EXPLORING THE RELATIONSHIP BETWEEN TIME PRESSURE AND WORK EXTENDING TECHNOLOGY IN A SAMPLE OF SOUTH AFRICAN CORPORATE EMPLOYEES

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ABSTRACT

Time pressure is said to have detrimental consequences on employees' wellbeing. This study examined the relationship between time pressure experienced by employees and their use of work extending technology (laptops, mobile phones, personal digital assistants, and BlackBerry type devices). A quantitative study was conducted with 103 employees from two medium sized corporate organisations in Johannesburg, South Africa. Employees' perceptions of time pressure was measured using Dapkus's tempo time pressure scale and the perceived use and impact of different types of work extending technology (WET) was measured with a scale developed specifically for this study. Significant correlations were found between the 'Drawbacks of WET' subscale and time pressure. Significant correlations were also found between the subscales 'productivity' and 'time intrusion' and time pressure experienced. These findings have importance for understanding the role that work extending technology has on time pressure.

INRODUCTION

There is a growing trend among employees to use technology that is capable of facilitating work-related activities, outside the work environment (Bittman, Brown & Wajcman, 2009). Particular types of technology have recently emerged which change the way employees work and these devices are changing the boundaries of work (Bittman et al., 2009). Among these work-related devices, there has been a rapid expansion in mobile phone technology (Wajcman, 2008). A key theorist, Linda Duxbury and her collaborators Higgins and Thomas (2006) have focused on extending the boundaries of work, and have researched different kinds of mobile technology that makes the boundaries between home and work increasing permeable for office workers. They suggest that a dichotomy is created with the use of these devices as they may induce a sense of flexibility and work- family life balance, but at the same time employees can be contacted at almost any hour of the day, which increases the expectation that employees are available at any time (Bittman et al., 2009). Thus the current study focused on the relationship between work extending technology and time pressure as well as on the advantages and disadvantages of work extending technology.

TECHNOLOGY AND WORK EXTENSION

Technology has progressed over the past twenty years - where previously, "the typewriter stayed on the desk when its user went home, and the office telephone was physically tied to its spot by its cable. The computers in use were too heavy to be carried – and even if they could be carried they were unusable because they could not be plugged in" (Towers, Duxbury, Higgins & Thomas., 2005, p. 3). There are specific types of technology that have emerged over the years that seem to be changing people's behaviour. These specific types of technology can be categorised as, 'work extending technology' (WET). The term WET was developed to describe "mobile phones, laptops, home computers, BlackBerry devices and PDAs – a group of devices capable of facilitating work-related activities outside of regular office hours in locations other than the business office" (Bittman et al., 2009, p. 676). The term WET reflects "...both the temporal and geographic extension of the work realm made possible through the use of certain technologies" (Towers et al., 2005, p.4). People rely on these types of technologies for business purposes, to keep in contact with friends and family and for having this 'perpetual contact' with others.

The connected presence conception refers to perpetual contact which implies that people can contact each other regardless of the fact that it is after office hours and the concept referred to as 'dead time' is lessened (Bittman, et al., 2009). Dead time refers to the time which "cannot be used for contacting people or being contacted by them" (Bittman, et al., 2009, p. 647). Due to the fact that work related technology exists, workers can work outside regular office hours, at any time of the day or night, whether the employee is on leave or not. Workers are now easily accessed by everyone. "...the act of performing work need no longer be limited to specific hours at a specific location. A knowledge worker can now be as productive outside the office, outside conventional working hours, as inside the office, during working hours" (Towers et al., 2005, p.3).

There are many different definitions that identify work that is performed outside the office. Terms such as teleworking, telecommuting, home-based-work, eWork and flexiworking have been used to describe the phenomenon (Towers et al., 2005). Teleworking is defined as, "a work arrangement in which organisational employees regularly work at home, or at a remote site, one or more complete workdays a week" (Towers et al., 2005, p. 3). The research described in the current study will not be focusing on teleworking but on a concept known as work extension. One difference between work extension and traditional teleworking is that teleworking is done on a planned, expected basis in a location such as home or remote site, whereas work extenders have an increase in the number of possible work locations (Towers, et al. 2005). A second difference is that the employee that uses teleworking completes their tasks during the 'normal workday' (Towers et al., 2005). The work extension thesis refers to employees who use work extending technology are expected to be present in the office, five days a week, the full workday. Employees work in the office during office hours and they use a variety of technologies to complete work outside office hours, when they are no longer in the office (Towers et al., 2005). The variety of technologies includes laptops, mobile phones more particularly smartphones such as BlackBerry type devices, personal digital assistants (PDA), iphones and ipads.

