were weaker than those

for productivity/job effectiveness. In spite of the fact that more than three

quarters of the mobile teleworkers reported that mobility had been a positive

influence on their morale, there were no significant differences between the

mobile teleworker group and the nonmobile worker group on measures of morale

and organizational commitment. In addition, very few respondents (less than

7%) volunteered that morale was a major benefit of the mobility program.

The background environment in IBM at the time of the study may offer some clues about why these results were weaker than anticipated. Since the early 1990s IBM has been undergoing a radical transformation. IBM had reduced its total workforce by half in 5 years. In the Western Area, where the survey was conducted, the employee population had been reduced 50% in the last two and one-half years. For decades IBM had been known as the "full employment" company, but now they have downsized dramatically and laid off tens of thousands of employees. At IBM there has been a shift in emphasis towards productivity and away from morale per se. The paradigm has shifted from "a happy employee is a productive employee" to "a productive employee is a happy employee." This information may help to explain why so few voluntarily wrote that mobile telework had either been a benefit or a drawback to morale in IBM.

Research Question 6:

What Is the Perceived Influence of Mobile Telework on Company Relationships?

The results about the perceived influence of mobile telework on company relationships are equivocal. On the one hand, more than half of the participants responded that mobile telework had a negative influence on camaraderie. In this vein, numerous respondents wrote about the drawbacks of the lack of co-worker networking and esprit de corps, which were perceived to be linked to mobility.

On the other hand, perceptions of the influence of mobile telework on manager relationships and communications with co-workers were more favorable. In fact, the mobile teleworker group rated their manager significantly more favorably than did the nonmobile worker group.

The results of this survey would indicate that mobile telework diminishes the strength of social networks at work. Though there are attempts to replace the face-to-face office interaction with equivalent electronic experiences, they do not seem to measure up. Evaluating the impact of this loss is difficult. If the social networks at work facilitate the sharing of information critical to task completion, then this loss will be negative. It may eventually result in diminished productivity/job effectiveness. However, if these are purely social networks, the reduction of time spent in these relationships may actually increase productivity.

It has been reported that mobile teleworkers experience a sense of loss after they are separated from daily social contact with co-workers (Hill & Weiner, 1994). This loss would be more severe for those who do not have strong social networks outside of work. However, for those with strong social networks outside of work, the reduction of social time at work may be perceived as a positive development. It may be seen as providing more time for long-term social relationships (i.e., with family members, friends, and others).

Another skill that must be developed to a greater degree in the mobile environment than in the traditional environment is that of selecting the

appropriate medium for the message to be communicated. In the traditional environment an employee could wait for a "by-the-way" setting when s/he could "run into" the co-worker or manager with whom s/he wanted to communicate. In the mobile environment there are many more choices of media for the message, and communications must be much more planned. Questions that might be addressed in a training program for mobile teleworkers include: When is the nature of the message such that you can/should use electronic mail? When can/should you leave a phonemail message? When should you wait until you can talk to the person? When must you arrange a face-to-face meeting? Where do you meet?

In the face of these drawbacks to intracompany relationships, it is interesting that mobile teleworkers rated their managers more favorably than the nonmobile workers. Why might that be? It takes a different kind of management style to be able to effectively lead in a mobile environment. To be successful, a telemanager must focus on results, not means (Hill & Weiner, 1994). It could be that mobile teleworkers appreciate the trust and autonomy that seems to be a more integral part of results or outcome-based leadership. Perhaps that is the reason for the higher manager ratings given by mobile teleworkers versus the nonmobile workers.

Research Question 7:

What Is the Perceived Influence of Mobile Telework

on Customer Relationships?

A surprisingly high proportion of mobile teleworkers (about two thirds) reported that mobility had a positive influence on their relationships with external customers. A relatively high number (about one third) voluntarily mentioned improved customer relationships as a benefit of mobility to the company in write-in comments. Many respondents equated mobility with the ability to be more responsive to customer requests for information. In addition, they reported that carrying their notebook computer gave them additional opportunities to market the mobile technology to customers.

However, one important question is how generalizable these results are to other companies. This sample consisted of IBM marketing and service employees. Of course, IBM is the company that manufactures and sells the ThinkPad computer used by the mobile teleworkers. In this particular case it would be much easier for mobility to have a positive influence on customer relationships, because the major portable tool of mobility is a product sold by the company. The question remains whether or not mobile teleworkers from another company without this link would report as positive an influence on customer relationships. Any company considering the implementation of mobile telework must ask itself how this might influence its customers.

Perceived Influence of Mobile Telework on Aspects of Family Life

In harmony with spillover theory, exploratory data about the perceived influence of mobile telework on aspects of family life were also generally positive, but with mobile telework having a weaker perceived influence than it had on aspects of work life. Though mobile teleworkers reported much greater flexibility in the timing and location of work, they did not report having an easier time balancing work life and family life. In write-in comments, some mobile teleworkers reported they were thriving because of the flexibility to balance their lives. Others, in harmony with segmentation theory, reported they were struggling because mobile telework blurred the boundaries between work life and family life.

Overall, the perceived influence of mobile telework on home chores/child care, family relationships, and personal factors was somewhat positive, but generally weak (see Table 24). Parents with preschool-aged children reported a much more positive influence on these aspects of family life. The fact that the preschool group was significantly different from the nonpreschool group on so many variables points to the potential usefulness of family development theory (Rodgers & White, 1993) for understanding these data in future research. The concept of stages of family development might be operationalized in future research about the influence of mobile telework on aspects of family life.

Table 24

Summary of Perceived Influence of Mobile Telework on Aspects of Family Life

	Mobile/Non Comparisons	Mobile Subgroups	Mobile Perceptions	Thematic Content Coding
Flexibility Timing/Location	Significantly More Flexibility	Parents: More Positive	Much More Flexibility	Much More Flexibility
Work/Family Balance	No Significant Differences	Parents, IBM Office: More Positive	Positive Influence	Positive and Negative Influence
Home Tasks/ Responsibilities	No Data	Parents: More Positive	Positive, But Weak Influence	Positive, But Weak Influence
Family Relationships	No Data	Parents: More Positive	Positive, But Weak Influence	Positive, But Weak Influence
Personal Factors	No Data	Parents, IBM Office: More Positive	Positive, But Weak Influence	Positive Influence

Research Question 8:

What Is the Perceived Influence of Mobile Telework

on Family Life in General?

The perceived influence of mobile telework on personal/home life in general appeared to be inconclusive. A majority of mobile teleworkers rated mobility as having had a positive influence on their personal/home life. However, there was not a significant difference between the mobile teleworker

group and the nonmobile worker group in this dimension. Thematic coding of write-in comments was not conclusive one way or the other.

There were significant differences between some mobile teleworker subgroups. Mobile teleworkers who were parents of young children were more likely to view this influence favorably. This is not surprising in view of the increasing numbers of dual-career couples with young children for whom the flexibility of mobile telework provides new ways to meet the difficult challenge of providing quality child care.

More surprisingly, mobile teleworkers who had a home office with a door were less likely to view this influence favorably. One possible explanation is that this dedicated home work environment may lead to longer hours of work at home. Having a home office with a door enables the mobile teleworkers to work with fewer external cues about when it is time for work to stop and makes it more likely that they would be available for interaction with their family.

Research Question 9:

What Is the Perceived Influence of Mobile Telework on Flexibility in the Timing and Location of Work?

Not surprisingly, the data revealed that the mobile teleworker group reported significantly more flexibility in the timing and location of work than the nonmobile worker group. According to the spillover substantive theory, this

flexibility would be predicted to lead to positive spillover from work life to family life, and from family life to work life.

Parents of preschool-aged children, those having the most interest in flexibility to promote work and family balance, reported significantly greater flexibility in the timing and location of work than those without preschool-aged children. The concept of the mesosystem in the ecological framework can help explain this finding. A mesosystem consists of the interactions of two or more microsystems. In this case the requirements for care of preschool-aged children in the family microsystem interact with the structure of mobile telework in the family microsystem to produce more flexibility in the timing and location of paid work in the work microsystem and in household work in the family microsystem.

It was interesting that mobile teleworkers who still had some kind of a dedicated work space at the IBM office reported significantly more flexibility in the timing of work than mobile teleworkers who no longer have any kind of dedicated work space at IBM. Why is this so? Having a dedicated IBM work space provides one more guaranteed venue for work. Other mobile teleworkers still have access to shared space at IBM, but this space is limited and there may be times when it is not available. Having a dedicated IBM work space means that when work cannot be productively done from either the home or the customer location, there is still the unambiguous option of working from the IBM office. Having the advantages of mobile telework along with a dedicated work

space at the company office is the best of both worlds. However, since reduction in office space is a primary justification for implementing mobile telework, this option is not likely to be adopted.

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Research Question 10:

What Is the Perceived Influence of Mobile Telework

on Work and Personal/home Life Balance?

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There is support in the data for both the spillover substantive theory and the segmentation substantive theory. It appears that mobile telework has been both a positive and a negative influence on the ability to balance work life and family life. The perception of most mobile teleworkers was that mobility had positively influenced their ability to balance work and family life. This was supported by numerous write-in comments. However, the mobile teleworker group did not respond more favorably than the nonmobile worker group on the question about work and family balance. In addition, there were numerous other comments about how mobile telework negatively blurred the boundary between work and family. This is consistent with other research (see Hill & Weiner, 1994).

Why would spillover theory not apply to balancing work and family life? Part of the rationale behind why flexibility would promote positive spillover for dual career couples is the ability it would provide to easily handle unplanned

family situations that can arise during normal business hours. Though the mobile environment supposedly espouses the "anywhere, anytime" office concept, some employees may be, for one reason or another, reluctant to use this flexibility (i.e., work from home during normal business hours). It is possible that some use the mobile technology simply to extend their hours at home *after* regular hours without any compensating benefit to their personal/home life during normal business hours. This might be particularly true of this particular implementation of mobile telework where it was emphasized that this new work arrangement was not a "work-at-home" program. It would be interesting to compare the responses to those where the implementation was more supportive to working at home during normal business hours. This also highlights the need for premobility training to clearly emphasize that the home is a viable work venue during normal business hours.

Research Question 11:

What Is the Perceived Influence of Mobile Telework on Household Chores and Child Care?

The results of this study indicate a weak but positive perceived influence of mobile telework on the ability to accomplish household tasks and child care. As might have been anticipated, these results were strongest and most positive

for parents of young children, who are in the stage of family development when the flexibility of mobile telework would be most beneficial.

Surprisingly, and in contrast to what would be expected based on previous research, there were no statistically significant differences between men and women in these results. Women were not significantly more likely to view the influence of mobile telework on household tasks and childcare as positive than were men. Why would this be? One possible explanation is that the IBM men in this study are more egalitarian in the household division of labor than men who are the subjects of other published research in this area. A 1991 IBM work and life issues study revealed that 45% of male employees working in the marketing and services division were married to women with professional careers (Hill et al., 1992). The same 1991 study found that IBM men reported significantly more responsibility for household chores and child care than IBM men had reported in a similar 1986 survey. The greater involvement of IBM men in household tasks and child care might explain why they were no less likely to view mobile telework as a benefit.

Another related possibility is that the IBM women in this study are more career-oriented than other women who are the subjects of household division of labor research. Most of the participants in this survey held high-paying professional technical marketing and services career-oriented jobs. Being more involved in a career might explain why IBM women were no more likely than

IBM men to see mobile telework as beneficial to their ability to do household chores and childcare.

One problem with interpreting the data is that there was no premobility measure of involvement with household tasks and child care. Without a baseline it is only perception and speculation about what the influence of mobile telework might have been.

More complete data could have been obtained if questions in this domain had also been asked to nonmobile workers as well, so that mobile versus nonmobile comparisons could have been available.

Research Question 12:

What Is the Perceived Influence of Mobile Telework

on Family Relationships?

Spillover theory predicts that mobile telework would have a positive influence on relationships in the family microsystem as a result of temporal and spatial flexibility in the work microsystem. The results of this study support this position, but the positive influence is relatively weak. The results were most positive for parents, both fathers and mothers, who had preschool children living in the home. Apparently the flexibility afforded by mobile telework created the ability to build better family relationships between parents and young children.

In light of the commonly held belief that family relationships are more important to women than men (Block, 1984), it was surprising that there were no statistically significant differences by gender in this area. Two possible explanations for this finding are that the IBM men with preschool-age children in this study value family relationships more than men in other studies. It also could be that IBM women with pre-school age children in this study are more career-oriented, and less oriented toward family relationships, than women in other studies. Either view, or both, could explain why both fathers and mothers of young children were more likely to view the influence of mobility on family relationships as positive and why there were no statistically significant gender differences for this IBM sample.

The write-in comments on this topic offered opposing views about the influence of mobile telework on family relationships. One group of comments expressed the view that mobility had strengthened their family relationships because it gave them the flexibility to spend more time with family at opportune times. For example, mobile teleworkers reported the influence of mobility as positive because they could attend school activities in the middle of the afternoon, have meals with the family regularly, and generally be more accessible to their children. However, another group reported an opposing viewpoint. They wrote comments indicating that the influence of mobility on family relationships was negative because it had taken them away from their family more of the time, and

that even when they were home they could not seem to ever get away from work. They reported difficulty in being psychologically available to their family members. However, in both cases the quantity of write-in comments in the area of family relationships was much lower than the quantity for work-related issues.

