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Does personal social media usage affect efficiency and well-being?

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ABSTRACT

Personal social media usage is pervasive in both personal and professional lives. Practitioner articles and news stories have commented on the addicting and distracting nature of social media. Previous empirical research has established the negative effects of distractions on primary tasks. To date, little research has looked at the potentially distracting nature of social media and the negative effects that can arise from usage. This research addresses this gap by investigating the effects of personal social media usage on task performance. To extend this research, I also examined the effects that the personal social media usage has on individuals' technostress and happiness levels. I tested these effects by creating a classroom task environment and measuring subjects' usage of social media and their task performance. From this, it was found that higher amounts of personal social media usage led to lower performance on the task, as well as higher levels of technostress and lower happiness. These results are consistent across different levels of attentional control and multitasking computer self-efficacy. These results suggest that the personal usage of social media during professional (vs. personal or play) times can lead to negative consequences and is worthy of further study.

1. Introduction

A recent survey found that 86% of online adults in the US and 79% of online adults in Europe use social media (Sverdlov, 2012). It would be hard to argue with the ubiquity of social media, and thus researchers have also paid attention to this growingly popular topic. Within the business disciplines, much research has been conducted on how businesses can leverage social media to increase exposure, profits, and other business goals. These studies have been very useful in examining social media; however, little work has been done on the effects of individual's personal social media usage and negative effects of such usage. There are at least 2.3 billion registered users for the ten most popular social networking websites worldwide combined (Socialnomics.net., 2011). Given this enormous population of users, it comes as no surprise that Facebook.com and YouTube.com are the two most-visited sites on the web, as of August 2014, and that social media usage has become the most common activity on the web (Socialnomics.net., 2012). Due to its ease of use, speed, and reach, social media is fast changing the public discourse in society and setting trends and agendas in topics that range from the environment and politics, to technology and the entertainment industry (Asur & Huberman, 2010).

Social media sites are frequently accessed both at home and at work. Though individuals can maintain a cognitive difference between personal life and professional life, these two aspects are both a part of the whole that is the individual. Understanding effects to both sides of a person's life is important for gaining a holistic picture of the individual. An argument can be made that the time spent using social media is not beneficial to the users, especially in the long term. Popular news outlets frequently report on stories involving negative outcomes of social media usage. For example, though people with low self-esteem consider Facebook an appealing venue for self-disclosure, the low positivity/high negativity of their disclosures elicited generally negative feedback from others (Forest & Wood, 2012). This cycle can lower users' happiness from not receiving the encouragement and positive feedback that they were hoping for. Also, extended use of a technology can lead to greater stresses. These technostresses can lower an individual's well-being.

Social media can also be distracting to users. The hedonic appeal of the technologies along with the ability to be connected to friends and family provides a strong pull to use the systems, both during professional and personal time. A typical worker gets interrupted at least six to eight times a day, which consumes about 28% of a knowledge worker's day (Spira & Feintuch, 2006). Research has shown that workers jump to an interruption about 40% of the time instead of focusing on the original task. When they come back to the primary task from the interruption, it can take up

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to 25 min to return to the original cognitive state (Czerwinski, Cutrell, & Horvitz, 2000). Inefficiencies in task performance can result from the time spent on the interruption and the challenge in mentally returning to the primary task.

For many students, being in the classroom can be analogous to being in a work environment. Students have work tasks to perform while in the classroom and a duty to perform these tasks efficiently, whether listening to a lecture, participating in discussion, working on a task, etc. Students accessing social media sites while in the classroom have the potential to experience many of the same drawbacks as do professionals in the workplace. A survey from Cengage Learning (2014) found that 59% of students are accessing social media in class. Given the potential for individuals to be affected when giving into these distractions/interruptions, this paper investigates this gap by exploring the effect of social media usage on students in a classroom environment. The results from this study will extend the literature concerned with technological distractors, provide preliminary empirical support for or against imposing personal social media usage limits in a classroom, and give justification for further study in more generalizable environments.

RQ: Does personal social media usage affect efficiency and well-being in a classroom environment?

The results of this exploratory study will contribute to the literature on social media and distractions by showing what effects social media usage can have on both external efficiency (performance) and internal states (well-being). As most research investigates only one of these two foci, combining both sides provides value to the literature.

The organization of the paper is as follows. The next section provides background on prior work on social media and the theoretical lens of Distraction–Conflict Theory. The research models, both the efficiency model and the well-being model, are presented along with their hypotheses. Next, the methodology is described and the analysis is performed. Finally, the discussion of the results is presented along with the conclusions.

2. Social media

Social media are a group of Internet-based applications that allow the creation and exchange of user generated content (UGC) (Kaplan and Haenlein (2010). UGC, which describes the various forms of media content created by end-users outside of a professional context and is publically available (Kaplan and Haenlein (2010), is what differentiates social media from other more traditional forms of media. As an example, online newspapers, such as the New York Times, are not considered UGC due to the professional nature of the material. The comments that can be posted about an article on an online newspaper can be considered UGC due to the creation by end users using their own creativity and its non-professional motivations.

Social media are ubiquitous in today's society. Social media have been tools used to organize political activism and coordinate revolution from the Philippines and Belarus to the 2011 activities in Tunisia and Egypt (McCafferty, 2011; Shirky, 2011). These tools can also be utilized to allow the public to voice their opinions to large firms like Bank of America (Change.org., 2011). It must be noted that social media themselves do not incite this upheaval; social media are tools that allow revolutionary groups to lower the costs of participation, organization, recruitment and training (Papic & Noonan, 2001).

From a psychological aspect, previous research has established three personality traits that are central to social media use: extraversion, neuroticism, and openness to experience (Ross et al., 2009; Zywica & Danowski, 2008). People who are more open to experiences tend to be drawn to social networking sites, as are those with high levels of neuroticism (Correa, Hinsley, & de Zúñiga, 2010). While extraversion and openness to experiences were positively related to social media use, emotional stability was a negative predictor (Correa et al., 2010). The strength of these predictions varied by gender: Correa et al. (2010) found that only the men with greater degrees of emotional instability were more regular users of the social media applications. Social media applications are used by all different types of people: happy and sad, rich and poor, healthy and sickly, old and young, etc.