THE POSITIVE AND NEGATIVE EFFECTS OF USING WET

There are both negative and positive effects of using WET. WET is seen to allow better response to clients and it makes it easier to work in non-traditional locations at non-traditional times (Towers et al., 2005). There are mixed responses as to whether there is an increase or decrease to work/life boundary flexibility. On the one hand, WET provides greater choice over the location and time that employees work. Such flexibility makes it easier to accommodate work and family (Towers et al., 2005,). On the other hand, WET makes it easier for work to impinge on family time which blurs the boundary between home and work (Towers et al., 2005). There is an increased expectation of availability. "There is a feeling of being on call all the time, and the possibility that an email might arrive, or the mobile might ring, means that evenings, weekends and holidays are less relaxing, causing some stress" (Towers et al., 2005, p. 14). As mobile phones have become more established and influential in people's everyday life, ongoing research is needed to assess the relative benefits versus harm associated with using such devices in the form of WET.

TIME PRESSURE AND WET

"Time pressure may be one of the causal pathways that link a stressor and well-being because the subjective experience of the flow of time is an important dimension of the experience of daily life" (Roxburgh, 2004, p. 116). There is evidence to suggest that the subjective experience of time pressure is associated with health outcomes for instance, "respondents who often or always feel rushed feel more stressed, "burnt-out", and are more likely to rate themselves lower on subjective measures of well-being such as life satisfaction and happiness than respondents who do not report

feeling rushed" (Roxburgh, 2004, p. 116).

Previous research has focused on mobile phone use, which gives rise to perpetual contact and therefore an association to time pressure (Bittman, et al., 2009). This study did not discover any evidence to support the claim that "the perpetual contact afforded by mobile phones has accelerated the pace of life beyond people's perceived capacity to cope comfortably" (Bittman, et al., 2009, p.686). "In the past, research has portrayed a direct relationship between technology, productivity and working-time, according to which the spread of automation should reduce both paid and unpaid working-time" (Wajcman, 2008, p.66). It was hypothesized that there would be an increase in free-time which in turn would slow down the pace of life; however this is not the case as recent research has demonstrated that technology "changes the nature and meaning of tasks and work activities" (Wajcman, 2008, p.66). Furthermore "it creates new material and cultural practices" (Wajcman, 2008, p.66). This suggests that with the use of WET people become more accessible to managers, clients and colleagues, as they can be given tasks to complete through forms of technology despite the time of day, or if the employee is on leave or not. Adding the factor of technology to time pressure, the focus of this research was on identifying whether work extending technology provides employees with a sense of flexibility or whether it increases the time pressure experienced? The specific research questions addressed in this research were:

- Is there a relationship between time pressure experienced by employees and their use of work extending technology (laptops, mobile phones, personal digital assistants and BlackBerry type devices)?
- Does the extent of the use of WET relate to the experience of time pressure?

METHOD

Sample

One hundred and twenty two employees accessed the questionnaire, however only 103 complete data sets were obtained. The sample consisted of employees at all levels of employment. The sample consisted mainly of men (63.37%) and only 37 women (36.63%) Most of the respondents in the current study were categorised between the ages 31-40, the fewest respondents were over 60. With regard to racial groupings the sample consisted of all the racial groups, the majority of respondents were White (49.04%), followed by Indians (17.31%), then Blacks (15.38%) then Coloureds (8.65%) and lastly 2 respondents (1.92%) had chosen the 'other' option. It was interesting to note that 78.85% of the respondents owned a device of WET whereas 21.15% had said that they did not own a WET device.

