



Telecommuting

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Abstract

This white paper describes the findings of empirical studies that examine how telecommuting relates to personal and workplace outcomes. Recommendations for appropriate implementation of telecommuting programs based on research findings are also provided.

What is telecommuting?

Telecommuting is a type of alternative (or flexible) work arrangement where work is conducted at an off-site location and employees use telecommunications technology to connect to the workplace¹. Other terms for telecommuting are telework, remote work, work from home, and flexplace.

Telecommuting arrangements can be formal in nature, meaning there is a clearly stated organizational policy, or informal. Informal arrangements tend to be made idiosyncratically with managers.

Telecommuting is prevalent in the U.S. According to the National Study of the Changing Workforce², 63% of employers allow some employees to telecommute occasionally and 33% allow some employees to telecommute on a regular basis.

How is telecommuting scientifically studied?

Many researchers have studied telecommuting. In fact, over 50 peer-reviewed published studies and dissertations focus on the organizational and/or personal outcomes of those who telecommute!



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There are two common ways that telecommuting is scientifically studied.

The most scientifically sound way is through an experiment or a quasi-experiment. In a typical telecommuting experiment two groups of workers are compared-- those that undergo a telecommuting intervention of some sort and a comparable group of employees that maintain traditional work arrangements. Researchers can then compare the two groups on relevant outcomes before and after the telecommuting intervention, with the idea that differences between the groups can be attributed to the tele-

commuting experience. The difference between an experiment and quasi-experiment is that an experiment involves random assignment of participants into groups, whereas the groups are naturally occurring in a quasi-experiment.

The second and most common type of design involves using surveys. The surveys include questions about an employee’s telecommuting status and the outcome variables of interest. A correlation can then be computed, which gives insight into how strongly telecommuting relates to various outcomes. However, this only gives information about relatedness and it is difficult to draw inferences about causality (e.g., does telecommuting cause an increase in job satisfaction or does high job satisfaction cause employees to telecommute?).

| Compared to those who do not telecommute, telecommuters report | Based on a total sample size of... |
|---|------------------------------------|
| Significantly higher.... | |
| Perceptions of Autonomy | 3,040 |
| Job Performance (based on objective indicators or supervisor ratings) | 484 |
| Quality supervisor relationships | 2,888 |
| Significantly lower... | |
| Work role stress | 2,406 |
| No meaningful differences in... | |
| Job satisfaction | 7,764 |
| Family-to-work conflict | 12,853 |
| Work-to-family conflict | 16,456 |
| Intentions to quit | 7,580 |
| Quality co-worker relationships | 3,269 |
| Self-rated job performance | 7,419 |
| Perceived career prospects | 1,038 |

Table 1. Outcomes associated with telecommuting based on survey research

What happens when employees telecommute?

Results based on survey research

As summarized in Table 1, survey research suggests that telecommuting relates to a number of outcomes for both employees and the organization.

These estimates are from Gajendran & Harrison (2007)³, with the exception of work-to-family and family-to-work conflict which are from Allen, Johnson, Kiburz, & Shockley (2013).⁴ In general, the magnitude of these relationships is small, although still important.

It is important to note that in some cases, it is not whether one telecommutes or not that impacts outcomes; instead, it is the amount of telecommuting that matters. Research suggests that this is the case with job and life satisfaction. Three studies found that the relationship between job satisfaction and extent of telecommuting resembles an inverted-U. Job satisfaction is highest at moderate levels of telecommuting (e.g., about 2 days per week).^{5,6,7} A similar pattern was found with life satisfaction.²¹

Another outcome of interest, the career consequences of telecommuting, has been examined less frequently and results across studies are somewhat discrepant. Specifically, in a study of only women across a 7 year time period, researchers found that women with work location flexibility had lower wage growth than those not using flexibility. This effect was strongest among women in professional or managerial jobs and those who stayed with a single employer over the course of the study.⁸ On the other hand, another study based on a U.S. nationally representative sample of both men and women found that those who engaged in formal and informal telecommuting earned higher wages than their traditional working counterparts.⁹ Likewise, a study of several flexible work practices, including flextime, telecommuting, part time work, and job sharing, found a similar positive association between flexibility use and wages, although the effect size was very small.¹⁰

It is important to note that in some cases, it is not whether one telecommutes or not that impacts outcomes; instead, it is the amount of telecommuting that matters.

Results based on experimental research

A few studies have used experimental or quasi-experimental design to examine the impact of telecommuting on employee outcomes. Other studies have used quasi-experimental designs to assess a concept similar to telecommuting called results only work environments (ROWE). ROWE initiatives involve reorienting employees and managers towards measurable results while deemphasizing the need to be physically present at work for a certain number of hours each day. The initiative gives employees greater control over work to do whatever they want, wherever they want as long as the work is completed on time. As detailed in Table 2, these studies generally suggest favorable results.