Social media usage can also have negative impacts in the workplace. From the results of a large survey conducted by KellyOCG, the Kelly Global Workforce Index (more than 168,000 respondents worldwide), 43% of respondents believe that the use of social media in the workplace negatively impacts productivity (Kelly Services, 2012). In the university classroom, Jacobsen and Forste (2011) found a negative relationship between usage of various types of electronic media, including social networking, and first-semester grades. Heavy Facebook use has been seen in students with a lower grade point average (GPA); though it cannot be said that Facebook is the cause for the lower GPA, there was a significant relationship between usage and GPA (Boogart, 2006). Much of the argument about the negative impacts have been owing to the distractions that are created for an individual while he/she browses social media sites while at work or class. Thus, to examine the negative impacts, the distractions literature is leveraged to provide a foundational background.

3. Distraction–Conflict Theory

Distraction–Conflict Theory (DCT) (Baron, 1986; Groff, Baron, & Moore, 1983; Sanders & Baron, 1975) provides a theoretical lens for understanding the effect that distractions and interruptions have on performance. The distraction–conflict model can be broken down into three causal steps (Baron, 1986): (1) others are distracting, (2) distraction can lead to attentional conflict, and (3) attentional conflict elevates drive. This elevated drive leads to impaired performance and motor behavior on complex tasks. DCT provides insight into evaluating social media as a technological "other" that distracts individuals from their primary tasks.

When a decision maker is exposed to an interruption or distraction, they may forget some of the information needed for processing the primary task and, therefore, some cues are lost or never enter working memory (Speier, Valacich, & Vessey, 1999). As the decision maker completes the interruption task and returns to the primary task, a recovery period is needed to reprocess information that was forgotten while attending to the interruption or lost from working memory due to capacity (incoming cues being greater than a decision maker can process) and structural interferences (decision maker has to attend to two inputs with the same physiological mechanisms) (Kahneman, 1973). Consequences of interruptions include mental attention and effort difficulties (Baeker, Grudin, Buxton, & Greenberg, 1995), resource rationing (Baron, 1986), and impaired task processing (Cellier & Eyrolle, 1992; Schuh, 1978). Fig. 1 shows a timeline of how an interruption can consume time previously allocated for the primary task. Concerning social media, its ubiquity and ease of access make it a potentially powerful distraction mechanism. With the example of the social networking site Facebook, distractions can be initialized by sound (when a user receives a chat message) and by sight (when the web browser blinks colors or changes page titles for receiving a new chat message or relevant posting). Even simply knowing that one's friends and family may be available through the social media at any given moment can be a distractor.

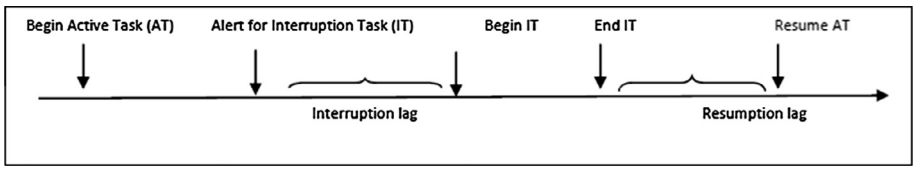

Fig. 1. Model of interruption lag, adapted from Altmann and Trafton (2004).

Given the multitude of negative effects that a distraction can pose, it is of relevance to determine if the distraction posed by social media will have negative impacts as well. To gain a more robust view, investigating both external and internal impacts on a user is of primary importance. Concerning potential external effects, efficiency is of importance to any user in the classroom or workplace. Being able to complete a primary task efficiently can be the difference between passing a class/keeping a job and failing at either. The proposed efficiency model, presented in the top half of Fig. 2, investigates if using social media impacts this external task performance. Concerning potential internal effects, there are a multitude of cognitions and emotional states that could be affected. To continue with the exploratory nature of the study, two central emotional states, stress and happiness, were selected as they can be central to many individuals' well-being. This proposed well-being model is presented in the lower half of Fig. 2.

4. Hypothesis development

4.1. Efficiency model hypothesis development

4.1.1. Task performance (PERF)

Regarding DCT, interruptions have been found to lower performance on complex tasks (Speier, Vessey, & Valacich, 2003). With complex tasks, how often an interruption occurs, and how different the content of the material in the interruption is from the content of the task affect performance. In a mobile computing environment, widely recognized as being susceptible to multiple disturbances, even low-level distractions have been indicated to lead to a performance reduction (Nicholson, Parboteeah, Nicholson, & Valacich, 2005). The popular news provides a case example (Giang, 2012): Maneesh Sethi hired a "slapper" to smack him in the face whenever he logged onto Facebook. This slapping increased Sethi's average productivity by 98%. Basoglu, Fuller, and Sweeney (2009) found that the frequency of interruptions has a significant effect on cognitive load. When cognitive load is increased, a person's attention is narrowed to one task at the price of the others (Speier et al., 1999). This one task focused on may or may not be the primary task at hand. If the task focused on is a distraction, this should lead to a decrease in the focus and attention on the primary task, thus leading to a decrease in performance of that task. For this research, social media is the distraction that the subjects can choose to focus on instead of the primary task. This leads to H1:

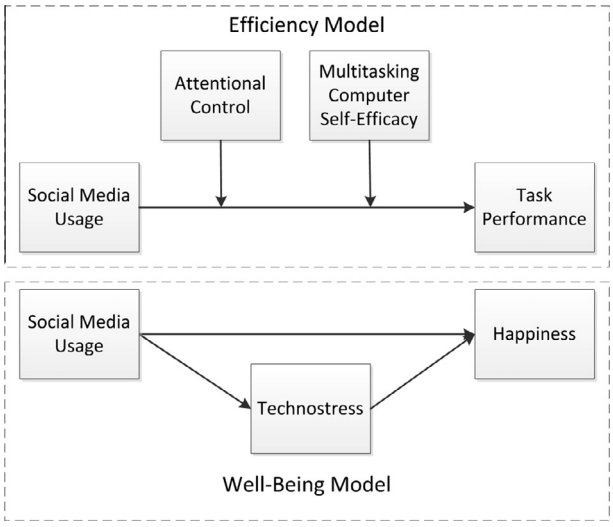

Fig. 2. Proposed research models.

H1. Usage of social media will be negatively related with task performance.

4.1.2. Attentional control (ATC)

Attentional control theory (Eysenck, Derakshan, Santos, & Calvo, 2007) posits that taxing attentional resources impairs performance efficiency (Sadeh & Bredemeier, 2010). Attentional conflicts faced by users of a highly interactive and rich medium has resulted in distractions; web developers need to take attention span and control into account when designing their sites (Nah, Eschenbrenner, & DeWester, 2011). This is also relevant to computer-based tasks. Some forms of social media are highly interactive and rich, and as such, could lead to attentional conflict for users.

