JOURNAL OF PSYCHOSOCIAL RESEARCH ON CYBERSPACE
CYBERPSYCHOLOGY

Derks, D., & Bakker, A. (2010). The Impact of E-mail Communication on Organizational Life. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace,* 4(1), article 4.
http://cyberpsychology.eu/view.php?cisloclanku=2010052401&article=4

The Impact of E-mail Communication on Organizational Life

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Abstract

Computer-mediated communication (CMC) has become mainstream in work life. This raises the question what the impact of CMC on our daily work is. Since e-mail is still the most prevalent form of CMC in organizational life, we focus predominantly on e-mail communication. The central aim of this paper is to give an overview of research on the impact of e-mail provided by personal computers and smart mobile devices on work using the JD-R model as a framework. In other words we interpreted the results of the studies used to show which aspects of e-mail communication can be considered as demands and resources, and hence complicate or facilitate our working life. The costs of e-mail seem to be disproportionally loaded on the recipient who has to deal with excessive amounts of e-mail and the pressure to answer these e-mails as soon as possible. A smartphone increases the flexibility of an employee but facilitates working long hours with a risk of disturbed work-home balance at the same time. Technology in itself is neither a demand nor a resource; it is how we deal with it.

Keywords: CMC, JD-R model, e-mail, job demands, mobile technology, smartphone.

The impact of e-mail communication on organizational life

Imagine an ordinary day at work. You probably start in the morning with a cup of coffee, greet your colleagues and then the inevitable happens, you log in on your computer. For many of us the latter simple action has become automatic behavior and we don't even realize that this act is dominating the rest of the office day. E-mails constantly ask for attention and intrude our working schedule. The Linked In (a business-oriented social networking site) profile needs an update, one has to respond to messages on the discussion board, scan the company network for news messages, etc. Only few have the discipline to structure the day in such a way that they plan fixed times to deal with e-mail. Remarkably, the answering of e-mail is rarely part of our job description, but more an underlying assumption of the functioning in nowadays' organizational life.

It is evident that computer-mediated communication (CMC) has become very common in work life. E-mail is still the most prevalent form of CMC within organizations. And, in fact, the increasing use of mobile devices in business has given the experience of e-mail a new dimension. Therefore, in the present paper we focus predominantly on the impact of e-mail, provided by personal computers as well as smart mobile devices, on organizational life. There is a still increasing number of studies on the social psychological aspects of computer-mediated communication, but to date the impact of mobile e-mail on organizational life has been neglected. Obviously, as with every new innovative technology there are advantages and disadvantages in using it. The original idea of e-mail was that it facilitates our communication and makes lives at work easier. Unfortunately, there are, besides advantages also side effects. This theoretical paper aims to overview the impact of (mobile) e-mail on organizational life. The impact of e-mail on a regular workday is inherent on differences between e-mail and face-to-face (F2F) communication. McKenna and Bargh (2000) listed these differences in four categories. First, physical distance is no issue on the Internet, in a fraction of a second one can interact with someone at the other end of the globe, where regular mail takes days or even weeks. The second aspect, time, is two-folded. It can be an influential cue in interpreting a message. When a colleague sends you an e-mail at 2 am you put it in another perspective than when you receive the same message at 10 am. The Internet is a speedy medium that allows us to reach a large group of people in one delivery. Third, unlike in F2F meetings, physical appearance and visual cues are absent in e-mail (McKenna & Bargh, 2000). Finally, it is easier to be anonymous while communicating on the internet. It is common to use nicknames in chat devices and pseudonyms are used in the construction of e-mail accounts.

Taking these differences into consideration it is obvious that some of these characteristics may have certain advantages that can make life at work easier, where other ones may complicate the communication process. This paper aims to give an overview of research on the impact of (mobile) e-mail on work using the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) as a framework. Thus, we will use research to show which aspects of e-mail communication can be considered as demands and resources, and hence complicate or facilitate our working life.

In order to give an overview the field of e-mail communication and organizational life, electronic searches were conducted, supplemented by publications collected through the professional network. The databases included were PsychInfo, Business Source Premier and web based databases like Google Scholar. The search was restricted to English-language papers, which were published from 1990 some classic studies excepted. The key terms used in the search were quite diverse because the single terms on e-mail communication and organizational life were not sufficient to

collect all relevant studies. Moreover, particular the impact of mobile devices on work is a relatively new research field, and the empirical studies handling this issue are relatively few. Therefore we had to extend our scope to studies focusing on the impact of e-mail communication in general and the implications of mobile working for both well being and performance. The key terms used were: CMC, JD-R model, mobile e-mail, ubiquitous computing, continual communication, tele-work, smartphone, Blackberry, always on culture, availability, non verbal cues, feedback, virtual, mobile technology, nomadic, online, work-home interaction. Besides these key terms we also used combinations of key terms in our search.

We included studies that (1) handled the subject of e-mail communication in general, (2) had an interaction setting, preferably a focus on organizational communication, (3) had a focus on mobile technology, and (4) were identifiable as organizational psychological, social psychological and behavioral in nature. Papers with opposing views and conflicting data were all included.

The paper starts with a brief discussion of the core assumptions of the JD-R model, subsequently we devote attention to the advantages and setbacks of e-mail at work, the individual differences in experiencing e-mail between sender and receiver, and, finally, we explore what the impact is of the increased mobility of employees facilitated by smartphones.

