



## Research Report

## Checking email less frequently reduces stress

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## ABSTRACT

Using email is one of the most common online activities in the world today. Yet, very little experimental research has examined the effect of email on well-being. Utilizing a within-subjects design, we investigated how the frequency of checking email affects well-being over a period of two weeks. During one week, 124 adults were randomly assigned to limit checking their email to three times a day; during the other week, participants could check their email an unlimited number of times per day. We found that during the limited email use week, participants experienced significantly lower daily stress than during the unlimited email use week. Lower stress, in turn, predicted higher well-being on a diverse range of well-being outcomes. These findings highlight the benefits of checking email less frequently for reducing psychological stress.

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## 1. Introduction

Every day, 183 billion emails are sent and received worldwide (Radicati & Levenstein, 2013). Email is among the most widespread online activities—in a 2011 survey, 92% of US adults reported using email to communicate (Pew Research Center, 2011). In addition to this ubiquity of email, people's inboxes play a central role in their lives: More than one-third of US adults surveyed in 2014 said that email would be 'very hard' to give up—more than three times as many people who said the same about social media (Pew Research Center, 2014). And, according to one survey, about one-third of US workers report replying within 15 min of receiving a work email, and three-fourths reply within an hour (Kelleher, 2013). The popular press is rife with claims about the effects on well-being of this ubiquity of email in the life of today's information worker. Best sellers, such as the *Four Hour Work Week* (Ferriss, 2007), recommend a variety of approaches to reducing stress at work by, for example, checking email only twice a day. In stark contrast to this abundance of causal claims in the popular discourse, very little experimental research has explored how different approaches to dealing with email actually impact well-being. Accordingly, in the present research, we set out to conduct the first experimental field study to investigate whether the frequency with which people check email exerts a causal impact on their well-being.

Correlational research has provided preliminary evidence that dealing with email may be associated with negative outcomes for well-being (for a review, see Taylor, Fieldman, & Altman, 2008). This correlational research indicates that people who handle more email experience lower job satisfaction (Merten & Gloor, 2010) and perceive email as a greater source of stress (Jerejian, Reid, & Rees, 2013; Mano & Mesch, 2010). Similarly, people who spend more time on email report greater work overload (e.g., feeling emotionally drained, frustrated, and stressed from work; Barley, Meyerson, & Grodal, 2011). Of course, this correlational research does not enable inferences about the causal effect of email on well-being. A busier work schedule, for example, may result in both dealing with more email and perceiving one's job as a greater source of stress.

If email does have a causal effect on well-being, what specific aspects of dealing with a larger inbox influence well-being? One possibility is that simply thinking about the ballooning size of one's inbox directly causes more stress, thus compromising well-being. In contrast to this possibility, however, people who handle more emails at work perceive email as a way to improve work effectiveness (Mano & Mesch, 2010) and see themselves as more able to cope with stressors (Barley et al., 2011). Another popular idea is that email reduces well-being because it allows people to work longer hours, by, for example, answering emails from home (e.g., Renaud, Ramsay, & Hair, 2006). Contrary to this idea, the time spent working does not mediate the relationship between time spent on email and work overload (Barley et al., 2011). Thus, neither sheer email volume nor time spent on email seems to influence well-being directly. A third possibility is that the effect of dealing with email on well-being depends on the

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way people manage their large inboxes. Providing some initial support for this possibility, a training program in effective email management resulted in less self-reported workflow impairment due to email and reduced level of email strain (e.g., being annoyed by email; Soucek & Moser, 2010).

One critical aspect of managing email is how frequently people attend to their inbox (e.g., Dabbish & Kraut, 2006). Faced with the constant flow of new email messages, some people respond by frequently switching between other tasks and their email (González & Mark, 2004; Jackson, Dawson, & Wilson, 2001, 2003; Whittaker, Bellotti, & Gwizdka, 2006; Whittaker & Sidner, 1997). Employees in one British company, for example, were interrupted by email on average every five minutes, and the typical worker responded within six seconds of receiving an email (Jackson et al., 2001, 2003). Even in the absence of such frequent external interruptions, email may provide a readily available source of distraction, which is important considering that self-interruptions account for 40% of all interruptions at work (Czerwinski, Horvitz, & Wilhite, 2004). In short, people often manage their email by attending to their inbox frequently, thus resulting in frequent interruptions and switching between tasks. In the present research, we set out to experimentally examine how the frequent interruptions and task switching due to email impact well-being.