Many researchers have suggested that individual differences in working memory (WM) capacity reflect poor attentional control over the use of WM resources (Fukuda & Vogel, 2011). For instance, Vogel, McCollough, and Machizawa (2005) provided evidence that low WM capacity individuals were much poorer at keeping irrelevant items from being stored than their high-capacity counterparts, who were highly efficient at excluding task irrelevant information. Though both high- and low-WM capacity individuals show equivalent attentional capture effects in the initial moments following the capture by distractors, low-capacity individuals take longer to recover (Fukuda & Vogel, 2011). This added length of time to recover that low-capacity individuals suffer should have a negative influence on their performance. This leads to H2:

H2. Attentional control will moderate the effect of social media usage on task performance.

4.1.3. Multitasking computer self-efficacy

Multitasking is typically conceptualized as performing two or more tasks at the same time (Stephens & Davis, 2009). Turner and Reinsch (2007) feel "multitasking has become synonymous with the communication technology–infused workplace of today" (p. 36). With today's "portable leashes" like smartphones and tablets, work can be accomplished and tasks can be added practically anytime, anywhere. As such, social media, especially social networking, has been identified as technology that is related to multitasking (Bannister & Remenyi, 2009).

While multitasking may increase productivity on simple tasks (Speier et al., 2003), after that point, workers face waning returns (Aral, Brynjolfsson, & Van Alstyne, 2007). Multitasking has a detrimental effect on task completion (Appelbaum, Marchionni, &

Fernandez, 2008), and college students' multitasking via electronic media has a negative relationship with GPA (Jacobsen & Forste, 2011). It is argued that the higher the rate of multitasking, the higher the cognitive switching costs between tasks since higher multitaskers are more susceptible to irrelevant interference (Ophir, Nass, & Wagner, 2009). As a result, cognitive load increases, tasks pile up, and efficiency drops. A term used by technology professionals for this is "thrashing". Humans, when they try too many task switches, can experience an analogous phenomenon. So much time is taken with juggling tasks that little productive work takes place (Bannister & Remenyi, 2009).

However, even with the body of knowledge showing that multitasking increases distractions and lowers performance, many computer users continue to multitask. Some of these users truly believe that they are efficient at multitasking and are able to complete a number of tasks concurrently efficiently. It is this belief in the ability to be able to multitask on computers, known as multitasking computer self-efficacy, that is of interest for this study.

Multitasking computer self-efficacy (MTCSE) is based on computer self-efficacy, identified and supported by Compeau and Higgins (1995). Compeau and Higgins extended Bandura's work on self-efficacy (e.g. Bandura, 1986), defined as the belief in one's capability to perform a certain behavior, into the usage of computers. Computer self-efficacy was shown to effect individual's expectations of the outcomes of using computers and their actual computer use. Users that believed that they were able to perform computing tasks were actually able to do so at a higher ability than those that did not hold the same belief. As a specific instantiation of computer self-efficacy, MTCSE is defined as a person's perception of the ability to perform and ease of computer use regarding concurrent execution of two or more tasks by using a single central processing unit (Basoglu et al., 2009). In short, MTCSE is the belief that a computer user can perform multiple tasks concurrently efficiently on the same computing device. In congruence with previous research on the benefits of self-efficacy, higher levels of multitasking self-efficacy has been found to help reduce cognitive load in an environment with interruptions (Basoglu et al., 2009). This reduced cognitive load produces a lesser decrease in task performance than if the cognitive load was not lowered. This leads to H3:

H3. Multitasking computer self efficacy will moderate the effect of social media usage on task performance.

Fig. 3 shows the efficiency research model for H1–3.

4.2. Well-being model hypothesis development

4.2.1. Technostress (TSTR)

Technostress is: "a modern disease of adaptation caused by an inability to cope with the new technologies" (Brod, 1984), or more specifically, "any negative impact on attitudes, thoughts, behaviors, or body physiology that is caused either directly or indirectly by technology" (Weil & Rosen, 1997, p. 5). Baron (2002, p. 130) gives examples of these negative impacts: "Physically, people may sweat, breathe heavily, or feel light-headed when experiencing a technological situation. Mentally, one may feel fear, anxiety, and a sense of being out of control." Technostress is a more commonly occurring state than many people realize. In their 2005 article, although they do not cite specific statistics, Kase and Ritter conclude, "Despite the increasing dispersal of computers, there is significant evidence that individual computer usage is affected by ... fear of computers that is widespread, and negative attitudes towards computers in general" (p. 1262). Concerning social media, researchers at Edinburgh Napier University found that the more Facebook friends a user has, the more likely you are to feel stressed out by the social media (University of Edinburgh Business School, 2012).

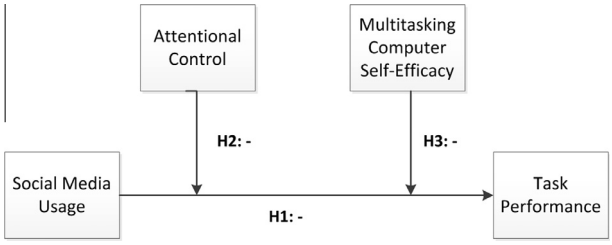

Fig. 3. efficiency model.

Technostress should not be confused with computer anxiety, though the two concepts are similar. Computer anxiety can be defined as: "The tendency of a particular individual to experience a level of uneasiness over his or her impending use of a computer, which is disproportionate to the actual threat presented by the computer...the complex emotional reactions that are evoked in individuals who interpret computers as personally threatening" (Kase & Ritter, 2009, p. 1264). Technostress is a problem of adaptation that an individual experiences when he or she is unable to cope with, or get used to, information and computer technologies (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007) Groberman (2011) explains the difference between stress and anxiety:

> "While stress is caused by the triggering of a stress-inducing factor known as a stressor, anxiety is what happens when someone gets stressed out and has no reasonable root 'stressor' that can simply be removed. This is precisely why while anxiety is considered a legitimate mental disorder, stress is not."

Previous research has explored this construct in the business environment. Technostress has been found to have a negative relationship with productivity (Tarafdar et al., 2007). The factors that create technostress lowers an individual's satisfaction with the information and communication technology they use (Tarafdar, Tu, & Ragu-Nathan, 2010), and their overall job satisfaction (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008). Shu, Tu, and Wang (2011) found that employees with higher levels of computer self-efficacy have lower levels of technostress, and that employees with a high dependence on technology have higher levels of technostress. Since the use of social media is dependent on technology, it follows that higher levels of social media usage would lead to higher levels of technostress.

