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INVESTIGATION OF
SELECTED FACTORS ON JOB SATISFACTION
AMONG TELECOMMUTERS

by

DAWN H. COVEYDUCK

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of

Master of Arts

Department of Psychology

Carleton University

Ottawa, Ontario

April 30, 1997

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"INVESTIGATION OF SELECTED
FACTORS ON JOB SATISFACTION
AMONG TELECOMMUTERS"

submitted by

DAWN H. COVEYDUCK

in partial fulfillment of the requirements for

the degree of Master of Arts

A handwritten signature in black ink, appearing to be 'B. M. R.', written over a horizontal line.

Thesis Supervisor

A handwritten signature in black ink, appearing to be 'B. M. R.', written over a horizontal line.

Chair, Department of Psychology

Carleton University

May 14, 1997

Abstract

Converging social, economic and technological forces are prompting massive decentralization of the workplace. The result is a growing trend towards telecommuting. Telecommuting here refers to a scenario where an organization has made a regular and formal arrangement for employees to work at home and receive full salary and benefits. An exploratory study was conducted with 307 telecommuting employees of an international telecommunications corporation. Respondents completed a questionnaire designed to bring order to debate in the literature (e.g., Shamir & Salomon, 1985; Letourneau, 1990) over the implications of work-at-home initiatives. Survey results suggested these telecommuters enjoyed relatively high job satisfaction, work autonomy, commitment to the organization and feelings of being supported by the organization. Only low to moderate levels of inter-role conflict were found. Hierarchical regression analysis identified autonomy and interrole conflict as predictors of feelings toward the organization. Implications of findings are discussed.

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Innovations in information and communication technologies are radically increasing the ability of organizations to distribute work processes. While decentralized organizational structures and managerial practices have existed for several decades, converging social, economic and technological forces are permitting massive decentralization of the workplace with implications for employees and employers who work with knowledge and information. The result is a growing trend towards telecommuting, or remote work (Di Martino and Wirth, 1990).

Telecommuting refers to a full- or part-time flexible work arrangement which essentially combines the use of telecommunication technologies with the concept of the flexible workplace. Debate in the literature exists over the quality of working life implications for the individual employee. On the one hand, studies indicate telecommuting can result in less stress for the individual worker with the elimination of the commute to the central office (Filipczak, 1992; Olson and Primps, 1984; Schiff, 1983).

Telecommuting has also been purported to contribute to both increases in employee satisfaction (Filipczak, 1992) and productivity levels (Piskurich, 1996) as a result of the flexible scheduling afforded by working at home. On the other hand, telecommuting can cause feelings of social isolation and marginalization, as well as draw concern about career development (Bonanno, 1993; Duxbury, Higgins, & Irving, 1987; Letourneau, 1990).

Interest in telecommuting is growing but actual levels appear to be increasing slowly. A wide ranging view of the status of telecommuting identifies the potential of telecommuting, as well as alerts the reader to potential drawbacks that must be addressed by organizations.

The theme in the literature has been the positive effect of the telecommuting arrangement on the productivity and job satisfaction of telecommuting participants. Shamir and Salomon (1986) and Olson (1989) viewed such increases as indicators of improved "quality of working life".

Shamir & Salomon (1985) define the "quality of working life" as the individual's job-related well-being and the extent to which his or her work experience is rewarding, fulfilling, and devoid of stress and other negative personal consequences. But quality of working life also refers to a group of methods for making the work environment both more productive and satisfying for workers. Telecommuting may be interpreted as a method of enhancing quality of working life. As a variable, quality of working life is measured by assessing an individual's reaction to work or the personal consequences of the work experience (Nadler & Lawler, 1983). The work attitudes that have been studied most frequently include job satisfaction, work and organizational commitment, work role and job context (Cook, Hepworth, Warr and Wall, 1981; Loscocco & Roschelle, 1991).

Having said that, an exploratory survey study was conducted with work-at-home employees of an international telecommunications corporation spanning Canada, the United States and United Kingdom. The purpose of the study is to bring order to current debate regarding the viability of work-at-home initiatives. The telecommuting literature presents a number of areas of contention which include the impact of telecommuting on the individual's job satisfaction, promotion opportunities, organizational commitment and work-family conflict. Telecommuting employees received a survey package to assess organizational variables which included job satisfaction and perceived opportunities for

promotion, organizational commitment, perceived organizational support, work autonomy, and inter-role conflict. The study evaluated at what level these telecommuters are functioning on each of the variables. It is presumed by stakeholders in the company's telecommuting program that outcomes generally valued by the employee, such as satisfaction with work, would benefit the organization through increased effectiveness and cooperation on the part of the telecommuting employee. The survey study here attempted to model job satisfaction amongst telecommuters and identify which organizational variables serve to predict job satisfaction within the sample.

A key question is whether individuals perceive telecommuting as cost-beneficial to themselves and hence whether they would be willing to substitute full-time telecommuting for travel to work. Ramsower (1985) argued that the trend to telecommuting is the result of a greater value being placed upon the quality of working life. This is an untested assumption based on the idea that providing an alternative work arrangement like telecommuting may promote greater motivation and job satisfaction as a result of the ability to work self-determined hours at a self-determined pace and location. Shamir and Salomon (1985) however, concluded from their review that the work-at-home arrangement may not always lead to improvements in the quality of working life. Relevant variables have been selected from a review of the literature to determine their effect on reported satisfaction.

In order to introduce this study, an overview of what telecommuting is, its nature and prevalence will be discussed. A review of the literature will follow, exemplifying major issues experienced by individuals who are working from a home office.

Methodological considerations will be presented, including an explicit outline of hypotheses.

Telecommuting Defined

There are numerous definitions of telecommuting (See e.g., Clutterbuck, 1985; DiMartino & Wirth, 1990; Gray, 1993; Nilles, 1976; Olson, 1983) and a variety of terms are used in the literature to convey the 'working at a distance' phenomenon. For example, telecommuting is also referred to as teleworking, remote working, flexible working, home working and flexiplace. All such terms are used more or less interchangeably to refer to a full- or part-time flexible work arrangement where an employee works at a distance from a central office, using electronic communications technology linked to the employer and co-workers.

Telecommuting, then, implies the substitution of telecommunications for physical travel to work. The work is brought to the individual rather than vice versa (Cukier & Truuvert, 1988; Katz, 1987; Olson & Primps, 1984). Boris and Daniels (1989) and Olson (1983) reported the home to be the most common alternative worksite. Other sites include neighbourhood work centres, satellite centres, a combination of work-at-home and on-site in an office, and mobile working (e.g., Fothergill, 1994; Smart Valley, Inc., 1996).

Clearly, a common definition is needed to capture the broad spectrum of situations encompassed by telecommuting. DiMartino and Wirth (1990) reported an analysis of 50 definitions of telework by de Beer and Blanc (1985) that showed all definitions rely on three main concepts: organization, location and technology. For the purpose of this paper telecommuting refers to work carried out in the home, remote from the central office. The

individual has minimal personal contact with co-workers and instead relies mainly upon information and communication technologies to communicate with employer and co-workers.

Consequently, there exist several categories of telecommuters as reviewed in Olson (1984). The least common type of telecommuting is regular work at home for full-time employees. The research here is concerned with this phenomenon only, and it is the focus of the remainder of the paper. "Regular work at home for full-time employees" describes the scenario where an organization makes a regular and formal arrangement for employees to work at home from 1 to 5 days a week and receive a full salary and benefits. Although this option is uncommon, there has been considerable speculation in the literature about the impact of home-based work on home and work life (e.g., Dunkin, 1995; Fothergill, 1994; Gurstein, 1991; Ramsower, 1985; Wallace, 1995). Unfortunately, as Hartman, Stoner and Arora (1991) pointed out, most empirically-based findings are arrived at from studies that fail to distinguish between those who are self-employed and those who are organizationally employed.

Extent of Telecommuting

The growing acceptance of telecommuting is related to a variety of business and public policy reasons. In particular it is being widely discussed and implemented as a mitigation strategy against congestion and air pollution. Empirical research (Kitamura, Nilles, Fleming & Conroy, 1990; Sampath, Saxena & Mokhtarian, 1991) have claimed that travel and transport emissions are reduced for those who telecommute. Mokhtarian & Salomon (1994) caution that research to date is based on small samples of early

adoptors. Indeed, data on current levels of telecommuters are typically based on small samples and a lack of consensus on how telecommuting is defined has lead to widely disparate estimates.

However, there have been a number of attempts to quantify the growth of telecommuting as an alternative work arrangement. Brehl (1994) estimated that 500,000 Canadians were telecommuting part- or full-time. A report published in Canada and the World Backgrounder titled "Flexible Workstyles" (1995) predicted that by the turn of the century, 40% of work will be done in home offices. It is important to note that precise numbers are difficult to quantify given the variety of definitions of telecommuting among different researchers measuring varying elements. For example, Popcorn (1991) makes the point that some research (U.S.) reports that while 16 million corporate employees are telecommuting, only 3.4 million have formal arrangements with their employers. Clearly, this is not a homogeneous population of telecommuters. So when Home Office Computing magazine (1993) reported that "there were 6.6 million telecommuters in the U.S., 20% more than the year before", scrutiny is required. Researchers must make explicit the criteria and definition used.

