Mobile Device Perceptions: Differences in Environment-Based Voluntariness

Completed Research Paper

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Abstract

In order to complete work tasks, individuals are constantly engaging in new technologies that allow them to connect to the work place from locations and at time periods which in the past were not possible. The increased ubiquity of information and communication technologies, in particular the use of mobile devices has coincidentally increased the number of hours employees are spending on work related tasks. The research agenda of this paper is focused on post adoption and proposes that individuals who are required to use mobile devices and those who voluntarily use them will have differing perceptions on mobile device usage, usefulness, work overload, flexibility and, work-life conflict. Secondary data from a previous study, consisting of data from 185 working individuals of various demographics was analyzed. The results suggest different perceptions between the groups. The findings have practical importance as managers and firms consider supplying mobile devices to employees.

Keywords (Required)

Mobile Devices, Voluntariness, Work-Life Conflict, Flexibility, Usefulness, Productivity

Introduction

One of the main reasons businesses adopt Information Systems (IS) is to improve productivity (Mithas, Ramasubbu, & Sambamurthy, 2011). Organizations have realized improvements in productivity with the adoption of Information Communication Technologies (ICTs) and in particular mobile devices (Hitt & Brynjolfsson, 1996; Wakefield & Whitten, 2006). The IS discipline centers on the idea that the use of IS will expedite business processes and ultimately increase profits and or lower costs. The adoption and use of mobile devices has progressed at an unprecedented rate in recent years (Prasopoulou, Pouloudi, & Panteli, 2006). The level at which employees are using their mobile devices to conduct work activities is also continuously increasing (Sørensen & Gibson, 2008).

Research on mobile device use is severely lacking and the importance of this subject will only increase as technology evolves and mobile devices become increasingly interconnected with our everyday lives. It is very important that firms understand the importance of the decisions they make in regards to supplying mobile devices and the influence that may have on the work-life balance of their employees. A small amount of qualitative research has been conducted that discusses mobile device functionality(Fui-Hoon, Siau, & Sheng, 2005) which is in contrast to the large amount of research found on the dysfunctionality(Mazmanian, Orlikowski, & Yates, 2004; C. Middleton & Cukier, 2006; Turel & Serenko, 2010; Wright Jr, Mooney, & Parham, 2011) of mobile devices. If mobile devices are so dysfunctional then

why are so many companies supplying their employees with this technology? The dynamics of traditional work environments and designated work hours have drastically changed with the introduction of mobile devices.

Literature Review

Mobile Device Usage

Previous information technology (IT) usage research has characterized three main classifications of mobile device usage, distinguished by the purpose of use. The three classifications consist of utilitarian, hedonic, and social behaviors or actions. For the purposes of this paper, these classifications constitute how individuals choose to use their mobile devices. Utilitarian usage is described as facilitating effective and efficient action (Wakefield & Whitten, 2006). Some examples of utilitarian behaviors include activities such as email, retrieving documents, searching for information, ecommerce, financial transactions, etc. While previous research has focused on work related utilitarian IT use, there is also a function of utilitarian use that can be associated with using a mobile device for non-work related activities. This latter use has been overlooked by previous research but is important to better understand the dynamics between our two groups of individuals. Another usage classification described in previous research is hedonic actions, which are defined as behaviors that generate pleasure from the consumption or use of a product (Schroeder, 2010). Examples of hedonic behaviors include playing games, watching videos, or participating in other entertainment related actions. The last classification of behavioral IT usage is social behaviors, which are described as using IT to communicate and is influenced by social pressures (Orlikowski & Scott, 2008). Examples of this type of usage include text messaging, calling, and communicating with others through social networking applications or websites.

While incorporating these three classifications that have been used in previous research, it was necessary to distinguish between usage for work and non-work activities (personal). Therefore we developed a classification of mobile device use as seen in figure 1 below (Brown & Palvia, 2014). Use for work purposes contains both utilitarian and social behaviors while non-work use comprises all three classifications. This categorization helps in the understanding of how use might influence the perceptions of individuals and strengthens our research agenda to study differences of groups within this nomological network.

