Out of work, out of mind? Smartphone use and work-life boundaries

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ABSTRACT

Smartphones are now ubiquitous and valuable in many professions and yet have also been blamed for creating an ‘always on’ culture, blurring boundaries between work and home. Research has shown that checking e-mails out-of-hours via computer makes workers feel more overloaded with work but also increases their sense of coping. A total of 94 participants completed a survey exploring whether the same pattern would emerge for accessing e-mail on smartphones, showing that those who use smartphones for work e-mail experienced lower levels of overload, but not coping, and push notifications were associated with greater use of smartphones for e-mail. However, there were no significant correlations between coping or overload and e-mail use or quantity, suggesting that lower overload is not due to the ability to process or read more e-mails outside of work.

Categories and Subject Descriptors
H.5.m. Information interfaces and presentation (e.g., HCI):
Miscellaneous.

Keywords
Mobile technology; email management; email overload; work-home boundaries.

1. INTRODUCTION

Mobile technologies have played an indisputably important role in improving the level of flexibility open to workers; employees are now better able to time journeys around rush hours, contribute to workloads while in other locations and perform important tasks outside of working hours. However, this also challenges the extent to which the boundaries of work and home can be enforced by factors such as time and location, which were once much more rigid. This is particularly true for smartphone use, as they not only allow access to work related information and e-mail from any location and at any time, but they also actively alert users to incoming information through notifications, potentially interrupting other activities.

Maintaining boundaries in an environment in which constant connectivity is the norm may consequently be very difficult, especially considering that approximately 64% of the UK population owns smartphones [2], and almost half of these users report using their smartphone for work related purposes [10]. However, for many this is not a choice, and dealing with the extra demands made through e-mail as quickly as possible is an expectation imposed on them, and one that makes it more difficult to compartmentalize time at home [11]. It is not just the extra demands received that encourage the erosion of boundaries, but also the ease with which e-mail can be accessed; smartphone users have been found to have a greater tendency to check e-mails outside of work than non-users [11].

The intrusion of work e-mail into the home domain is likely to have a number of consequences, although the most prominent and influential is arguably work stress. Not only has work stress been linked to physical health problems such as coronary heart disease [7], but boundary management strategies that do not allow for a degree of detachment from work are likely to result in greater levels of family conflict [8]. In this regard, previous research suggests that checking e-mail outside of work hours may have double-edged outcomes; the amount of time spent dealing with e-mails has been found to be correlated with an increased sense of overload [1]. Conversely however, Barley and colleagues [1] also report a positive correlation between the number of e-mails processed and an increased sense of coping. Overload and coping are considered influential factors of stress, and although negatively correlated, are different constructs; overload is the experience of stress, whereas coping is the ability to handle stress [1, 9]. This suggests that while allowing e-mail to cross home and work boundaries may be stressful, it may also be beneficial in terms of being able to process e-mails, creating a sense of control over work demands. However, this is yet to be investigated in terms of smartphone e-mail use. There are likely to be a number of differences, as smartphones remain restricted in the kinds of tasks they make possible [6]. Indeed, they appear to be used primarily to check and prioritize e-mails, rather than to process them [13], indicating that there may be differential outcomes of spending time accessing e-mails on smartphones compared to computers.

We report on a survey study, exploring smartphone e-mail use and work stress. In line with the above research, it was hypothesized that using smartphones to access e-mail:

- Will be associated with a greater amount of time processing email outside of work and processing a greater number of e-mails than non-smartphone e-mail users
- Will be associated with a greater sense of coping, but also a greater sense of overload.

2. METHOD

2.1 Participants

A total of 94 adults (54.3% male) completed the questionnaire, all of whom were in full time employment and had work e-mail accounts. An additional 19 did not complete the survey and so were excluded. The final participant group were aged between 20 and 69 (M=39.23, S.D.=11.37), and were recruited through e-mail mailing lists (mostly those relating to professions likely to use e-
mail) and social networking sites. The majority (87.2%) owned smartphones, 73.4% used smartphones to access their work e-mail and 54.3% received automatic notifications on their smartphones for work e-mail.