The Conference Board of Canada surveyed 132 Canadian organizations and found that work-at-home arrangements were offered by approximately 10.5% (Paris, 1989). Telecommuting arrangements were more common in the private sector than the public sector and prevalent in both manufacturing and non-manufacturing industries. Paris (1989) remarked that telecommuting was more common in larger organizations with a greater number of employees and with significantly higher revenues and asset values. In

addition, the International Labour Office (reported in DiMartino and Wirth, 1990) found that 20.8% of 250 large Canadian organizations surveyed had implemented telecommuting programmes and 42% were preparing for or considering implementing similar work arrangements.

Finally, Gordon (1988) concluded that while telecommuting was used in the past predominantly for clerical jobs, there is a trend toward using it in professional positions. Research also indicates men are somewhat more likely than women to telecommute, and overall, teleworkers are well-educated (Fothergill, 1994). The reader is referred to the Handy & Mokhtarian (1996) paper which explored growth rates in telecommuting prevalence according to type of telecommuting. They reviewed approaches that require new data and knowledge about telecommuting and the characteristics of telecommuters in contrast to non-telecommuters, that should produce more reliable forecasts.

It is noteworthy to stress that assessment of current levels of telecommuting and subsequent forecasting of future levels can be facilitated by analyzing telecommuting characteristics. Handy & Mokhtarian (1996) suggested correlating telecommuter characteristics with the choice to telecommute to aid in forecasting. For example, Mannering & Mokhtarian (1995) found both the presence of small children (irrespective of gender), and telecommuter gender were important in explaining the choice to telecommute.

However, the crux of this paper is to identify variables which predict job satisfaction amongst telecommuters. It seems that while many studies have assessed demographic characteristics of telecommuters (DiMartino & Wirth, 1989; Fothergill,

1994; Mokhtarian & Salomon, 1994; Olson, 1989), the purpose of these studies was to document the extent of telecommuting. Alternatively, studies reporting demographic characteristics have served to profile the telecommuting population to yield a "telecommuting personality" (Nilles, 1994) rather than to serve as explanatory variables for research. Attempts to directly correlate demographic factors with telecommuting satisfaction have been limited. Hartman, Stoner & Arora (1991) attributed this finding to the frequent research focus in the literature on pilot programs that are comprised of highly homogeneous participants. This is not surprising, given that work-at-home initiatives are still a new and growing phenomenon.

Literature Review

The Case For Telecommuting

An important argument for alternative work arrangements like telecommuting may be taken from Pfeffer and Baron's (1988) theory of work. Pfeffer and Baron argued that the traditional organizational theory of work is rooted in three fundamental notions: administrative control over the employee by the organization, the idealized goal of the development of long-term relationships between the organization and the employee, and the physical proximity between the organization and the worker. Pfeffer and Baron contend that changes in society are forcing a re-examination of the nature of work in terms of externalization (e.g., work at home). Clearly, telecommuting challenges the traditional organizational theory of work. Decentralization of the workplace is being stimulated by changing workforce demography, the diminishing role of physical proximity for work monitoring, the changing social norms about work and organizational attachments.

advancements in technology, and the changing economics of the work organization.

These fundamental forces suggest the drive towards telecommuting arrangements will continue to grow. It is essential that the implications of telecommuting for working conditions and the organization of corporations is fully analyzed. For example, telecommuting programmes must struggle to achieve a balance between the centralization and decentralization of work. Other dicotomous areas of contention involve the reduction of commuting as against fragmentation of the workforce; company cost savings versus fading corporate identity; work time against family and leisure time for the telecommuter; and the creation of work opportunities for the disabled and for women as against possible marginalization of these categories of workers.

Consequently, several dominant themes emerge when evaluating the literature on home office work. While futurists like Alvin Toffler (1980) speculated that rapid advancements in technology would lead to the eventual demise of the office environment, theorists of the 'electronic cottage' had not anticipated that technological changes and the social changes would not necessarily coincide. The complexity of the telecommuting population was not incorporated into their outlook of home work. This explains why the telecommuting arrangement has met with some resistance (Olson and Primps, 1984; 1988). Debates surrounding the notion of telecommuting have been polarized. For some it is a symbol of liberation (Venkatesh & Vitalari, 1992) while for others it serves as a symbol of isolation (Letourneau, 1990) and potential exploitation (Huws, Korte & Robinson, 1990). Discussion will turn now to empirical data to set a framework within which telecommuting can be analyzed.

Shamir and Salomon (1985) examined the work-at-home arrangement in light of theories of organizational behaviour and the quality of working life. The term "quality of working life" refers to the employee's job-related well-being and the extent to which the individual's work experience is rewarding and devoid of stress and other negative personal consequences. Following a review of the telecommuting literature, Shamir and Salomon concluded "the work-at-home arrangement warrants suspicion from the quality of working life viewpoint". For example, they noted it is often assumed an employee's level of autonomy is likely to be increased by the shift from the office to the home. Despite less supervision and greater flexibility in the choice of work hours and patterns, childcare responsibilities can result in a demanding home environment that offers less personal freedom than the workplace. Only under certain conditions would telecommuting lead to improvements in the quality of working life.

However, Ramsower (1985) reported that one option for improving quality of working life is providing alternative work arrangements in both space and time. Recall telecommuting provides an individual with the opportunity to work self-determined hours at his / her home office. The combination of providing a more satisfactory work environment (i.e., the home) for the employee and greater flexibility in work hours then, would likely result in greater job satisfaction. Telecommuting, then, may be seen as a job enrichment strategy, whether formal or informal.

In considering all implications of the telecommuting option, a basic framework may be devised to help understand the forces shaping the development of work-at-home arrangements. Rather than discussing telecommuting strictly in terms of advantages and

disadvantages as most reviews have done, the framework for this paper consists of three headings: facilitators, drivers, and inhibitors. "Facilitators" represent the advanced technology available to enable work at home to take place. Facilitators however, do not guarantee telecommuting will take place. Other factors must exist and are termed drivers. "Drivers" represent the potential benefits of a telecommuting initiative for the individual, the company and society as a whole. Drivers then, initiate the desire to make telecommuting more prevalent. "Inhibitors" represent the negative consequences of telecommuting which work against the widespread adoption of telecommuting. Recognition of the range of inhibitors may help increase knowledge and awareness of how to a) assist people's learning on how to succeed as a telecommuter easily and quickly, and b) change elements of the work arrangement to help make acceptance of telecommuting a more positive experience. Each of these points will be elaborated upon with relevant literature explicating findings to-date.

Facilitators

New technologies and procedures are linking the at-home worker with the office in an affordable way. Technology provides the means by which telecommuters communicate with and stay linked to the office, and often provides the means by which telecommuters get their work done while at home. The relevance of time and place to work is reduced with wideband services (like ISDN) to the home, with collaborative groupware, improved remote connectivity, as well as voice services that integrate the telecommuter with colleagues and employer. The availability and adequacy of these technologies "facilitate" the development of a telecommuting program.

A study by Igarria and Nachman (1990) presented data from 104 end users in six large companies to investigate factors that are considered important for the success of end user computing and related information systems. "End users" in this case, refers to the individuals who were accessing the computers, data and applications. Igarria & Nachman (1990) found significant positive relationships exist between user satisfaction and hardware/software accessibility and availability. With the proper mechanisms in place then, employees will be more apt to work-at-home and to report satisfaction with the arrangement. After all, Wallace (1995) promoted telecommuting, suggesting the use of technology as a way to form and maintain professional and personal ties. Thus the availability of hardware/ software and networking connectivity infrastructure is the prerequisite to any telecommuting initiative.

Drivers

While facilitators make telecommuting possible, drivers make the move to the home desirable. Key drivers for telecommuting include the desire to achieve productivity gains for competitive advantage, to reduce company costs (or avoid increased costs), to attract or retain staff, to comply with governmental mandates such as air quality control through reduced traffic congestion, and to enhance employee satisfaction and quality of working life.

There is evidence across a number of studies suggesting productivity output gains result from telecommuting. Piskurich (1996) reported that telecommuters may outperform in-office workers by as much as 16%. Such gains may be attributable to employees being able to decide appropriate work times, as well as enjoying fewer

interruptions from telephones, meetings and colleagues. Filipczak (1992), Olson and Primps (1984) and Schiff (1983) all found telecommuters generally reported an overall feeling of being more productive with fewer interruptions. A report by Statistics Canada (1995) presented findings from a pilot study of telecommuting that claimed increased productivity as measured by telecommuters' becoming better able to meet deadlines. As well, Alaton (1996) reported that IBM Canada Ltd. had a telecommuting programme in place for four years. Its success has to do with the increased level of productivity which has resulted in 20% of all sales and service being conducted through telework today.