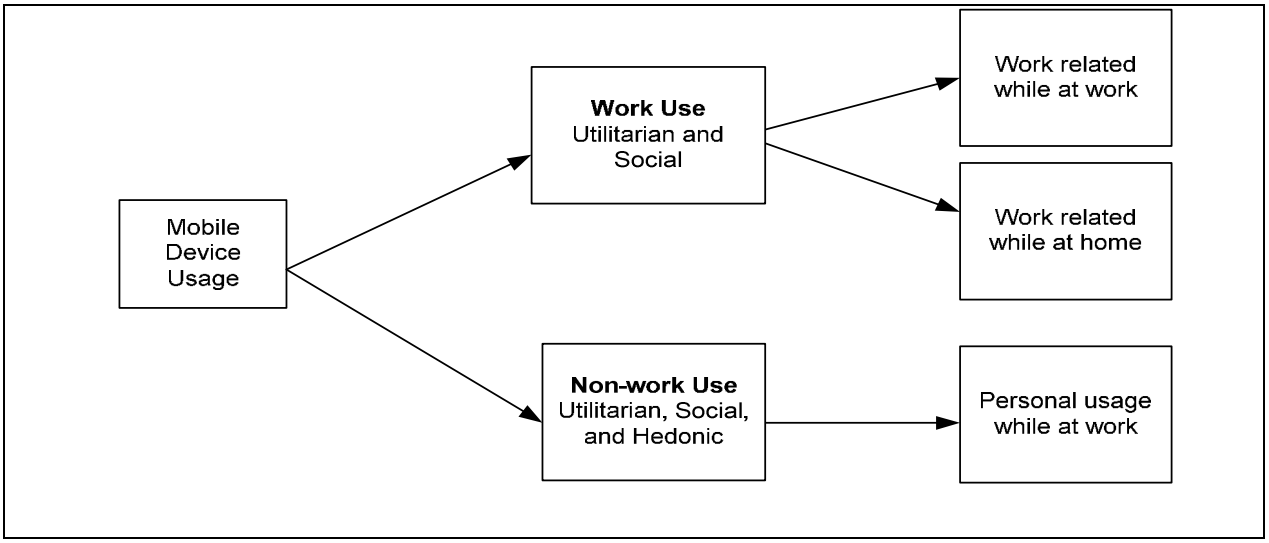

Figure 1. Illustration of Mobile Device Usage

Tam

The Technology Acceptance Model (TAM) is derived from the Theory of Reasoned Action (TRA) and is used in IS literature to better understand system use. TAM suggests that beliefs (usefulness and ease of

use) influence attitudes, which then influence behavioral intentions, and that lastly influence actual behavior. Although attitude was used in the original conceptualization of the technology acceptance model, Davis (1993) found that attitude was not a strong mediating factor and therefore, most modern conceptualizations do not include an attitude construct.

A stream of recent IS research has focused on the use of the TAM in environments that mandate the use of technology (Koh, Prybutok, Ryan, & Wu, 2010; Malhotra, Galletta, & Kirsch, 2008; Sharp, 2007; Wang & Butler, 2007; Ward, Brown, & Massey, 2005). Therefore, many of these studies focus on trying to adapt TAM to be used in an environmental settings in which information technology (IT) adoption are mandatory. Findings from Brown et al. (2002) suggest that the attitudes construct, originally present in TAM, plays a role in mandatory IT environments. Wu & Lederer, (2009) define "Voluntariness … as the degree of free will involved in the adoption of an information system". In most situations and in our research we treat voluntariness as dichotomous, such that individuals either have no free will or they have entire free will in the adoption of information systems.

While these prior studies have focused on the adoption of IT, it is also important to study post adoption perceptions to see if there is a difference depending on voluntariness. Therefore this agenda seeks to better understand individuals who are required to use mobile devices and those who voluntarily use them to conduct work related tasked, by measuring perceptions on mobile device usage, usefulness, work overload, flexibility and, work-life conflict.