One explanation for the lack of findings in this area is the nature of the survey itself. The questions about the influence of mobility on family life were embedded in an employee survey that also covered the topics of morale and management. This is unusual for IBM surveys. Usually this quantity of questions about personal/home life would be reserved for a single-topic work-and-life issues survey. It is possible that some of those responding were reluctant to express their true feelings and opinions about the influence of mobile telework on family relationships because they felt uncomfortable answering these questions in this type of survey.

Another possible issue regarding the perceived influence of mobile telework on family relationships is the quality of those relationships before mobility. Others have speculated (Gordon & Kelly, 1986; Pitt-Catsouphes & Marchetta, 1991) that telework would most likely influence good relationships for the better and bad relationships for the worse. Unfortunately, this study had no family relationship measures from before mobile telework was implemented. Future research should gather family relationship measures before beginning

mobility, as well as during a variety of time periods after the implementation of mobile telework.

More complete data could have been obtained if questions in this domain had also been asked to nonmobile workers so that additional comparisons could have been made between the mobile and nonmobile groups.

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Research Question 13:

What Is the Perceived Influence of Mobile Telework

on Other Personal Factors?

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There was little support for either spillover theory or segmentation theory in this area. Mobility per se appeared to have little perceived influence on personal factors. There was one difference reported in mobile teleworker subgroups. Mobile teleworkers who were parents of young children reported a more positive influence of mobility in this area than others. This finding again highlights the importance of differentiating individuals by stage of family development when doing research of this kind.

Though the quantitative results showed little influence, there were several write-comments (23) that expressed the perception that mobile telework had been a positive influence on workers' personal life. The most commonly mentioned benefit was that it reduced their commute time, which provided additional temporal resources for work and family activities. Interestingly, few mobile

teleworkers translated this reduction in commuting into a personal expense
savings. In fact, twice as many comments stated that mobile telework increased
personal expenses as there were comments saying that mobile telework had
decreased personal expenses. The issue of personal expense is one that could be
part of a training plan for new mobile teleworkers.

Limitations

Lack of external validity, the inadequacy of survey methodology to meet
all the needs of an exploratory study, the inability to differentiate write-in
comments by demographic category, the drawbacks of a cross-sectional research
design, contamination of the nonmobile worker group by interactions with the
mobile teleworker environment, lack of mobile/nonmobile comparative data on
aspects of family life, and constraints by the survey sponsor are all seen as
limitations of this study.

The subjects of this study all worked for a single company, all doing
customer-contact jobs in a single geographical area of the western United States.
It is uncertain the degree to which these results may be generalized to other
companies, types of jobs, or geographies. More research must be done in other
domains to assess the external validity of these findings.

Another limitation is the ability of a survey methodology to adequately
capture enough of the dimensions of mobile telework to truly get the depth

needed in an exploratory study. Future exploratory research ought to also include interviews and observations of mobile teleworkers.

The thematic content coding of write-in comments provided valuable insights related to the general quantitative results. However, they could have been even more helpful if they had been coded by key demographic categories. Future studies should include the ability to analyze write-in comments by gender and other salient characteristics.

The present study was cross-sectional in nature. A single question asked respondents how long they had been working in a mobile environment. This was a very new program, so most participants reported they had been mobile teleworkers for less than one year. It is possible that some of the positive results, especially on the work side, may have been a halo effect that might not last over an extended period of time. It also seems reasonable to assume that significant changes would occur over time as mobile teleworkers adapt their work habits and interpersonal styles to a radically different way of working. Future research should include a longitudinal component, perhaps an annual survey, to monitor these changes over time.

On a number of work variables and family variables (i.e., productivity, ability to balance work life with family life, household responsibilities, family relationships, etc.), it would have been useful to obtain baseline measurements before the employee entered into a mobile telework arrangement. By comparing

the premobility measures with the postmobility measures, a clearer understanding of the influence of mobile telework would have been obtained.

Another limitation has to do with possible contamination of the nonmobile worker group with aspects of IBM's mobile telework program. Though the nonmobile workers had not yet personally gone mobile, they still knew they were scheduled for mobility and they frequently interacted with mobile teleworkers. It seems likely that this would have altered their perception of mobility and may have influenced the way they answered questions. Because of this contamination there is less confidence in reporting that significant differences between the two groups are caused by mobility.

Another drawback of this study was that few of the questions related to aspects of family life were asked of the nonmobile worker group. Therefore, there could be no statistical comparisons between the mobile teleworker group and the nonmobile worker group. This meant that most inferences about the influence of mobile telework on aspects of family life were limited to the subjective perceptions of the mobile teleworkers themselves. In future research this domain of questions should be asked of both groups.

Finally, the questions for this study were part of an IBM survey on morale and management. The questions that were approved had to fit within some constraints in content and budget required by IBM. As a result there were not as

many family demographic questions (i.e., marital status, spouse demographic information, etc.) as would have been ideal from an academic standpoint.

Implications

This research has important implications to both the technical side as well as the human side of implementing mobile telework.

Technical Implications

This study highlights the need for a company to carefully choose the technical tools that fit the particular job to be done in the mobile office. Providing the wrong tools can adversely impact productivity. For example, at the time of the survey mobile teleworkers had been supplied with a dot matrix printer to handle their home-printing needs. However, as many write-in comments attested, this hampered their productivity because the mobile teleworkers had to travel to the office anytime they needed high-quality output (i.e., for a proposal). Some were wasting several hours a week in travel time just retrieving printouts.

There were very few other negative comments about the tools provided to mobile teleworkers for IBM. One implication may be that, except for the printer, IBM did a good job of providing the right tools for this population of marketing and services personnel. These tools included an IBM ThinkPad

notebook computer with modem, fax card, and mobility software; two extra
phone lines in the home of the mobile teleworker; and a printer. Some,
especially marketing employees, were also supplied with cellular phones,
alphanumeric pagers, facsimile machines, and personal copiers. Though this
may seem expensive, the break-even point for the cost savings of decreased
office space to pay for this equipment was less than one year (Martin, 1994).

Another technical implication of this research is the importance of setting
up a productive work environment in the home. The results of the study showed
that mobile teleworkers that had a home office with a door perceived that
mobility had been a significantly more positive influence on productivity than
those who did not have such a home office. Companies beginning mobile
telework should carefully consider training their employees on where to
physically locate their home office. It is important to emphasize the selection of
a location free from household distraction (i.e., a room with a door that shuts).

Human Implications

An important implication of this study is the need to explore what the loss
of the camaraderie in the office means to the company and to the employee. The
weakening of employee social networks may be positive for the company if that
social time is peripheral to the objectives of the organization. However, if key
information and skills are transferred serendipitously during these social

encounters, this loss could be deleterious. An implication of this study is that companies embarking on a mobile telework strategy should do job content analysis to determine the impact that a reduction of face-to-face communication time would have.

Likewise, what the decrease in community occasioned by mobility means to the individual employee also needs to be explored. In America in the mid 1990s it is increasingly likely that an individual's major social network is at work. Schor (1992) has reported that average time on the job for working Americans had increased 163 hours per year between 1969 and 1987. There is simply less time to develop social relationships outside of work. It is possible that the weakening of the social network on the job might have negative effects on the social life of the individual, leading to isolation and discouragement. However, it is equally plausible that mobility may enable employees to take the social time formerly spent at work and invest it in more permanent social networks outside of work (i.e., with spouse, children, relatives, neighbors, etc.) with personally positive outcomes. An implication of this study is that this issue needs to be studied more and should be addressed in whatever training employees receive prior to going mobile.

Another implication of this study is that some mobile teleworkers need to learn how to set boundaries between work and family lives. One suggestion would be to establish a ritual at the beginning of the work day to mark the start

of work, and more importantly, another ritual to mark the end of the work day. For example, at the beginning of the day a mobile teleworker might kiss his or her spouse good bye, close the door to the home office, check voice-mail messages, and turn on the computer. At the end of the day the mobile teleworker might straighten up the home office, turn off the ringer to the office phone line, turn off the computer, and lock the door to the home office as he or she leaves.

Need for Mobility Training

The results of this study highlight the importance of developing a well-designed training program for employees and leaders who will be working in a mobile environment. This training should not only include instruction on how to use the technology of mobile telework (i.e., how to use the laptop computer, telecommunications equipment, etc.) but also on the social and psychological changes that are required as well. For example, it may be well to advise potential mobile teleworkers that they will likely experience a loss of camaraderie with their co-workers. Instruction might then be provided giving techniques for maintaining esprit de corps via electronic mail and/or other tools of mobility (Kostner, 1994). Training on how to select the right work venue for a work task might be another subject which should be covered.

In this new work environment, leaders need to be prepared to function in fundamentally different ways. The physical separation of management and employees, inherent in mobile telework, demands a less controlling leadership style than the traditional management environment. It also demands a different style of interaction as chance encounters in the office are replaced by scheduled communications via e-mail or telephone. These, and other leadership issues, must be addressed in the training of telemanagers.

Conclusion

To conclude this research it may be well to come full circle and briefly describe the overall background and key findings of this study. As the United States moved from an industrial-based economy to an information-based economy, a revolutionary shift in the nature of work has enabled telework to become a viable work alternative. There are, in 1995, more than 8.4 million teleworkers who use telecommunications equipment to work from home at least 8 hours per week during normal business hours (Henkoff, 1995). This number has increased by a factor of eight in the last 10 years, and is expected to grown 10% to 20% per year through the end of the 1990s (Greengard, 1994). A new form of telework called the "mobile office" or the "virtual office" has appeared in this decade and is growing exponentially. Mobile employees are provided portable telecommunications equipment to enable them to work whenever and from

whatever venue might best meet business, personal, and/or family needs (Illingworth, 1994). Because there was almost no scholarly research on the mobile office, the purpose of this research project was to explore mobile telework and how it influences the work and family life of the mobile teleworker.

This research used an ecological framework with two competing substantive theories. Spillover theory predicted that the flexibility inherent in mobile telework would lead to positive perceived influence on aspects of work life and family life. On the other hand, segmentation theory predicted that the blurring of the boundaries between work life and family life would have a negative effect. Because this was an exploratory study, there was no attempt to statistically establish the causal links proposed by these theories. However, the data, to varying degrees, supported or failed to support the predictions of each.

Overall, the data offered more support for spillover theory than for segmentation theory. This support was stronger for aspects of work life than for aspects of family life. The strongest support for spillover theory was in the area of productivity/job effectiveness. In this domain the comparison of the mobile with the nonmobile groups, the perception of the mobile teleworkers themselves, and the thematic content coding of write-in comments all pointed to increased productivity and job effectiveness among mobile teleworkers.

The data generally failed to support segmentation theory except in the area of company relationships and the balancing of work life with family life. The

quantitative results revealed the pervasive perception that mobility had been a negative influence on camaraderie. In addition, the thematic content coding of write-in comments revealed some evidence that the blurring of boundaries may be associated with a negative influence on family life. However, based on the number of significant differences between parents of preschool-aged children and those without preschool-aged children, it appears that family development theory might be fruitful as a theoretical framework for future studies.

Perhaps the most significant non-finding of this research was that male and female mobile teleworkers did not differ significantly on any of the aspects of family life studied. In past research, issues related to the balancing of work life and family life were thought to apply almost exclusively to women. However, there has been a growing recognition that the emerging culture of fatherhood includes much more involvement with family life, especially with small children. The data in this study, showing no gender differences, are in harmony with that view.

Mobile telework appears to benefit parents of small children more than any other mobile teleworker subgroup. Compared to those without preschool-aged children, those with preschoolers were significantly more likely to view the influence of mobile telework more positively on several aspects of work life, and on most aspects of family life. This was true for both fathers and mothers.

Apparently it is possible that enhancing the ability to do work from home may make it more difficult to balance work life with family life. Mobile teleworkers that had a home office with a door viewed the influence of mobility more positively on productivity but more negatively on their ability to balance work life and family life.

Finally, having the best of both worlds--being a mobile teleworker *and* having a dedicated workspace at IBM--seems to ameliorate some of the negative influence perceived in company relationships. This group was significantly more likely than their counterparts to view the influence of mobility on company relationships as positive.

Mobile telework is a rapidly emerging trend in the workplace today. From this exploratory study it appears that, on the whole, mobile telework can positively influence aspects of both work life and family life. It can be a way to increase productivity while, at the same time, providing a way to balance family needs. However, there are potential pitfalls which must be dealt with if a mobile telework program is to be successful. Sound program design and training for employees and leaders are essential. Some of the findings of this research will be useful in that endeavor. However, the study of mobile telework is in its infancy, and additional research is needed to understand how this new work form may influence aspects of work and family.

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APPENDICES

Appendix A

Questions Used In Self-Administered Online Survey

Welcome to the Fall 1994 Western Area Mini Opinion survey. The survey is being administered from Wednesday, December 7 through Tuesday, December 20. This survey is being given to Western Area IBM employees who report to professional development managers (PDMs) in the Intermountain, Pacific Northwest, and Northern California trading areas. Its purpose is to gather employee perceptions about morale and the PDM system of management. In addition, a set of questions about the "mobile office" is asked. These questions are part of a pilot project, sponsored by Leadership Development, to understand how IBMers might more effectively work in a mobile environment.

The survey contains about 30 questions and should take you approximately 15-20 minutes to complete. Please take the time to respond to this survey candidly and completely. Of course, all responses are anonymous and confidentiality is absolutely guaranteed. Thank you.

OCCUPATION CODES

Occupation codes are used for studes of large groups with similar backgrounds. These codes are NOT included in your manager's reports. Please select the code from the group that is most like your current occupation.