For corporations, teleworking is more than an altruistic work practice for its employees. Telecommuting may tap new labour sources among homebound and those needing flexibility, as well as possibly creating employment in rural areas (Huws et al, 1990). Telecommuting may also increase retention rates of employees with valuable skills whom companies might otherwise lose due to family obligations or relocation (Monas, 1994; Piskurich, 1996). Another tangible benefit is the savings in office costs (Boris and Daniels, 1989; Gray, Hodson, & Gordon, 1993).

In regards to environmental regulations set by the government, work-at-home may imply a reduction in the number of automobiles on the road. The decrease in congestion allows conservation of energy and the reduction of automobile-related pollution (Cunningham and Porter, 1992; Nilles, 1994; Piskurich, 1996). Attempts to quantify these and other impacts are found in Nilles, Carlson, Gray and Hanneman, (1976) and Oberman (1981).

Another driver for telecommuting is the desire to combine domestic, leisure and

child care activities with work (Fothergill, 1994). An important issue for many working women concerns the interface between work and family life. Fothergill reported that while women are taking on the role of wage earner, women tend to have primary responsibility for children and because of this, are more likely to work around school times or when children are asleep. Quite possibly men may be better able to telecommute as, according to Fothergill, men do not bear major responsibility for children. However, Coates (1991) reported that men are beginning to take on more of the responsibilities of the family. As well, Mannering (1995) identified the key variable explaining the frequency of telecommuting from home in her U.S. study, was the presence of small children in the household, irrespective of gender. While gender differences are not the main focus in this study (given the sample is predominantly male), analyses will ascertain the existence of potential gender differences. However, the primary focus will be in measuring telecommuters' ability to establish a boundary between work and family life. Monas (1994) discussed problems here for many work-at-home employees.

Perhaps the biggest driver for telecommuting are the prospects of enhancing job satisfaction. The literature identified key contributors to job satisfaction is less stress with the elimination of the commute to the central office, higher energy levels on the job, and increased autonomy with the ability to decide the ideal time for work (Filipczak, 1992; Olson and Primps, 1984; and Schiff, 1983).

The importance of autonomy as an organizational variable may be noted in a variety of organizational domains. Examples include career development (Schein, 1978); organizational climate (Schnake, 1983); job design (Hackman and Oldman, 1976); and

occupational stress (Daniels and Guppy, 1994). Cummings and Molloy (1977) reviewed the quality of worklife and productivity improvement experiments in the literature and argued that "...the most frequently changed of all organizational variables included in the experiments was the degree of autonomy or discretion that employees have over their work" (p.6). As well, Loher and Noe (1985) found autonomy to be more highly related to job satisfaction than any of the other job dimensions. (See also, Spector, 1986). For present purposes, it is important that telecommuting may lead to increased autonomy which in turn can enhance the quality of working life and overall job satisfaction (Shamir & Salomon, 1986). Afterall, the desire for autonomy seems to be a common motivation for telecommuting (Olson, 1987, 1985, 1983).

Other drivers for telecommuting may be derived from articles which review the case for and against work-at-home (e.g., Berner, 1994; Globe and Mail, 1996; Huws et al., 1990; Monas, 1990; Piskurich, 1996).

Inhibitors

The case so far has been that there are many forces making telecommuting possible and desirable. However, certain inhibitors work against the widespread adoption of telecommuting. Strong social values that attract the worker to the office may form the basis of resistance to telecommuting. For some, the social contact of the work environment is a crucial element to the enjoyment of work. It is no surprise then, to find that social isolation is cited as the biggest problem at the individual level (Duxbury, Higgins, & Irving, 1987; Elling, 1985; Letourneau, 1990; Monas, 1994; Schiff, 1983). There is the deprivation of direct, personal interactions which provide informal, on-the-job

training and knowledge of the organizational culture (Olson, 1985; Shamir & Salomon, 1985). Employees are said to miss the sense of belonging gained by working at the central office. The sense of "officelessness" at the main site may affect the morale of the telecommuter and in turn, challenge the loyalty and commitment of the telecommuter to the company (Handy & Mokhtarian, 1996).

Indeed, an important facet of the employment relationship is the impact of physical separation on commitment to the organization. Mowday, Steers & Porter (1979) defined [organizational] commitment as the relative strength of an individual's identification with and involvement in a particular organization. Mowday et al., (1979) added that commitment is characterized by a strong belief in and acceptance of the organization's goals and values, a willingness to exert extra effort on behalf of the organization, and a strong desire to maintain membership in the organization (p226). In interviews with at-home employees in high-technology firms, Olson & Primps (1984) found relatively low commitment to the employees' organization but strong commitment to their particular project group. In those cases where the employee felt that his or her commitment to the organization increased, it was because the employee attributed the organization with the opportunity to create work arrangements to suit personal preferences.

Another danger of telecommuting is a potential loss of promotion opportunities. Reduced social interaction may increase telecommuters' concerns about career development. Bonanno (1993) and DiMartino and Wirth (1990) stated that those working at home may fear being passed over for a promotion, especially from missing out on the informal information network. Employees may also suffer from less feedback from

supervisors and peers on crucial issues.

Indeed, in 1984, Olson and Primps noted that telecommuting workers from 14 companies that had implemented formal pilot programs were likely to believe that working from home would adversely affect their chances for promotion. Possibly, the increase in prevalence of telecommuting programs since Olson and Primp's earlier study has been based on less negative views of the impact of telecommuting on promotion. Where work-at-home is common and voluntary, the increase in autonomy may be more important than promotional opportunities. Advanced technology may also better provide numerous modes for communication between the telecommuter and the employer.

Hartman et al. (1991) remarked that telecommuters' satisfaction with the performance evaluation system in place is likely to affect their perception of their work situation. Performance evaluation results play a key role when managers make promotion decisions. Research on telecommuting has generally ignored the role of the performance evaluation system and the telecommuters' acceptance of these systems in affecting job satisfaction.

Consequently, the one social force which is and will continue to be a major barrier to telework is management style (Olson, 1988). Having an employee work at home requires that management develop trust and confidence in the employee's abilities. Olson stated that most managers are reluctant to give up authority, believing they can only manage those employees who are physically present. Piskurich (1996) noted that the disadvantages of telecommuting for managers is a reduction in direct control of employees and subsequent fewer face-to-face supervisory meetings.

Indeed, efficiency at one time, was determined by whether an employee was at work or not (Monas, 1994). Employers today are being forced to move away from a system of judging people on their input to one which measures their output. This means evaluating employees on the quality of the work produced on a timely basis. Eisenberger, Fasolo, and Davis-LaMastro (1990) reported a positive relationship between employees' perceptions of being valued and supported by their organization with employees' conscientiousness in carrying out their job responsibilities. Perceived organizational support (POS) also resulted in the promotion of innovation in work projects in the absence of anticipated reward or recognition. Hutchinson and Sowa (1986) also reported that perceived organizational support increases the employees' affective attachment to the organization which in turn influences the amount of work effort shown by the employee

Discussion will turn now to explicit statements of hypotheses that have been derived from the literature presented.

Research Objectives

A survey study was conducted with telecommuters of a major telecommunications corporation to determine whether individuals perceive telecommuting as cost-beneficial to themselves. An attempt was made to model job satisfaction within the sample by identifying which variable(s) best predict telecommuters' positive perceptions of their job

Drawing from the literature presented, certain paths of inquiry appeared warranted. Relevant variables had been selected to examine the following research propositions:

1. Shamir & Salomon (1985) concluded from their review of the literature that work-

at-home initiatives warrant suspicion from a quality of working life viewpoint. For example, a telecommuter's level of autonomy may actually diminish when work responsibilities are shifted to the home because of added responsibilities in childcare. However, Ramsower (1985) suggested that alternative work arrangements in both space and time leads to a more satisfactory work environment (the home) and flexibility in work hours. The result is greater job satisfaction for the telecommuting employee.

Hence, job satisfaction was measured to determine to what extent the work-at-home arrangement differentially impacts telecommuters' perceptions of their overall job satisfaction. The telecommuters sampled in this study had volunteered to shift their job responsibilities from the office to the home. For that reason, it was hypothesized that telecommuters would report high job satisfaction.

2. The literature identified autonomy as a key contributor to job satisfaction amongst telecommuters, since telecommuters gain the ability to decide the ideal time for work (Filipczak, 1992; Olson & Primps, 1984; & Schiff, 1983). In fact, Loher & Noe (1985); and Olson (1988; 1983) reported the desire for autonomy to be more highly related to job satisfaction than any of the other dimensions measured in their studies. Additionally, Cummings & Molloy (1977) had reviewed the quality of working life and productivity improvement experiments and found autonomy to be the most frequently changed of all organizational variables.

Thus, level of work autonomy was measured to determine to what extent telecommuters are able to decide the ideal time for work, the procedures and methods they will use, as well as the criteria for which their work is subsequently evaluated.

Additionally, it was determined to what extent autonomy predicts job satisfaction in the sample. The central hypothesis of this paper was that autonomy would be the strongest predictor of job satisfaction because of the flexibility in both work scheduling and location inherent in telecommuting arrangements. Again, since telecommuting arrangements in the organization being studied are offered strictly on a volunteer basis, it was presumed increased autonomy is the prime motivator for the individual who chose to work at home.