The Job Demands-Resources (JD-R) Model

The core assumption of the JD-R model is that every occupation has its own job characteristics, but nevertheless these characteristics can be categorized in two general, overarching, categories: job demands and job resources (Bakker & Demerouti, 2007; Demerouti et al., 2001). Job demands are associated with psychological and/or physical costs. Examples are a high work pressure, emotionally demanding interactions with colleagues or clients, and an unfavorable physical environment. Job resources reduce the impact of job demands and the associated costs, are functional in achieving work goals, and they stimulate growth, learning and development. In short, demands are related to stress and resources have motivational potential.

The JD-R model states that two different processes play a role in the development of motivation and job strain. In the motivational process, job resources like opportunities for development, autonomy, and social support satisfy employees' basic needs, including the need for autonomy and the need to belong. Therefore, resources lead to high employee engagement and optimal organizational performance. In contrast, job demands that are too high or have a chronic character may exhaust employees leading to a depletion of energy and accompanying health problems, including job burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000; Leiter, 1993; Lewig, Xanthopoulou, Bakker, Dollard, & Metzer, 2007).

Job demands and resources also interact with each other and produce combined effects. Specifically, the JD-R model proposes that job resources may buffer the impact of job demands on strain (e.g., Bakker, Demerouti, & Euwema, 2005; Xanthopoulou et al., 2006). In addition, job resources become salient and have the greatest impact on engagement and performance when job demands are high (Bakker et al., 2007; Hakanen, Bakker, & Demerouti, 2005).

Computers in general and Internet in particular was once developed to make our life easier and in the workplace it is considered as a facilitator of organizational goals. In the spectrum of the JD-R model, you just might consider it as a resource. However, what happens if one receives excessive amounts of e-mail and if all the senders expect an immediate answer? How much of the autonomy is left when the workday is dominated by e-mail alerts on the desktop? It should be noted that answering e-mail usually is something that is assumed and not part of one´s job description. It does not bring an extra bonus or a positive recommendation. Mobile devices extend our job demands during the day to the evening hours. What is the impact of work intruding in our private life on both performance and general well being? In the subsequent section we will discuss the history of e-mail communication in general.

History of CMC literature in a Nutshell

Most of the literature on CMC has focused on text-based e-mail communication (e.g., Byron, 2008; Dawley & Anthony, 2003; Friedman & Currall, 2003; Kruger, Epley, Parker, & Ng, 2005). This is not very surprising because up till now e-mail is the most often used form of CMC. The absence of social interaction is usually seen as a major determinant of the different social effects of CMC in comparison to F2F communication and has been at the root of several theories about the effects of CMC (Walther & Tidwell, 1995). Over the years, research has examined how the social meaning of an interaction is affected by the absence of visual cues, especially in situations where interaction partners replace F2F with CMC (Walther & Parks, 2002), which frequently happens in organizational life today.

Walther, Loh and Granka (2005) show that there are two prevailing positions with respect to this issue. One position holds that the absence of nonverbal cues withholds interactants important information about attitudes, emotions and partners' characteristics, resulting in a less sociable, relational, understandable, and effective communication. This is known as the cues-filtered out approach (e.g., Culnan & Markus, 1987; Kiesler, Siegel, & McGuire, 1984; Sproull & Kiesler, 1986). This cues-filtered out approach has fallen out of favour with many CMC researchers because time has proven that people can have meaningful and social interactions online, and the subsequent research of the genuine advocates of this approach has reflected also more positive assessments of CMC's potential in social interaction (e.g., Galagher, Sproull, & Kiesler, 1998; Sproull & Faraj, 1997).

The other position holds that people adapt to the medium by imbuing verbal messages with contextual and stylistic cues, information about attitudes, emotions, and personal characteristics allowing for normal relational communication to build up. Walther's (1992) Social Information Processing (SIP) theory formalizes the latter position. This theory explicitly rejects that the absence of nonverbal cues restricts the interactants' capability to exchange individuating information. Walther (1992) assumes that interactants are just as motivated to reduce uncertainty, form impressions and develop affinity in online settings as they are in face-to-face settings. When there are no nonverbal cues available, interactants substitute the expression of relational messages into cues available in CMC (e.g., social content, emoticons, style, and timing of verbal messages) (Walther, 1992). A business setting is considered to be more formal

than social interaction online, therefore it seems plausible that emoticons are not always appropriate to use. Employees are increasingly becoming multi media experts and seem to know quite well which medium is appropriate for what message. E-mail has proven its added value in the communication of task-oriented messages. Especially the communication of ambiguous messages is a challenge in a strictly text-based environment. Therefore, in the subsequent section we will elaborate on the challenges in e-mail communication centred around the communication of ambiguous messages. Subsequently, we discuss the impact of the lack of nonverbal cues, the consequences of egocentrism in online communication, the implications for feedback and the differences in the experience of e-mail between senders and recipients.

Challenges in e-mail communication

Nonverbal cues

When e-mail first was introduced, people thought it was impossible to have other interactions than the exchange of short task-oriented messages. Remarkably, the same opinion existed when the telephone was first introduced. The lack of nonverbal cues implies automatically that not all information is fully transferred (McKenna & Bargh, 2000). The messages typically conveyed by these cues are absent in a text-based environment (e.g., Burgoon & Saine, 1978; Shaw, 1981; Walther, 1995), which implies that for the interpretation of messages online we have to rely exclusively on verbal information. This may have consequences for the decoding of others' emotions because we cannot make use of nonverbal cues in the interpretation of incoming messages. In addition, the lack of nonverbal cues also has consequences for the expression of our own emotions since every emotion has to be verbalized and part of the nonverbal expression happens unconsciously. The strictly task-oriented messages should not suffer that much from these consequences. But even in a work setting many messages contain both social and task-oriented components, and are ambiguous in a sense. One of the functions of nonverbal cues in F2F communication is that the ambiguity of a message is reduced. The same verbal messages can portray different signals depending on tone, emphasis, and emotional expression (e.g., Clark, 1996; Drew, 1987; Goffman, 1959; Lee & Wagner 2002). Where F2F communication is about what is said and how it is said, e-mail communication is limited to the former.