2.2 Materials

Work stress was measured by scales relating to overload (the five item Emotional Exhaustion subscale of the Burnout Inventory [12]) and coping (the three item Coping/Mastery scale [3]), both answerable on a five point scale. This is in line with previous research [1], and allowed the investigation of the potentially double edged associations of smartphone e-mail use. The overload scale included questions relating to experiences such as feeling emotionally drained or burned out from work, and coping focused instead on experiences such as feeling confident about abilities to solve problems.

Participants answered further questions on their smartphone and e-mail use and were asked to estimate the total amount of time spent on e-mail and the number of e-mails read, sent and received outside of work each day. Previous research has reported high correlations between self-reported and actual e-mail behaviors [4], and this is an approach adopted in similar studies. Each question was asked for both the average work day and average day off. Separate answers were also given for e-mails accessed, read and received on personal computers and smartphones.

2.3 Procedure

The questionnaire was hosted by Qualtrics online survey software.

3. RESULTS

<table>
<thead>
<tr>
<th>E-mail behaviors</th>
<th>No</th>
<th>Yes</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload score</td>
<td>17.16</td>
<td>15.09</td>
<td>15.64</td>
</tr>
<tr>
<td></td>
<td>(4.26)</td>
<td>(3.50)</td>
<td>(3.81)*</td>
</tr>
<tr>
<td>Coping Score</td>
<td>10.36</td>
<td>10.80</td>
<td>10.68</td>
</tr>
<tr>
<td></td>
<td>(2.02)</td>
<td>(2.48)</td>
<td>(2.37)</td>
</tr>
</tbody>
</table>

*Note. *p<.05, **p<.01.

Table 1. Means and standard deviations for stress measures according to whether work e-mail is accessed on smartphones outside of work

See table 1 for means and standard deviations of overload and coping. Mann Whitney tests demonstrated that those who accessed work e-mail on smartphones (n=69) reported less overload (U=614, p<.05), spent less time accessing e-mails on computers on days off (U=652, p<.05), read more e-mails outside of work (U=568, p<.05) and received more e-mails on their days off (U=574.5, P<.05) than those who did not access work e-mail on their smartphones. There was no difference between the groups in relation to coping, nor in relation to any other measure of e-mail use.

There were also no significant correlations (conducted using Kendall’s Tau) between either overload or coping and time spent on e-mail (on a computer or smartphone), or the number of e-mails sent, received or read outside of work.

Associations with push notifications were also investigated. When comparing those with (n=51) and without push notifications (n=18) within the smartphone e-mail group, it was found that those with notifications spent more time accessing e-mail on their smartphones (U=223, p<.05) and sent more e-mails (U=288.5, p<.05). They did not, however, differ in the number of e-mails read or received, nor in the stress outcome measures.

4. DISCUSSION

This study aimed to inform the field of the possible associations with boundary spanning demands, specifically smartphone e-mail use outside of working hours. It was found that those who accessed work e-mail on their smartphones outside of work hours scored significantly lower in overload than non-users. They also spent less time accessing e-mail on their computers, received more e-mails on their days off and read more e-mails than non-users. However, contrary to predictions, smartphone e-mail users and non-users did not differ in their sense of coping, nor was there a relationship between either the number of e-mails processed, or the amount of time spent on e-mail and either coping or overload.

This goes some way to suggest that while fluid boundaries between home and work contexts may be a negative influence in some contexts [8], this may not necessarily be the case in terms of work e-mail. Despite allowing work e-mail (and consequently work-related tasks), to intervene in home contexts, the only association with stress appeared to be a positive one. Although the current study cannot establish causality, this may be due to access to e-mail providing an increased sense of control and flexibility [5]. The findings also indicate that in some situations (for instance, checking e-mail on days off), smartphones may operate as a replacement for accessing e-mail on computers, rather than encouraging more flexible boundaries themselves. Therefore, not only does this suggest the practice of e-mail outside of work does not necessarily need to be discouraged (at least in relation to overload and coping), but if a company does wish to do this, it would need to implement alternative strategies other than removing smartphones.