3. Fothergill (1994) reported a major driver for telecommuting is the desire to combine domestic, leisure and childcare activities with work. Mannering (1995) also identified the key variable explaining the frequency of telecommuting was the presence of small children in the household, irrespective of gender. Perhaps the opportunities to combine work-leisure-family life enhances job satisfaction. Monas (1994) and Shamir & Salomon (1985) however, discussed problems here for telecommuters with the difficulties in delineating work time from family time. Role responsibilities often increase and result in higher stress levels. The extent of inter-role conflict was explored. The majority of telecommuters in this study are married and have children. It was hypothesized that inter-role conflict, as an independent variable, would predict job satisfaction. Presumably, low work-family conflict would result in positive outcomes in job satisfaction.

4. Employees are said to miss the sense of belonging gained by working at the central office. The sense of 'officelessness' at the main site may affect the morale of the telecommuter and in turn challenge the loyalty and commitment of the telecommuter to the company (Handy & Mokhtarian, 1996). Commitment refers to an emotional identification with the organization characterized by acceptance of the organization's goals

and values. There appear to be mixed feelings in the literature concerning telecommuters' commitment (or lack of) to the organization.

However, telecommuting studies which recount the benefits of telecommuting consistently report "retention of employees" as a benefit to employers offering work-at-home arrangements (Glory, 1994; Piskurich, 1996). It was determined to what extent telecommuters are committed to the organization. Presumably those working the majority of the work week at the central office will be more highly committed than full-time telecommuters, since the organization's goals and values may be more easily assimilated into one's identity. To the extent that telecommuters felt their commitment to the organization had increased, it may be that employees credited the organization with the creation of alternative work arrangements to suit personal preferences.

5. A concept related to organizational commitment is 'perceived organizational support'. Perceived organizational support is based on the assumption that being valued by the organization encourages the incorporation of organizational membership into the employee's self identity (Eisenberger, Huntington, Hutchison & Sowa, 1986). The literature (Eisenberger, Fasolo, & Davis - LaMastro, 1990) reported a positive relationship between employees' perceptions of being valued and supported by their organization with conscientiousness in carrying out their job responsibilities. It is presumed that feelings of being supported would be highly dependant upon management style and support of the employee working at home. While management style was not measured in this study, perceived organizational support was assessed to determine to what extent the amount of support varies amongst telecommuters.

6. Bonanno (1993) and DiMartino & Wirth (1990) discussed how reduced social interaction may increase telecommuters' concerns about career development and draw fear for being passed over for a promotion. This paper, however, assumed an alternative position. The majority of telecommuters in this study were in their late thirties and had been with the company for several years. Since studies suggested the move towards working at home is initiated by the prospect of combining work, leisure and family responsibilities (Fothergill, 1994; Mannering, 1995), it was hypothesized that concerns about promotional opportunities would not be a focal complaint for telecommuters. That is, a tradeoff may have been made on the part of the employee. The achievement of increased autonomy and discretionary time was expected to be an important contributor to overall satisfaction.

7. While a number of studies have assessed the demographic characteristics of telecommuters, no predictable inferences have been made regarding demographic characteristics on telecommuters' job satisfaction. However, one study was found in the literature that attempted to link sex, educational level, marital status and age with telecommuting productivity and satisfaction (Hartman, Stoner & Arora, 1991). No significant relationships were found between demographic characteristics and telecommuting productivity and satisfaction. Research here approached these issues from an exploratory perspective. The relationship between demographic variables gender, marital status, age, tenure with the organization, and total telecommuting time, against job satisfaction, as a dependant variable was examined.

Method

Subjects

Full-time employees formally enrolled in the work-at-home program of an international telecommunications company served as subjects for this study. Selection criteria restricted study recruitment to those working at home a minimum of three months up to the total duration of the program's operation (1.5 years). It is felt that the first three months constitute readjustment for the employee in terms of home office setup and the establishment of remote connectivity. The average number of months subjects had been telecommuting was eight months, with a range from three to eighteen months in total. While enrolment in the company telecommuting program is largely voluntary, managers screen their employees to ensure a match between person and environment. It is important to note, however, that the criteria for which an employee might be evaluated is not known and likely varies across managers.

A total of 320 of 900 telecommuting employees completed surveys, yielding a response rate of 36%. Data from only 307 surveys could be utilized.

Subjects were required to check the number of hours worked at home versus at the main office to determine whether an individual fit the criteria used to identify a telecommuter from a non-telecommuter. Three groups emerged. Table 2 indicates full-time telecommuters (n=191) represented employees who work at home 4 - 5 days per week. Part-time telecommuters (n=91) work at home 1 to 2 days per week. Non-telecommuters (n=25) have basic access to the main office for off-hours work only.

The sample was approximately normally distributed for age, with a mean age of 35

years and a range of 20 to 50+ years. Similarly, the length of service with the organization (tenure) was normally distributed with the mean length of service being 7 years and a range of 1 to 15+ years.

Procedure

Surveys were distributed via internal mail to all employees (n=900) enrolled in the company telecommuting program. Telephone numbers of the researchers involved, including the program managers, were given in the instruction section of the survey in case subjects had any questions. Subjects were assured confidentiality of all responses and were reminded that participation was voluntary. The written introduction is found in Appendix B. Survey items are found in Appendix A.

Measures

All measures employed in this study are described below. It must be noted that scales listed in Appendix A, augmented a larger survey distributed by the program director. Program questions are proprietary to the company. The entire survey was either filled out by respondents electronically or had been printed off by the respondent and returned hard copy.

Job Satisfaction. Job satisfaction was assessed using a sub-scale from the Job Descriptive Index (Appendix A: Smith, Kendall, & Hulin, 1969). The scale is the most frequently used measure of satisfaction and is defined by Smith et al. (1969) as the feelings or attitude an employee has about his or her job. This subscale contains 17 word descriptors of the job experience and has three response choices "yes", "?" for uncertain and "no". The scores for the questions are 2, 1, and 0 respectively. Negatively worded

items are reverse scored. The JDI is internally reliable, with split-half internal consistencies of .80 and higher.

Opportunities for Promotion. Opportunities for promotion was measured using a sub-scale from the Job Descriptive Index (Appendix A: Smith et al., 1969). The subscale contains 9 short phrases which describe both negative and positive descriptions of promotion opportunities. Respondents were instructed to indicate whether each phrase applies to his or her perceived opportunities for promotion. Three response choices are available, "yes", "?" for uncertain, and "no". The scores for the questions are 2, 1, and 0 respectively. Negatively worded items are reverse scored. The subscale has been shown to be internally consistent with a coefficient alpha of .79.

Perceived Organizational Support. Perceived organizational support was assessed using the Survey of Perceived Organizational Support (Appendix A: Eisenberger, Huntington, Hutchison, & Sowa, 1986). The survey measures the extent to which employees perceive that the organization values their contribution and cares about their well-being. The survey is comprised of 16 statements concerning the organization's valuation of the employee's well-being. Respondents indicate the extent of their agreement with each item on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Reliability coefficients (Cronbach's alpha) and item analyses calculated by the Eisenberger et al. (1986) indicate inter-item reliability of .93.

Inter-Role Conflict. Inter-role conflict was measured using the Inter-role Conflict Scale (Appendix A: Kopelman, Greenhaus & Connelly, 1983). The scale measures the extent to which a person is experiencing work-related pressures that are incompatible with

pressures arising within family-related roles. There are eight statements in which respondents indicate on a 5-point Likert scale the extent of their agreement (1 = strongly disagree, 5 = strongly agree). Construct validity has been demonstrated by Kopelman et al. (1983) and a Cronbach's coefficient alpha of .87 is reported in the literature.

Affective Organizational Commitment. Affective organizational commitment was measured using the Affective Organizational Commitment scale (Appendix A: Meyer and Allen, 1984). The scale contains eight items that measure the degree of emotional identification a respondent has with the organization. Commitment is typically characterized by acceptance of the organization's goals and values. Response format utilizes a 7-point Likert-type response format (1 = strongly disagree, 7 = strongly agree). This measure has been shown to have acceptable reliability (coefficient alpha = .87).

Autonomy. Autonomy was assessed using the Work Autonomy scale (Appendix A: Breugh, 1985; 1989; Breugh & Becker, 1987). Three facets of autonomy are encompassed in this scale and in turn, form three subscales. Work Method autonomy refers to the degree of discretion or choice individuals have regarding the procedures they utilize in going about their work. Work scheduling autonomy is the extent to which workers feel they can control the sequencing or timing of their work activities. Work criteria autonomy refers to the degree to which workers have the ability to modify or choose the criteria used for evaluating their performance. Each subscale contains three items, yielding nine items in total. Responses are made on a 7-point continuum from 1 = strongly disagree to 7 = strongly agree. Construct validity and test-retest reliability has been shown across Breugh (1985), Breugh & Becker, (1987) and Breugh (1989)

studies. Internal consistency coefficients reported for method, scheduling and criteria subscales are .97, .97 and .96 respectively (Breugh & Becker, 1987).