The lack of nonverbal cues can also have certain advantages in the regulation of emotions. For example, it might be easier to regulate our own emotions. For one thing, because everything has to be typed there is time to read over the message before it is submitted. Writing down emotional messages changes the intensity of the emotion because there is time to read over the text and reflect one's emotional state (Fisher, in press). Additionally, you are in conscious control over which emotions you deliberately choose to display in your e-mail, since there is no risk of unconsciously leaking of nonverbal cues. This makes e-mail a relatively "safe" environment (McKenna, Green, & Gleason, 2002). Since many organizations demand that their service employees apply to strict display rules according to what emotions they have to show to customers, CMC may have potential to make this work easier. Service employees constantly have to regulate their emotional expressions while interacting with customers (Grandey & Brauburger, 2002). Hochschild (1983) argued that this form of emotional labor is not without costs for the employees because this process requires much effort from the employee. In the light of the JD-R model, we argue that CMC may moderate the increasing emotional demands related to emotional labor in facilitating emotion regulation online. Furthermore, it can be argued that the possibility to communicate emotional messages to colleagues and customers mediated by e-mail gives the user more control and autonomy over his/her actions. Besides the lack of nonverbal cues that complicates the communication of messages with ambiguous content, in the subsequent paragraph the relation between egocentrism and miscommunication is discussed.

Egocentrism as a source of Miscommunication

The fact that the "how things are said part" is missing in regular e-mail communication, is not without consequences. In fact, this is likely to be a fertile ground for miscommunication and in particular not noticing that miscommunication. Humor and sarcasm, for example, is difficult to properly communicate by e-mail. The misunderstanding is usually that the sender thinks (s)he has sent a clear message, and the receiver does not interpret the message in the way the sender intended it. This can lead to awkward situations. Miscommunication can be a source of stress because an employee has to take action to correct the message which automatically implies that extra time and attention is needed to handle the message again. Additionally, an employee needs to engage in damage control in maintaining a good relationship with the "victim" of the miscommunication since the main part of e-mail communication is devoted to long-term relations (colleagues, customers). There are indications that egocentrism is an important source in miscommunication (Kruger, Epley, Parker, & Ng, 2005).

A growing body of evidence states that when individuals try to anticipate on the perspective, thoughts, and/or feelings of someone else, they use themselves as the main reference point (Kruger et al., 2005). In other words, the assessment of another's perspective is influenced by one's own (e.g., Epley et al., 2004; Keysar et al., 1998; Nickerson, 2001). People tend to believe that their intentions are more obvious to others than they actually are (Gilovich et al., 1998); they overestimate the extent to which others attend to their internal states (Gilovich, Medvec, & Savitsky, 2000), and exaggerate how much consensus there is over their thoughts and feelings (Keysar, 1994; Nickerson, 1999; Ross & Ward, 1996; Van Boven, Dunning, & Loewenstein, 2000).

Kruger et al. (2005) argued that people routinely overestimate how well they can communicate over e-mail, particularly when the message is ambiguous. They argue that this overestimation is caused by egocentrism in that people find it very difficult to move beyond their own subjective experience of a stimulus and imagining how the stimulus might be evaluated by someone who does not share the privileged perspective (Kruger et al., 2005). In other words, in estimating how the receiver will interpret our message, we take our self as the main reference point. We implicitly assume that because we know what we intend to communicate; the receiver will automatically know it as well. Kruger and colleagues set up five experiments to examine to what extent participants overestimated their ability to communicate over e-mail. The results showed that this is true at least for trying to communicate humor, sarcasm, some emotion or tone and regardless the amount of freedom they had in constructing their messages. They reasoned that when people tried to take the attitudes and experiences of the receiver into perspective, they focused excessively

on their own phenomenology or experience and insufficiently consider the receivers' perspective (Epley, Keysar, Van Boven & Gilovich, 2004; Gilovich, Savitsky, & Medvec, 1998; Keysar, Barr, & Horton, 1998; Kruger et al., 2005).

This finding may have dramatic consequences for e-mail communication in intra- and inter-organizational settings. Not only because we apparently are not that good in communicating ambiguous messages, but mainly because we think that we are competent in doing this. This implicates that a lot of miscommunication stays unnoticed. Especially in customer service which increasingly takes place online, it can be a reason for losing customers without knowing why. Therefore, besides the promising possibilities in reducing emotional labor in communicating online in customer service, the overestimation of how competent we are in communicating ambiguous e-mail messages can be a pitfall. Perhaps a wink emoticon can help in pointing a message as humorous or sarcastic. However, in an organizational setting we face two difficulties. First, the problem remains that the rather formal setting of business communication does not lend itself for the use of emoticons, which are interpreted as informal and in some cases as incorrect. Second, if we are not aware of our lack of competence in communicating ambiguous messages, we will not feel the need to use an emoticon to clarify either. This implies that miscommunication, when it backfires to the employee, can increase the workload. Since miscommunication is related to failure, this can be demanding for the employee, both emotionally and mentally. According to the JD-R model, these demands can lead to strain and in the long run to deteriorated well-being. The JD-R model showed that demands only lead to an increase in strain when an employee is not capable to mobilize additional resources to compensate. Feedback, an important resource according to the JD-R model, is discussed in the next section.