___ (71) Client Representative
___ (72) Marketing Specialist (product,software,services,maint.)
___ (73) Consulting and Services
___ (74) Availability Center
___ (70) Other occupation not listed above

MORALE QUESTIONS

1. How would you rate IBM US as an organization to work for compared to other companies you know about?

___ (1) Very good
___ (2) Good
___ (3) Average
___ (4) Poor
___ (5) Very poor

2. Overall, how would you rate your satisfaction in IBM US at the present time?

___ (1) Very satisfied
___ (2) Satisfied
___ (3) Neither satisfied nor dissatisfied
___ (4) Dissatisfied
___ (5) Very dissatisfied

3. How do you like your job--the kind of work you do?

___ (1) Very good
___ (2) Good
___ (3) Average
___ (4) Poor
___ (5) Very poor

4. How satisfied are you with your opportunity for growth and development in IBM US?

___ (1) Very satisfied
___ (2) Satisfied
___ (3) Neither satisfied nor dissatisfied
___ (4) Dissatisfied
___ (5) Very dissatisfied

5. Please respond to the following statements using this scale:

(1) Strongly agree
(2) Agree
(3) Neither agree nor disagree
(4) Disagree
(5) Strongly disagree

___ I am proud to tell others I am part of IBM.
___ I feel I am part of the group of people I work with.
___ I am willing to put in a great deal of effort beyond that normally expected in order to help IBM be successful.
___ I have sufficient time for my personal/home life.
___ I am generally optimistic about my long-term future in IBM.

6. How would you rate your own morale at the present time?

___ (1) Very good
___ (2) Good
___ (3) Average
___ (4) Poor
___ (5) Very poor

7. How would you rate your total compensation at IBM US (e.g., salary, benefits, commission, bonus, variable pay, PRP, TDSP, etc.)?

___ (1) Very good
___ (2) Good
___ (3) Average
___ (4) Poor
___ (5) Very poor

8. People in my trading area are rewarded based on results achieved rather than some other basis.

___ (1) Strongly agree
___ (2) Agree
___ (3) Neither agree nor disagree
___ (4) Disagree
___ (5) Strongly disagree

9-12 Not used in this analysis

13. How good a job do you feel is being done by your PDM (i.e., the manager who appraises you, administers your salary, and is your focal point for skills development, certification, and career development)?

___ (1) Very good
___ (2) Good
___ (3) Average
___ (4) Poor
___ (5) Very poor

___ (9) I don't know/don't have a PDM

14. How good a job do you feel is being done by your business manager (i.e.,
    the manager who gives you strategy and leadership in day-to-day business
    activities).

___ (1) Very good
___ (2) Good
___ (3) Average
___ (4) Poor
___ (5) Very poor

___ (9) I don't know/don't have a business manager

MOBILITY SECTION

The following section contains pilot questions for a project about working
effectively in a mobile environment, sponsored by Workforce Solutions,
Leadership Development. For this study "mobility" is defined as having the
portable means to accomplish your work electronically away from the office. In
the field this usually means having a ThinkPad with appropriate mobility software
and usually includes giving up dedicated office space. Please answer all questions,
regardless of whether or not you are currently mobile. Thank you.

15. How many hours per week do you typically work for IBM? (Please make
    an average per week estimate covering the last three months.)
___ (Enter number of IBM work hours per week)

16. Please divide up this total number of IBM work hours per week and
    estimate how many hours you typically work at the following five locations
    (use two digits, i.e., 00-99):
___ Customer location (hours/week)
___ Home (hours/week)
___ IBM facility (hours/week)
___ Travel (hours/week)
___ Other location (hours/week)

17. How much flexibility do you have in selecting the LOCATION of your
    work?
___ (1) Complete flexibility
___ (2) A great deal
___ (3) Some
___ (4) Very little
___ (5) No flexibility

18. How much flexibility do you have in scheduling WHEN you do your work (e.g., scheduling the hours you work, the time of day, etc.)?

____ (1) Complete flexibility
____ (2) A great deal
____ (3) Some
____ (4) Very little
____ (5) No flexibility

19. How easy or difficult is it for you to balance your work and your personal/home life?

____ (1) Very easy
____ (2) Easy
____ (3) Neither easy nor difficult
____ (4) Difficult
____ (5) Very difficult

20. What best describes the area from which you work at home?

____ (1) Dedicated ROOM with a door
    (primarily or totally used for work purposes)
____ (2) Dedicated AREA in a specific room
    (room primarily used for something other than work)
____ (3) Non-dedicated AREA
    (you do NOT have a dedicated area from which you work)
____ (4) I do not ever work from home

21. What best describes your workspace at an IBM location?

____ (1) I have my own private office (with a door) at IBM
____ (2) I have my own desk in a cubicle at IBM
____ (3) I have my own desk in a common area (bullpen) at IBM
____ (4) I check out a desk or workspace when I work at IBM
____ (5) I find a desk or workspace on an ad hoc basis at IBM
____ (6) I do not ever work from an IBM location

W3. What kinds of work are most effectively done from the customer location? From home? From the IBM facility?

22. In the last month, how many nights have you been away from home on IBM business? (two digits, 00-30)

___ (number of nights)

23. Do you consider yourself "mobile" (e.g., have a Thinkpad, able to connect to PROFS network from a variety of locations, perhaps have an extra phone line at home, etc.)?

___ (1) Yes
___ (2) No

23a. How long have you been mobile? (Only mobile employees answer)

___ (1) Less than a month
___ (2) 1-2 months
___ (3) 3-4 months
___ (4) 5-6 months
___ (5) 7-12 months
___ (6) 13-24 months
___ (7) More than 24 months

W4. When you were assigned to work in a mobile environment for the first time, what tips or advice would have been most useful to you? (Only mobile employees answer)

INFLUENCE OF MOBILITY

In this section you will be asked to rate the influence of mobility on aspects of your work life and aspects of your personal/home life. Please use the following scale to answer these questions.

(1)   Very positive influence
(2)   Somewhat positive influence
(3)   No influence
(4)   Somewhat negative influence
(5)   Very negative influence
(9)   Not applicable

NOTE:
If you are not mobile yourself, please answer according to the influence that other IBMers who ARE mobile have had on your work life.

24. What has been the influence, if any, of mobility on the following aspects of your WORK LIFE at IBM? (1 = Very positive, 2 = somewhat positive, 3 = no influence, 4 = somewhat negative, 5 = very negative)

___ Your productivity
___ Your overall morale
___ Customer satisfaction of your clients
___ Your relationship with your manager
___ Feedback you receive about your performance
___ The comraderie of your department
___ Your commitment to IBM

24a. What has been the influence, if any, of mobility on these additional aspects of your WORK LIFE at IBM? (1 = Very positive, 2 = somewhat positive, 3 = no influence, 4 = somewhat negative, 5 = very negative)

___ Your ability to communicate with IBMers
___ Your ability to communicate with customers
___ Your ability to concentrate while working
___ Your ability to meet deadlines
___ Your ability to access the information needed for your job
___ Your ability to close business transactions
___ Overall influence of mobility on your work life

W5. What are some specific examples of the benefits and/or drawbacks of mobility to your work life at IBM?

25. What has been the influence, if any, of mobility on the following aspects of your PERSONAL/HOME LIFE away from IBM? (Only mobile employees answer) (1 = Very positive, 2 = somewhat positive, 3 = no influence, 4 = somewhat negative, 5 = very negative, 9 = not applicable)

___ Ability to pursue personal interests/recreation
___ Community involvement
___ Management of home chores
___ Management of childcare/eldercare responsibilities
___ Relationship with your spouse or partner
___ Relationship(s) with your child(ren)
___ Ability to balance work and personal/home responsibilities
___ Overall influence of mobility on your personal/home life

W6. What are some specific examples of the benefits and/or drawbacks of mobility to your personal/home life away from IBM?

26. How has mobility affected the amount of time you spend in the following activities? Please use this response scale: (Only mobile employees answer)

(1) More time spent on this activity due to mobility
(2) About the same amount of time spent
(3) Less time spent on this activity due to mobility

___ "Face time" with customers
___ Time interacting with teammates
___ Time interacting with manager
___ Travel time
___ Non-productive work time
___ Social interaction at work
___ Total time working for IBM
___ Time for household chores
___ Social interaction at home
___ Total time with friends/family members

27. Overall, do you believe IBM has benefited from mobility?

___ (1) Yes
___ (2) Unsure
___ (3) No

W7. Please comment about why you do or do not believe that IBM has benefited from mobility.

28. Overall, have you benefited from mobility? (Only mobile employees answer)

___ (1) Yes
___ (2) Unsure
___ (3) No

W8. Please comment about why or why not you have benefited from mobility (only mobile employees answer).

BACKGROUND INFORMATION

The following questions ask for information about your background. This information will be used to better understand the views of large groups of employees with varying backgrounds and experiences. This information is completely anonymous and confidential, and will not be used to identify any individual.

B1. Are you:

___ (1) Male
___ (2) Female

B2. How many years have you been employed by IBM?

___ (Enter number of years, 00-99)

B3. How much formal education have you had?

___ (1) Grade school or some high school
___ (2) High School or equivalent diploma
___ (3) Some college/technical school/two-year college
___ (4) College graduate (Bachelor's degree)
___ (5) Master's degree/Doctorate or more (including law degree)

B4. What was your last performance rating?

___ (1) "1"
___ (2) "2"
___ (3) "3"
___ (4) "4"
___ (5) "5" or "4-check"

B5. Please indicate the number of children and/or adults that live with you in your home at least half of the time (This is a pilot question for the mobility project. Should you prefer not to answer any part of this question, please leave it blank):

_____ # of Pre-school age children
_____ # of Elementary school age children (Grades K-6)
_____ # of Secondary school age children (Grades 7-12)
_____ # of Post-secondary school age children
_____ # of Dependent adults (eldercare, etc.)
_____ # of Independent adults (not children)

W9. If you would like to enter any additional comments which are not covered by the previous topic categories, please press PF2.

As part of Leadership Development's project "Working Effectively in a Mobile Environment" some voluntary follow-up interviews will be conducted in December and January about additional aspects of mobility. If you would be willing to spend approximately 45 minutes in a telephone interview, please send call or send a note to Jeff Hill, LSAVMIC4(EJHILL), 801-755-2833. You may also make any additional comments about the mobility portion of this survey directly to him.

This concludes the survey. Thank you for your participation.

Appendix B

Comparison of Mobile and Nonmobile Workers: Aspects of Work Life

Appendix B-1
Aspects of Work Life:
Comparison of Male Mobile Teleworkers and Female Mobile Teleworkers

Variable	Male (n=107)		Female (n=45)		t	ES
	M	SD	M	SD		
General Influence on Work						
Overall infl on work life index	3.91	0.84	4.02	0.75	-0.74	-.13
Affect on time spent working	2.61	0.51	2.49	0.59	1.27	.22
IBM has benefited from mobility	2.74	0.50	2.73	0.54	0.05	.02
Hours Per Week Spent Working						
Total Work Time	53.22	13.10	48.84	14.22	1.83	.32
Customer Office	24.19	13.50	20.29	16.29	1.52	.26
Home Office	10.40	8.80	8.40	6.07	1.36	.27
IBM Office	12.49	11.20	15.40	14.10	-1.35	-.23
Other Locations	5.87	5.07	4.71	4.30	1.34	.25
Productivity/Job Effectiveness						
Appraisal	4.09	0.58	4.20	0.51	-1.15	-.20
Rewarded for results	3.21	0.90	3.02	0.92	1.18	.21
Extra effort for company success	4.26	0.79	4.07	0.75	1.40	.25
Infl on productivity index	3.96	0.69	3.88	0.71	0.64	.11
Infl on productivity	4.25	0.80	4.18	0.94	0.50	.08
Infl on ability to concentrate	3.83	0.98	3.93	1.01	-0.58	-.10
Infl on ability to meet deadlines	4.03	0.74	3.98	0.84	0.37	.06
Infl on access to information	3.14	1.07	3.44	1.35	-1.02	-.25
Non-productive work time	1.54	0.64	1.61	0.75	-0.62	-.10

* $p < .05$ ** $p < .01$ (two-tailed test)

(Appendix B-1 continues)

Appendix B-1 (continued)
Aspects of Work Life:
Comparison of Male Mobile Teleworkers and Female Mobile Teleworkers

Location	Male (n=107)		Female (n=45)		t	ES
	M	SD	M	SD		
Morale/Organizational Commitment						
Rate own morale	3.09	1.01	3.04	0.82	0.29	.05
Proud to tell others about company	3.69	0.97	3.69	0.92	-0.02	.00
Optimistic about future in company	2.50	1.14	2.62	0.94	-0.61	-.12
Infl on morale/commitment index	3.78	0.76	3.69	0.86	0.58	.11
Infl on morale	3.93	0.83	3.89	0.91	0.24	.05
Infl on commitment to company	3.64	0.86	3.5	0.98	0.86	.15
Company Relationships						
Feel part of work group	3.60	1.16	3.33	1.22	1.26	.23
Peer feedback	3.70	1.16	3.81	1.21	-0.51	-.09
Rating of manager	3.74	1.12	3.53	1.18	1.00	.18
Infl on company relationships index	3.03	0.81	2.82	0.72	1.41	.27
Infl on relationship with manager	3.18	0.81	3.07	0.82	0.74	.13
Infl on performance feedback	3.11	0.92	3.02	0.68	0.55	.11
Infl on camaraderie in department	2.66	0.97	2.20	0.98	2.61**	.47
Infl on company communications	3.20	1.19	2.87	1.14	1.50	.28
Time interaction with teammates	1.52	0.71	1.33	0.56	1.59	.30
Time interacting with manager	1.40	0.51	1.29	0.51	1.22	.22
Time in social interaction at work	1.36	0.52	1.11	0.32	2.99**	.60
Customer Relationships						
Infl on customer relationships index	3.69	0.75	3.68	0.67	0.06	.01
Infl on customer satisfaction	3.79	0.80	3.86	0.82	-0.49	-.09
Infl on customer communication	3.65	0.88	3.51	0.84	0.90	.16
Infl on ability to close business	3.65	0.85	3.68	0.74	-0.24	-.04
Face time with Customer	2.55	0.52	2.47	0.59	0.89	.14