Results

Descriptive Statistics

Demographic characteristics pertinent to the sample are presented in Table 1. Respondents were sometimes selective with regards to which demographic items were responded to. Since the majority of respondents included an employee number, much of the information could be retrieved from the company database. Females were more likely than males not to respond to age, gender and marital status questions.

Table 1 shows that the ratio of males to females was almost 7:3. This ratio is representative of the male to female ratio existent in the rest of the company. On average, respondents were between 31 - 40 years of age. 80.8% of the sample were married or living with a significant other. Of 67% of respondents indicating they have dependant children, only 4% reported the presence of children home during the day.

Table 2 shows descriptive statistics related to employment and telecommuting categories. On average, respondents have been working with the company between 6 to 10 years, and have been working at home between 7 to 9 months in total. Full-time telecommuters were n=191 respondents, defined as employees who worked at home 4 to 5 days per week. Typically, these employees only visited the main office for meetings or to access photocopiers. Of the 191 full-time telecommuters, 78% had completely given up their desk space at the main office. Part-time telecommuters were defined as employees who worked at home 1 to 2 days per week. These employees had all retained desk space at the main office. The remaining groups of employees had basic remote access to the main office for off-hours work only. These employees constitute a non-

Table 1

Demographic Characteristics of the Sample

<u>Sex</u>	Males	= 212 (69.1%)
	Females	= 95 (30.9%)
<u>Age</u>	<30 yrs	= 50 (16.3%)
	31 - 40 yrs	= 124 (40.4%)
	41 - 50 yrs	= 87 (28.3%)
	Over 50 yrs	= 34 (11.1%)
	No Response	= 12 (3.9%)
<u>Marital Status</u>	Married	= 248 (80.8%)
	Single	= 54 (17.6%)
	No Response	= 5 (1.6%)

Table 2

Employment Characteristics and Telecommuting Categories of the Sample

<u>Tenure with Employer</u>	Mean	= 6 - 10 years (24.4%)
	1 - 5 years	= 77 (25.1%)
	11 - 15 years	= 82 (26.7%)
	15+ years	= 50 (16.3%)
	No Response	= 23 (7.5%)
 <u>Months Telecommuting</u>	 Mean	 = 7 - 9 months (18.9%)
	3 - 6 months	= 96 (31.3%)
	10 -12 months	= 54 (17.6%)
	12+ months	= 97 (31.6%)
	No Response	= 2 (.7%)
 <u>Telecommuting Category</u>	 Full-time	 = 191 (62.2%)
	Part-time	= 91 (29.3%)
	Non-	= 25 (8.1%)

Table 3

The Number and Percentage of Total Respondents in each of the Occupational Categories Represented by Telecommuters

Occupational Category	Total	
	n	%
Software Design	56	18.2
Software Support	22	7.2
Software Development / Testing	18	5.9
Network Analyst	7	2.3
Sales and Marketing	43	14
Training and Documentation	9	2.9
Hardware Support and Design	9	2.9
Technical Support	24	7.8
Manager	50	16.3
Finance	7	2.3
Human Resources	10	3.3
Other ^a	51	16.6
No Response	1	.3
Total	307	100

^aemployees did not specify occupational category

telecommuting group.

Table 3 shows the number and percentage of respondents in each of the reported occupational categories.

Data Screening

A total of 320 respondents returned completed surveys electronically. Data from 13 respondents could not be utilized. Seven surveys contained responses on only demographic questions while answers for the remaining six surveys were illegible. Thus, a total of 307 surveys were analyzed. Prior to analysis, both descriptive data and data contained in each scale was examined using SPSS for accuracy of data entry, missing values, and fit between their distributions and the assumptions of multivariate analysis. Three cases each had a single missing value in the autonomy scale. The missing value for each case was replaced by the mean for all cases. Tabachnick & Fidell (1996) described this procedure as conservative in that the mean of the distribution as a whole does not change and guessing of missing values is not required of the researcher. The various scales, job in general, work autonomy, inter-role conflict, opportunities for promotion, perceived organizational support and affective commitment scales presented only minor deviations from normality.

Quantitative Analyses

Prior to testing specific hypotheses, the reliabilities of each scale were estimated by means of Cronbach's alpha (Table 4). All scales appeared to be internally consistent with reliabilities ranging from .81 (affective commitment) to .93 (perceived organizational support). Means and standard deviations obtained for each scale are presented in Table 5.

Table 4

Internal Consistency Reliability Coefficients (alphas) for Scales

Scale	Alpha	Number
Name		of Items
Work Autonomy:		
Method Autonomy ^a	.90	3
Scheduling Autonomy ^a	.82	3
Criteria Autonomy ^a	.88	3
Affective Commitment ^a	.81	8
Inter-role Conflict ^b	.90	8
Job Satisfaction ^c	.82	17
Opportunities for Promotion ^c	.87	9
Organizational Support ^a	.93	16

^a7-point scale^b5-point scale^cAnswer scheme Y, ?, N = 2, 1, 0 scoring, respectively

Table 5
Scale Descriptives: Means, Standard Deviations

Scale Name		N	Mean Obtained	Standard Deviation	Scale Total
Work Autonomy:					
Method Autonomy	FT ^a	178	17.40	2.72	21
	PT ^b	85	16.19	3.47	
	Non ^c	25	16.16	3.01	
Scheduling Autonomy	FT	178	16.37	2.90	21
	PT	86	15.38	2.95	
	Non	25	15.04	3.63	
Criteria Autonomy	FT	177	13.41	4.05	21
	PT	86	13.29	3.49	
	Non	25	14.80	3.29	
Affective Commitment	FT	184	39.16	7.75	56
	PT	89	39.36	7.36	
	Non	25	41.48	5.65	
Inter-role Conflict	FT	181	22.13	6.48	40
	PT	88	24.93	6.38	
	Non	25	27.12	6.89	
Job Satisfaction	FT	182	30.55	4.47	34
	PT	83	29.13	5.02	
	Non	20	30.25	3.26	
Opportunities for Promotion	FT	178	10.44	5.28	18
	PT	81	10.98	5.12	
	Non	20	12.30	4.73	
Perceived Organizational Support	FT	176	80.76	15.01	112
	PT	84	78.01	13.56	
	Non	24	81.17	13.77	

^a Full-Time Telecommuters^b Part-Time Telecommuters^c Non-Telecommuters

As can be seen, the groups appeared to differ only minimally across organizational variables. Full-time, part-time and non- telecommuting employees reported a mean of 30 out of a possible 34 on the job satisfaction measure. Similarly, these groups reported means on the upper ends of the scales which indicated high perceived organizational support (mean of 80 out of a possible 112), reasonable expectations for promotion opportunities (mean of 11 out of a possible 18) and fairly high autonomy (a mean of 16 out of a possible 21 on each sub-scale) regardless of work location. Finally, respondents indicated low to moderate levels of inter-role conflict, reporting a mean of 40 out of a possible 56.

A multivariate analysis of variance was performed to determine whether there were significant differences in the scale results associated with gender and with type of telecommuter. The analysis utilized eight dependent variables: criteria, method and scheduling autonomy, opportunities for promotion and job satisfaction, inter-role conflict, commitment and organizational support. Independent variables were gender (males and females) and type of telecommuter (full-time, part-time, non-telecommuter). With the use of Wilks' criterion, the dependent variables were not significantly different between males and females with $F(1, 258) = 2.47, p > .05$. Similarly, there was no significant multivariate effect associated with the respondent group (full-time, part-time, non-telecommuter) with $F(2, 256) = 2.87, p > .05$. The univariate F tests for each of the scales were non-significant, indicating no significance differences in means between gender and type of telecommuter groups.

In Table 6, zero order correlation matrix between each variable is presented to

show the degree of relationship among the variables. The inter-correlations range from - 0.14 to 0.56.

Principal component factor analysis with varimax rotation was carried out with the aim of reducing the number of variables. Two factors were extracted and accounted for 54% of the total variance. Loadings of variables on factors, communalities, and percent of variance are shown in Table 7. Interpretative labels are suggested for each factor. Job satisfaction, perceived organizational support, commitment and opportunities for promotion variables formed a factor which will be termed "feelings towards the organization". Method autonomy, criteria autonomy and scheduling autonomy loaded on a second factor. This factor may be labelled autonomy. Inter-role conflict did not load with the other variables. Therefore, the variable set was reduced to inter-role conflict, autonomy and feelings toward the organization by summing across the autonomy scales on the one hand, and the commitment, support, satisfaction and promotion scales on the other.

A hierarchical regression was performed between feelings toward the organization as the dependent variable, and demographics, autonomy and inter-role conflict as independent variables. Table 8 shows the results of the hierarchical regression analysis. Demographic variables age, gender, marital status, children at home and tenure with the company were entered first, followed by type of telecommuter and number of months telecommuting, autonomy and inter-role conflict. Only autonomy and inter-role conflict contributed significantly to the regression, $F(9, 221) = 8.64, p < .001$.