Feedback

Another type of ambiguous communication in a task-oriented setting is the exchange of feedback messages. Since e-mail is proven to be very practical in the exchange of documents (e.g., Sullivan, 1995) it has also become more common to deliver feedback on these documents by e-mail. Feedback messages can be considered ambiguous because they have an objective, critical component, but also a motivational component in the form of constructive feedback. In organizations, feedback is considered as a first step to improvement and personal development. This makes it an important resource fuelling our motivation at work (Bakker & Demerouti, 2007). However, if information is likely to be negative, media choice can be crucial in delivering the feedback (Fulk & Mani, 1986). In our western society it is not done to send negative personal feedback by e-mail. In such a situation, F2F interaction is preferred. The question is, what is in best concern of the employee?

The space between the sender of the feedback (manager) and the receiver (employee) is regulated by the context of the interaction and by the history of the relationship between the two (Lave, 1993). Positive feedback is not that difficult to deliver because it usually makes the receiver happier. Media choice is also no issue, since positive messages are less ambiguous and more easily interpretable than negative messages. However, many people have a natural reluctance in communicating undesirable feedback, which is in the literature known as the "mum effect" (Rosen & Tesser, 1970). This effect can be explained in the expectations of the sender that the news (s)he is going to deliver can be psychologically unpleasant for both the receiver and the sender (e.g., Maynard, 1996; Tesser & Rosen, 1975). Before the communication begins the sender anticipates how the reaction of the receiver might be; defensive, disbelief, or emotional distressed (Sussman & Sproull, 1999). The latter authors argue that deliverers of bad news or negative feedback have three options. First, there is a possibility to "sugar-coat" the negative aspects of the feedback in an attempt to reduce the apparent negativity to the receiver. Another option is to omit (some of) the negative feedback - an option that is not always desirable or possible in an organizational setting. Finally, a more supportive environment can be arranged for the recipient of bad news.

In conclusion, we can argue that delivering negative feedback can be stressful and unpleasant for both the sender and the recipient. E-mail, and its relatively safe environment (McKenna, Green, & Gleason, 2000) might afford opportunities to deliver negative feedback without detailed information about the social context and the recipients' immediate reaction (Sproull & Kiesler, 1986). The mediated environment of e-mail communication might decrease the psychological discomfort of the sender during the communication process and as a consequence the feedback might be more straight and honest (Sussman & Sproull, 1999). So, people may find it less stressful to deliver negative feedback by e-mail in comparison to F2F because they are socially buffered from their communication partners (e.g., Bailey & Pearson, 1983; Gallupe, Dennis, Cooper, Valacich, Nunamaker, & Bastianutti, 1992; Kiesler & Sproull, 1992). Sussman and Sproull (1999) experimentally tested the influence of media choice (F2F, telephone, synchronous CMC) on feedback (positive or negative). The results showed that individuals using CMC to deliver negative feedback distorted it to a lesser extent than individuals communicating F2F. In the CMC condition the senders of negative feedback were straighter in their communication and reported higher levels of comfort and satisfaction.

However, cultural norms in organizations today still favor delivering bad news in a personal F2F conversation (Sussman & Sproull, 1999). Sending negative feedback messages over e-mail in order to increase honesty and accuracy is considered inappropriate and disrespectful. Perhaps that with the increasing amount of communication taking place in an online environment these norms will alter over time.

It is interesting to see how feedback can be an important resource in stimulating growth and development in employees and at the same time, when feedback is negative, as a significant demand for the manager who has to deliver it. Furthermore, negative feedback can also be stressful for the employee who receives it. For feedback to serve as an important resource it is important that it is constructive and well understood. When feedback is blunt and negative it can damage the relationship between the manager and the employee. Since individuals have difficulties in communicating negative evaluations face-to-face, e-mail might be beneficial for the sender. Evaluating employees by e-mail might decrease the emotional demands of the messenger, but will it also benefit the receiver? In the next section, we will elaborate on the differences between sender and receiver in how they experience e-mail communication.

The differences between sender and receiver in e-mail communication

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E-mail is no longer just a tool to communicate over long distance. Business deals are closed by e-mail, and a major part of the communication even with colleagues in close proximity takes place online (Renaud, Ramsay, & Hair, 2006). E-mail has the reputation to be less time-consuming, more reliable, and more efficient than a F2F meeting or a telephone conversation (e.g., Berghel, 1997). There is evidence that e-mail encourages people to communicate more (Bälter, 1998) and is critical for success in business (Vile & Collins, 2004). The way in which employees manage time and attention in relation to answering e-mail is susceptible to mismanagement. Inherently in e-mail communication is the expectation that people can be reached easily and quickly, which is probably the reason why e-mail is rated as such an attractive medium (Manger, Wicklund, & Eikeland, 2003). Another reason behind the success of e-mail might be that most recipients have the habit to answer messages the minute they arrive, which makes e-mail almost as quick as a phone call (Markus, 1994). However, although a speedy response can be beneficial for the efficient running of organizations, it can be a source of occupational stress for employees (Gillespie, Walsh, Winefields, Dua, & Stough, 2001). The benefits of e-mail, for example working together with individuals across multiple sites, are evident. However, the costs of e-mail are disproportionally loaded on the recipient who engages in continuous activity switching between e-mail and other tasks (Renaud, Ramsay, & Hair, 2006). The latter researchers illustrated that the costs for the sender are negligible but the cost for the recipient of continuously monitoring to respond consistent with sender expectations is high. Translating these findings to the JD-R model one might consider e-mail as a helpful resource for the sender but as a demand for the recipient.