Research Hypotheses

Previous studies show a difference in attitudes involving voluntarism(Brown et al., 2002) and therefore we suggest that individual perceptions will also differ between these two groups of individuals. The construct of work related use while at work represents a combination of different modes of use including calling, emailing, and text messaging for work related purposes while the employee is at work. An example of this type of usage would be reading an email or texting a coworker while in a meeting. Studies have shown that individuals who are supplied mobile devices can sometimes have employer software making them more efficient(C. Middleton & Cukier, 2006) and also feel a responsibility to be more productive because of the work supplied mobile device(Matusik & Mickel, 2011). Therefore, we propose that individuals who have been issued a work device will have a more positive association with how useful or helpful the device will be. Thus,

> *H1a: Individuals who have employer issued mobile devices will have increased usage (work related while at work) in comparison to individuals who use their personal mobile devices.*

The construct of work related use while at home represents a combination of different modes of use for work related purposes while the employee is at home. An example of this type of usage would be reading work emails while having dinner with your family. Previous research by Mazmanian et al. (2004) eluded to this hypothesis as individuals continually commented on the obtrusiveness of their mobile devices. Employees who are supplied a mobile device feel more a responsibility to answer emails and take phone calls while away from the office. Thus,

> *H1b: Individuals who have employer issued mobile devices will have increased usage (work related while at home) in comparison to individuals who use their personal mobile devices.*

The construct of personal related use while at work represents a combination of different modes of use for personal related purposes while the employee is at work. An example of this type of usage would be reading personal emails, interacting through a social network, texting friends, or doing some personal online banking. This unique classification brings focus to another unique area of research as individuals now have the ability to participate in personal use from the office. Even if the organizations IT department has blocked users laptop and desktop computers from accessing websites used for personal purposes, they are not able to block access through mobile devices. Individuals are somewhat reluctant to use employer supplied mobile devices for personal use because of guilt or fear of that information being shared to the company they work for(Yun, Kettinger, & Lee, 2012). Thus,

H1c: Individuals who have personal mobile devices will have increased usage (personal usage while at work) in comparison to individuals who have employer issued mobile devices.

Usefulness

The main reason businesses choose to adopt Information Systems (IS) is to improve productivity (Brynjolfsson, 1993; Dong, Xu, & Zhu, 2009; Hitt & Brynjolfsson, 1996). Only a small amount of research has been conducted that discusses the increase in usefulness with the use of mobile devices in the work environment (Fui-Hoon et al., 2005). Rather, much of the focus of more recent research on mobile devices has been on the negative impacts of mobile device use (Mazmanian et al., 2004; C. Middleton & Cukier, 2006; Turel & Serenko, 2010). Usefulness is a widely known construct in IS research mainly because it is used as part of the TAM, although it has been used in many other types of studies as well. It is believed that most employees who are issued a mobile device in their current job will indeed find it to be useful for work related purposes as IT departments help maintain the proper software and applications that are compatible with the organization(Schroeder, 2010). Individuals who choose to use their own personal devices for work related activities are more inclined to find that firewalls and other precautionary mechanisms might cause their mobile devices to be less useful. Thus,

H2: Individuals who have employer issued mobile devices will have higher perceptions of usefulness in comparison to individuals who use their personal mobile devices.

Work Overload

The ubiquity of mobile devices allows working professionals to be constantly connected with their work environments. Orlikowski (2007) gives this quote: "In general…people's expectation levels have gone up…People presume that it's fairly easy to reach you 24/7"(p.1442). After adopting this technology employees are expected to answer work related emails and phone calls while away from work at an increasing rate. This change suggests that individuals are expected to answer work related phone calls and emails at an increasing rate. Individuals who voluntarily connect to work related activities are doing so to lessen work overload whereas individuals who are supplied a mobile device feel added pressure to always be connected. Thus,

H3: Individuals who have employer issued mobile devices will have higher perceptions of work overload in comparison to individuals who use their personal mobile devices.

Flexibility

Previous research has shown that perceived job flexibility enables employees to work longer hours before impacting work-life balance and that perceived job flexibility enables more employees to have work-life balance (Hill, Hawkins, Ferris, & Weitzman, 2001). Flexibility in job structure allows employees more freedom to choose when, where, how, and with whom they wish to invest in work activities. Most research suggests a positive perception of flexibility and suggests that individuals should seek to maximize the amount of flexibility in their occupations. In contrast, more recent research has shown that flexibility in work structure can have a negative impact on work-life balance (C. A. Middleton, 2008). Flexibility in work structure can take many different forms. Flexibility in work structure blurs the boundaries between work and life and therefore causes disruption. In general employees with work issued devices are granted some form of flexibility in order for the company to justify the cost of the mobile device. Thus,

H4: Individuals who have employer issued mobile devices will have higher perceptions of flexibility in comparison to individuals who use their personal mobile devices.