Table 6

*Telecommuting 37*Zero Order Correlations Between Variables

	Org'l Com't	Criteria Auton.	Inter-role Conflict	Job Satisfn	Method Auton.	Opport. Promotin	Scheduling Auton.	Org'l Support
Org'l Commitment	1.00 (.)	.18 (p<.01)	-.14 (p<.05)	.35 (p<.001)	.21 (p=.001)	.35 (p<.001)	.07 (n.s.)	.53 (p<.000)
Criteria Autonomy	.18 (p<.01)	1.00 (.)	-.16 (p<.01)	.19 (p<.01)	.35 (p<.001)	.29 (p<.001)	.44 (p<.001)	.42 (p<.001)
Inter-role Conflict	-.14 (p<.005)	-.16 (p<.01)	1.00 (.)	-.27 (p<.001)	-.27 (p<.001)	-.20 (p=.001)	-.18 (p<.01)	-.36 (p<.001)
Job Satisfaction	.35 (p<.001)	.19 (p<.01)	.27 (p<.001)	1.00 (.)	.28 (p<.001)	.22 (p<.001)	.26 (p<.001)	.28 (p<.001)
Method Autonomy	.21 (p=.001)	.35 (p<.001)	-.27 (p.001)	.28 (p<.001)	1.00 (.)	.21 (p=.001)	.56 (p<.001)	.39 (p<.001)
Opportunities for Promotion	.35 (p<.001)	.29 (p<.001)	-.20 (p=.001)	.22 (p<.001)	.21 (.001)	1.00 (.)	.19 (p<.01)	.53 (p<.001)
Scheduling Autonomy	.07 (n.s)	.44 (p<.001)	-.18 (p<.01)	.26 (p<.001)	.56 (p<.001)	.19 (p<.01)	1.00 (.)	.29 (p<.001)
Perceived Organ- izational Support	.53 (p<.001)	.42 (p<.001)	-.36 (p<.001)	.28 (p<.001)	.39 (p<.001)	.53 (p<.001)	.29 (p<.001)	1.00 (.)

Table 7

Principal Component Analysis

Extracted Factors and Rotated Loadings			
Variable	F ₁	F ₂	Communalities
Commitment	.78	.00	.61
Criteria Autonomy	.27	.64	.48
Inter-role Conflict	-.44	-.20	.24
Job Satisfaction	.49	.29	.32
Method Autonomy	.21	.78	.65
Opportunities for Promotion	.71	.11	.52
Scheduling Autonomy	.06	.88	.77
Organizational Support	.79	.30	.71
Percent of variance	38.6	15.1	

^aFactor Labels:F₁ Feelings Towards the OrganizationF₂ Autonomy

Table 8

Hierarchical Multiple Regression Analysis of Demographics, Autonomy and Inter-role Conflict on Positive Views of the Organization

Variable Entered	b	t	p
Step 1 Age	-.04	-.60	n.s.
Gender	-.04	-.60	n.s.
Marital Status	-.03	-.46	n.s.
Children at Home	.00	.07	n.s.
Tenure with Co.	.03	.43	n.s.
MR ² = .00			
Adjusted R ² = -.02			
F(5, 225) = .15, p > 1.0			
Step 2 Type of Telecommuting	.11	1.7	n.s.
Duration Telecommuting	-.06	-1.0	n.s.
MR ² = .01			
Adjusted R ² = -.02			
F(7, 223) = .31, p > 1.0			
Step 3 Autonomy	.39	6.3	.0001
Inter-role Conflict	-.26	-4.1	.0001
MR ² = .26			
Adjusted R ² = .23			
F(9, 221) = 8.64, p > .001			

Review of the Findings

There were no differences between males and females on scale means and no differences were found between full-time telecommuters, part-time telecommuters and non-telecommuters. The respondents tended to report high job satisfaction, high perceived organizational support, high work autonomy, high commitment to the organization and low inter-role conflict. The linear combination of autonomy and inter-role conflict significantly predicted feelings toward the organization.

Discussion

The purpose of this study was to bring order to the current debate in the literature regarding the viability of work-at-home initiatives. An exploratory study was conducted with work-at-home employees of an international telecommunications company to determine the relationship of selected variables on telecommuting satisfaction. From an organizational perspective, one of the key telecommuting concerns relates to satisfaction - the attitude an employee has about his or her job as a result of the telecommuting arrangement. Unfortunately, attempts to delineate specific antecedent variables of telecommuters' job satisfaction have been fragmented. Shamir and Salomon (1985) suggested that telecommuting may lead to increased autonomy which in turn, may enhance an individual's quality of working life. However, in certain situations like those spawned with work-role / family-role conflict, telecommuters may experience less autonomy which could result in lowered quality of working life. Other studies (e.g., Filipczak, 1992; Letourneau, 1990; Monas, 1994; Olson & Primps, 1984) present similar discussions which serve to fuel debate. Findings from this survey study will now be presented to

address paths of inquiry identified in the beginning of this study.

Job Satisfaction

A hypothesis put forth by the author was that telecommuters would have reported high job satisfaction. This assumption was based on several factors. One, telecommuting for the respondents had been completely voluntary so that presumably, employees are working in an environment of their choice. Two, the literature stipulated that alternative work arrangements in both space and time leads to a more satisfactory work environment (the home) and flexibility in work hours. The result is said to be greater job satisfaction for the telecommuting employee (Ramsower, 1985) as a result of having more discretionary time.

Findings obtained in the present investigation supported this hypothesis. All telecommuters reported mean job satisfaction of around 30 out of a possible 34. This indicated telecommuters are at the upper end of the continuum of possible scores for job satisfaction. We should note however, that all employee groups in the sample showed high job satisfaction.

Perceived Opportunities for Promotion

Another hypothesis of this paper was that concerns about promotional opportunities would not be a focal complaint for telecommuters. Bonanno (1993) and DiMartino & Wirth (1990) discussed how reduced social interaction may increase telecommuters' concerns about career development and draw fear for being passed over for a promotion. It was assumed that since the majority of telecommuters in this study are in their late thirties, are married and have children, promotion concerns would not be

focal. Instead, the achievement of autonomy would be central in the decision to telecommute and would contribute to feelings toward the organization.

In general, telecommuters perceived themselves to have reasonable opportunities for promotion within the company. Telecommuters reported a mean of 11 out a total possible score of 18. The company has offices internationally and employees regularly correspond via telephone or video conferencing to work group members at various locations. Virtual conferences from home versus a meeting room at the main office may make little difference on productivity. It is argued that to the degree that a telecommuter is actively participating with their manager and colleagues and is visibly contributing to work output, opportunities for promotion will not differ from employees working at the main office.

While it appeared that all respondents perceived reasonable opportunities for promotion, further research is required to ascertain the reasons why employees chose to telecommute to determine whether promotion concerns are focal for telecommuting employees. Studies (Bonanno, 1993; DiMartino & Wirth, 1990) have discussed the potential loss of promotion opportunities that can result from telecommuting. However, Olson (1983; 1985) made the point that telecommuters must actively maintain contact with their professional peers to ensure professional development is maintained. No studies have been reported at this stage showing telecommuting initiatives hinder career development.

Organizational Commitment

In an exploratory study conducted by Olson (1983) with 32 employees working at

home, findings indicated that work-at-home altered the telecommuter's organizational identification. It was suggested that telecommuting served only to foster individual autonomy rather than organizational commitment. Similarly, a more recent report by Handy & Mokhartarian, 1996) warned the sense of 'officelessness' at the main site may affect the morale of the telecommuter and in turn challenge the loyalty and commitment of the telecommuter to the company. This does not seem to be the case with other studies (Glory, 1994; Monas, 1994; Piskurich, 1996) which indicated telecommuting represents an employee retention strategy. There clearly exist mixed feelings in the literature regarding telecommuter commitment to the organization.

The present study set out to determine to what extent telecommuters were committed to their organization. Results indicated that respondents were in general, fairly committed to the company, with mean scores of 40 out of a total possible score of 56. It may be that respondents credited the organization with the creation of flexible work arrangements to suit personal preferences. Nonetheless, telecommuting did not appear to challenge employee retention.

Perceived Organizational Support

Recall perceived organizational support is based on the assumption that being valued by the organization encourages the incorporation of organizational membership into the employee's self identity (Eisenberger et al., 1986). Presumably, the feeling of being supported by the organization would lead to highly committed employees. On average, respondents in this study reported high perceived organizational support, reporting a mean of 80 out of a total score 112. Eisenberger et al. (1990) reported a

positive relationship between employees' perceptions of being valued and supported by their organization with conscientiousness in carrying out their job responsibilities. This is an important implication that may help reduce management questions concerning telecommuter productivity. It would be interesting to conduct a study identifying factors contributing to the telecommuter's sense of being supported. It would be expected that both emotional and technical support from managers would be key in the relationship. Implications for management style could be drawn.

Work Autonomy

Another hypothesis of this study had been that work autonomy would be high among telecommuters. In the present study autonomy means that respondents have high discretion over the procedures and methods they use in carrying out their work (method autonomy: mean score of 16 out of 21), are able to decide the ideal time for work (scheduling autonomy: mean score of 15), and are free to select the criteria for which their work is subsequently evaluated (criteria autonomy: mean score of 13 out of 21). See Breugh (1985; 1989) for elaboration of definition. Means on the autonomy scales indicated telecommuters have moderately high work autonomy.