Results based on other forms of research

Recent advances in technology have allowed researchers to study communication using objective data. Specifically, research conducted by the Human Dynamics Group at MIT uses sociometric badges, which are wearable devices that use an infrared transceiver, a microphone, and accelerometers to record movement, speech patterns, and detection of others in close proximity. Based on data from employees who wore these devices, they found that those who had the most face-to-face interactions cleared about \$100,000 more in revenue per month compared to their less interactive counterparts. This was attributed to the fact that problem solving, a frequency occurrence in IT situations, is easier when one is able to speak to an expert in person rather than emailing or instant messaging complex questions.¹⁷ This suggests that telecommuting, which reduces face-to-face interactions may have a negative impact on collaboration and innovation.

It is important to note that these findings using novel research methodology mimic other survey-based research. A study of 56 engineering teams used a survey design to examine the relationship between numerous characteristics of the team, including geographic dispersion and electronic dependence, which have potential relevance to a telecommuting arrangement. They authors found that increased geographical diversity and dependence on electronics for communication related to less innovation. Innovation was assessed through a survey administered to 2-3

members of the organization that served as internal customers to the team. These effects were somewhat mitigated by the presence of a psychologically safe communication climate, defined as an atmosphere of by open, supportive communication, speaking up, and risk taking.¹⁸

Why does telecommuting affect these outcomes?

Job attitudes. There are a few “pathways” that researchers believe account for the relationship between telecommuting and positive job attitudes, such as job satisfaction. Many (albeit not all) telecommuting arrangements afford employees more control over work. Control is considered to be an important component in positive employee attitudes.¹⁹ When employees are granted flexibility, they gain control over how their work is completed and may experience positive outcomes as a result.²⁰ Other researchers have tested models that include reduced work-family conflict as a linking factor.^{3,21} However, it is important to note that although telecommuting use does correlate with work-to-family conflict, the magnitude of the



Summary: Experimental research suggests that compared to traditional office workers, telecommuters report significantly greater productivity, flexibility, job satisfaction, and work-schedule fit.

| Study Description | Compared to traditional office workers, telecommuters reported significantly greater... | Compared to traditional office workers, telecommuters reported significantly less... | No differences between telecommuters and traditional workers in... |
|--|--|--|--|
| <i>Telecommuting Studies</i> | | | |
| Quasi-experiment with 249 IBM workers ¹¹ | -productivity (measured via self-reports) -flexibility | | - morale - teamwork - work-life balance - hours worked |
| Quasi-experiment with 61 Canadian government employees ¹² | | - use of communications written by a second party (e.g., administrative assistant) | - perceived communication problems - frequency of communication - use of other communication media. |
| True experiment with 249 Chinese call center employees ^{13**} | - productivity (13% more phone calls per week and 9.2% more minutes worked per week) - job satisfaction | - likelihood of being promoted (when controlling for performance) - turnover | - quality of calls made |
| <i>Results Only Work Environment Studies</i> | | | |
| Quasi-experiment of 775 employees from Fortune 500 company ¹⁴ | | - intentions to turnover - turnover | |
| Quasi-experiment of 659 employees from Fortune 500 company ¹⁵ | - sleep quantity - exercise - seeing a doctor when ill | - going to workplace when ill | - sleep quality - emotional exhaustion - personal mastery - psychological distress - self-reported health - energy levels |
| Quasi-experiment of 608 employees from Fortune 500 company ¹⁶ | -time adequacy -work schedule fit - schedule control | -work-family conflict -negative work-home spillover | |

Table 2. Outcomes associated with telecommuting based on experimental and quasi-experimental research

** As a caveat, this study is a working manuscript and has not yet undergone the peer-review process.

relationship is very small⁴ (and thus of questionable practical utility), and the correlation between telecommuting and family-to-work conflict is not significant.⁴ Thus, reduced work-family conflict may play a role, but it seems unlikely that it is a major one. Finally, there is some evidence that telecommuting reduces work exhaustion, which in turn relates to more favorable job attitudes.²²

Performance. Although a common perception of the remote worker is the slacker who enjoys the luxuries of home while “working,” most research paints a different picture. Some studies have found that telecommuters actually work more hours than traditional office workers.^{13,23} This may be one reason that they are more productive. Additionally, research commonly finds that telecommuters report being less distracted and having fewer interruptions when working from home, resulting in greater ability to focus.²²

What about managers who telecommute? What impact does this have on subordinates?

Two studies have addressed this question, focusing on different outcomes and finding quite different patterns of results.