Push notifications may, however, be more influential than simply using a smartphone for e-mail; those with push notifications were found to engage significantly more with their e-mail on their smartphones, in terms of both time and number of e-mails sent. Push notifications have previously been reported to provide substantial distractions from other activities [15], suggesting that they may increase smartphone e-mail use through actively cueing users to access e-mails. They may, therefore, be more actively involved in violating work-home boundaries in a less voluntary manner. As having enabled notifications was not associated with overload or coping, this indicates it has a limited impact on stress, although future research may wish to investigate the influence on other factors, such as work-home interference, or family conflict.

Much of the previous research on this topic has relied on data collected before smartphones were so widely owned and used (for example, [1]), and this may be the reason for the lack of expected difference in coping between those who use smartphones for work e-mail and those who do not. It is likely that in modern day workplaces, individuals are more aware and mindful of the fact...
that e-mails will be received instantly, irrespective of location than they were when only a limited number of people owned smartphones. This may have led to practices that reduce the level of stress experienced as a result of receiving these e-mails outside of the workplace, for instance, stating how important it is for the receiver to reply or specifying that this does not need their attention until they return to the office. Alternatively, being more used to receiving this kind of information while outside of work may have allowed employees to adapt and feel less stressed when this occurs. Either way, this could have led to individuals preventing interruptions from their smartphones permeating boundaries to the extent that stress is caused.

The relatively diverse sample used in the present study may also have been influential in generating different findings to those reported by Barley and colleagues [1]; their study focused on employees off one specific company. Although there are likely to be useful insights gained from this approach, the present study aimed to uncover overall trends, as opposed to those generalizable only to a specific company.

Whatever the reason for the discrepant findings, the present results would indicate that neither the volume of e-mail received outside of work hours nor the time spent processing it are related to stress, as measured by coping and overload. This is despite the potential for this to interfere with the management of work home boundaries. One possibility is that when individuals experience increasing volumes of work, or require a greater level of engagement with their e-mail, rather than experience greater overload or reduced coping, many are able to adapt to the increasing demands. Therefore, e-mail behaviors will fail to be associated with coping or overload, whereas strategies such as using smartphones would be. Future research may wish to focus on how smartphone use corresponds with other boundary management techniques, and whether these associations occur because or despite alternative methods of segregating work and home contexts.

4.1 Limitations
The most notable limitation of the present study is the lack of an objective measure of e-mail use. Previous work has established that self-reports of e-mail use are relatively reliable [4], although using tracking software such as Xobni would no doubt improve accuracy. Furthermore, widening the scope to include e-mail accessed on other devices such as may better reflect the role of mobile technology in e-mail.

It must also be noted, that in contrast to some previous studies conducted prior to mass-adoption, it is now the case that those who do not own smartphones are very much in the minority. Therefore, those resisting this trend may form a group that differs substantially from smartphone users on many factors other than simply owning a smartphone. For instance, they are more likely to be resistant to technology overall [14]. As the differences between users and non-users is likely to intensify even further in the future, studies may wish to focus instead on other variables, such as the amount of time spent on the smartphones, rather than simply if they are used for e-mail or not.

4.2 Conclusion
The current literature has so far failed to address whether the common boundary spanning practices such as dealing with e-mails on smartphones outside of work is associated with coping and overload. The conclusions of the present study indicate that while smartphone use for work e-mail is associated with lower overload, neither overload nor coping are related to the volume of e-mails or the time spent processing them outside of work. This therefore indicates that it is not the ability to deal with e-mails during this time that underlies the relationship between overload and smartphone use. Rather, it could be simply due to being able to access them easily, and exert a sense of control over workload as a result, or due the other benefits of owning smartphones. For instance, smartphones allow unrivaled opportunities for social interaction as well as work related applications, such as Microsoft Office. As a consequence, this may reduce overload due to heightened connectivity in general, in addition to the ability to access e-mail. This contributes to the debate surrounding the costs and benefits of smartphone use and the importance of keeping work and home contexts distinct. The findings indicate that workers may stand to gain a sense of control by owning a smartphone. This has broader implications for a society in which remote working and increased connectivity are becoming the norm, with a greater than ever reliance on technology.

5. ACKNOWLEDGMENTS
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6. REFERENCES