* $p < .05$ ** $p < .01$ (two-tailed test)

Appendix B-2
Aspects of Work Life:
Comparison of Mobile Teleworkers With Preschool Children and Mobile
Teleworkers Without Preschool Children

	Preschoolers (n=32)		Without Preschoolers (n=119)			
Location	M	SD	M	SD	t	ES
General Influence on Work						
Overall infl on work life index	4.09	0.82	3.90	0.85	1.16	-.29
Affect on time spent working	2.47	0.51	2.62	0.54	-1.47	-.29
IBM has benefited from mobility	2.75	0.51	2.75	0.51	0.02	.00
Hours Per Week Spent Working						
Total Work Time	51.53	11.60	52.54	13.23	-0.39	-.08
Customer Office	19.80	14.20	24.00	14.20	-1.48	-.30
Home Office	10.00	7.50	9.73	7.51	0.18	.04
IBM Office	16.50	12.80	13.13	12.00	1.38	.27
Other Locations	5.25	3.34	5.70	5.26	-0.46	-.10
Productivity/Job Effectiveness						
Appraisal	4.26	0.57	4.08	0.56	1.55	.32
Rewarded for results	3.20	0.89	3.10	0.92	0.52	.11
Extra effort for company success	3.91	0.82	4.25	0.80	-2.15*	-.42
Infl on productivity index	3.96	0.76	3.94	0.68	0.15	.03
Infl on productivity	4.25	0.92	4.24	0.85	0.09	.01
Infl on ability to concentrate	3.91	0.93	3.88	0.99	0.12	.03
Infl on ability to meet deadlines	3.97	0.82	4.03	0.75	-0.43	-.08
Infl on access to information	3.72	0.99	3.54	1.08	0.86	.17
Non-productive work time	1.44	0.56	1.58	0.70	-1.08	-.22
Morale/Organizational Commitment						
Rate own morale	3.34	0.83	3.02	0.97	1.75	.36
Proud to tell others about company	3.94	1.11	3.56	0.94	1.83	.37
Optimistic about future in company	2.63	1.24	2.50	1.05	0.59	.11
Infl on morale/commitment index	3.88	0.75	3.71	0.85	0.99	.21
Infl on morale	4.03	0.78	3.87	0.92	0.89	.19
Infl on commitment to company	3.72	0.85	3.56	0.94	0.86	.18

* $p < .05$ ** $p < .01$ (two-tailed test)

Appendix B-2 (continued)
Aspects of Work Life:
Comparison of Mobile Teleworkers With Preschool Children and Mobile
Teleworkers Without Preschool Children

Location	With Preschoolers (n=32)		Without Preschoolers (n=119)		t	ES
	M	SD	M	SD		
Company Relationships						
Feel part of work group	3.47	1.24	3.55	1.19	-0.32	-.07
Peer feedback	3.80	1.10	3.70	1.19	0.43	.09
Rating of manager	3.97	0.86	3.61	1.20	1.59	.35
Infl on company relationships index	3.23	0.79	2.88	0.77	2.20*	.45
Infl on relationship with manager	3.23	0.72	3.14	0.84	0.51	.12
Infl on performance feedback	3.42	0.72	2.97	0.88	2.59*	.56
Infl on camaraderie in department	2.81	1.15	2.46	0.93	1.81	.34
Infl on company communications	3.34	1.21	3.02	1.15	1.37	.27
Time interaction with teammates	1.69	0.74	1.40	0.63	2.19*	.42
Time interacting with manager	1.59	0.61	1.32	0.47	2.77**	.50
Time in social interaction at work	1.41	0.56	1.25	0.45	1.66	.32
Customer Relationships						
Infl on customer relationships index	3.83	0.67	3.64	0.73	1.29	.27
Infl on customer satisfaction	3.91	0.73	3.79	0.83	0.69	.15
Infl on customer communication	3.78	0.79	3.53	0.89	1.45	.30
Infl on ability to close business	3.81	0.75	3.63	0.83	1.09	.23
Face time with Customer	2.53	0.51	2.54	0.55	-0.07	-.02

$* p < .05$ $** p < .01$ (two-tailed test)

Appendix B-3

Aspects of Work Life

Comparison of Mobile Teleworkers Having a Dedicated Home Office with a Door and Mobile Teleworkers Who Do Not Have a Dedicated Home Office with a Door

Location	Home Ofc w/ Door (n=76)		No Home Ofc w/ Door (n=81)			
	M	SD	M	SD	t	ES
General Influence on Work						
Overall infl on work life index	4.03	0.77	3.85	0.90	1.31	.22
Affect on time spent working	2.64	0.51	2.53	0.55	1.25	.21
IBM has benefited from mobility	2.76	0.51	2.72	0.51	0.58	.08
Hours Per Week Spent Working						
Total Work Time	52.89	12.60	51.34	14.22	0.72	.12
Customer Office	21.63	13.50	24.06	14.91	-1.06	-.17
Home Office	12.14	9.23	7.78	5.98	3.54**	.57
IBM Office	13.70	12.80	13.49	11.53	0.10	.02
Other Locations	5.42	3.99	5.67	5.57	-0.32	-.05
Productivity/Job Effectiveness						
Appraisal	4.14	0.56	4.11	0.53	0.33	.06
Rewarded for results	3.13	0.85	3.15	0.96	-0.16	-.02
Extra effort for company success	4.26	0.82	4.11	0.81	1.17	.18
Infl on productivity index	4.08	0.65	3.79	0.71	2.59*	.43
Infl on productivity	4.37	0.81	4.07	0.91	2.14*	.35
Infl on ability to concentrate	4.09	0.94	3.67	0.97	2.78**	.44
Infl on ability to meet deadlines	4.08	0.71	3.94	0.81	1.16	.18
Infl on access to information	3.64	1.10	3.49	0.99	0.90	.14
Non-productive work time	1.42	0.62	1.68	0.69	-2.35*	-.40
Morale/Organizational Commitment						
Rate own morale	3.05	0.94	3.09	0.98	-0.22	-.04
Proud to tell others about company	3.72	0.97	3.59	0.97	0.84	.13
Optimistic about future in company	2.47	1.06	2.57	1.09	-0.55	-.09
Infl on morale/commitment index	3.89	0.80	3.59	0.81	2.29*	.37
Infl on morale	4.07	0.77	3.74	0.95	2.35*	.38
Infl on commitment to company	3.71	0.94	3.46	0.87	1.74	.28

$* p < .05$ $** p < .01$ (two-tailed test)

(Appendix B-3 continues)

Appendix B-3 (continued)
Aspects of Work Life
Comparison of Mobile Teleworkers Having a Dedicated Home Office with a Door
and Mobile Teleworkers Who Do Not Have a Dedicated Home Office with a Door

Location	Home Office w/Door (n=76)		No Home Ofc w/Door (n=81)			
	M	SD	M	SD	t	ES
Company Relationships						
Feel part of work group	3.47	1.23	3.56	1.15	-0.43	-.08
Peer feedback	3.74	1.07	3.69	1.26	0.26	.04
Rating of manager	3.63	1.14	3.69	1.14	-0.36	-.05
Infl on company relationships index	2.98	0.77	2.93	0.79	0.38	.06
Infl on relationship with manager	3.16	0.84	3.13	0.78	0.22	.04
Infl on performance feedback	3.11	0.86	3.04	0.85	0.48	.08
Infl on camaraderie in department	2.53	0.95	2.52	1.01	0.09	.01
Infl on company communications	3.16	1.18	3.02	1.16	0.71	.12
Time interaction with teammates	1.43	0.64	1.50	0.69	-0.68	-.10
Time interacting with manager	1.31	0.49	1.45	0.53	-1.75	-.27
Time in social interaction at work	1.23	0.42	1.34	0.53	-1.44	-.23
Customer Relationships						
Infl on customer relationships index	3.76	0.77	3.58	0.66	1.56	.25
Infl on customer satisfaction	3.89	0.88	3.73	0.73	1.30	.20
Infl on customer communication	3.67	0.91	3.50	0.83	1.22	.20
Infl on ability to close business	3.72	0.84	3.57	0.77	1.14	.19
Face time with Customer	2.53	0.53	2.53	0.55	0.10	.00

$* p < .05$ $** p < .01$ (two-tailed test)

Appendix B-4
Aspects of Work Life:
Comparison of Mobile Teleworkers Who Have a Dedicated Work Place at IBM and Mobile Teleworkers Who Do Not Have a Dedicated Work Place at IBM.

Location	IBM Work Place (n=60)		No IBM Work Place (n=96)		t	ES
	M	SD	M	SD		
General Influence on Work						
Overall infl on work life index	3.90	0.86	3.96	0.83	-0.42	-.07
Affect on time spent working	2.53	0.60	2.61	0.49	-0.83	-.15
IBM has benefited from mobility	2.73	0.52	2.74	5.10	-0.07	-.00
Hours Per Week Spent Working						
Total Work Time	51.62	10.90	52.32	14.88	-0.31	-.05
Customer Office	16.13	11.30	27.22	14.36	-5.07**	-.86
Home Office	9.22	7.84	10.26	8.15	-0.79	-.13
IBM Office	20.78	12.20	9.01	9.69	6.31**	1.07
Other Locations	5.52	3.81	5.56	5.45	-0.06	-.01
Productivity/Job Effectiveness						
Appraisal	4.23	0.47	4.05	0.60	1.87	.33
Rewarded for results	3.14	0.99	3.14	0.87	0.03	.00
Extra effort for company success	4.27	0.80	4.13	0.82	1.06	.17
Infl on productivity index	3.93	0.67	3.93	0.72	0.08	.00
Infl on productivity	4.15	0.92	4.26	0.85	-0.77	-.12
Infl on ability to concentrate	3.87	0.93	3.88	1.02	-0.05	-.01
Infl on ability to meet deadlines	4.08	0.74	3.96	0.78	1.00	.16
Infl on access to information	3.60	0.87	3.55	1.15	.30	.15
Non-productive work time	1.53	0.63	1.58	0.70	-0.50	-.08
Morale/Organizational Commitment						
Rate own morale	3.23	0.98	2.96	0.93	1.76	.28
Proud to tell others about company	3.73	1.06	3.61	0.92	0.74	.12
Optimistic about future in company	2.52	1.14	2.53	1.05	-0.08	-.01
Infl on morale/commitment index	3.83	0.78	3.67	0.84	1.24	.20
Infl on morale	3.95	0.87	3.86	0.89	0.59	.10
Infl on commitment to company	3.73	0.83	3.49	0.96	1.58	.27

$* p < .05$ $** p < .01$ (two-tailed test)

(Appendix B-4 continues)

Appendix B-4 (continued)
Aspects of Work Life:
Comparison of Mobile Teleworkers Who Have a Dedicated Work Place at IBM and
Mobile Teleworkers Who Do Not have a Dedicated Work Place at IBM.

Location	IBM Work Place (n=60)		No IBM Work Place (n=96)		t	ES
	M	SD	M	SD		
Company Relationships						
Feel part of work group	3.95	0.91	3.24	1.26	4.07	.65
Peer feedback	3.82	1.11	3.63	1.19	0.95	.17
Rating of manager	3.88	1.04	3.55	1.15	1.84	.30
Infl on company relationships index	3.13	0.78	2.84	0.76	2.18*	.38
Infl on relationship with manager	3.33	0.76	3.03	0.82	2.22*	.38
Infl on performance feedback	3.15	0.87	3.01	0.82	0.93	.17
Infl on camaraderie in department	2.68	0.94	2.42	1.00	1.56	.27
Infl on company communications	3.28	1.11	2.98	1.20	1.59	.26
Time interaction with teammates	1.40	0.59	1.51	0.71	-1.00	-.17
Time interacting with manager	1.47	0.54	1.33	0.49	1.62	.27
Time in social interaction at work	1.35	0.48	1.24	0.48	1.33	.23
Customer Relationships						
Infl on customer relationships index	3.71	0.65	3.65	0.77	0.48	.08
Infl on customer satisfaction	3.84	0.72	3.78	0.86	0.47	.08
Infl on customer communication	3.53	0.81	3.61	0.91	-0.53	-.09
Infl on ability to close business	3.75	0.73	3.58	0.86	1.21	.21
Face time with Customer	2.48	0.60	2.55	0.50	-0.78	-.13

* $p < .05$ ** $p < .01$ (two-tailed test)

Appendix C

Comparison of Mobile and Nonmobile Workers: Aspects of Family Life

Appendix C-1

Aspects of Family Life:
Comparison of Male Mobile Teleworkers and Female Mobile Teleworkers