Work-Life Conflict

Work-life balance is one of the most researched areas in the field of human resources (Chang, McDonald, & Burton, 2010). Work-life balance refers to an individual's perception of harmony or equilibrium between work and life domains. Work-life balance can be operationalized as low conflict or high satisfaction in both work and life domains (Chang, McDonald, & Burton, 2010). Individuals who are using their personal devices for work related activities view this action as a helpful process. On the other hand, with work issued devices employees feel added employer and co-worker pressures to conduct work related activities. Thus,

> *H5: Individuals who have employer issued mobile devices will have higher perceptions of work-life conflict in comparison to individuals who use their personal mobile devices.*

RESEARCH METHODOLOGY

A quantitative methodology was used in order to test perceptions on mobile device usage, usefulness, work overload, flexibility and, work-life conflict of individuals. Secondary data from a previous study was analyzed to test the hypotheses of this study. After developing an initial instrument a pretest was conducted to revise the survey in ensuring that the items are easily understood (Straub, 1989). This pre-test was administered to 11 IS doctoral students who were advised to review each item carefully in order to validate the content and provide suggestions to improve the survey. Feedback was used to revise the survey and ensure the reliability of measures. All measures were adapted from existing scales to the context of this study and are included in the appendices.

Next, a pilot study was conducted using an MBA class of working professionals to review the items and ensure that there are no major issues in the development of the survey. Analyses of the pilot data seemed to show support for our hypothesis, therefore we proceeded with the full study. Next a full study was conducted involving large-scale data collection that included employees from a diverse number of companies and job responsibilities. A sample of 185 individuals was collected from a diverse range of age, sex, job responsibility, occupational field, income level, marital status, and number of dependents.

Measures

In developing the measures, whenever possible, we adapted items from existing instruments from related literature. When existing instruments were not available, relevant studies provided useful information to develop new items. All items were assessed using a five-point Likert-type scale and the instrument is composed entirely of reflective measures. We also controlled for other important variables, including: demographic factors such as gender, age, and respondents' position type. For information on our specific items the instrument is included in appendix A.

Participants

We distributed the online survey to 325 recipients via email. We received 237 responses, a response rate of 73 percent. This is much higher than typical response rates in IS research as much lower response rates have been reported in top IS journals (Sivo & Saunders, 2006). Only 185 responses were usable as some respondents failed to respond to all questions and the design of the survey only allowed individuals who currently use a mobile device (by our definition) and are currently employed, to complete the survey.

We defined a mobile device as a personal device that combines a cell phone with a hand-held computer, typically offering internet access, data storage, e-mail capability, etc. (such as a smart phone). As seen in Table 1 gender was well represented by the respondents as well as normal ranging responses for age range and position type.

Demographic Item		Count	Percent
Gender	Male	96	52%
	Female	89	48%

Age Range	18 - 24	8	4%
	25 - 34	76	41%
	35 - 44	41	22%
	45 - 54	28	15%
	55 - 64	29	16%
	65 and over	3	2%
Position Type	Upper Management	20	11%
	Middle Management	62	34%
	Administrative Staff	2	1%
	Support Staff	16	9%
	Student	48	26%
	Educator	7	4%
	Other	29	16%

1. Table 1. Demographic Data of Respondents

Analysis and Results

Our hypotheses were tested first by using the Multivariate Analysis of Variance (MANOVA) technique to show overall significance of a difference between means and then by univariate Analysis of Variance (ANOVA) tests to asses differences in specific means of the study. The MANOVA shows there is a significant difference on at least one of the constructs of mobile device usage, usefulness, work overload, flexibility and, work-life conflict as they relate to the voluntariness of mobile device use (Λ=.749, F_(7, 175)=8.36, p<0.0001).