Another characteristic of e-mail is that it invites the sender to engage in short and shallow messages (Bertacco, 2007; Bertacco & Deponte, 2005). Wicklund and Vandekerckhove (2000) argue that only speedy communicative media that are also limited in bandwidth, for example e-mail, would promote shallow communications. Speed oriented communication gives an individual the sense that the recipient can be reached and dealt with quickly (Manger et al., 2003). Especially in comparison with regular mail, e-mail messages tend to be shallower and more reactive (Bertacco & Deponte, 2005). This might bring about important social psychological consequences in that senders abbreviate their interactions and are more egocentric, in that they reduce perspective taking, than individuals who interact F2F (Wicklund & Vandekerckhove, 2000). In the section handling egocentrism in e-mail we have seen what may be the consequences of egocentrism in terms of miscommunication and increased stress levels.

When e-mail was introduced on the work floor, it not only replaced part of the F2F communication but it also generated an increase in communication overall (Contractor & Eisenberg, 1990; Culnan & Markus, 1987). Surprisingly, Sarbaugh-Thompson & Feldman (1998) found out that the increase in electronic mail did not offset the decrease in F2F and telephone interactions, producing a net decrease in overall communication in their population of organization members. This decline in volume might suggest that e-mail is more efficient in communication (see also, Rice & Case, 1983). Taking a closer look at the analysis revealed that electronic communication was not more efficient per se but that the reduction in casual communication (e.g., greetings, social talk at the coffee corner) was at the root of the decrease of communication (Sarbaugh-Thompson & Feldman, 1998). This may have implications for the amount of social support employees' experience.

Social support is an important job resource that has potential in buffering increasing demands according to the JD-R model (e.g., Bakker et al., 2005; Xanthopoulou et al., 2007). Therefore, it is interesting to examine the balance between formal and casual communication among workers. Particularly because e-mail can contribute significantly to the workload caused by the increase in information and communication, it is important to maintain the level of resources. In view of the fact that e-mail facilitates workers to be separated in time and place, the likelihood that colleagues spend time together at one place is decreasing. The key ingredient of casual conversation "hanging out together" is missing in e-mail communication which requires intent and planning. These reduced opportunities to give and receive support are also an issue for the increasing number of tele-workers. The increasing use of mobile technologies in organizational life facilitates employees to work in distributed places. The implications of being "mobile" are discussed in the next section. In this section we will elaborate subsequently on teleworking, smartphones, changes in availability requests, the implications for work-home balance, information stress, interruptions and engagement in new technology.

The Impact of Mobile Technologies

Tele-working

Tele-working involves work away from the office via telecommunication equipment (telephone, CMC etc.) (Mann, Varey, & Button, 2000). Depending on a computer as the main communication tool with colleagues may have emotional impact on the employee. CMC results in a reduction in intimacy because of the inability to directly engage with your interaction partner and having to deal with the obstacles from the mediator (Kiesler, Siegel, & McGuire, 1987). Affective bonds and emotional involvement which can be essential in teamwork are harder to attain when all communication takes place online. Furthermore, communicating strictly online in a formal business setting might make it more difficult to express your own emotion which may be stressful (Mann, 1998). Emotions are crucial for functioning in the work environment. They can help fuel interest in informal organizational processes (Ashforth & Humphrey, 1995).

Moreover, emotional involvement is central to motivation (Ashforth & Humprhrey, 1995; Organ, 1990); cohesiveness in a group depends largely on the affective bond between individuals (Dyer, 1985); emotional contagion underlies team spirit and can be a strong constructive or destructive (when negative) force in organizations (Bakker, Van Emmerik & Euwema, 2006; Mann et al., 2000). Mann and colleagues (2000) examined the emotional impact of home-based working on employees. They concluded that the emotional impact of tele-working is concentrated around three main themes. First, the effects of being away from the office environment and being physically separated from colleagues. Tele-workers experience social isolation, a reduction in the affective bond with colleagues but also lack of technical and emotional support. Second, related with the first point, the effects of having to rely on a computer as the primary mode for communication. For example, the loss of richness of communicated material and the problems caused by technical breakdowns. Finally, the effects of being predominantly home-based. In other words, it is difficult to separate work from private life. It affects family life and work-home interference is more likely (Mann et al., 2000).

A new development in digital media is the increasing use of smart phones in business today. A smart phone can also intrude into family life since you stay connected (literally) with your work during the evening hours.

Mobile devices—Smartphones

E-mail is not a new communication medium but the wireless e-mail systems facilitated by a smartphone enable users to engage in e-mail in new ways. Mobile e-mail devices may affect social dynamics by enabling new forms of interaction and collaboration (Lyytinen & Yoo, 2002a; Pica & Kakihara, 2003). A smartphone is a wireless device with functions to manage your calendar, make phone calls, browse the Internet and to receive and answer e-mails anytime, anywhere. The main reason for having a smartphone is to send and receive e-mails (Middleton, 2007). It is a mobile tool that contains functions to facilitate our work. Unlike the desktop computer, a smartphone is rarely separated from its owner. As a result of spending much quality time together, users develop deep relationships with their smartphone (e.g., Lyytinen & Yoo, 2002b; Rheingold, 2002).

The still increasing use of smartphones in business creates an environment characterized by nomadic working and a network of information flows and continual communication (e.g., Castells, 1996; Hassan, 2003; Hörning, Ahrens, & Gerhard, 1999). The ability to stay connected expands into new settings and challenges regarding expectations of availability, responsiveness and coordination (Mazmanian, Orlikowski, & Yates, 2006).