Location	Male (n = 107)		Female (n = 45)		t	ES
	M	SD	M	SD		
General Family Life Perceptions						
Sufficient time for family life	2.84	1.17	2.71	1.10	0.64	.11
Overall infl on personal/home life	3.47	0.91	3.56	0.92	-0.52	-.10
Personal benefit from mobility	2.67	0.60	2.64	0.61	0.24	.05
Time for personal/home life	2.00	0.62	1.93	0.58	0.61	.12
Flexibility						
Flexibility index	3.49	0.92	3.74	0.87	-1.61	-.28
Flexibility in location of work	3.54	1.10	3.84	0.93	-1.64	-.30
Flexibility in timing of work	3.43	0.98	3.64	0.98	-1.24	-.21
Work/Family Balance						
Ability to balance work/family	2.65	1.05	2.51	1.06	0.77	.13
Infl on ability to balance	3.42	0.99	3.43	0.97	-0.04	-.01
Household Chores/Child Care						
Infl on household tasks index	3.28	0.77	3.54	0.73	-1.52	-.35
Infl on household chores	3.36	0.87	3.27	0.91	0.57	.10
Infl on child care	3.30	0.86	3.57	0.84	-1.45	-.32
Time for household chores	2.01	0.55	1.96	0.52	0.56	.09
Family Relationships						
Infl on family relationships index	3.20	0.82	3.40	0.76	-1.11	-.25
Infl on relationship with spouse	3.21	0.91	3.28	0.75	-0.40	-.08
Infl on relationship with child(ren)	3.23	0.85	3.43	0.84	-1.09	-.24
Time for social interaction at home	2.04	0.62	1.98	0.58	0.56	.10
Personal Factors						
Infl on personal factors index	3.18	0.71	3.14	0.73	0.26	.06
Infl on personal interests/recreation	3.29	0.84	3.27	0.89	0.13	.02
Infl on community involvement	3.07	0.70	3.02	0.69	0.36	.07

* $p < .05$ ** $p < .01$ (two-tailed test)

Appendix C-2
Aspects of Family Life:
Comparison of Mobile Teleworkers With Preschool Children and Mobile
Teleworkers Without Preschool Children

Location	With Preschoolers (n=32)		Without Preschoolers (n=119)		t	ES
	M	SD	M	SD		
General Perceptions						
Sufficient time for family life	3.13	1.04	2.66	1.17	2.13*	.43
Overall infl on personal/home life	3.72	0.92	3.39	0.94	1.76*	.35
Personal benefit from mobility	2.69	0.64	2.65	0.60	0.29	.06
Time for personal/home life	2.22	0.61	1.89	0.60	2.75**	.55
Flexibility						
Flexibility index	3.75	0.74	3.53	0.93	1.21	.26
Flexibility in location of work	3.91	0.93	3.58	1.06	1.58	.33
Flexibility in timing of work	3.59	0.84	3.48	1.01	0.57	.12
Work/Family Balance						
Ability to balance work/family	2.88	0.98	2.49	1.06	1.86*	.38
Infl on ability to balance	3.75	0.95	3.29	1.03	2.28*	.46
Household Chores/Child Care						
Infl on household tasks index	3.56	0.80	3.23	0.80	2.01*	.41
Infl on household chores	3.50	0.80	3.24	0.93	1.43	.30
Infl on child care	3.63	0.98	3.23	0.83	2.18*	.44
Time for household chores	2.09	0.59	1.93	0.52	1.52	.29
Family Relationships						
Infl on family relationships index	3.48	0.87	3.14	0.82	1.94*	.40
Infl on relationship with spouse	3.47	0.86	3.13	0.88	1.87*	.39
Infl on relationship with child(ren)	3.53	0.95	3.15	0.84	2.10*	.42
Time for social interaction at home	2.22	0.61	1.93	0.60	2.40*	.48
Personal Factors						
Infl on personal factors index	3.32	0.56	3.09	0.75	1.62	.35
Infl on personal interests/recreation	3.44	0.76	3.20	0.87	1.41	.29
Infl on community involvement	3.19	0.54	2.98	0.73	1.50	.33

* $p < .05$ ** $p < .01$ (two-tailed test)

Appendix C-3
Aspects of Family Life:
Comparison of Mobile Teleworkers Having a Dedicated Home Office with a Door
and Mobile Teleworkers Who Do Not have a Dedicated Home Office with a Door

Location	Home Ofc w/ Door (n=76)		No Home Ofc w/ Door (n=81)		t	ES
	M	SD	M	SD		
General Perceptions						
Sufficient time for family life	2.59	1.19	2.96	1.08	-2.05*	-.33
Overall infl on personal/home life	3.53	1.03	3.41	0.85	0.76	.13
Personal benefit from mobility	2.71	0.54	2.60	0.66	1.04	.18
Time for personal/home life	1.91	0.70	2.04	0.51	-1.33	-.21
Flexibility						
Flexibility index	3.57	0.92	3.56	0.91	0.12	.01
Flexibility in location of work	3.64	1.10	3.63	1.02	0.06	.01
Flexibility in timing of work	3.51	0.98	3.48	0.99	0.20	.03
Work/Family Balance						
Ability to balance work/family	2.55	1.12	2.63	0.99	-0.46	-.08
Infl on ability to balance	3.43	1.12	3.37	0.89	0.41	.06
Household Chores/Child Care						
Infl on household tasks index	3.35	0.83	3.30	0.23	0.72	.09
Infl on household chores	3.34	0.97	3.28	0.84	0.41	.07
Infl on child care	3.32	0.89	3.37	0.89	-0.34	-.06
Time for household chores	1.99	0.65	1.98	0.42	0.13	.02
Family Relationships						
Infl on family relationships index	3.22	0.89	3.24	0.78	-0.14	-.02
Infl on relationship with spouse	3.14	0.95	3.29	0.81	-1.05	-.17
Infl on relationship with child(ren)	3.26	0.95	3.25	0.80	0.03	.01
Time for social interaction at home	1.99	0.69	2.03	0.53	-0.39	-.07
Personal Factors						
Infl on personal factors index	3.13	0.77	3.17	0.65	-0.42	-.06
Infl on personal interests/recreation	3.24	0.92	3.28	0.78	-0.30	-.05
Infl on community involvement	3.01	0.77	3.06	0.61	-0.45	-.07

$* p < .05$ $** p < .01$ (two-tailed test)

Appendix C-4
Aspects of Family Life:
Comparison of Mobile Teleworkers Who Have a Dedicated Work Place at IBM and Mobile Teleworkers Who Do Not have a Dedicated Work Place at IBM.

Location	IBM Work Place (n=60)		No IBM Work Place (n=96)		t	ES
	M	SD	M	SD		
General Perceptions						
Sufficient time for family life	2.88	1.08	2.74	1.18	0.76	.12
Overall infl on personal/home life	3.55	0.95	3.42	0.94	0.83	.14
Personal benefit from mobility	2.63	0.69	2.66	0.56	-0.29	-.05
Time for personal/home life	2.10	0.63	1.90	0.59	1.96*	.33
Flexibility						
Flexibility index	3.73	0.82	3.45	0.95	1.92*	.32
Flexibility in location of work	3.77	0.96	3.54	1.10	1.33	.22
Flexibility in timing of work	3.70	0.89	3.35	1.02	2.17*	.37
Work/Family Balance						
Ability to balance work/family	2.75	1.10	2.49	1.03	1.50	.24
Infl on ability to balance	3.58	0.96	3.29	1.03	1.78	.29
Household Chores/Child Care						
Infl on household tasks index	3.36	0.78	3.31	0.82	0.33	.06
Infl on household chores	3.39	0.81	3.28	0.95	0.76	.13
Infl on child care	3.37	0.87	3.34	0.90	0.18	.03
Time for household chores	2.02	0.54	1.97	0.54	0.55	.09
Family Relationships						
Infl on family relationships index	3.28	0.80	3.19	0.86	0.59	.11
Infl on relationship with spouse	3.32	0.84	3.14	0.91	1.21	.21
Infl on relationship with child(ren)	3.31	0.85	3.22	0.90	0.54	.10
Time for social interaction at home	2.10	0.60	1.96	0.60	1.43	.23
Personal Factors						
Infl on personal factors index	3.28	0.67	3.08	0.72	1.79	.29
Infl on personal interests/recreation	3.42	0.81	3.17	0.86	1.77	.30
Infl on community involvement	3.15	0.68	2.98	0.69	1.50	.25

* $p < .05$ ** $p < .01$ (two-tailed test)

Appendix D

Thematic Content Coding of Write-in Comments

General Comments About Mobility

1 Theme: 23 Positive Comments, 4 Negative Comments

Theme 1: Mobility is good for me and for IBM. (23)
"Mobility is great !!!!!!!!!!!"
"Mobility is the wave of the future."
"The mobility is great. I would not (have) survived without it."
"It's the leading edge work style, I have good tools, and it's cool."
"Overall the mobile rollout has been very positive."
"I prefer mobility!"
"Being able to carry my office around with me has been very helpful."
"mobility has improved the flexibility, productivity ... of IBMers."
"IBM .... (is) at the forefront ... with alternative, progressive, technology."
"Mobility is good for those of us who have a private office."
"I feel much more tuned in to my customer ... more isolated from colleagues."
"Not all the bugs are ironed out yet but overall I believe it is better."
"Mobility is positive overall."
"I think overall it is a very good thing."
"Mobility must be good for IBM."
"I like it and I would not recommend changing back."
"In general, I like the idea of mobility."
"The overall benefit is positive."
"I have benefitted from mobility."
"Being mobile is great!."
"I am more productive, more dedicated, happier, less stressed ... more creative."
"It (positive attitude from mobility) carries over into my home life as well."
"It's been a good experience for me."

Counter Theme 1: Mobility is not worth it. (4)
"...this direction has probably cost IBM its soul."
"tactical action ... without thought for total effect on workforce."
"I suggest strongly that IBM return to the old policy of one person one desk."
"My personal life was greatly impacted this year."

Mobility and Productivity/Job Effectiveness

7 Themes: 165 Favorable Comments, 68 Unfavorable Comments

Theme 1: I work more productively in a mobile environment (34)
"I am more productive working at home."
"During ... crunches I can get more done in a given amount of time."
"We are constantly productive."
"overall productivity of employees."
"It makes me a more productive employee."
"I can be much more productive when it is convenient to me."
"elimination of commute time helps productivity."
"Mobility has helped employees be more productive by cutting down on commute."
"can work from anywhere, even while at class, on vacation, etc."
"More flexibility allows for better productivity."
"I can review PROFS at home outside of normal business hours."
"better productivity because of fewer distractions and more work space."
"ability to more easily generate letters and proposals."
"finish work quicker, more work done in same time frame."
"nature of the ... work ... I can accomplish A LOT more at home than in the office."
"It allows me to get more work done overall."
"from 5:00 AM - 7:00 AM is one of the best times to be productive."
"gives you the option to stay home if you need to be more productive."
"Mobility makes it easer (to check phonemail, etc.) for coverage on vacation."
"don't have to wait to go to an office to complete customer proposals, requests, etc."
"...a more productive workforce, lower fixed costs, improved morale."
"mobility ... allows me be productive all day from any location or while traveling."
"Productivity seems very high because they are mobile."
"less time lost dressing to sit in the office."
"IBM has gained much, much more productive time from employees."
"In short, better productivity and better responsiveness."
"IBM is getting more hours of productive work."
"mobility has improved productivity when not in the office."
"I am more productive." (6)

Counter Theme 1: My productivity suffers in a mobile environment (6)
"I have lost a lot of productivity."
"Mobility has been somewhat of a productivity hit."
"Professional is spending much more time screwing around with PC's and typing."
"It is too easy to take advantage of IBM when you are truly mobile."
"spend more time ... tinkering with ThinkPads than using them to be more effective."
"loss of revenue."

Theme 2: Mobility's flexibility makes it easier to get the job done (38)
"allows more flexibility in getting a job done."
"primary benefit is flexibility, time management becomes easier."
"flexibility to work where it makes most sense."
"I find it great to have the flexibility to work at home or in the office."
"I can do certain work at anytime of the day (midnight, 8pm etc)."
"If I forget to do something on Fri., don't have to go into the office over weekend."
"I think mobility has increased the flexibility of where you can work."
"It has given me the flexibility to work at customer locations, at home or ... office."
"can perform many work activities at any time from anywhere."
"more flexibility regarding when and where work is done."
"take care of work things during personal time (i.e., after wife and kids are in bed."
"Now I can do PROFS at 10:00 at night."
"I can do most of my work without being in the office."
"I have to really schedule my time carefully, but it's my schedule!!!!"
"empowered to make the calls ... of when to say no ... of how I spend my time."
"more independence ..."
"ability to work from any location."
"flexible, allows access to IBM systems whenever needed."
"more flexibility in time management."
"Mobility goes hand-in-hand with schedule flexibility." ,
"ability to work at home at any time of the day or night."
"able to use PC applications for most tasks ... whenever I want."
"I can be a little more flexible, leave the office early and continue working at home."
"It makes me more flexible ... making it easier to plan my schedule."
"able to interact with people from different time zones."
"work when I am mentally ready ... instead of when I happen to be in the office."
"Mobility contributes to flexibility which helps to reduce stress."
"you can be productive while travelling, working on planes, hotel rooms...."
"can check Profs after hours, catch up on ... paperwork without driving into office."
"mobility doesn't eliminate the extra hours, (but) it lets me control where I work."
"I am not tied to having to go to a specific location."
"I can spend less time travelling between work locations."
"able to work on the road."
"I am able to continue work from home ... without having to return to the office."
"Flexibility is a big benefit." (4)

Theme 3: The mobile environment enhances my job effectiveness (24)
"using the Think Pad to display the presentation ... much more effective."
"ability to be much more organized."
"easier to do overtime if I can work more effectively at home."
"we are much more effective when we do get together."
"IBM is taking advantage of technology to make its workforce more effective."
"If I have an idea in my head, I can get it down on my system anywhere I am."