H4. Social media usage will be positively related with technostress.

It is commonly held that increased stress will lead to lower happiness. Research in psychology and other disciplines supports this notion. The relationship between happiness and stress has been examined both in terms of the negative effects of stress on well-being as well as the role of positive emotions in buffering against stress (Schiffrin & Nelson, 2010). Research has demonstrated the negative effects of stress on well-being (e.g. (Chatters, 1988; Suh, Diener, & Fujita, 1996; Zika & Chamberlain, 1987)). Individuals with higher levels of stress have been found to have lower levels of happiness (Schiffrin & Nelson, 2010). Given the wealth of knowledge on stress and happiness, we posit that a continuance of the previous work will be represented here.

H5. Technostress will be negatively related with happiness.

4.2.2. Happiness (HAP)

Personal happiness is generally held to be the most important goal in life (Fordyce, 1988). This is not a new thought: Aristotle

held the view that "happiness is so important, it transcends all other worldly considerations." Surveys conducted with college students in over 40 nations showed that on a 7-point scale (7 – extraordinarily important and valuable), respondents rated happiness a 6.39 on average (Diener, Sapyta, & Suh, 1998; Kesebir & Diener, 2008). Americans, for example, see happiness as more relevant to the judgment of a good life than wealth or moral goodness; they even think that happy people are more likely to go to heaven (King & Napa, 1998). It is clear that happiness is a fundamental desire for people. As such, the opposite is true: people are repulsed by unhappiness.

Social media usage is posited to have a negative impact on happiness. Many news stories published by popular media outlets are concerned with negative impacts on happiness from social media. One story in particular, entitled "Facebook: The Encyclopedia of Beauty?" (Enayati, 2012), discusses the rampant unhappiness that can be found in college-aged females living on campus. The story gives accounts of self-esteem issues and other negative effects from over-usage of social media. The article states that not many mainstream studies have been conducted in this area and those that have been conducted provide mixed results. This leads to H6:

H6. Social media usage will be negatively related with happiness.

Fig. 4 shows the Well-Being research model.

5. Methodology

5.1. Study

The hypotheses are examined using surveys before and after a specific task was provided. Two surveys were created to measure self-reported information on the constructs of interest.

5.2. Subjects

The sample consists of undergraduate students enrolled in an information systems course in a large Western US university. Subjects were given course credit for participating. College students were selected for the sample because social media usage is prevalent among this demographic. Social media sites, especially social networking sites (SNS) are popular among college-aged people (Marett, McNab, & Harris, 2011): 93% of young adults (18–29) are online, and 73% of those use social network sites (Lenhart, Purcell, Smith, & Zickuhr, 2010). In order to increase the relevance of the study to the students, a task appropriate for introductory IS students was used.

5.3. Pilot test

To investigate the hypotheses, a pilot test ($N = 139$) of the study's interface and instruments was conducted to gain an estimate of time taken and applicability of the chosen items was administered at the subject's choice of time and place. This test involved having the subjects use a Visual Basic (VB) programmed interface to watch a 15-min video about "The Web is Dead" from Wired.[1] The video was created by the researcher solely for this study, and consisted of narration of the topic and pictures related to the material. This topic was chosen as it discusses a topic of relevance and salience to introductory IS students. Prior to inclusion for the study, the subjects were asked if they are familiar with the topic of the video in the study. Those who were familiar were flagged to be biased and removed from the sample.

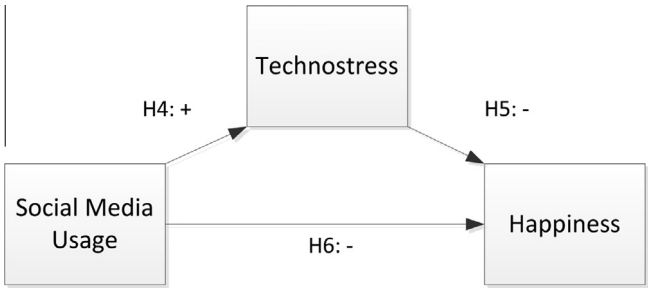

Fig. 4. Well-Being research model.

The VB program was utilized to control for the errors in memory and other biases in the social media usage during the task, as well as provide a programmatic, objective capture of sites visited. Other options for this capture, such as network monitoring and logging software, were considered for use but ultimately discarded due to campus regulations against their usage. The programmatic interface allowed students to use their personal social media accounts if they chose to do so. The tabs were built to provide an Internet browser directed to the page specified by the tab, as if the subject clicked a hyperlink to that site.

The subjects were directed to a website that contained instructions and the program setup file to run the study. Subjects were instructed to complete the study on their own time so that they would have access to their personal machines and installed software for use. This instruction eliminated potential biases of having a teacher watching them and being in an unnatural environment, but introduced biases of added distractions not accounted for by the study.

Subjects were instructed to first complete the pre-task survey and provide their student ID numbers (SIDs). The collection of SIDs was made so that responses between the two surveys could be paired. After the pre-task survey, subjects were tasked with watching the 15-min lecture video about "The Web Is Dead." After finishing the video, the subjects took the post-task survey. As the goal of this study is to measure the natural tendencies of the subjects, nothing was mentioned in the instructions or study about using social media. The post-task survey began with a quiz over the video material to measure PERF and then asked subjects about their usage of social media during the video before continuing on to the other dependent variables. Fig. 5 shows the video interface.

All subjects in the pilot test were excluded from following data collections. A raffle for a video game was offered to all subjects who participated and answered the attention-checking questions properly. The post-video survey asked about PERF, social media usage, ATC (Both the Boredom Proneness Scale and the Attention-related Cognitive Errors Scale (ARCES) (Cheyne, Carriere, & Smilek, 2006), MTCSE, HAP (Oxford Happiness Inventory, (Argyle, Martin, & Crossland, 1989), TSTR, eustress (O'Sullivan, 2011), and general stress.

Findings from the analysis of the pilot study are promising. TSTR was found to be significant with Performance. The Boredom Proneness Scale, specifically the external-stimulation items, was found to be a more reliable and significant construct for measurement in this context than the ARCES. Finally, the reliance of self-reported social media usage resulted in great variability in the data points. Neither eustress nor general stress were found to be strong predictors, and thus are dropped from the model. The same holds for the ARCES and internal stimulation portion of ATC.