This finding can be attributed to the fact that the company under investigation supports a highly professional group of employees. Since creativity and innovation are key drivers for this company, employees have the capacity to choose goals, the means for achieving these goals, and at most times can contribute to the scheduling over deliverables. The employee performance evaluation system in place supports employee-defined milestones. Future research that directly compares professional employees with

non-professional staff may yield differences in autonomy scores.

Demographic Variables

Research here explored the relationship between demographic characteristics and feelings toward the organization. Demographic characteristics were age, gender, marital status, tenure, type of telecommuter (full-time, part-time vs non-telecommuter), and duration of telecommuting. None of these variables predicted feelings toward the organization. This finding is not entirely surprising. The sample section of this report explained that while telecommuting had been voluntary for employees, their managers gave final approval following a self-prescribed screening session. Chances are high that managers differ in the criteria used to evaluate their employees. Perhaps there exists a complex relationship between personality factors such as attitudes, needs and expectations, and demographic variables as moderators of job satisfaction levels.

The present results confirmed Hartman et al.'s (1991) findings that the effect of gender, educational level, marital status and age did not predict telecommuting satisfaction. Similarly, Hunt and Saul (1975) examined the relationship between age, tenure, and job satisfaction among male and female white collar workers without finding significant results.

Some researchers (e.g., Nilles, 1994; Olson, 1983) have tried to describe characteristics of the ideal candidate for telecommuting. Some of these characteristics included the ability to work independently and personal attributes like self-motivation and self-discipline. While telecommuters in this study volunteered to work at home, their managers gave final approval. Thus, the lack of significant relationship between job

satisfaction and demographics should not lead the reader to believe that telecommuting is appropriate for all persons or job types.

Predictors of Telecommuters' Feelings Toward the Organization

Work Autonomy

One of the goals of this study was to substantiate literature findings which indicated that telecommuters enjoy increased autonomy with the ability to decide the ideal time for work (Filipczak, 1992; Olson & Primps, 1984; Schiff, 1983). In fact, autonomy was purported to be a key contributor to job satisfaction amongst telecommuters. Both Lohr and Noe (1985) and Olson (1988; 1983) reported the desire for autonomy to be more highly related to job satisfaction than any of the other dimensions measured in their studies. Additionally, Cummings and Molloy (1977) had reviewed the quality of working life and productivity improvement experiments and found autonomy to be the most frequently changed of all organizational variables.

Findings obtained in the present investigation supported the hypothesis that autonomy is an important organizational variable contributing to telecommuters' feelings toward the organization.

There exist a number of reasons why autonomy is an important consideration for telecommuters. Ideally, telecommuters have more control over their environment with the ability to adjust temperature, eliminate noise pollution and arrange work areas for maximum efficiency.

Additionally, recall the demographic profile of the sample in this study. The majority were between the ages of 31–40 years and are married with children. The

flexibility in time and place to work may permit optimal use of time for leisure and family pursuits.

Telecommuters may also be able to reduce some sources of work stress through eliminating the daily commute to the central office. For many, regular travel to the main office would translate into commute times up to two or more hours daily. In principle, the time that is ordinarily spent commuting may be used for work related tasks.

While highly speculative, the correlation between autonomy and feelings toward the organization may, potentially, be increased by feelings of being more productive. In their research, Filipczak (1992) and Piskurich (1996) found telecommuters claimed increased productivity as a result of being able to work during one's peak working hours, as well as enjoying fewer interruptions from telephones, meetings and colleagues.

Inter-role Conflict

Inter-role conflict was also found to predict feelings toward the organization among telecommuting employees.

As noted earlier, a major driver for telecommuting is frequently the desire to combine domestic, leisure and childcare activities with work (Fothergill, 1994) . Mannering (1995) also identified the key variable explaining the frequency of telecommuting was the presence of small children in the household, irrespective of gender. While the majority of respondents in the present study indicated the presence of small children in the home, only 4% reported children home during the day.

Generally, the opportunity to combine work-leisure-family life may serve to enhance job satisfaction for telecommuters. Telecommuters in this study tended to report

low to moderate levels of inter-role conflict. This may be attributed to the fact that children are not home during the day. Perhaps a more representative sample of telecommuters who are working at home because of childcare requirements would answer questions. As well, a study comparing representative samples of telecommuting males and females would be valuable in exploring possible gender differences. For example, Fothergill (1994) reported that women tended to have primary responsibility for children and because of this, were more likely to work around school times or when children were sleeping. Fothergill argued that men may be better able to telecommute as they are less likely to bear major responsibility for childcare.

It is important to note that the telecommuting program surveyed in this study has existed for only a short period of time. For many, the work-at-home option has been a voluntary trial arrangement. Thus far, inter-role conflict has been low for the short-term. Long-term effects, however, are not known. Longitudinal studies might usefully track the development of work-family role conflict. Dual income households for example, may be forced to rearrange childcare and household responsibilities to the spouse working in the home. Are telecommuters more likely to take on childcare and other household responsibilities over time? What effect would these added responsibilities have on productivity levels for work tasks?

Clearly, this study indicated the importance of autonomy and inter-role conflict on job satisfaction for telecommuters. Telecommuters may be motivated to obtain increased work autonomy and in turn, may claim greater job satisfaction. But if inter-role conflict develops, telecommuters may lose any autonomy gained with the acquisition of a new set

of stressors in the home. Monas (1994) and Shamir and Salomon (1985) have noted problems for telecommuters in delineating a boundary between work and family life because of increased role responsibilities and higher individual stress levels. Shamir and Salomon (1985) warned that the loss of autonomy may result in negative implications for the telecommuter's quality of working life.

Telecommuting Considerations for the Employer

Organizations implementing work-at-home initiatives want to ensure productivity gains. Productivity gains may be related solely to savings in real estate. As many as 78% of work-at-home employees have given up their office space within one year.

Alternatively, telecommuters may perceive productivity gains associated with the increase in work autonomy, whereby employees are able to decide appropriate work times to meet personal and professional goals and objectives. The result may be fewer work-related interruptions, a greater ability to meet deadlines, and less stress from the elimination of commute time.

An important consideration for employers is that telecommuting setup means more than a business line to the home. The success of the telecommuting experience will be closely connected to the adequacy and sophistication of the technology provided (Igbaria & Nachman, 1990; Wallace, 1995). The computer hardware, software and connectivity to a network must replicate the inventory and the reliability afforded to employees at the main office. Otherwise, telecommuters will become frustrated, experience lowered productivity and feelings of isolation will increase.

Moreover, employers must not assume that telecommuters will have the know

how or immediate resources to set up an appropriate work area in the home that is away from family or household distractions. Employees require a private room in the home for an adequate office setup mirroring office space at the main office. Financial and technical assistance here from the employer serves to insure the organization from loss in individual productivity. Telecommuters in this study received subsidized office furniture, ISDN lines and desktop equipment required to complete their daily projects.

Finally, employers must help their telecommuters to develop a successful manager-employee relationship. If an employer is comfortable with giving employees autonomy, the transition to the home office is made smoother. Telecommuting can be interpreted as a reflection of a fundamental management practice of empowering employees. Research has indicated a positive relationship between employees' perceptions of being valued and supported by their organization with conscientiousness in carrying out their job responsibilities (Eisenberger et al., 1990).

Research Needs

First, research studies must be specific about how telecommuting has been defined. As Hartman et al. (1991) pointed out, most empirically-based findings are arrived at from studies that fail to distinguish between those who are self-employed and those who are organizationally employed. Data on current levels of telecommuters indicate a lack of consensus on how telecommuting is defined and has lead to widely disparate estimates of number of telecommuters in Canada. Data on the characteristics of current telecommuters are also inadequate. It has to become clear to employers what type of person and what type of jobs are suitable for work at home.

Additionally, it is possible that most of the available research has inadvertently targeted 'early adoptors' of the telecommuting option. Indeed, the study here reported findings from a telecommuting program in place just over a year young. Further studies comparing later adoptors to early adoptors in their motivations for telecommuting might prove valuable.

As well, longitudinal research is needed to clarify psychological factors that underlie job satisfaction. Longitudinal study is required in particular, to track the development of work-role / family-role conflict. Such research could determine whether telecommuters are more likely to take on childcare and other household responsibilities. Telecommuters' productivity levels would have to be monitored to determine the degree to which inter-role conflict, as a stress variable, negatively affects work output and subsequent job satisfaction. This could clarify the process of individual adjustment to the demands of work-at-home setups.

Work-team development may also be an important field of study in relation to telecommuting. The organization in this study emphasized team work and group cohesiveness. What impact does telecommuting have on team building and group cohesiveness? Research may help to identify the training, education and resource requirements underlying the employee's unwillingness to accept flexible work arrangements like telecommuting. The dynamics of "virtual" team relations need to be outlined as work groups, increasingly, will function across geographical distances via telephone and video conferencing. Building team cohesion as well as maximizing work team efficiency will become a challenge for managers.