Theme 3: The mobile environment enhances my job effectiveness (Cont.)
"The ThinkPad allows ...to give high-quality presentations ... the customer location."
"I've been able to write and deliver proposals to customers while on the road."
"makes us much more responsive."
"Mobility allows us to make better use of time spent with the customer."
"ability to perform my job more effectively."
"the ability to do 'what if' exercises with Lotus and MicroSoft Project."
"Mobility allows me to immediately work with an idea."
"more responsive to answer customer's questions because of remote access."
"Mobility allows me to be far more effective at my job."
"With mobility I can perform whatever activity I need wherever it is best performed."
"am able to provide billable services for multiple customers."
"greater accessibility on trips."
"Mobility allows me to access any information I need regardless of where it is."
"able to access information and communicate from home."
"Mobility allows access to any information at IBM from any location."
"I would not be able to function without mobile access."
"off hours work at home allows access to more information."
"ability to obtain or disseminate information more quickly."

Counter Theme 3: Mobility creates obstacles to my effectiveness (25)
"some things are at home, some things are at the office."
"...not having files at any one place."
"I am forced to be a pack rat with deliverables and printed information."
"tough to keep voluminous files ... not everything can be computerized."
"tools are heavy to carry around."
"(they) ... look like pack animals with two or three bags over their shoulders."
"The mobile environment involves hauling tons of stuff all the time."
"It is a myth to think you can work at home with children present."
"It is difficult to have half your files at work and half at home."
"I don't have space at home to store files."
"Often (I) need to go into office to access documentation...I cannot keep it at home."
"If I'm at work, someone will always ask me for something that is now at home."
"More of my time is spent gaining access to the information I need."
"not always possible to provide adequate work conditions and file space at home."
"It is very difficult to find ... space to store files."
"need filing cabinets in the office."
"The biggest problem with mobility is the management of paper files."
"Working from home is difficult because I do not have a desk or room for one."
"I had to purchase extra phones and cabinets."
"I don't have space to at home to store all the paper and books related to my job."
"tired of storing IBM junk at home - kids sick of not being able to use phone."

Counter Theme 3: Mobility creates obstacles to my effectiveness (Cont.)
"I don't have a dedicated office ... files (are) stacking up on desks, couches, tables."
"inadequate storage space."
"I share space at home with my spouse which has been a serious point of contention."
"don't have a spare room, or spare phone line."

Theme 4: Interrupted less, fewer distractions, better concentration (17)
"The quiet atmosphere of home is more productive."
"I can be very productive since there are no interruptions and it is very quiet."
"fewer interruptions, more focus on completing tasks."
"fewer distractions working away from the office."
"fewer interruptions, more focus."
"less office distraction."
"It's easier to concentrate at home without so many interruptions."
"I don't get disturbed at home allowing for longer and better ... concentration."
"feasible to concentrate ... on a specific project when I have a pressing deadline."
"Mobility lets me focus on critical success factors."
"Working at home is good for thinking and planning."
"writing and research is better done in quiet space that ... doesn't exist in the office."
"By working at home I can find a quiet place to think and create documents."
"I am able to concentrate on what needs to get done."
"helps concentration (to get) the job done faster."
"I ... can concentrate better when not interrupted by chit-chat in the office."
"easier to concentrate."

Counter Theme 4: Mobility makes it difficult to concentrate on my job (2)
"My household is very noisy with kids continuously coming and going."
"Mobility inhibits creativity."

Theme 5: Mobility enables me to work longer hours (16)
"I work 'harder' and 'longer' than I used to, but I do it more 'comfortably'."
"I am willing to spend the extra time working when I am comfortably at home."
"Easy to want to work all the time when you have the tools at home (2)."
"I work more hours, at any hour necessary, provided it is after my son goes to bed."
"I am always at work ... between 5:00 a.m. and Midnight, seven days a week."
"I have worked on proposals all night on the system, cuz I can now."
"work at night. I can get it done now. Before, I couldn't."
"... more hours doing IBM work because of (access to) PROFS, , HONE, etc."
"I gladly and happily work more, at my own convenience, at my own time."
"can perform many WORK activities at any time from anywhere."
"early in the morning (I) can have 2 or 3 hrs ... working before my children get up."
"employee probably spending more time than what they have b.l."
"More work + same pay = greater profit."
"IBM is getting a lot more of my time because systems are available."
"Because of convenience they get more of my time after normal working hours."

Theme 6: The technology/tools provided by mobility benefit my work (13)
"having the technology we sell ... puts our money where out mouth is."
"I love my ThinkPad. It is the best tool I have ever had from IBM."
"I have my own customized workstation with the tools I need and use."
"forced into our hands tools we should have been going to anyway--pcs, pagers etc."
"forcing the IS support structure ... some cases, the cobbler's children have shoes."
"I can keep abreast of things like announcements, mail, etc. from my home at night."
"It is about time that usable tools were put in the hands of the marketing force."
"improved marketing tools (laptops) improve productivity."
"Mobile tools are excellent and help make me more productive overall."
"The tools have enabled me to accomplish many things in a timely manner."
"The biggest benefit is access to Callup."
"With the modern communications, I ... avoid the penalties associated with mobility."
"tools really help consulting and services work."

Counter Theme 6: Better tools are needed for mobility to reach potential (33)
"can't finish a job requiring printing, or copying/mailing without coming to office."
"the lack of printing capability at home creates need for unnecessary trips to office."
"IBM should spend more for required resources (quality printers, etc.)"
"We need access to 3820."
"Inadequate tools, old PC, etc."
"tools - printing, mail, copying."
"trading area has implemented a cheap version of mobility."
"need tools that are all connected."
"inordinate time solving workstation and printer problems."
"Mobility is not fully implemented ... tools lacking fax, printers."
"some information still not available from online systems."
"PC attached printers are not supported."
"not having all facilities at home ... mail, laser printers, conf. call capability,etc."
"additional burden of solving and managing my own workstation."
"Obtaining printed documents for customers is now a major headache."
"insufficient tools."
"improper tools."
"I spend a lot of time with things not working, like printing."
"not all customers have phone systems that allow for analog."
"printed documents and files are not available immediately."
"printing of formatted 3820 documents are not an option."
"printing is quite difficult when you are mobile."
Help number, wait on hold for 15 minutes.
"I have a lot of problems with my ThinkPad.
"telephone access and noise."
"mobility platform (OS/2) doesn't match customer (MS Office Suite)."
"not having a dedicated AIX line at home."
"I still need to go to office for mail, copying and printing."

Counter Theme 3: Mobility creates obstacles to my effectiveness (Cont.)

"I don't have a dedicated office ... files (are) stacking up on desks, couches, tables."
"inadequate storage space."
"I share space at home with my spouse which has been a serious point of contention."
"don't have a spare room, or spare phone line."

Theme 4: Interrupted less, fewer distractions, better concentration (17)

"The quiet atmosphere of home is more productive."
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"fewer interruptions, more focus on completing tasks."
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"It's easier to concentrate at home without so many interruptions."
"I don't get disturbed at home allowing for longer and better ... concentration."
"feasible to concentrate ... on a specific project when I have a pressing deadline."
"Mobility lets me focus on critical success factors."
"Working at home is good for thinking and planning."
"writing and research is better done in quiet space that ... doesn't exist in the office."
"By working at home I can find a quiet place to think and create documents."
"I am able to concentrate on what needs to get done."
"helps concentration (to get) the job done faster."
"I ... can concentrate better when not interrupted by chit-chat in the office."
"easier to concentrate."

Counter Theme 4: Mobility makes it difficult to concentrate on my job (2)

"My household is very noisy with kids continuously coming and going."
"Mobility inhibits creativity."

Theme 5: Mobility enables me to work longer hours (16)

"I work 'harder' and 'longer' than I used to, but I do it more 'comfortably'."
"I am willing to spend the extra time working when I am comfortably at home."
"Easy to want to work all the time when you have the tools at home (2)."
"I work more hours, at any hour necessary, provided it is after my son goes to bed."
"I am always at work ... between 5:00 a.m. and Midnight, seven days a week."
"I have worked on proposals all night on the system, cuz I can now."
"work at night. I can get it done now. Before, I couldn't."
"... more hours doing IBM work because of (access to) PROFS, HONE, etc."
"I gladly and happily work more, at my own convenience, at my own time."
"can perform many WORK activities at any time from anywhere."
"early in the morning (I) can have 2 or 3 hrs ... working before my children get up."
"employee probably spending more time than what they have to."
"More work + same pay = greater profit."
"IBM is getting a lot more of my time because systems are available."
"Because of convenience they get more of my time after normal working hours."

Counter Theme 6: Better tools are needed for mobility to reach potential(Cont.)
"there could be more effective tools made available."
"need a laser printer at home."
"more time and training on the tools would be very helpful."
"not having print capability for documents at home."
"move common tools off of the host and onto the workstation."

Theme 7: Mobility reduces the company's expenses, especially in real estate (23)
"IBM has saved money."
"I am sure IBM has benefitted financially."
"reduces expenses."
"short-term cost avoidance."
"I think IBM as a company is saving money."
"Obviously from a cost standpoint, IBM should be benefitting."
"IBM ... benefitted from a financial standpoint, less real estate needed per employee."
"the reduction in real estate expense."
"...reduction in real estate costs."
"saving facility costs."
"reduced real estate costs."
"IBM has reduced expense for office space and facilities."
"we have made great strides in real estate reductions."
"reducing real estate expenses."
"real estate costs have been reduced."
"the cost associated with building space."
"reduction in the amount of work space."
"saving on floor space."
"opportunity to reduce real estate costs."
"real estate costs must be coming down."
"expense of workspace has gone down."
"It saves IBM parking expenses."
"Generally expenses should be less. Supplies, mileage, etc."

Counter Theme 7: Expense savings are not accurate (2)
"lack of tangible savings."
"We'll eventually have to pay the full price."

Mobility and Morale

1 Theme: 9 Favorable Comments, 1 Unfavorable Comment

Theme 1: Mobility has boosted my morale (9)
"More flexibility allows for ... improved morale."
"It has given a morale boost to me."
"my morale is higher."
"Mobility has allowed me to insulate myself from (the depressing office)."
"morale ... is very poor so it's nice to be mobile and out of the office."
"flexibility to do the work where it is most convenient has helped my attitude."
"morale has greatly improved since the company has encouraged working at home."
"I believe (mobility) has greatly improved my morale."
"empowerment engendered ... when they realize IBM has trusted them..."

Counter theme 1: Mobility has negatively adversely my morale (1)
"adversely impacts morale."

Mobility and IBM Relationships

3 Themes: 5 Favorable Comments, 57 Unfavorable Comments

Theme 1: Teamwork and comraderie have suffered as a result of mobility (33)
"The synergy we used to have ... sharing experiences and ideas is gone".
"I don't have the same level of access to my co-workers"
"We have to work to regain the comraderie."
"It is difficult to learn to work together."
"very hard to get together as a team."
"no longer feeling part of a team."
"The comraderie is diminished some ... you don't see your peers much anymore."
"You don't know what's going on in the other product areas."
"You are not in contact with your teammates as much."
"...less loyal to IBM ... teamwork affected ... loss of purpose."
"creates isolation and less teamwork."
"The social interaction with other IBMers has gone down."
"Mobility does take away from the team aspect."
"lack of teamwork, idea sharing, awareness of marketing situations."
"The comraderie is not evident, since no one is really around."
"lack of interaction with teammates on strategy."
"They are less accessible than when they were working in the office."
"hard to develop/maintain people relationships when people are out of the office."
"There is less of a sense of belonging to an organization."
"The feeling of ... belonging to a group focused on a common purpose has declined."
"negative impact on the interactions with colleagues."
"you don't have the comraderie."
"you lose a sense of team."
"little interaction with peers or managers."
"lack of awareness of other project opportunities in the office."
"Co-workers seldom see each other any more."
"Both social and professional ties disappear."
"internal contacts and networks ... will disappear over time."
"lack of peer interaction ... makes it difficult to accomplish team activities."
"I feel like an independent contractor ... instead of an employee who is included."
"Lack of contact with peers is a drawback."
"social interaction that contributes to team building is diminished."
"Individuals who work for IBM will lose any group culture and sharing."

Theme 2: Informal networks and mentoring flounder in a mobile environment(12)
"new employees will not pick up any benefits of others' experiences."
"junior workers are going to be hurt by the loss of interaction with senior IBMers."
"less informal exchange of information ... Comraderie has declined."
"Comraderie and informal exchange of information no longer exist."
"Informal mentoring is lost."
"loss of informal education amongst peers."
"loss of business networking with fellow IBMers."
"The networking is not there."
"lack of connection with the people ... don't know the power structure anymore."
"Much is lost in technical cross education when each specialist is isolated."
"exchange of marketing ideas (doesn't happen) in a technical environment."
"I foresee a real problem with new hires."

Theme 3: Mobility is an obstacle to internal communications (12)
"The worst part of mobility is ... that you can't reach some IBMers in a hurry."
"It does make it a bit harder to contact those that (are mobile)."
"Management has difficulty communicating."
"It can be difficult to track people down."
"Communications with fellow team members ... limited mostly to Profs/phonemail."
"Communications ... (are) often losing some effectiveness."
"(mobility) does tend to restrict the overall interaction with other IBMers."
"Communications definitely suffers."
"difficult to get a hold of people who are mobile."
"I have had a client call my phonemail ... and be told I no longer work for IBM."
"Interactions with peers have virtually ceased."
"To discuss something with a coworker really means leaving phonemail messages."