5.4. Study 1

After modifications were made based on the pilot, the main study was conducted ($N = 209$) to test an updated research model

[1] http://www.wired.com/magazine/2010/08/ff_webrip/all/1.

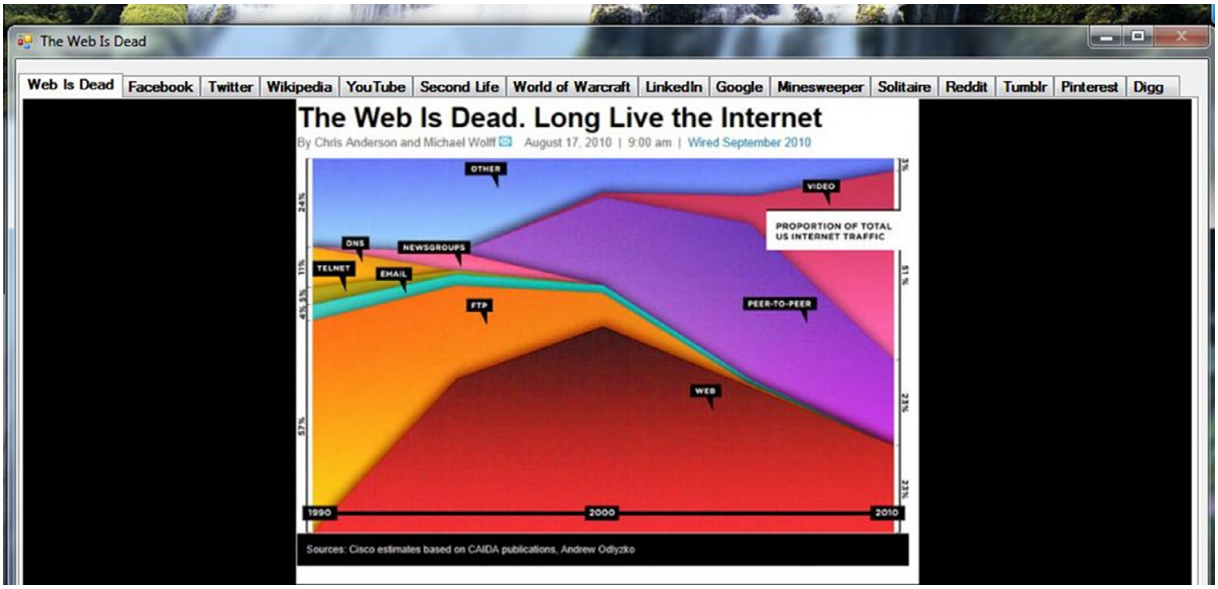

Fig. 5. Study's video interface.

and interface. The VB program was updated from the pilot study to facilitate distribution of the task and surveys. Subjects were solicited for participation through business courses at a large Western US university. Subjects were instructed to sign up for a timeslot for the study and were directed to a computer lab on campus reserved for the study to complete the work. A raffle for a video game was again offered to all subjects who participated and answered the filter questions properly.

During the session, subjects were informed to use a pair of headphones and told to log into a computer and adjust the volume. Once the testing of the audio equipment was done, subjects were told of the three tasks: A short survey, followed by a 15-min video, ending with the quiz on the video and the second survey. The program was installed on every computer in the lab and the subjects were allowed to sit at any machine. When finished, subjects were thanked and allowed to leave.

The post-video survey asked about PERF, social media usage, ATC, MTCSE, TSTR, and HAP. To help control for extraneous distractions, the study was primarily conducted in a computer lab. The program was installed on each machine and subjects came during scheduled times. Subjects unable or unwilling to attend a scheduled session were given a link to the website where the instructions for the study and the setup file for the VB program were contained. These subjects were instructed to download the setup file, install the program, and run it. It was explicitly stated that the program should only be downloaded and ran from the subjects' personal computers. This precaution was indicated because campus computers do not allow the installation of new software and since many of the social media sites/software would not be available except on personal machines.

The average age of the participants was 21, and 67% were male. ANOVAs showed no significant differences between the male and female groups ($p = .62$), as well as no significant differences on social media usage, task performance, and time spent between those who completed the task in the computer lab and those who completed it at home ($p = .32$, $p = .17$, $p = .41$, respectively).

5.5. Measures

The following instruments and measures were used for this study. The details of these measures are provided in Appendix A.

5.5.1. Social media usage

Social media usage was gathered from self-reported usage during the video task as well as programmatically captured when they clicked onto the different browsing tabs available during the video. Fig. 6 shows an example of the tab options. Subjects were not required to use any of the tabs beyond the video, and were not instructed to do so. In addition, tabs for a search engine (Google) and a game (Solitaire) were provided to eliminate leading biases.

After the questions about the content of the video, subjects were asked how much time they spent with each of the six types of social media (Kaplan & Haenlein, 2010) on a 7-point Likert-type scale anchored by "Not at All" and "The Entire Time". For those types receiving a time value greater than "Not At All", respondents entered how many different instantiations of that type were used. Comparison of the self-reported usage and the recorded usage will be analyzed to look for significant discrepancies.

5.5.2. Performance

PERF was measured via a seven question, multiple-choice quiz on the material from the task video. Each question has six possible answers: one correct, four incorrect, and "I Don't Know", which was included to give the subjects an honest answer and mitigate potential errors if the subject did not know the answer but guessed it correctly. These multiple choice questions were created by another instructor unfamiliar with the research agenda after having watched the video. This instructor was asked to create them as if they were going to give this as a quiz to their introductory IS class. The data points for each item in this quiz were either correct (1 of 6) or incorrect (5 of 6). The total number of questions answered correctly is the measurement of task performance.

5.5.3. Attentional control

ATC was measured using the Boredom Proneness Scale (BPS) (Vodanovich, Wallace, & Kass, 2005). The BPS is a 7-point Likert-type scale (1 – Strongly Disagree, 7 – Strongly Agree) and has been

Fig. 6. Four of the tab options.

used often in the literature. The BPS has been shown to be related to other self-report (Cheyne et al., 2006) and performance measures (Kass, Vodanovich, Stanny, & Taylor, 2001) of inattention. Six items were used from the external-stimulation section as these items loaded stronger than the items from the internal-stimulation section, which had many non-significant loadings in the pilot test.