Conclusion

In conclusion, research identified autonomy and inter-role conflict as key variables predicting telecommuters' feelings toward the organization. To the extent that autonomy has increased and interrole conflict is kept to a minimum, telecommuters will be highly satisfied and committed employees.

Clearly, telecommuting represents an exciting growth area with individual, organizational and societal consequences far-reaching. Of utmost importance is investigating the long term effects of telecommuting on maintenance of autonomy and productivity levels while balancing work and family obligations.

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Appendix A

Survey Questions Given to All Full-Time Employees Enrolled in the Company's Telecommuting Program

The following scales were incorporated into "X" Company's Program Evaluation Survey in the order presented. The informed consent is found in Appendix B.

Job Category:

☐ S/W Design	☐ Training & Documentation	☐ Human Resources
☐ S/W Support	☐ H/W Support & Design	☐ Other
☐ S/W Dev't / Testing	☐ Technical Support	
☐ Network Analyst	☐ Manager	
☐ Sales & Marketing	☐ Finance	

Which of the following options did you select on your work-at-home application form?

- Telecommuting - majority of work done at home
- High-speed access for 1 - 2 days per week at home, majority of work done at main office
- Remote access - primarily for off-hours, infrequent work-at-home

Length of time with the Telecommuting Program

☐ 3 - 6 mo.	☐ 8 - 12 mo.
☐ 7 - 9 mo.	☐ 12+ mo.

Length of time Employee by the Company

___ 1-5 yrs	___ 11-15 yrs
___ 6-10 yrs	___ 15+ yrs

Age ☐ 20-30 ☐ 41-50 Gender ☐ M ☐ F
 ☐ 31-40 ☐ Over 50

Marital ☐ Married / Living with Significant Other
☐ Single

Do you have children? ☐ Yes ☐ No
If yes, are the children at home with you during the day? ☐ Yes ☐ No

In your estimate, how many hours do you work at-home per week? _____ hrs
In your estimate, how many hours do you work at the main office per week? _____ hrs

Job in General (Job Satisfaction).

Think of your job in general. What is it like most of the time?

In the blank beside each word given below write:

Y for "Yes" if it describes your job,

N for "No" if it does NOT describe it, or

? if you cannot decide.

☐ Pleasant	☐ Worthwhile	☐ Makes me content
☐ Bad	☐ Acceptance	☐ Inadequate
☐ Ideal	☐ Like to leave	☐ Excellent
☐ Waste of time	☐ Better than most	☐ Rotten
☐ Good	☐ Disagreeable	☐ Enjoyable
☐ Undesirable	☐ Poor	

Opportunities for Promotion.

Think of the opportunities for promotion that you have now. How well does each of the following words describe these?

In the blank beside each of the words below write:

Y for "Yes" if it describes your opportunities for promotion,

N for "No" if it does NOT describe them, or

? if you cannot decide.

- ☐ Good opportunities for promotion
- ☐ Unfair promotion policy
- ☐ Opportunity somewhat limited
- ☐ Infrequent promotions
- ☐ Promotion on ability
- ☐ Regular promotions
- ☐ Dead-end job
- ☐ Fairly good chance for promotion
- ☐ Good chance for promotion

Organizational Support

Please indicate the degree of agreement and disagreement with each statement by circling a number from 1 to 7 according to the following scale.

	1	2	3	4	5	6	7
	Strongly Disagree	Disagree	Mildly Disagree	Neither Agree nor Disagree	Mildly Agree	Agree	Strongly Agree
1. The organization values my contribution to its well-being.						1 2 3 4 5 6 7	
2. If the organization could hire someone to replace me at a lower salary it would do so.						1 2 3 4 5 6 7	
3. The organization fails to appreciate any extra effort from me.						1 2 3 4 5 6 7	
4. The organization strongly considers my goals and values.						1 2 3 4 5 6 7	
5. The organization would ignore any complaint from me.						1 2 3 4 5 6 7	
6. The organization disregards my best interests when it makes decisions which effect me.						1 2 3 4 5 6 7	
7. Help is available from my organization when I have a problem.						1 2 3 4 5 6 7	
8. The organization really cares about my well-being.						1 2 3 4 5 6 7	
9. Even if I did the best possible job, the organization would fail to notice.						1 2 3 4 5 6 7	
10. The organization is willing to help when I need a special favour.						1 2 3 4 5 6 7	

11.	The organization cares about my general satisfaction at work.	1	2	3	4	5	6	7
12.	If given the opportunity the organization would take advantage of me.	1	2	3	4	5	6	7
13.	The organization shows very little concern for me.	1	2	3	4	5	6	7
14.	The organization cares about my opinions.	1	2	3	4	5	6	7
15.	The organization takes pride in my accomplishments at work.	1	2	3	4	5	6	7
16.	The organization tries to make my job as interesting as possible.	1	2	3	4	5	6	7

Organizational Commitment

Please indicate the degree of agreement and disagreement with each statement by circling a number from 1 to 7 according to the following scale. There are 16 statements in total.

	1	2	3	4	5	6	7	
	Strongly Disagree	Disagree	Mildly Disagree	Neither Agree nor Disagree	Mildly Agree	Agree	Strongly Agree	
1.	I feel a strong sense of belonging to my organization.	1	2	3	4	5	6	7
2.	I do not feel emotionally attached to this organization.	1	2	3	4	5	6	7
3.	This organization has a great deal of personal meaning for me.	1	2	3	4	5	6	7
4.	I do not feel like "part of the family" at this organization.	1	2	3	4	5	6	7

5.	I would be very happy to spend the rest of my career with this organization.	1	2	3	4	5	6	7
6.	I enjoy discussing my organization with people outside it.	1	2	3	4	5	6	7
7.	I really feel as if this organization's problems are my own.	1	2	3	4	5	6	7
8.	I think I could easily become as attached to another organization as I am to this one.	1	2	3	4	5	6	7

Interrole Conflict

Decide how you react to each of the following 8 statements. Circle the appropriate number to indicate your response according to the following scale.

- | | 1
Strongly
Disagree | 2
Disagree | 3
Neither | 4
Agree | 5
Strongly
Agree |
|----|--|---------------|--------------|------------|------------------------|
| 1. | My work schedule often conflicts with my family life. | | | | 1 2 3 4 5 |
| 2. | After work I am too tired to do some of the things I would like to do. | | | | 1 2 3 4 5 |
| 3. | On the job I have so much work to do that it takes away from my personal interests. | | | | 1 2 3 4 5 |
| 4. | My family dislikes how much I am preoccupied with my work. <i><omitted: when I am at home></i> | | | | 1 2 3 4 5 |
| 5. | Because my work is demanding there are times when I am irritable at home. | | | | 1 2 3 4 5 |
| 6. | The demands of my job make it difficult to be relaxed all the time at home. | | | | 1 2 3 4 5 |

7.	My work takes up time that I would like to spend with my family.	1 2 3 4 5
8.	My job makes it difficult to be the kind of spouse or parent that I'd like to be.	1 2 3 4 5

Work Autonomy

Please indicate the degree of agreement and disagreement with each statement by circling a number from 1 to 7 according to the following scale.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Mildly Disagree	Neither Agree nor Disagree	Mildly Agree	Agree	Strongly Agree

Work Method Autonomy

1.	I am allowed to decide how to go about getting my job done (the methods to use).	1 2 3 4 5 6 7
2.	I am able to choose the way to go about my job (the procedures to utilize).	1 2 3 4 5 6 7
3.	I am free to choose the method(s) to use in carrying out my work.	1 2 3 4 5 6 7

Work Scheduling Autonomy

1.	I have control over the scheduling of my work.	1 2 3 4 5 6 7
2.	I have some control over the sequencing of my work activities (when I do what).	1 2 3 4 5 6 7
3.	My job is such that I can decide when to do particular work activities.	1 2 3 4 5 6 7

Work Criteria Autonomy

1.	My job allows me to modify the normal way we are evaluated so that I can emphasize some aspects of my job and play down others.	1 2 3 4 5 6 7
2.	I am able to modify what my job objectives are (what I am supposed to accomplish).	1 2 3 4 5 6 7

3. I have some control over what I am supposed to accomplish (what my supervisor sees as my job objectives).

1 2 3 4 5 6 7

Appendix B

The Cover Letter to Accompany the Questionnaire Package

January 1997

As an employee who has been working at home a minimum of three (3) months, we ask that you complete the following year-end program evaluation. While some questions may not appear to relate directly to work-at-home, they represent organizational measures that will help us better interpret all responses. The evaluation is designed to assess the work-at-home arrangement and identify key elements that must be addressed to ensure the ongoing success of the program.

All responses will be kept confidential but not anonymous. Employee numbers are used to track responses received. Individual names will not be used for reporting purposes. Your response is voluntary.

Surveys can be returned electronically via email <*email address*>, or via internal mail to <department address>.

If you have any questions please call <*manager name; telephone #*> or Dawn Coveyduck <#>.

Thank you for your timely response!

Appendix C

The Debriefing Used Following the Survey Procedure

Debriefing

The questionnaire results were presented in the year-end report written by Dawn Coveyduck and the program manager. This report is distributed to all employees and managers in the telecommuting program and is available on a website internal to the company.