Counter Theme 3: Mobility facilities internal communications (5)
"IBM has benefitted because it has forced radical changes in the way we interact."
"can access other IBM'ers at any time of the day."
"cellular phone with pager facilitates communication."
"employees ... communicate better when away from the office ... a definite benefit."
"My biggest improvement is my ability to communicate with IBM."

Mobility and Customer Relationships

3 Themes: 45 Positive Comments, 3 Negative Comments

Theme 1: I spend more time with my customer in a mobile environment (13)
"Mobility has meant more customer face time ... a positive effect."
"has forced some people to get out of the office and in front of the customer."
"can cover the personal issues that come up ... without impacting ... customers."
"Mobility gives me more quality time with customers."
"I spend more time with my clients."
"It allows me to spend more time with my customer."
"more customer face time."
"It has added more time to be in front of my clients."
"more attention to the customer."
"More time with customers is good ... "
"more time with the customer.(3)"

Theme 2: Flexible access to information means I can be more responsive (23)
"No matter where I am, I can get the information I need to the customer."
"allows employees ... to respond to clients faster with more accurate results."
"It allows me to be more responsive to my customer."
"can provide customer answers on the spot."
"access to information from anywhere."
"ability to access e-mail and Fax from anywhere."
"gets you out of the office and in front of the customer."
"I am more in touch with my customers. (2)"
"better prepared to give them the information they need when I meet with them."
"can cover customer issues whether in or out of town."
"can access the IBM wealth of information right from our customer sites."
"don't have to say, 'I'll get back to you on that.'"
"more opportunity and time for client contact."
"I am spending more time with customers."
"ability to dial into customer's computers remotely."
"can be with their customers more easily, thereby generating more business."
"cellular phone and a pager allow me to respond to my customers much quicker."
"can deliver fixes and to customer immediately while I am at their location."
"in virtually any customer location ...have access to tools and information."
"overall communications with customers has been enhanced."
"Employees who are travelling can dial in from just about anywhere."
"the ability to be absolutely as responsive and productive as I can."

Counter Theme 2:   With mobility I am less responsive to customers (3)
"Customers never reach me live on the phone."
"major drawback is the 'I'm not here' message it gives to customers."
"unresponsiveness to customers."

Theme 3:   ThinkPads provide additional marketing opportunities (9)
"presentations and demos can be shown to customers that couldn't be shown before."
"Mobility affords the IBMer with incredible demonstration capability."
"more ... conversant about our ThinkPad and OS/2 because they have to use them."
"a tremendous testimony to our customers when we use our own latest technology."
"tools on enhanced mobile platform ... positive influence on client satisfaction."
"has helped customers see how a ThinkPad might help their sales/technical forces."
"customer is impressed when IBMer shows up with a ThinkPad and (can) use it."
"It allows me to use the tools we sell."
"I would expect that ThinkPad orders have gone up as more of us have gone mobile."

Mobility and the Ability to Balance
Work and Personal/Family

3 Themes: 27 Favorable Comments, 39 Unfavorable Comments

Theme 1: Mobility's flexibility helps me balance work and personal/family life(27)
"I can do much of the work at home and not be away from my family."
"When my child is sick, I can work (really work) at home."
"able to work from home when emergencies come up."
"If I need to work extra hours, I can do this after my children's bed time."
"I am able to get work done at home and still ... provide child care."
"(I) do not spend as much time away from home."
"some flexibility regarding how schedule ... work ... and their family lives."
"otherwise need to stay late and miss the family, or go back into the office late."
"to juggle work and family life, it helps a lot to be able to have flexibility."
"I can work more hours with less disruption to my family. "
"greater time with my family."
"I like the flexibility of working from home."
"greater flexibility in scheduling."
"the major benefit is flexibility."
"flexibility to meet family and IBM needs, i.e., I can work at home at night."
"I can easily start work early and take a few minutes to drive my child to school."
"I have benefitted because of the flexibility it offered."
"because of the increased flexibility ... to manage my life and be more productive."
"(it) enables me to meet my commitments to IBM, my customers, and my family."
"increased flexibility to schedule work hours to accommodate ... personal schedules."
"flexible work time at home."
"I am an early morning person and I can begin work at 6:00 am if I want."
"flexibility to work at home in off hours after my child has gone to bed."
"You can be more flexible in terms of after hours work."
"There is a better balance and more flexibility."
"mobility has offered ... greater flexibility in managing ... work and personal lives."
"It helps I have an office at home so I can easily divide work from my personal life."

Counter theme 1: Mobility blurs boundary between work and family life (23)
"Lack of (defined workspace at home) is a negative effect on my family life."
"...to be productive ... I must cut myself off from my family."
"it is as hard, or harder to balance home and work."
"Now I am bringing the office home with all it's frustrations, etc."
"being mobile makes it too easy to do work during vacation/personal hours."
"harder to separate work from personal life (not that it was ever easy).

Counter theme 1: Mobility blurs boundary between work and personal life(Cont.)
"it seems as though work is always there, I'll log on at weird hours because I can."
"on a tighter LEASH (I call my pager and cellular phone my electronic leashes)."
"I can be reached at almost any hour, and can't generally leave work ... a problem."
"Probably need better personal management guidance to balance work/personal life."
"It used to be I left work at work. Not any more."
"Easy to let work dominate home."
"(It is) difficult to shut off the PC when the end of the day is at hand."
"I cannot leave work at the office anymore so ... (my) home life is suffering.
"Vacations are not days off ... need to check on something and family suffers."
"I am never home! I am expected to be available ... to my project at all hours."
"While I was on vacation I was contacted every single day."
"more definite about drawing boundaries ... you always have access to work ..."
"(Work) is always with you."
"I never truly leave the work environment unless I get away from the house."
"Even vacation time blends into work time unless I go somewhere."
"It does seem to leave significantly less time for my personal life."
"I am (working) at night and on weekends which is interfering with personal life."

Theme 2: In the mobile environment I feel like I am always working (16)
"I seem to be working all of the time now: vacation, late nights, weekends."
"I can never get away from work."
"Work is always with you, it is hard to "leave the office."
"am more flexible with schedules but still put too much time into work."
"a year ago my profs note high hit 40 in my backlog. This year I hit 260..."
"I spend more hours working each week than before."
"tend to work whether I am on vacation or sick...put personal life behind work."
"each individual employee has had to give more of their personal time."
"With longer work days I have less time to spend with my family."
"I tend to work at home too much at night."
"Being mobile sometimes causes me to work during the evenings and on weekends."
"I now spend evening time doing PROFS since I have access from home."
"IBM now has a 24-hour employee instead of 8 to 8."
"many will suffer burnout over time and move on."
"I am skeptical about the long term because of the burnout factor."
"lots more unpaid overtime."

Mobility and Household Responsibilities

1 Theme: 13 Favorable Comments, 1 Unfavorable Comment

Theme 1: Mobility helps me to better fulfill household responsibilities (13)
"I can take care of the sick child and get my work done. A win-win situation."
"On occasion, it is possible to do some household chores."
"easier to schedule doctor appointments, domestic-type appointments and errands."
"take care of some personal things during working hours."
"Makes it easier to schedule appointments ... home for repairmen, deliveries, etc."
"I can arrange my day better to suit my work and personal life."
"I can work and take care of a sick child."
"I can do laundry while writing a report!"
"I don't have to shave in the morning."
"When I work at home I can accomplish personal tasks at the same time."
"I have more time for domestic chores."
"I can also blend some personal interests and time when I am at work."
"No need for detailed attention to grooming., i.e., dress code, shaving, etc."

Counter Theme 1: Mobility makes it more difficult to do household chores (1)
"Your ability to tend to household chores and errands is degraded."

Mobility and Family Relationships

1 Theme: 14 Favorable Comments, 6 Unfavorable Comments

Theme 1: Mobility strengthens my family relationships (14)

"I enjoy working from home! It strengthens the family bond."

"I can be more involved in (my children's) school life."

"The fact I am (home) does make a big difference (to my children)."

"greater ability to interact with family."

"I can take my son to his basketball games in the middle of the afternoon."

"being able to see my kids off to school more than ever this year."

"teenager knows where I am - greater accessibility."

"have dinner with family, run errands before stores close, finish work later at home."

"I am more accessible ... to my family."

"family understands (the) nature of my work better."

"I have more time with my family."

"my wife and I to do some tasks together which previously only one of us could do."

"This has been a definite plus for me, my family ... "

"I can spend more time with my children before and after school."

Counter Theme 1: Mobility gets in the way of family relationships (6)

"(Mobility) has taken away more time on home life."

"I spend too much time with my ThinkPad and not enough time with my family."

"Being on the road ... has required that I short-change my family and personal life."

"hard on kids to be home when dad is working (what's more important?)"

"Mobility has equated to travel and time away from family."

"tend to work more hours ... instead of taking time ... to enjoy the family."

Mobility and Personal Factors

3 Themes: 27 Favorable Comments, 4 Unfavorable Comments

Theme 1: Mobility benefits me personally in some unique ways (7)
"I can sleep in longer!
"It is much easier to schedule personal tasks."
"psychological benefit from knowing I can work whenever I need to."
"the flexibility to manage my own time."
"Mobility offers a means for me to have control and flexibility in my schedule."
"I am less stressed."
"reduces a big safety concern ... customer's office ... not in the best part of town."

Theme 2: Mobility reduces commuting time (18)
"don't waste time commuting to the office."
"not having to commute during prime traffic time."
"greatest benefit has been on commuting."
"less wasted time in the car."
"elimination of four hours of commute time."
"less time commuting."
"still work longer hours than I want; I just don't have to commute to do it."
"avoiding traffic ... in the morning helps improve the disposition."
"less commuting time."
"less commute time, more time to do the job."
"reduced travel, do not need to go into an IBM office to access systems."
"not forced to go into the office after hours and weekends to use the IBM systems."
"less time lost to commuting."
"less time commuting."
"reduce travel to go to an IBM office. Time could be spent on home life."
"I can use ... commuting (time) to deal with business and personal issues."
"don't have to travel back to office to get access to the systems."
"I can avoid traffic jams at peak commute hours."

Theme 3: Mobility personally saves me money (2)
"I can also dress casually more often, so my budget for clothing has been reduced."
"cost effective, I can eat lunch at home."

Counter Theme 3: Mobility personally costs me money (4)
"IBM has used mobility as an excuse to float expenses thru my wallet."
"IBM is saving money at my expense. I use considerably more power at home."
"I view the 'mobile experiment' as a $10,000 unreimbursed expense."
"IBM has used mobility as a way of transferring expenses ... to the employee."

VITA

E. JEFFREY HILL

WORK AND HOME ADDRESSES AND PHONES

IBM: HR Research and Consulting
Route 9, Town of Mt. Pleasant
North Tarrytown, NY   10591
(602) 217-2081

Department of Family and Human Development
Utah State University
Logan, Utah   84322-2905
(801) 797-1501

Home
1085 North 400 East
Logan, Utah   84341
(801) 755-0759

EDUCATION

Doctor of Philosophy, Family and Human Development. Utah State University, 1995.

Master of Organizational Behavior. Brigham Young University, 1984. (Summa Cum Laude, With Distinction)

Master of Business Administration Program. Pacific Lutheran University, 1981-1982.

Bachelor of Arts. Major: Interpersonal Communications. Minors: International Relations and Spanish. Brigham Young University, 1977. (Summa Cum Laude, With High Honors)

PROFESSIONAL POSITIONS

Instructor, Teaching/Research Assistant. Department of Family and Human Development, Utah State University. Logan, Utah. March, 1992 - present.

Senior Account Representative/Personnel Research Advisor. Workforce Solutions, an IBM Company, Human Resources Research and Consulting. Mt. Pleasant, New York. September, 1990 - present.

Account Systems Engineer. IBM Marketing Organization. Phoenix, Arizona. November 1986 - August 1990.

Personnel Research Associate/Employment Planning Assistant. IBM-Southwest Marketing Division Headquarters. Atlanta, Georgia. 1984-1986.

Instructor, Teaching/Research Assistant. Department of Organizational Behavior, Brigham Young University. Provo, Utah. 1983-1984.

Organizational Consultant. Ejido Magdaleno Aguilar. Tamaulipas, Mexico. 1983-1984.

Marketing Support Representative/Industry Specialist. IBM Office Products Division, Tacoma/Seattle, Washington. 1977-1982.

SCHOLARLY PUBLICATIONS

Papers Published or Accepted for Publication

Hawkins, A. J., Christiansen, S. L., Pond-Sargent, K., & Hill, E. J. (in press). Rethinking fathers' involvement in child care: A developmental perspective. In Marsiglio, W. (Ed.), Fatherhood: Contemporary theory, research, and social policy. Newbury Park: Sage.

Young, M. H., Miller, B. C., Norton, M. C., & Hill, E. J. (in press). The effect of parental supportive behaviors on life satisfaction of adolescent offspring. Journal of Marriage and the Family 57(3).

Hawkins, A. J., Christiansen, S. L., Pond-Sargent, K., & Hill, E. J. (1993). Rethinking fathers' involvement in child care: A developmental perspective. Journal of Family Issues, 14, 531-549.

Hill, E. J., & Miller, B. C. (1992). The why and how of families. Contemporary Psychology 37(2), 1092-1093.

Papers Under Review and in Preparation

Hill, E. J., Miller, B. C., Weiner, S. P., Wood, B. B., Spear, K. M., & Voydanoff, P. (asked to revise and resubmit). Who is responsible for what at home?: The division of responsibility for household labor as reported by corporate employees. Journal of Family and Economic Issues.