5.5.4. Multitasking computer self-efficacy

MTCSE was measured using the Multitasking Computer Self Efficacy (MTCSE) scale (Basoglu et al., 2009). This scale has six 5-point Likert-type questions (1 – Strongly Disagree, 5 – Strongly Agree). The MTCSE scale was chosen for the parsimony of the scale as well as that many measures of multitasking ability, such as the Greenwich tasks (Burgess, Veitch, de Lacy Costello, & Shallice, 2000), rely on physical objects that do not translate to the computer-interface environment well.

5.5.5. Technostress

TSTR was measured using items from Tarafdar et al. (2007), specifically the items from techno-overload, techno-invasion, and techno-complexity. Tarafdar et al. went through the instrument development process and found significance in the loadings and reliabilities of these constructs. This instrument was chosen due to its rigorous development and relevance to this research.

The other two aspects of technostress identified, insecurity and uncertainty, were not included since they capture concepts not of relevance to this personal usage of social media. Techno-Insecurity is concerned with situations where users feel threatened about losing their jobs as a result of ICTs, or to other people with a greater knowledge of the ICT. Uncertainty refers to contexts where continuous changes in an ICT unsettle users due to the need to continuously learn the new changes in the ICT. Neither construct applies to voluntary usage of a primarily hedonic technology.

5.5.6. Happiness

HAP was measured using a combination of the Oxford Happiness Questionnaire (Hills & Argyle, 2002) and the Happiness Measures (Fordyce, 1988). The Oxford Happiness Questionnaire is a short-form of the Oxford Happiness Index. This shorter version uses 8 items instead of the original's 29 items. The Happiness Measures is comprised of two questions concerned with the individual's normal happiness level. Combining these two scales provides a more robust estimation of the construct, and still remains parsimonious.

6. Analysis and results

The data was analyzed using SmartPLS 2.0 (Ringle, Wende, & Will, 2005). PLS was chosen for analysis due to the exploratory nature of this model and the desire to identify key constructs (Hair, Hult, Ringle, & Sarstedt, 2013, p. 19). The sample size ($N = 209$) is of sufficient size for this analysis (Chin & Newsted, 1999). Both the bootstrapping procedure (cases = 209, samples = 5000) and the PLS algorithm were used for analysis.

6.1. Efficiency model

For the efficiency model, Table 1 shows the descriptive statistics. Only one item in the attentional control construct, did not load significantly on its construct ($p < .05$). This non-significant item was removed from the analysis. As per the common rule-of-thumb (Hair et al., 2013, p. 102), the other items loading greater than .5 but less than .7 were considered for exclusion from the model. After review, these items were retained to maintain content validity (Hair et al., 2013, p. 103).

Table 2 provides composite reliability and the correlation matrix. The Fornell–Larcker criterion is assessed to determine discriminant validity (Hair et al., 2013, p. 105). As the square root of the AVE for each construct is larger than the correlation with the other constructs, this model shows sufficient discriminant validity.

Fig. 7 shows the measurement model for these hypotheses including the moderators. H1 is supported by the data; greater amounts of social media usage are associated with lower task performance ($-.212$, $p < .01$). H2 and H3 are not supported. Neither attentional control nor multitasking computer self-efficacy significantly moderated the effect of personal social media usage on task performance; the result of lower task performance is consistent across the sample.

6.2. Well-being model

For the well-being model, Table 3 shows the descriptive statistics. All items loaded significantly on its construct ($p < .01$). The fifth item of the Happiness scale, with a loading less than .4, was removed from the model (Hair, Ringle, & Sarstedt, 2011). As per the common rule-of-thumb (Hair et al., 2013, p. 102), the other items loading greater than .5 but less than .7 were considered for exclusion from the model. After review, these items were retained to maintain content validity (Hair et al., 2013, p. 103).

Table 4 provides composite reliability and the correlation matrix. The Fornell–Larcker criterion is assessed to determine discriminant validity (Hair et al., 2013, p. 105). As the square root of the AVE for each construct is larger than the correlation with the other constructs, this model shows sufficient discriminant validity.

Fig. 8 shows the measurement model for these hypotheses. H4 is supported by the data. Greater amounts of social media usage are associated with higher levels of technostress. H5 is supported by the data. Greater levels of technostress are associated with lower levels of happiness. Finally, H6 is supported by the data. Greater amounts of social media usage are associated with lowered happiness levels.

7. Discussion

From this exploratory investigation, support was found that social media usage can be detrimental to both halves of an individual's life: the professional and the personal. Table 5 provides a summation of the hypotheses.

For the efficiency model, in line with Distraction–Conflict Theory, social media usage was found to negatively affect performance. Neither attentional control nor multitasking computer self-efficacy has a significant effect on this relationship. As often as students and professionals claim that they are multitasking, and that this is supposed to be rationale for adequate performance, the efficiency model shows that no matter how much someone believes that they are successful multitaskers on computing equipment or how strong their attentional control is, it does not change the negative effect of social media usage on their performance. This result lends support to the common rhetoric that people are not as good at multitasking as they think they are.

Concerning the well-being model, the findings are interesting. Social media usage is positively associated with technostress. People who use great amounts of technology in general have been found to have higher levels of technostress (Tarafdar et al., 2010). We can now include social media into the list of technologies that can increase this negative affective state. Consistent with the stress literature, higher levels of technostress are associated with lower happiness. Though the effect of stress on happiness has been well-researched (Schiffrin & Nelson, 2010), the specific aspect of stress, technostress, is also shown to exhibit this inverse

Table 1
Descriptive statistics, efficiency model.

Scale item	Construct	Item mean	Item SD	Item loading
ATC_1	Attentional control	4.05	1.668	0.67**
ATC_2		3.63	1.317	0.52*
ATC_3		4.23	1.592	0.75**
ATC_4		4.61	1.608	0.63*
ATC_5		3.67	1.471	0.35[a]
ATC_6		4.78	1.518	0.76*
M1_1	Multitasking computer self-efficacy	3.87	.876	0.78**
M1_2		3.80	.924	0.88**
M1_3		3.84	.810	0.86**
M1_4		3.68	.934	0.86**
M1_5		3.74	.866	0.88**
M1_6		3.91	.812	0.83**
USAGE	Usage	11.22	6.231	1
PERF	Performance	3.01	1.795	1

[a] Non-significant.
* $p = .05$.
** $p = .01$.

Table 2
Composite reliability, construct correlation, and square root of AVE (in bold), efficiency model.