This finding suggests that we should continue and conduct the univariate ANNOVA tests in order to better understand what differences in means are relevant. The univariate ANOVAs are used as a protected test to assess which variables are most likely responsible for the significant MANOVA. We determine that (mobile device usage) work related at work ($F_{3,181}$=27.87, p<0.0001) , (mobile device usage) work related at home($F_{3,181}$=11.48, p=0.0009), (mobile device usage) personal related at work($F_{3,181}$=11.44, p=0.0009), usefulness($F_{3,181}$=23.23, p<0.0001), work overload($F_{3,181}$=23.02, p<0.0001), flexibility($F_{3,181}$=6.71, p=0.0104) and, work-life conflict($F_{3,181}$=5.91, p=0.0160) are all contribute to the significant MANOVA after controlling for age and gender. As seen in Table 2 all hypothesized relationships were supported through these statistical tests.

Hypotheses (F-value, P-Value)	**Supported?**
H1a: Individuals who have employer issued mobile devices will have increased usage (work related while at work) in comparison to individuals who use their personal mobile devices. (27.87 , <.0001)	Yes
H1b: Individuals who have employer issued mobile devices will have increased usage (work related while at home) in comparison to individuals who use their personal mobile devices. (11.48 , 0.0009)	Yes
H1c: Individuals who have personal mobile devices will have increased usage (personal usage while at work) in comparison to individuals who have employer issued mobile devices (11.44 , 0.0009)	Yes
H2: Individuals who have employer issued mobile devices will have higher perceptions of usefulness in comparison to individuals who use their personal mobile devices. (23.23 , <.0001)	Yes
H3: Individuals who have employer issued mobile devices will have higher perceptions of work overload in comparison to individuals who use their personal mobile devices. (23.02 , <.0001)	Yes
H4: Individuals who have employer issued mobile devices will have higher perceptions of flexibility in work structure in comparison to individuals who use their personal mobile devices. (6.71 , 0.0104)	Yes
H5: Individuals who have employer issued mobile devices will have higher perceptions of work-life conflict in comparison to individuals who use their personal mobile devices. (5.16 , 0.0243)	Yes

2. **Table 2. Summary of Proposed Hypotheses**

Conclusions

One major purpose of this study was to examine how the decision of management and organizations to issue mobile devices is perceived by employees. Through our unique classification of mobile device usage, a better understanding was revealed when it comes to use. The significant hypothesized relationships for mobile device usage suggests that employees who are issued mobile devices will in fact use their mobile device more for work related activities both at work and at home. On the other hand individuals who use their personal devices are more likely to conduct personal related activities at work. The hypotheses support the decision to issue mobile devices as employees are more likely to use them for work related tasks. On the other hand management of organizations might want to research methods of controlling how much time is being spent on personal mobile devices throughout the day.

Also supporting the decision to supply mobile devices to employees is the finding that individuals who are supplied mobile devices are more likely to perceive them as useful for work related activities. As discussed above the use of personal devices for work related activities might be hindered by firewalls or incompatible software, whereas work issued mobile devices often have the expertise of organizational IT personnel to set up and maintain the devices on a regular basis. Results of hypothesis 3 are concerning for organizations as employees issued work related mobile devices had a higher level of perceived work overload. On the contrary, individuals connect their personal devices to work related activities to alleviate work overload and will have a more positive perception or their responsibilities.

Flexibility is a somewhat misunderstood construct in the literature and in the minds of employees. While flexibility seems to have a positive sentiment, research has shown that it can cause a blurring of

boundaries in which the individual is actually overworked due to the fact that they cannot completely disconnect from work. Our finding suggests that individuals who are issued a work related device have an increased perception of flexibility and therefore they also might find themselves with increasingly blurred boundaries between work and life. Our final hypothesis tests the difference of the two groups in terms of work-life conflict. We found that individuals who are supplied a mobile device are more likely to have work-life conflict. This study was exploratory in nature and sought to better understand perceptions of mobile device usage, usefulness, work overload, flexibility and, work-life conflict as they relate to the voluntary nature of mobile device use. Future research in this area should seek to further explain these relationships and how other factors such as type of mobile device used might also influence perceptions. Some interesting areas for future research revealed also include discovering new methods to limit access through mobile devices in the work place. Results shine light on other interesting opportunities for future research as companies seek to find balance in increasing employee productivity while also being mindful of their wellbeing. As companies seek to find this balance research on guidelines restricting work related use while away from work and personal use while at work is essential. The findings of this article have strong practical applications and should be considered when managers are faced with the decision to supply mobile devices.