Miller, B. C., Norton, M.C., Curtis, T., Hill, E. J., Schvaneveldt, P., & Young, M. H. (under review). The timing of sexual intercourse among adolescents: Family, peer, and other antecedents. Journal of Research on Adolescence.

Hill, E. J., Miller, B.C., Norton, M., & Young, M. H. (in preparation). Religiosity and adolescent sexual intercourse: Reciprocal effects. Journal for the Scientific Study of Religion.

UNIVERSITY TEACHING ACTIVITIES

Utah State University Courses

FHD 260: Child Guidance. Instructor, on-campus class, Spring, 1995.

FHD 310: Research Methodology in Family and Human Development. Uinta Basin Center, Winter, 1995.

FHD 260: Child Guidance. Instructor, USU Extension, Fall, 1994.

FHD 120: Marriage and the American Family. Instructor, on-campus class, Winter, 1994.

FHD 775: Advanced Topics in Family and Human Development. Teaching assistant for SAS using the NSFH. Doctoral Seminar, Fall, 1993.

FHD 260: Guild Guidance. Instructor, on-campus class, Winter, 1993.

Brigham Young University Courses

OB 455: Leadership in Organizations. Lab Instructor, 1984.

OB 321: Organizational Behavior. Lab Instructor, 1983-1984.

PRESENTATIONS AT SCHOLARLY MEETINGS

Hill, E. J., Weiner, S. P., & Miller, B. C. (1995, November). The influence of mobile telework on aspects of work and family life. Accepted for presentation at the 57th annual conference of the National Council on Family Relations, Portland, Oregon.

Weiner, S. P. & Hill, E. J. (1995, June). Effective leadership in a telework environment: A training needs analysis. Accepted for presentation at the annual conference of the American Psychological Society, New York, New York.

Hill, E. J. (1995, May). Work and family in the virutal office: The influence of mobile telework on aspects of work life and family life. Presented at the annual meeting of the Utah Academy of Sciences, Arts and Letters, Utah State University, Logan, Utah.

Hill, E. J. (1995, April). The human side of mobility: The virtual office from an organizational behavior perspective. Presented at the Indiana School of Business Virtual Office Conference, Indiana University, Indianapolis, Indiana.

Hill, E. J. (1995, March). Family supportive paradigms at work and in the community. Keynote address of the annual graduate student conference of the Family Science Department at Brigham Young University, Provo, Utah.

Miller, B. C., Norton, M. C., Curtis, T., Hill, E. J., Schvaneveldt, P., & Young, M. H. (1994, February). The timing of sexual intercourse among adolescents: Family, peer, and other antecedents. Presented at the annual conference of the Society for Research on Adolescence, San Diego, California.

Hill, E. J., & Miller, B. C. (1993, November). Work and family in the 21st century: Trends and opportunities. Presented at the annual conference of the National Council on Family Relations, Baltimore, Maryland.

Hawkins, A., Christiansen, S., Pond-Sargent, K., & Hill, J. (1993, November). Fathers' involvement in child care as a context for adult development. Presented at the annual conference of the National Council on Family Relations, Baltimore, Maryland.

Young, M. H., Miller, B. C., Norton, M. C., & Hill, E. J. (1993, November). Mothers' and fathers' supportive behaviors and self-concept of sons and daughters over time. Presented at the annual conference of the National Council on Family Relations, Baltimore, Maryland.

Hill, E. J., Miller, B. C., Norton, M. C., & Young, M. H. (1993, May). Religiosity and adolescent sexual intercourse: Reciprocal effects. Presented at the annual conference of the Utah Council on Family Relations, Provo, Utah.

Hill, E. J., Miller B. C., Weiner, S. P., Wood, B. B., Spear, K. M., & Voydanoff, P. (1992, November). Who is responsible for what at home?: The division of responsibility for household labor as reported by corporate employees. Presented at the annual conference of the National Council on Family Relations, Orlando, Florida.

Hill, E. J. (1992, August). Creating a more flexible and a more productive workplace. Presented at the 100th annual convention of the American Psychological Association, Washington, D.C.

Hill, E. J. (1992, May). Children and fathers: Young children as agents of their father's socialization. Presented at the annual conference of the Utah Council on Family Relations, Logan, Utah.

Hill, E. J., & Rawson, K. T. (1992, May) What parents can do to facilitate the creation of constructively flexible gender schemata in their young children: A contextual approach to a genderful life. Presented at the annual conference of the Utah Council on Family Relations, Logan, Utah.

ACADEMIC RESEARCH PROJECTS

USU/Childtrends National Survey of Children (NSC) Project (1992-1995). Research assistant to Brent C. Miller for exploration of the antecedents to adolescent sexual intercourse. Examined longitudinal and reciprocal effects of religious and sexual activity.

CORPORATE PUBLICATIONS

Hill, E. J., & Weiner, S. P. (1994). Effective leadership in a mobile environment. Mt. Pleasant, NY: IBM.

Hill, E. J., & Weiner, S. P. (1994). The telework primer. Mt. Pleasant, NY: IBM.

Hill, E. J., Spear, L., Bachiochi, P., & Rogelberg, S. (1992). IBM flexible work leave of absence: A new way to work. Armonk, NY: IBM.

CORPORATE WORK AND FAMILY RESEARCH

IBM Western Area Mini Opinion Survey on Morale and Mobility (1994). Project director for this study which looks at the influence of mobile telework on aspects of work and family life. Online survey of 399 employees in seven western states.

IBM Managing in a Mobile Environment Project (1994). Project co-director to develop a leadership development program for managers of mobile workers. Developed "telefocus" group methodology to do focus groups over the telephone. Impact of personal/home life on work-at-home is a key consideration.

IBM Work and Life Issues Survey (1994). Project co-director to develop survey for exploring the work and personal/family needs of IBM employees.

National Study of the Changing Workforce (1992-1993). As an IBM representative to the project I worked with Ellen Galinsky of the Families and Work Institute to develop the survey instrument for this longitudinal study. Hour-long telephone interviews were conducted with 3718 workers about numerous aspects of the work life and their personal/family life. Preliminary report released to the public on Labor Day, 1993.

IBM Flexible Work Leave of Absence (FWLOA) Evaluation Study (1992). Principal investigator to evaluate this work/family program via structured interviews with program participants and their managers. As a result of our research the time limit for the program was lengthened from three years to five years, and the program was opened up to managers.

IBM Work and Life Issues Survey (1991). Participated in questionnaire development, administration, and analysis of a 450-data-point survey to take an in-depth look at the work and life issues occasioned by the changing demographics of the IBM population. Simple random sample survey (n=4800) of all IBM employees in the United States.

OTHER CORPORATE RESEARCH PROJECTS

IBM Western Area Mini-Opinion Survey (1994). Project manager for an online 29-question census survey of about 3000 IBM employees in the Western States. Questionnaire development, survey administration, report generation/distribution, data analysis, and regression analysis using SAS.

IBM-United States Headquarters Interim Opinion Survey (1994). Project manager for an online 23-question census survey of about 1500 IBM Headquarters employees located in Westchester County, New York and in remote sites. Questionnaire development, survey administration, report generation/distribution, data analysis, and executive presentation preparation.

IBM Area 11 Compensation and Recognition Survey (1993). Project manager for an on-line, 45-question survey of 1800 randomly selected IBM employees from the San Francisco area. Reports and analyses generated and distributed using SAS within two days of survey close.

IBM Field/HQ Opinion Survey (1993). Senior account representative for an on-line, 120-question survey of 30,000 field and HQ IBM employees in the United States. Results distributed on-line to 60+ trading areas within 24 hours of survey close. Manager reports distributed to 3000+ managers within three working days of survey close.

IBM Field Opinion Survey (1992). Personnel research advisor for an on-line, 120-question survey of 38,000 field IBM employees in the United States. Results distributed on-line to 60+ trading areas within two working days of survey close. Reports distributed to 4500+ managers within two weeks of survey close.

IBM Field Opinion Survey (1991). Personnel research advisor for an on-line, 106-question survey of 45,000 field IBM employees in the United States. Results distributed on-line to 65+ trading areas within two working days of survey close. Reports distributed to 5500+ managers within two weeks of survey close.

IBM United States Sample Opinion Survey (1991). Simple random sample (n=3000) of IBM's employees in the United States. Analyzed the data on empowerment and opportunity. Presented to IBM executives.

IBM Marketing and Services Field Opinion Survey (1990). Personnel applications advisor for an on-line, 115-question survey of 51,000 field IBM employees in the United States. Hard-copy results distributed to 7000+ managers within three weeks of close.

IBM Southwest Marketing Division Field Opinion Survey (1986). Personnel research associate for an on-line, 100-question survey of 12,000 field IBM employees in the Southwest United States. Hard-copy results distributed to 2000+ managers within four weeks of survey close.

HONORS AND AWARDS

Who's Who in the West, 1992-1993, 1994-1995, 1996-1997. Marquis.

Outstanding Graduate Student in the Field of Family Science. The Utah Council on Family Relations, Salt Lake City, 1994.

Phi Upsilon Omicron. National Honor Society for the College of Family Life, 1994.

IBM Achievement Award. Workforce Solutions: HR Research and Consulting, Mt. Pleasant, New York, 1993, 1994.

FHD Graduate Student Elected Representative. Department of Family and Human Development, Utah State University, Logan, Utah, 1992-1993.

Presidential Fellowship. Department of Family and Human Development, Utah State University, Logan, Utah, 1991-1992.

IBM Excellence Award. IBM-United States, White Plains, New York, 1991.

IBM Fund For Community Service. $1250 award to support my Scouting efforts in Troop 761, Mesa, Arizona, 1991.

Outstanding Young Americans. Included in 1989 volume.

IBM Headquarters Achievement Award. Southwest Marketing Division, Atlanta, Georgia, 1986.

Graduate Academic Scholarship. Full tuition, two years, Brigham Young University, Provo, Utah, 1982-1984.

IBM Regional Marketing Support Person of the Year. IBM Office Products Division, Region 16, (Pacific Northwest), 1981.

IBM Branch Office Marketing Support Person of the Year. IBM Office Products Division, Tacoma/Olympia, Washington, 1978, 1979, 1980.

Undergraduate Academic Scholarship. Full tuition, four years, Brigham Young University, Provo, Utah, 1971-1972; 1974-1977.

Varsity Track Letter. BYU Track Team, Provo, Utah, 1972.

Philharmonic Orchestra. BYU, String Bass, 1972.

COMMUNITY PRESENTATIONS AND PROJECTS

Creating an Optimistic Vision of the Family. Layton, Ut. March 19, 1995.

Family Friendly Business is Good Business: Meeting Family Needs in the Workplace. Presented at the World Conference of Cities, Local Government and Private Sector Parnters on Families, International Year of the Family Patron Cities Program, Salt Lake City, Utah, March 18, 1995.

Work and Family in the Virtual Office. Marriott School of Management, Provo, Utah, March 1, 1995; Department of Family Science, Brigham Young University, Provo, Utah, March 2, 1995; Illinois Institute of Technology, Chicago, Illinois, March 7, 1995.

Helping Your Children Achieve in the 21st Century. Parenting conference, Soda Springs, Idaho, November 16, 1994.

Telework: Benefits to Families of Working from Home. Utah State University Leadership Conference, Logan, Utah, November 3, 1994.

Marriage Enrichment Mini-Retreats. Directors and Lead Couple, Logan, Utah, October, 1994; August, 1993; April, 1993.

Ten Principles of Joyful Marriage. Logan, Utah, September 25, 1994, Rexburg, Idaho, September, 11, 1994.

Flexible Fathers in the 90's: Learning to balance work and family. Early Childhood Conference, Utah State University, Logan, Utah, July, 1994.

Child Development Parent's Meeting. Utah State University, May, 1994.

Teaching Children About Intimacy. Logan, Utah. March 6, 1994.

The Good Dad. Presented at the 6th annual Governor's Conference on Families, Salt Lake City, Utah, September, 1993.

Montessori School Parents Program. Logan Montessori School, 1993.

Meaningful Management of Family and Work. ALS Conference, Utah State University, October 6, 1992.

Marriage Enrichment Mini-Retreat. Directors and Lead Couple, Mesa, Arizona, Eight Retreats, 1989-1991.

COMMUNITY RADIO

Parenting. Utah State University Radio. June 21, 1994.

Marketplace. National Public Radio. Full-time Dad. December 24, 1990.

COMMUNITY/SERVICE PUBLICATIONS

National Magazine

Hill, J. (1991, June). Full-time Dad. Good Housekeeping, pp. 54-57.

Newsletter

Founder, publisher, and editor of DAD/S Newsletter. 19 issues published since 1989. Self-sustaining with about 150 involved fathers from more than 30 states.

AFFILIATIONS

National Council on Family Relations. 1990-present. *Men in Families* newsletter editor.

Utah Council on Family Relations. 1992-present.

American Psychological Association. 1992-present.

Families and Work Institute. 1992-present. IBM advisory board member for the National Study of the Changing Workforce.

Westhaven Institute. 1994-present. Advisory board member.

Association for Couples in Marriage Enrichment. 1989-present.

The Conference Board. 1993. Reviewer for *Work-Family Roundtable*.

Arizona Marriage and Family Enrichment, Inc. 1989-1992. Board of directors.

Dads and Daughters/Sons (DAD/S). 1988-present. Founder of national support network for involved fathers. Editor of quarterly newsletter (150+ men from 30+ states).