	Construct	Composite reliability	1	2	3	4	5	6
1	Attentional control	0.77	**0.765**					
2	Multitasking CSE	0.94	0.352	**0.85**				
3	Social media usage	0	−0.146	−0.132	**1**			
4	Task performance	0	0.146	0.172	−0.219	**1**		
5	Attentional control moderator	0.742	0.08	−0.035	0.015	−0.062	**0.757**	
6	Multitasking CSE moderator	0.896	−0.016	−0.006	−0.104	−0.069	0.297	**0.773**

Numbers in the diagonal represent the square root of the AVEs of the constructs.

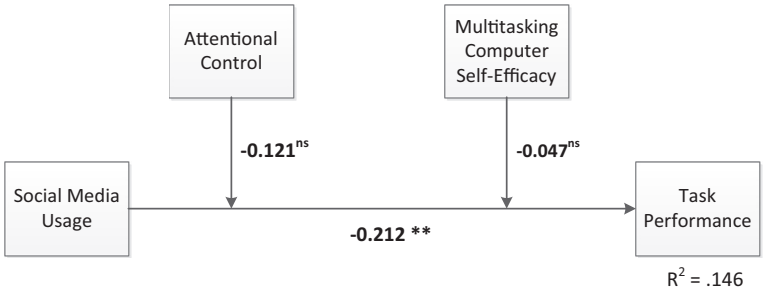

Fig. 7. Measurement, efficiency model (**—$p = .01$).

relationship. In addition, social media usage is associated with lower happiness. There are a number of conflicting results in the literature on the existence and nature of this relationship (Mitchell, Lebow, Uribe, Grathouse, & Shoger, 2011; Utz & Beukeboom, 2011), so the results provided are of use to this debate.

When examining both models, I found that social media usage has negative effects on both performance and happiness. This exploratory result provides justification for future research to determine the extent of these negative effects.

7.1. Importance for theory

Previous research has laid groundwork for the foundation of study on social media, and this foundation has room to grow. Few studies look at the potential negatives that can result from usage of these platforms in a classroom and/or work environment. Social media has the potential to be a distractor or a distraction-enabler in these environments. This study extends Distraction–Conflict Theory (Baron, 1986) by looking at the effects that a distraction caused by social media can have on an individual performing a task. With an understanding of the potential negative consequences, theorists can apply more and varied models and theories to the usage of social media.

This research also contributes towards understanding the impacts of technology in the classroom. For many years, a strong focus has been placed on introducing or upgrading technology in the classroom. This has been successful to the point that many classrooms have computers for student access, or schools will either provide laptops or encourage students to bring laptops to class. This ease of access to the Internet through this technology provides many benefits to students, but also some hindrances to success. This study provides a look at some of the negative outcomes of this push for technology in the classroom.

7.2. Importance for practice

It seems that a new story dealing with social media appears in the popular news every day. Social media has become a powerful

Table 3
Descriptive statistics, well-being model.

Scale Item	Construct	Item Mean	Item SD	Item loading
HAP1	Happiness	4.60	1.294	.62
HAP2		4.42	1.178	.69
HAP3		4.47	1.217	.54
HAP4		4.83	0.960	.65
HAP5		4.11	1.287	.38
HAP6		4.44	1.097	.69
HAP7		4.89	1.009	.78
HAP8		5.02	1.234	.52
HAPM		70.68	15.58	.55
TI1	Technostress	3.31	1.128	.63
TI2		2.97	1.096	.72
TI3		3.22	1.161	.63
TI4		3.33	1.166	.64
TI5		3.15	1.211	.64
TI6		3.12	1.297	.43
TI7		2.98	1.284	.51
TI8		2.58	1.227	.69
TI9		3.22	1.255	.43
TI10		2.29	1.103	.78
TI11		2.36	1.193	.80
TI12		2.56	1.200	.80
TI13		2.67	1.222	.77
TI14		2.36	1.157	.81

All items loaded at $p = .01$.

Table 4
Composite reliability, construct correlation, and square root of AVE (in bold), well-being model.

	Construct	Composite reliability	1	2	3
1	Happiness	0.844	**0.736**		
2	Social media usage	0	-0.259	**1**	
3	Technostress	0.919	-0.385	0.253	**0.765**

Numbers in the diagonal represent the square root of the AVEs of the constructs.

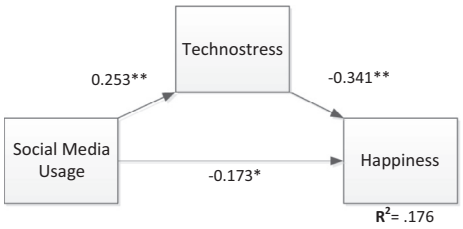

Fig. 8. Measurement, well-being model (*–$p = .05$, **–$p = .01$).

Table 5
Hypotheses.

	Hypothesis	Direction	Supported?
H1	SM usage → performance	–	Yes
H2	ATC Moderate H1	–	No
H3	MTCSE moderate H1	–	No
H4	SM usage → technostress	+	Yes
H5	Technostress → happiness	–	Yes
H6	SM usage → happiness	–	Yes

tool that can influence the world and change the way a given individual operates on a daily basis. The results of this study support the notion that personal social media usage in the classroom can have negative effects for the individual. To address these effects, regulation of social media usage in the classroom should be considered for the students' benefit.

8. Limitations and future directions

Like all research, this study is not without limitations that need to be identified and addressed in future studies. First, the usage of college students for the sample is not generalizable to the workplace. After all, the pressure that a student faces while sitting in the classroom vary greatly from the professional, economic, and possible familial pressure felt by employees in the workforce. The choice of sample is relevant for this study due to the familiarity and usage of the social media technologies by college students and that the focus of the study was on the classroom. To provide a more robust finding, future studies should investigate these relationships in the workplace context specifically. Another limitation of the study is the use of the experimental design. As the subjects were aware that they were participating in a study, the potential for biases to manifest increased. Future studies should attempt to gather social media usage and performance data objectively from field studies and non-obtrusive measurement techniques. Finally, the measure of social media usage did not distinguish between types or purpose of usage. To gain a clearer picture of the true relationship between usage and the negative effects, an understanding of the components or manifestations of usage need to be examined.