Changes in availability requests

One of the selling arguments of mobile technologies is that they provide anytime, anywhere connection (Green & Harvey, 1999). This can increase both spatial and temporal flexibility for users (Steward, 2000). However some research indicates that mobile teleworking can also have a negative impact on employees and their families, especially when they are compelled, rather than chosen, to work in this manner (e.g., Hill, Hawkins, & Miller, 1996). Green (2002) showed that the advantages of mobility and "telepresence" sometimes were offset by the drawbacks of permanent availability for work. These effects were also strongly influenced by the degree of free choice and autonomy in becoming a mobile worker.

The opportunity of accessibility anywhere, anytime seems to change in availability everywhere, all the time (Brown, 2001; Cooper, 2001; Katz & Aakhus, 2002). Expectations of always availability can normalize into the notion that employees should be online and accountable to others at any time and place (Green, 2001). In other words, the increased autonomy comes at cost of the shifting expectations of availability escalating the commitment to stay connected. Many smartphone users engage in ongoing monitoring which generates compulsive routines of chronic checking, escalation of commitment, reduced time for reflection and in the long run, increased stress (Gergen, 2002; Mazmanian et al., 2006). However the asynchronous nature of e-mail allows some flexibility in when to respond, and enables a sense of control over incoming messages (Mazmanian et al., 2006).

Prior research has shown that employees´ use of communication technology is more strongly influenced by organizational culture than by technology design or managers' intentions in implementing the technology (Fulk, Schmitz, & Schwarz, 1992; Markus, 1983; Orlikowski, 1992, 2000). The always on culture and its implication for managing the work and home domains is discussed in the next section.

Managing Work-home balance

Organizations provide smartphones to their employees to raise the flexibility of employees and to increase productivity and communication efficiency. Research has indeed indicated that mobile tools can lead to increased productivity (Baron, 2005; Edwards, 2002; Locke, 2005) and to enhanced collaboration (Baron, 2005). Other advances associated with smartphone use are improved responsiveness, real time information, faster decision making and more flexibility in work schedules. This flexibility gives individual workers the opportunity to realize a better work-life balance (Rood, 2005; Taylor, 2003).

Paradoxically, a major drawback of the same smartphone is that it is associated with difficulties in managing a work-home balance (e.g., Davis, 2002; Jarvenpaa & Lang, 2005). Higgins and Duxbury (2005) also conclude that mobile technology is not helping us to achieve work-life balance. It seems difficult, if not impossible, for mobile users to maintain a satisfactory balance between work and personal life. The company's increasing expectations regarding availability suggest that employees feel compelled to immediately respond to work-related messages even during leisure time (Davis, 2002). Many users report great pressures to respond whether or not they wanted to. Some of them feared that they had become slaves to the machine. Smartphone use can be very demanding since the employees experience closer monitoring and supervision, resulting in a lack of autonomy (an important resource according to the JD-R model). Duxbury, Higgins and Lee (1994) argue that work-life stress is explained in terms of perceived control. Furthermore, they reported increased work pressure and the inability to separate and keep distance from work (Jarvenpaa & Lang, 2005). In addition, the smartphone made it much easier to work longer hours (Middleton, 2007).

Frequently using a smartphone contributes to a blurring of the boundaries between work and leisure time. It can lead to increased productivity, but that is often achieved at the cost of higher stress levels and lower employee satisfaction which in the long run can lead to impaired performance. These costs can also be related to the research on work-home interference and recovery. Work-home interference is positively related to time spent on work in the evening. Especially employees high on work-home interference were still putting effort in their jobs during the time that might be used to recover from load effects that were build up during regular work time (Van Hooff, Geurts, Kompier & Taris, 2006). Particularly the prolonged exposure to work demands (e.g., daily overtime work) is a risk factor as a demand is made on the same psycho-physiological systems that were already activated during normal work hours (Geurts & Sonnentag, 2006). Van Hooff and colleagues (2006) also showed that work-home interference and its extended demands was positively related to fatigue and sleep complaints, indicating that it indeed reflects a lack of recovery.

Research has shown that recovery is closely related to well-being (Sluiter, Van der Beek, & Frings-Dresen, 1999) and

necessary to prevent an ongoing deterioration in mood and performance in the long run (Meijman & Mulder, 1998). Periods of rest from work, vacations and time off, are important in maintaining well-being at work (Eden, 2001) and result in a decrease in perceived job stress and burnout (Westman & Etzion, 2001). Sonnentag (2003) showed that individuals benefit from shorter rest periods that occur during the evenings of normal work weeks. Daily recovery from work stress is helpful to supplement the effects of vacations. Notebooks and Internet access at home started a process in which it has become technically possible to work at home in the evening hours. However, the difference between notebooks and smartphones is the amount of perceived control an employee has over the initiative to start work. A smartphone indicates new messages or an incoming phone call, but the receiver has no control over when this happens. It is likely that the smartphone with its always-on culture disturbs the important process of recovery and may even lead to a decrease in productivity and performance levels on the long run.

Information stress

The inability to escape from computers and information is a theme in literature on mobile communication technology (e.g., Dryer, Eisbach, & Ark, 1999; Weilenmann, 2001) and information overload (e.g., Allen & Wilson, 2003; Lang, 2001; White & Dorman, 2000). Technology can generate information far more faster than most people can process it. As a consequence people often find themselves unable to cope with an increasing amount of information (Chan, 2001). Information overload originates both from own requests for information and information received inertly (Marcusohn, 1995). This information overload can lead to reduced productivity and can have negative effects on health and well being (White & Dorman, 2000). E-mail is identified as the major contributor (e.g., Dawley & Anthony, 2003; Whittaker & Sidner, 1997).