Instruments

Time pressure was measured using Dapkus's time pressure scale, particularly focusing on a tempo scale which captures the subjectively stressful dimensions of time (Roxburgh, 2004). Respondents were asked to state the extent to which they agree with the statements using a twelve month time frame Examples include: 'You feel pressed for time' and 'There just does not seem to be enough hours in the day'. "The scale has good internal reliability with a Cronbach's alpha of 0.892" (Roxburgh, 2004, p.120).

Attitudes towards WET were measured using a self-developed questionnaire. This questionnaire was developed using the results of a previous qualitative study (Duxbury et al., 2005) which identified the benefits and drawbacks of WET. These benefits and drawbacks were formulated into items and constructed as a Likert type scale. A five point response scale was utilised with responses ranging from 1- strongly agree to 5- strongly disagree. The scale was piloted with a sample of ten people; in

order to test how adequate the WET questionnaire is. This was a sufficient amount of people to test the questionnaire as they had provided enough feedback to address any issues. The respondents from the pilot study consisted of five males and five females who owned a WET device. The age ranged from 27-45 years. Response from the pilot study required the questionnaire to be slightly adjusted. For example, in the pilot study, the statements were placed under headings; the sample in the pilot study found this to be too leading and suggested mixing the statements without the headings. The psychometric properties of the scale were established through factor analysis and reliability testing prior to its use in answering the research questions.

Procedure

Ethical clearance was obtained from the Human Research Ethics Committee at the University of the Witwatersrand (Protocol no. ORGH/11/04 IH). On completion of the pilot study, organisations were approached to participate in the study. Two medium size organisations had granted permission to proceed with this research. All the employees in both organisations were invited to take part in the research via email. Data was collected through an online internet website (www.SurveyMonkey.com)

RESULTS

A factor analysis was conducted on the WET scale to explore the factor structure of the scale. A principal component factor analysis with Varimax rotation was conducted. The factor solution was determined on the basis of Kaiser's criterion and eigenvalues greater than 1. Based on Kaiser's criterion, it was decided that factors extracted would only comprise items with a factor load greater than 0.4. The principal component analysis identified five factors with eigenvalues greater than 1. The factor solution comprised of 20 items grouped into 5 factors that accounted for 65.14% of the variance. However the fifth factor was removed because the items that loaded on to it were found to be incoherent with one another. Thus only 4 factors were utilised accounting for 50.55% of the variance. The remaining four factors were labelled: Flexibility; WET drawbacks; Productivity; Time intrusion.

Table 1: Rotated factor pattern with Varimax rotation

	Factor1	**Factor2**	**Factor3**	**Factor4**	**Factor5**
WET_19	.88902	.09593	.21884	-.06292	.00583
WET_20	.83295	-.11337	.07646	.17552	.05780
WET_16	.75724	.12834	.33484	-.15053	.13848
WET_6	.65583	-.16968	.24676	.01892	.23357
WET_9	.50954	.02297	-.01544	.25404	.44510
WET_21	-.00353	.87166	.02855	.11117	-.08839
WET_8	-.00502	.80069	.11711	.15373	.13071
WET_10	-.06206	.67934	-.02020	.35256	-.10756
WET_1	.15341	-.02425	.82932	-.16431	-.04040
WET_4	.26091	-.15637	.72248	-.04467	.08233
WET_5	.52337	.12408	.59565	.17327	-.09835
WET_3	.14856	.29186	.55064	.12454	.02781
WET_13	.40121	.32080	.45773	-.03200	.19456
WET_18	.12289	.36079	-.15954	.69039	-.08846
WET_11	.06787	.43868	.06647	.65683	.18583
WET_15	.01460	.44867	-.16092	.65579	-.25587

WET_7	-.02184	-.08555	.46634	.62924	.17120
WET_12	.02243	-.04638	-.12249	.17890	.80443
WET_17	.19080	.06747	.15112	-.20351	.63912
WET_14	.37251	-.22291	.29571	-.34156	.47308

The table above shows how it has loaded on certain factors.