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Appendices:

A: Survey Instrument:

Q12 Please indicate the frequency at which you participate in the following statements. WHILE AT WORK, I USE MY MOBILE DEVICE TO:	Never (1)	Sometimes (2)	Often (3)	Very Often (4)	Almost Always (5)
send work related emails (1)	❍	❍	❍	❍	❍
access work documents (2)	❍	❍	❍	❍	❍
search for work related information (3)	❍	❍	❍	❍	❍
participate in on-line social networks that relate to work (4)	❍	❍	❍	❍	❍
send work related text messages (5)	❍	❍	❍	❍	❍
make work related phone calls (6)	❍	❍	❍	❍	❍

Q13 Please indicate the frequency at which you participate in the following statements. WHILE AT HOME, I USE MY MOBILE DEVICE TO:	Never (1)	Sometimes (2)	Often (3)	Very Often (4)	Almost Always (5)
send work related emails (1)	❍	❍	❍	❍	❍
access work documents (2)	❍	❍	❍	❍	❍
search for work related information (3)	❍	❍	❍	❍	❍
participate in on-line social networks that relate to work (4)	❍	❍	❍	❍	❍
send work related text messages (5)	❍	❍	❍	❍	❍
make work related phone calls (6)	❍	❍	❍	❍	❍
Q14 Please indicate the frequency at which you participate in the following statements. WHILE AT WORK, I USE MY MOBILE DEVICE TO:	**Never (1)**	**Sometimes (2)**	**Often (3)**	**Very Often (4)**	**Almost Always (5)**
send personal emails (1)	❍	❍	❍	❍	❍
access personal documents (2)	❍	❍	❍	❍	❍
search for personal information (3)	❍	❍	❍	❍	❍
access my personal bank account (4)	❍	❍	❍	❍	❍
purchase personal items or services (5)	❍	❍	❍	❍	❍
participate in on-line social networks for personal purposes (6)	❍	❍	❍	❍	❍
send personal text messages (7)	❍	❍	❍	❍	❍
make personal phone calls (8)	❍	❍	❍	❍	❍
play games (9)	❍	❍	❍	❍	❍

Q22 Please indicate the extent to which you agree or disagree with the following statements:	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
The use of my mobile device enables me to accomplish work tasks more quickly (1)	❍	❍	❍	❍	❍

The use of my mobile device improves the quality of my work tasks (2)	❍	❍	❍	❍	❍
The use of my mobile device makes it easier to complete my job tasks (3)	❍	❍	❍	❍	❍
The use of my mobile device enhances my effectiveness of my work tasks (4)	❍	❍	❍	❍	❍
The use of my mobile device allows me to complete more work tasks (5)	❍	❍	❍	❍	❍

Q23 Please indicate the extent to which you agree or disagree with the following statements:	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
My mobile device creates many more work requests in my job than I would otherwise experience (1)	❍	❍	❍	❍	❍
I feel constantly busy due to the use of my mobile device (2)	❍	❍	❍	❍	❍
I feel pressured due to the use of my mobile device (3)	❍	❍	❍	❍	❍
My supervisors expect me to do more work since I have acquired a mobile device (4)	❍	❍	❍	❍	❍
My coworkers expect me to do more work since I have acquired a mobile device (5)	❍	❍	❍	❍	❍

Q20 Please indicate the extent to which you agree or disagree with the following statements:	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
I have flexibility in selecting the location of where I work (1)	❍	❍	❍	❍	❍
I have flexibility in scheduling when I complete my work (2)	❍	❍	❍	❍	❍
I have flexibility in scheduling what work I will do (3)	❍	❍	❍	❍	❍
I have flexibility in how I complete my work (4)	❍	❍	❍	❍	❍

I have flexibility in who I complete my work with (5)	❍	❍	❍	❍	❍

Q22 Please indicate the extent to which you agree or disagree with the following statements:	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
The demands of my work interfere with my home and family life. (1)	❍	❍	❍	❍	❍
The amount of time my job takes up makes it difficult to fulfill family responsibilities. (2)	❍	❍	❍	❍	❍
Things I want to do at home do not get done because of the demands my job puts on me. (3)	❍	❍	❍	❍	❍
My job produces excessive strain that makes it difficult to fulfill family duties. (4)	❍	❍	❍	❍	❍
Due to work-related duties, I have to make changes to my plans for family activities. (5)	❍	❍	❍	❍	❍