In a study of 11,059 managers and their subordinates in a single Fortune 500 company, researchers found that subordinates with telecommuting managers reported less favorable attitudes and career development experiences than subordinates with non-telecommuting managers. Specifically, they reported receiving less feedback, less professional development, lower job satisfaction, lower empowerment, and higher turnover intentions. On the positive side, they reported more favorable perceptions of a work climate that values diversity. It should be noted that although statistically significant, the magnitude of the differences between groups was quite small. Additionally, outcomes were generally more favorable when the subordinate also telecommuted.²⁴

A smaller scale study of 137 subordinates and their 41 leaders employed in various organizations also examined the role that telecommuting plays on manager-subordinate relations. They found little evidence of physical distance mattering, as the leader’s telecommuting status had no impact on his/her communication effectiveness or subordinate’s perceptions of leader performance.²⁵

What happens to organizations that offer telecommuting?

Because individuals who telecommute tend to be more productive and engage in more positive health behaviors, a case can be made that organizations with more telecommuters may reap bottom line benefits through increased production and decreased costs associated with absenteeism, attrition, and healthcare. However, the answer to this question may also be addressed by turning to two studies that specifically examine telecommuting adoption in relation to firm performance.

In a study using data from 156 Spanish companies, researchers found that firms with a larger proportion of telecommuting employees also exhibited the highest firm performance, which was determined by subjective CEO ratings.²⁶

Although a common perception of the remote worker is the slacker who enjoys the luxuries of home while “working,” most research paints a different picture.

A study based on the 100 companies listed in Working Mother magazine's "The 100 Best Companies for Working Mothers" found that the amount of employee participation in work from home programs positively related to firm profit, measured as actual operating income.²⁷

It is important to note that these studies are correlational; thus, we cannot definitely conclude that telecommuting causes increased firm performance. It is also possible that it is the highest performing firms that have the resources available to offer telecommuting.

What can my organization do to make the most of telecommuting?

Recommendation #1

Research suggests that telecommuter job satisfaction is maximized when telecommuting occurs at moderate levels (around 2 days per week), especially for jobs that require high interdependence. With this in mind, encouraging a mixed work arrangement where employees are not entirely remote may help with employee satisfaction and morale.^{7,22}

Recommendation #2

Do not adopt a one-size-fits-all approach to telecommuting policies. Each employee is unique and will need to cater the policy to her or her needs.^{28,29}

Recommendation #3

In order to be most productive, telecommuters need to have a strong sense of self-efficacy, or belief about his/her ability to complete tasks.³⁰ Provide encouragement to telecommuters in an attempt to foster self-efficacy, especially during the initial adjustment period for new telecommuters.

Recommendation #4

Professional isolation, loss of identification with the organization, and feeling excluded are real threats to teleworkers and can have implications for performance and turnover.^{31,32,33} To avoid these sentiments, be sure to include teleworkers in organizational events, socialization activities, and training and development opportunities that are available to other employees. On a more daily basis, it may be helpful to set up a "virtual water cooler" via intranet or shared email folder, and managers should take extra efforts to contact telecommuters more frequently so that they feel in "in the loop."²³

Recommendation #5

The mere offering of telecommuting is not enough. The organization culture must also adapt to support use of these policies, else they are likely to be underused and less efficacious for those who do use them.^{34,35,36,37} This can be achieved, in part, by:

- a) shifting norms surrounding face time; judge employees by their actual output rather than the time they spend at the main office.^{38,39}
- b) ensuring that raise and promotion systems are not biased against those who work remotely. Employees commonly cite fear of negative career consequences as a reason that telecommuting benefits are deemed unusable.
- c) creating buy-in from top management. True culture change of any kind requires buy-in the top and the creation of a structural plan that outlines specific behaviors that will foster change.⁴⁰

Recommendation # 6

Communicate and clearly articulate the details and expectations surrounding telecommuting up front. This may be best achieved by establishing a telecommuting training program for telecommuters, managers of telecommuters, and even the coworkers of telecommuters.⁴¹

Recommendation #7

Deciding who can and cannot telecommute can be a challenge, and it can lead to perceptions of unfairness if not handled correctly. The ideal situation is to offer telecommuting universally²⁹, but this is not be feasible in all organizations and job types. When this is not possible, it is imperative to have a clear set of criteria regarding how telecommuting decisions are made. Allowing employees, including telecommuters and non-telecommuters, voice in determining these criteria is also beneficial.²⁸

Recommendation #8

Because telecommuters are “out of sight” it may be tempting for managers to give stricter standards or highly monitor their behaviors. But research suggests the most effective supervisors manage telecommuters and non-telecommuters in an identical same manner.²⁸ The focus should be on managing the work and not the worker.

Recommendation #9

Provide employees with advice on how to best structure their remote work station. For many employees forming boundaries between work and family roles is important.⁴² One way to do this is to have a separate room for telework if the home arrangement allows it. Additionally, employees should make sure that family members also understand the work and home boundaries.²⁸

Recommendation #10

Discourage employees from using telecommuting as a means of childcare. Working while simultaneously caring for children can lead to role blurring, which has been linked to greater work-family conflict and distractions during work time.⁴³

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