Since the primary function of a smartphone is to send and receive e-mail anytime, anywhere, Allen and Shoard (2005) explored the impact of mobile technologies on the users' experience of information overload. Their research examined the use of wireless devices by senior officers in the West Yorkshire Police. The results showed that e-mail was cited as the primary cause of personal information overload. However, although there was a small overall increase in number of e-mails, the officers did not feel that the mobile technology contributed to information overload. The nature of communications was changed when mediated by mobile technology. Messages sent became less formal and less complex than using a standard personal computer or laptop (Allen & Shoard, 2005). Furthermore the officers indicated that using the devices outside their conventional work setting was beneficial in terms of the ability to spread their workload. The smartphone as facilitator of the intrusion of work into personal lives was seen as an acceptable trade-off for personal productivity and flexibility benefits (Allen & Shoard, 2005).

In sum, the quick access to information can have motivational potential for dealing with work, but when there is too much information (especially unrequested) coming your way, this can be a stressful experience of loss of control. The JD-R model states that particularly the combination of losing control and experiencing a higher workload because of the large amounts of information one has to deal with can be detrimental for both health and performance.

Interruptions

Although communication technologies do often produce the intended benefits, studies have also shown that technologies in use (Orlikowski, 1996, 2000) have unanticipated, and often paradoxical, consequences (Markus, 1996; Orlikowski, 1992; Robey & Boudreau, 1999). For example, the continuous availability cited before can decrease work delays (quick access to information) which leads to increased organization. However, this same continuous availability leads to an increase in work interruptions, and in turn to increased disorganization (Renneker & Godwin, 2005). An e-mail interrupt is any e-mail distraction that makes an employee to stop the planned activity. Rubinstein and colleagues (2001) have examined the time cost implications of task familiarity and complexity in task switching. They showed that switching between tasks resulted in a delay before engaging in effectively in a new task, even if the worker had been previously engaged in the task. Each fragmentation to a task adds to the total time required to complete it (Rubinstein, Meyer, & Evans, 2001). In the light of the JD-R model, task variety, as a resource, can also be linked to positive outcomes. Research has linked interruptions to both negative and positive impacts on task performance (Jett & George, 2003; Perlow, 1999, 1997). Interruptions seem to facilitate workers' speed and accuracy, especially on monotonous well-learned tasks (Jett & George, 2003). Additionally, not every message recipient experiences incoming messages as an interruption (Jett & George, 2003; Markus, 1996).

Mazmanian and colleagues (2006) identified two type of responders: those who responded as soon as they received an e-mail (constant responders) and those who delayed their responses to some later time when a number of messages had accumulated (batched responders). The latter group valued the asynchronicity of e-mail as many believed it afforded them with some control over when to respond. Workers in general, and communicators in particular, operate in dialogue with colleagues and customers. Strategies for technology use might be moderated by a worker's relationship with coworkers and the culture within which the interaction takes place (Renneker & Godwin, 2005). More specifically the sender's status (Weisband, Schneider, & Connolly, 1993) and the recipient's sense of affinity towards (Cialdini & Goldstein, 2004) and expectation of reciprocity from the sender (Deckop, Cirka, & Andersson, 2003), will influence when and how the recipient responds to a message. It is expected that workers will be more responsive to an information request by e-mail from a higher status person, a friend, and/or when the expectations and norms regarding to reciprocity are high (Renneker & Godwin, 2005). One of the important outcomes of the JD-R model is that when both job demands and job resources are high, employees are motivated and engaged in their work (Demerouti et al., 2001). Taking into consideration the research on delay and interruptions it might be interesting to examine when interruptions are interpreted as a welcome variety in work and when interruptions are interpreted negatively as an interference of the flow an employee is in.

Engagement & Withdrawal

Another paradox associated with mobile technology and related to opportunities for recovery is that a smartphone can be engaging and disengaging at the same time (Jarvenpaa & Lang, 2005). The smartphone generates a dynamic of extensive engagement with e-mail communication, but at the same time it also generates an attendant disengaging from face-to-face interactions and events occurring in physical proximity (Mazmanian et al., 2006). The desire to

retreat from stressful environments goes hand in hand with the desire to stay involved. Most people find it difficult to engage in parallel activities, so engaging in a new activity (for example answering an incoming phone call or e-mail) leads automatically to disengagement in the 'old' activity (for example the conversation you were in before the phone call or e-mail interrupted).

A research question that should be addressed in future research is whether a smartphone is primarily a facilitator in work that makes life at work easier and eventually contributes to work engagement. Or, whether it has become an increasing demand and a facilitator of working long hours which may lead to burnout in the long run.

Discussion and Conclusions

This overview intended to bring together the research areas of traditional e-mail communication, mobile e-mail and the JD-R model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). We aimed to give an overview of research on the impact of (mobile) e-mail on work using the JD-R model as a framework. In other words we interpreted the results of the studies used to show which aspects of e-mail communication can be considered as demands and resources, and hence complicate or facilitate our working life. Since the impact of mobile devices on both performance and employee well-being is still a niche in the research field, and decent empirical research is needed, we hope that this overview paper will generate ideas and encourages researchers to set up studies handling these issues.

It is evident that e-mail communication plays a significant role in our daily work life. It is obvious that it has enriched and facilitated business today in a sense that is easy to exchange information by e-mail with other people regardless of time and location. Mobile devices, such as the smartphone, increase our flexibility and help to improve our responsiveness at times we are not physically present at the office. When the server at work is down for a day, we realize how dependent we have become on the computer and how handicapped we are in our work without access to the Internet. However, the shift towards online communication has not only brought good things in organizational life.