Table 2: Cronbach Alphas for WET scale

Scale	Number of Items	Cronbach Alpha
Flexibility	5	.8258
Drawbacks	3	.8028
Productivity	5	.7665
Time intrusion	4	.7252

Although the scale comprised of 21 items only 20 items were taken into account as it was found that the removal of item 2, increased the Cronbach's alpha of the WET scale. Items 2, 12, 14, and 17 did not load on to any factor therefore they were excluded from further analyses.

Table 3: Simple Statistics for the total of each WET subscale and the total for time pressure

Variable	Mean	Standard Deviation	Minimum	Maximum	Sample items
WET-Flexibility	20.79048	3.12771	10.00000	25.00000	WET gives me greater ability to work from home.
WET-Drawbacks	9.91429	2.77043	4.00000	15.00000	WET takes time away from my family.
WET-Productivity	20.93333	2.91636	10.00000	25.00000	WET allows me to do my work more efficiently.
WET- Time intrusion	14.35238	3.16222	6.00000	20.00000	With the use of WET, I am never off duty.
Time Pressure	32.76190	7.40780	0	45.00000	You feel rushed to do the things that you have to do.

Table 4: Pearson Correlation analysis between WET and Time Pressure

Pearson Correlation Coefficients, N= 105 Prob> |r| under H0: Rho=0					

	WET-Flexibility	WET-Drawbacks	WET-Productivity	WET-Time Intrusion	Time Pressure
WET-Flexibility	1.00000	-.03649 .7117	.53712 <.0001*	.11642 .2369	.04016 .6842
WET-Drawbacks	-.03649 .7117	1.00000	.15400 .1168	.52592 <.0001*	.45206 <.0001*
WET-Productivity	.53712 <.0001*	.15400 .1168	1.00000	.13811 .1600	.19999 .0408*
WET-Time Intrusion	.11642 .2369	.52592 <.0001*	.13811 .1600	1.00000	.23020 .0182*
Time Pressure	.04016 .6842	.45206 <.0001*	.19999 .0408*	.23020 .0182*	1.00000

*Correlation is significant at the 0.05 level

A moderate, positive and significant correlation was found for the relationship between the subscale drawbacks of the WET scale and time pressure. Weak, positive and significant correlations were found between the subscales productivity and time intrusion and time pressure experienced. No significant correlation was found between the subscale flexibility and time pressure. A weak, positive and non significant correlation was found for the relationship between time pressure and the extent of use of WET.

DISCUSSION

On the whole, the results of the current study indicate that there is no association between time pressure experienced by employees and their use of work extending technology. However the results indicate a relationship between the ‘Drawbacks of WET’ subscale and time pressure. Significant correlations were also found between the subscales ‘productivity’ and ‘time intrusion’ and time pressure experienced. The results further indicate that there is no association between the extent of use of WET and time pressure. This has practical implications for the usage of technology outside ‘normal’ working hours, as well as theoretical implications in relation to the technology literature.

At a practical level, it is important to note that this study did not find an association between the extent of the use of WET and the perceptions of time pressure. Thus the usage of WET does not have an impact on the experience of time pressure. The frequent use of WET could be explained by the usage of the various functionalities that is included in the WET device. This could make people more productive and they could induce a sense of flexibility with this device as it does not have an impact on their experience of time pressure.

There are both positive and negative implications with the use of WET, if a person experiences more

negative aspects than a positive aspects, the person is likely going to experience more time pressure. From the literature of time pressure, it is noted that time pressure can have detrimental consequences to ones well-being. The results from the current study indicate that the more one perceives the drawbacks of WET this would increase the time pressure experience and in turn this would impact a person's well-being negatively.

At a theoretical level, the current findings indicate that technology that facilitates work related activities can be interpreted differently. This means that some view these devices as a tool to allow them to be productive and it gives them a sense of flexibility. Others find this tool to be a source of time intrusion and they also find it to have many drawbacks. This study found a significant difference for the drawbacks of WET between males and females. Therefore males and females interpret the drawbacks of WET differently. A scale has been developed to measure the attitudes of WET. This contributes to the literature of technology as previous research does not explain new perceptions towards WET therefore the current study has established a scale to determine these perceptions.

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