## 2. Theory and relevance to basic research

A wealth of basic research and theory documents the toll of task switching on cognitive resources. Classical theorizing in cognitive psychology postulates that people have limited cognitive resources (Navon & Gopher, 1979; Pashler, 1998), and basic research has shown that when two tasks require the same cognitive resource (e.g., working memory), people cannot perform these tasks simultaneously and have to instead switch between tasks (Garavan, 1998; Liefoghe, Barrouillet, Vandierendonck, & Camos, 2008; Oberauer, 2003). According to the time-based resource sharing model of attention (Barrouillet, Bernardin, & Camos, 2004), the very act of switching between tasks requires deployment of attention, thus further taxing people's limited cognitive resources and resulting in greater cognitive load (Barrouillet et al., 2004; Liefoghe et al., 2008). To make matters worse, according to the load theory of attention (Lavie, 2010), higher cognitive load can further increase proneness to distraction (Lavie & De Fockert, 2005; Lavie, Hirst, De Fockert, & Viding, 2004), thus potentially resulting in even more multitasking.

Although relatively little research has directly examined how frequent task switching throughout the day impacts well-being, there are several reasons to believe that the cognitive tax associated with task switching may be detrimental to well-being. First, unsurprisingly, the greater cognitive load induced by frequent task switching has been postulated and shown to impair performance and speed of completing tasks that require cognitive effort (Bowman, Levine, Waite, & Gendron, 2010; Rubinstein, Meyer, & Evans, 2001). Thus, frequent multitasking may result in doing worse at work tasks, potentially increasing stress. In support of this prediction, when participants in a lab experiment were frequently interrupted by instant messages, they reported greater stress and frustration while working on another task (Mark, Gudith, & Klocke, 2008). In another study, after obtaining baseline measurements of task switching and physiological stress (as measured by heart rate variability) during three regular workdays, researchers asked a convenience sample of 13 workers to completely refrain from checking new email for five workdays (Mark, Vaida, & Cordello, 2012). When they were cut off from new email, these workers both switched less between work tasks and experienced less stress as compared to baseline, suggesting a potential link between task switching and stress.

Second, both psychological theory and research suggest that cognitive resources are essential for emotion regulation (Holzel et al., 2011; Posner & Rothbart, 2007), and therefore, to the extent that switching between tasks taxes cognitive resources, frequent task switching may compromise emotional well-being. Indeed, experimental research has shown that increasing the frequency of interruptions during a cognitive task leads to less positive affect (Zijlstra, Roe, Leonora, & Krediet, 1999).

In short, basic theory and research suggest that frequent task switching can increase cognitive load and impair performance, with potential downstream consequences for well-being. In addition, recent research has shown that people tend to check their email frequently throughout the day (e.g., Jackson et al., 2001, 2003), thus effectively making email into a source of task switching. No experimental research, however, has ever directly explored whether the frequency with which people check their emails has an impact on well-being. Thus, building on psychological theory and basic research on task switching, we set out to conduct the first experimental field investigation directly examining how the frequency of checking email affects well-being.

## 3. Summary of the present research

Preliminary evidence has suggested a link between email and lower well-being, but most research has been correlational, preventing any causal conclusions. Furthermore, most researchers have used overall email volume to predict well-being, although evidence indicates that inbox size might matter less than the way people manage their large inboxes. A common approach to managing one's inbox is to check email frequently and respond to incoming messages quickly, which results in frequent task switching and task interruptions. Although some research suggests that interrupting and switching between tasks can be detrimental to well-being, no research has ever directly examined whether people experience improved well-being when they check email less frequently. In the present research, we set out to experimentally examine how the frequency of checking email affects subjective well-being.

## 4. Method

To examine whether checking email less frequently can improve well-being, we designed a two-week within-subjects study. Specifically, we randomly assigned participants to minimize the frequency of checking their email during one week and to maximize frequency during the other week. Based on previous research linking email to stress, we assessed weekly and daily stress, as well as stress during a particular important activity. Due to the dearth of research on how handling email can impact other components of well-being, we adopted an exploratory approach and assessed the effects of our manipulation on a wide range of established well-being outcomes. Specifically, given previous theorizing underscoring the importance of measuring theoretically distinct components of well-being (Biswas-Diener, Kashdan, & King, 2009; Kashdan, Biswas-Diener, & King, 2008; Ryan & Huta, 2009; Ryff, 1989), we included measures of both hedonic (e.g., affect) and eudaimonic well-being (e.g., meaning in life, environmental mastery). Finally, to capture other important aspects of optimal day-to-day functioning, we examined mindfulness, perceived sleep quality, and self-reported productivity.

### 4.1. Participants

A total of 142 adults agreed to participate in this two-week study. Eighteen participants dropped out of the study before

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