Employees complain about the huge amounts of e-mail they receive on a regular day; the pressure of the expectations to answer these e-mails within a day and; the smartphone that facilitates continuous availability for the organization even in evening hours. These mixed experiences with (mobile) e-mail in organizational life made us wonder whether e-mail communication is mainly considered as an important resource that facilitates our work and may facilitate work engagement. Furthermore, we tried to explore the possible setbacks of (mobile) e-mail use with increasing demands and a depletion of energy as a result. We focused primarily on e-mail communication since that is still the most common form of CMC in business settings, but next to e-mail we extended our search to the effects of mobile e-mail facilitated by smartphones on organizational life. Online access anytime, anyplace, differed the way communicators engage in e-mail (e.g., Lyytinen & Yoo, 2002a).

Altogether, we can conclude that there is no straightforward answer to the question what the impact of (mobile) e-mail communication on organizational life is. That new technology changed the way we work and communicate in organizations is obvious. However, the results of our theoretical overview are mixed and even paradoxical on some occasions. What starts as a useful job resource can become a risk factor and end up as an increasing job demand because of mismanagement, changing expectations and feelings of losing control. Additionally, the communication process involves two sides, a sender and a receiver. We have argued that the same act can function as a resource for the receiver and simultaneously function as a demand for the sender and vice versa. For example, feedback on performance is considered an important resource for the receiver because it is a first step to improvement and personal development (Bakker et al., 2003). However, people have a natural reluctance in delivering negative feedback (Rosen & Tesser, 1970), which can make the same feedback an emotional demand for the sender. E-mail communication might be an important moderator in this process. When feedback is delivered by e-mail, the senders are socially buffered from their communication partners and that may make it less stressful (e.g., Bailey et al., 1983; Gallupe et al., 1992; Kiesler & Sproull, 1992). This is an interesting issue that may be examined in future research.

The benefits of e-mail are quite obvious for the sender. Renaud and colleagues (2006) argued that the costs of e-mail are disproportionally loaded on the recipient who constantly has to divide attention between e-mail and other tasks. Recipients have to engage in constant monitoring to live up to the sender's expectations according to acceptable reaction times in answering e-mails.The smartphone amplifies this process. This pressure can turn into a continuing demand for the recipient. Another, related concern is that because of the shift from F2F communication to CMC the occasions for casual communication decrease (Sarbaugh-Thompson & Feldman, 1998). E-mail communication requires intent and planning which automatically reduces spontaneity and opportunities for social support. Tele-workers report social isolation, reduction in affective bonds with colleagues and lack of social support as major disadvantages of their status (Mann et al., 2000). Social support from colleagues is considered an important resource in the light of the JD-R model and it has potential in buffering the undesirable effects of high job demands (Bakker & Demerouti, 2007). A still increasing number of organizations decide to go mobile and to provide their employees with smartphones. If employers are aware of the disadvantages of working mobile for the employee, they can take action to minimize these effects. Therefore, this paper can function as an eye-opener since it lists the benefits as well ass the potential pitfalls for remote workers.

The main reason for organizations to provide smartphones to their employees is to increase their communication efficiency and to raise their flexibility. This flexibility can give the employee more autonomy in work and an opportunity for a better work-life balance. Surprisingly, difficulties in managing the work-home balance are a frequently cited drawback of the smartphone (Jarvenpaa & Lang, 2005). However, there is no empirical evidence to support this yet. The increasing expectations regarding availability make employees feel that they immediately have to respond to work-related messages, even during leisure time (Davis, 2002). This results in ongoing monitoring and compulsive routines of chronic checking for new messages (Gergen, 2002). Availability anywhere, anytime seems to transform into availability everywhere and all the time (Brown, 2001; Cooper, 2001; Katz & Aakhus, 2002). The effects of 24/7 availability are strongly influenced by the degree of free choice in working mobile (Green, 2002). This can be explained in terms of control and autonomy to work in a way that suits the employee best. Furthermore, the smartphone

facilitates to work long hours and contributes to a blurring of boundaries between work and leisure time.

Future research is needed to examine the long-term effects of intensively using a smartphone on need for recovery, work-home interference, job performance, and employee well-being. Diary studies are useful to examine the causal effects of staying attached to work in the evening hours and its consequences for performance and well-being the next working day. Additionally, it is interesting to explore the reasons why intensive smartphone users have the urge to stay connected during evening hours. Potential predictors for staying connected during evening hours are ambition, self control, how central work is in your life and work engagement. Next to self report measures it is also necessary to include other ratings in the research designs. Are intensive smartphone users aware of how much time they spend on work during evening hours? Or do they underestimate their work-home interference since the smartphone intrudes gradually in their private life.

The quick access to information is helpful in managing tasks and restricts the delay in work. However, the access to online information is almost unlimited. Many e-mail users report information overload, especially when the received information was not requested. Again, the sense of personal control is an important factor in the experience of quick access to information as a source of stress or as a facilitator in work. It is interesting to empirically test the influence of the experience of personal control on smartphone use.

Taken together, we can conclude that e-mail communication in itself is neither a demand nor a resource. It is the shift of expectations and the "always on" culture that makes dealing with (mobile) e-mail an increasing demand. If we keep in mind that both a computer and a smartphone have a switch-off button and that we are in control of the device and not the other way around, we can exploit the benefits of these new media, use them as resources, and be aware of their pitfalls.

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