Distractions caused by social media could lead to role stress. People will assume multiple roles during any given day, and these roles can potentially change in an instant. Consider the following scenario: Bob is sitting at his desk, working hard to complete a database project. While engrossed in the table layouts, the phone rings. His wife is on the other end, instructing Bob to pay a bill immediately. Bob's role will (likely) switch from employee to husband. In this scenario, Bob will experience role conflict – his role of husband is interrupting his role of database administrator. This interruption will impede Bob's ability to fulfill his duties in his primary professional role. This scenario highlights one of the key tenets of boundary theory – role conflict. Boundary theory is useful in explaining that people assume various roles (e.g., friend, boss and co-worker) and these roles have different identities characterized by goals, values, beliefs, norms, and interaction styles (Koch, Gonzalez, & Leidner, 2012, citing Ashforth, Kreiner, & Fugate, 2000). Role conflict will occur when (1) the expectations and demands of a role conflict, (2) when the demands of one role are incompatible with those of another role, (3) between an individual's internal standards and the desired job behavior, and (4) between time, resource or capabilities of an individual and required behavior (Igbaria & Guimaraes, 1999; Koch et al., 2012; Rizzo, House, & Lirtzman, 1970; Tarafdar et al., 2007). In addition to the limitations acknowledged, a future study should consider the effects of role switching in the context of the models presented here.

Finally, many of the path weights and R^2 values found in this study may be considered statistically low and/or trivial. When examining broad constructs such as performance and happiness as dependent variables, it is likely that many constructs would have an effect on them. For this exploratory study, the significant findings show that social media usage and technostress affect these dependent variables. Future studies should test these models with additional theoretically-relevant constructs to identify more explanatory findings.

9. Conclusions

This study investigated the effects of personal social media usage on efficiency and well-being. As mentioned earlier, the popular press is rife with stories of people feeling negative consequences of social media usage. Given that social media usage is

the most popular activity on the Internet, it is important to investigate what effects this usage is actually having so that future research may uncover effective ways to handle these issues.

The results of the study indicate that personal social media usage leads to negative effects, both on efficiency and well-being. Specifically, social media usage is associated with lower task performance, increased technostress, and lower happiness. These results, though negative, are encouraging for future research as the first step in solving any problem is understanding that it exists.

Social media will continue to exist and grow in one form or another in the future. As more and more people spend increased amounts of time with the technologies, the potential for these negative effects grows. Having an understanding of what occurs and how to help remedy these effects will be vital for continued enjoyment of these dynamic platforms.

Appendix A. – measures

Items listed in the following instruments that are reverse-coded are marked with (–).

A.1. Attentional control

Attentional Control was measured using the External Stimulation portion of Vodanovich et al.'s (2005) short form of the Boredom Proneness Scale (Farmer & Sundberg, 1986). The construct has six items measured on a 7-point Likert-Type scale (1 – Strongly Disagree, 7 – Strongly Agree).

- Having to look at someone's home movies or travel pictures bores me tremendously.
- Many things I have to do are repetitive and monotonous.
- It would be very hard for me to find a job that is exciting enough.
- Unless I am doing something exciting, even dangerous, I feel half-dead and dull.
- It seems that the same old things are on television or the movies all the time; its getting old.
- When I was young, I was often in monotonous and tiresome situations.

A.2. Happiness

Happiness was measured with the Oxford Happiness Questionnaire (OHQ) (Hills & Argyle, 2002).

The OHQ is comprised of 8 questions on a 6-point Likert-Type scale (1 – Strongly Disagree, 6 – Strongly Agree):

- I don't feel particularly pleased with the way I am (–).
- I am well satisfied about everything in my life.
- I don't think I look attractive (–).
- I find beauty in some things.
- I can fit in everything I want to.
- I feel fully mentally alert.
- I feel that life is very rewarding.
- I do not have particularly happy memories of the past (–).

A.3. Multitasking computer self-efficacy

Multitasking computer self-efficacy was measured using Basoglu et al.'s (2009) MTCSE scale. This instrument has six items measured on a 5-point Likert-Type scale (1 – Strongly Disagree, 5 – Strongly Agree). The items' wordings are not provided per the request of the scale's authors.

A.4. Performance

Performance was measured using a 7-question quiz on the video material. Each question has five possible answers, and a sixth option of "I Don't Know". The number of questions answered correctly measured this construct.

- What was Chris Anderson's point of view in the article?
- What was Michael Wolff's point of view in the article?
- One of Michael Wolff's concerns is that the control the "web" took from the vertically integrated, top-down media world can:
- According to Chris Anderson, what does Metcalfe's Law state?
- What conclusion does Michael Wolff say that marketers have come to about online advertising?
- Chris Anderson thinks the web has moved to a state where it is now less about browsing, but more about:
- According to Chris Anderson, why wasn't the Web monopolized a decade ago?

A.5. Social media usage

Social media usage was measured in two different ways; a self-report, and an actual usage measure. Before the question the description of social media was provided.

The self-report question used a 7-point Likert-type scale (1 – Not at all, 7 – The Whole Time) concerning the amount of time the subject spent using the six different categories of social media sites.

The actual usage was captured programmatically through the study interface. Whenever a subject clicked on a tab for a site, the site name and exact time were added to an array of data about the subject. Once the video was completed, these arrays of information, along with the subject's ID and beginning time of the video, were emailed to the primary researcher by the program itself. Analysis of the data in these emails provides the exact usage measures.

A.6. Technostress

Technostress was measured using items from Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan (2007) paper. Their constructs of Techno-overload, Techno-invasion, and Techno-complexity were chosen for their relevance to the subject pool. The other possible constructs included Techno-insecurity (which deals with fears of being replaced) and Techno-uncertainty (which deals with organization-level issues).

All items were measured on a 5-point Likert-Type scale (1 – Strongly Disagree, 5 – Strongly Agree). A sixth option of "I Don't Know/Not Applicable" was also provided.

Techno-overload

- I am forced by technology to work much faster.
- I am forced by technology to do more work than I can handle.
- I am forced by technology to work with very tight time schedules.
- I am forced to change my work habits to adapt to new technologies.
- I have a higher workload because of increased technology complexity.

Techno-invasion

- I spend less time with my family due to technology.
- I have to be in touch with my work even during my vacation due to technology.

- I have to sacrifice my vacation and weekend time to keep current on new technology.
- I feel my personal life is being invaded by technology.

Techno-complexity

- I do not know enough about technology to handle my job satisfactorily.
- I need a long time to understand and use new technology.
- I do not find enough time to study and upgrade my technology skills.
- I find new students know more about computer technology than I do.
- I often find it too complex for me to understand and use new technologies.

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