You've Got Mail, But Is It Important And/Or Urgent?:
An Investigation into Employees' Perceptions of Email

by

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Abstract

This thesis presents three papers linked together by their investigation into two social/psychological predictors of email use: the end user's assessment regarding the importance and urgency of the email. The first paper presents a study designed to help us better understand the cues employees use to identify the two constructs of interest: important email and urgent email. The research takes an emic perspective and uses a qualitative research methodology. The study makes three significant contributions. First, knowledge workers define an email's importance by considering its salience as described in the stakeholder literature. More specifically, an important email comes from a stakeholder with power and/or pertains to an issue/stakeholder that has legitimacy. Second, knowledge workers evaluate an email's urgency in terms of its time-sensitivity and importance. Third, we found that context is critical to the email evaluation process.

The second paper reports on the development and validation of measures that can be used by researchers and practitioners to quantify the important email and urgent email constructs. Buss and Craik's Act Frequency Approach, which uses a mixed-methods "imposed etic-emic-derived etic" approach to scale development was used in this study. The important email and urgent email scales were both found to be reliable and valid measures.

The third paper is informed by Karasek's buffer hypothesis and investigates the relationship between email demands (i.e., objective: email volume and hours spent in email; social/psychological: important email and urgent email) and email strain (i.e. email overload). It is hypothesized that work control moderates the relationship between email demands and email overload. This paper also investigates the relationship between

email overload and perceived stress. Partial Least Squares Structural Equation Modelling analysis confirmed that all four email demands predicted email overload and that email overload was a predictor of perceived stress. Control over work moderated the path between urgent email and email overload. This study contributes to the email and well-being literature by demonstrating that: email overload is a distinct type of role overload, social/psychological demands imposed by email should be investigated in the literature, and negative email outcomes can be mitigated by increased control over urgent email.

Preface

At the time of the initial submission of this dissertation all three papers had been submitted to peer review journals to be considered for publication. All three papers are reproduced here in full, with minor alterations to fit the formatting guidelines of the thesis. The papers all have Andre Lanctot as the first author and Dr. Linda Duxbury (Supervisor of this thesis) as the co-author.

Dr. Linda Duxbury provided guidance throughout the research process in the form of feedback. She engaged in discussions about research decisions and direction by offering her wisdom and experience (including helping to prevent many mistakes). She assisted with her connections for finding organizational partners and assisted in the data analysis where a second researcher was needed. She also provided editorial support. There were no other co-authors for these three papers.

I, Andre Lanctot, I'm the sole author of this thesis and was fully involved in every step of the research. All interviews were conducted by me and all surveys were administered by me. I conducted the data collection, preparation (removing outliers, missing data, etc.), and the main data analysis. I was also responsible for preparing and writing up the materials presented in each paper. When citing this dissertation please reference it as,

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Additionally, I would like to thank my father who helped support me throughout the PhD. Without his endless patience, encouragement, motivation (sometimes with threats—yes, it’s a theme), and advice this dissertation could not have been completed.

Lastly, I would like to thank my fellow PhD students and relatively recent graduates of the program. The advice, assistance, conversations, and good company over the years has not only been a great help, but also a pleasure that made this endeavour more bearable.

This thesis is dedicated to my parents.

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Chapter 1: Introduction

“Email remains the most pervasive form of communication, while other technologies such as social networking, instant messaging (IM), chat, mobile IM, and others are also taking hold, email is still the most ubiquitous form of business communication.” (The Radicati Group, 2018, p. 2)

For the last several decades, a technology marketing research group called The Radicati Group (<http://www.radicati.com>¹) has produced yearly reports that bring together statistics and forecasts for email, instant messaging, social networking, wireless email, and unified communications usage. These reports include data on both business and consumer usage. The data presented in these reports demonstrate that a significant proportion of the world’s population can access their personal and work emails 24/7 regardless of where they are—and do just this. Moreover, the statistics reported by The Radicati Group suggest email use is staggering and the ability to connect omnipresent. The following picture of email use can be painted from the data presented in the Radicati reports:

- “In 2018, the total number of business and consumer emails sent and received per day will exceed 281 billion, and is forecast to grow to over 333 billion by year-end 2022” (The Radicati Group, 2018, p. 2).
- “The average corporate worker spends a quarter of his/her work day on various email-related tasks. In comparison, the time spent in personal meetings accounts for

¹ All of the Radicati Group quotes and statistics cited in this thesis can be found on the corporate website: <http://www.radicati.com>

about 14% of the typical day at the office, and phone conversations occupy only 9% of the typical workday” (The Radicati Group, 2009, p. 4).

Also noteworthy are the data showing that since 2012 the mobile email market has continued to expand as consumer and business users are accessing their email accounts from their mobile devices. In 2012, worldwide mobile email users totalled 730 million with 34% accessing their email via a mobile device (The Radicati Group, 2012). While this expansion of the wireless market is expected to increase worker productivity it has also reduced response time for decision makers (The Radicati Group, 2009).

Why has email become the pervasive form of communication at work? A survey conducted by Purcell and Rainie (2014) found that most (61%) employees in America think email is “very important” for doing their job – more important, in fact, than other forms of communication used in the workplace such as landline phones, cellphones, and social media sites. Research in the area claims that email has many advantages over previous forms of communication, such as snail mail. Advantages include: convenience, easier to engage in, and speed (Sumner, 1988). Whittaker and Sidner (1996) point out that email allows “people in different geographical areas to communicate across time and space. It has also led to the emergence of on-line communities by supporting asynchronous communication” (p. 276). Email certainly beats more traditional asynchronous media in terms of speed, such as snail mail, while maintaining the advantages these media offer. Taylor, Fieldman, and Altman (2008) have a different view and note “it seems that the move to this new era of communication is driven more by the immediate, practical advantages, and the availability of the technology, rather than a rational assessment of its advantages and disadvantages” (p. 159).

A review of the literature suggests that regardless of the reasons for its use, a high reliance on email does come at a cost. For example, work by Dabbish and Kraut (2006) found that feelings of email overload were positively associated with the perceived importance of email for work as well as overall email volume. Similarly, Barley, Meyerson and Grodal (2011, p. 898) found “the more e-mail [respondents] handled, the longer they worked, and the more time they spent doing e-mail, the more overloaded they felt”. Follow-up analysis by Barley et al. (2011) showed email volume is positively associated with stress regardless of how much time people work. They attributed this link to “the specific anxieties that e-mail evoked, the norms that governed its use, and the temporal distribution of communicative acts over the course of a day” (p. 898). Similarly work by Taylor et al. (2008) identified two features of email that can be considered both a curse and a blessing: its speed and its reach. Taylor et al. (2008) go on to note the fact that any recipients of a given email can alter the message and forward it to a large group of people quickly can contribute to problems at work.

Our review of the literature indicates that although we know the amount of time employees spend using email to communicate with others is substantive and growing, we have little understanding of why this is the case (Kooti, Aiello, Grbovic, Lerman, & Mantrach, 2015). While employees say email is very important to their ability to do their job, the reasons behind this perception are not clear. Are the emails employees are sending and receiving communicating important information? Does the fact that email facilitates rapid asynchronous communication to multiple receivers enhance employees’ perceptions that information communicated this way is urgent and requires their immediate attention? Unfortunately, we do not know the answer to these questions. Our

lack of understanding of these critical issues can be attributed to the fact that at this time we have only a rudimentary understanding of how people judge an electronic communication with respect to the importance of its content or the need for an urgent response. Additionally, there are no existing measures to help us in our examination of these phenomena.

The omnibus objective of this thesis is to develop and validate a research instrument, which can be used by researchers and practitioners to quantify the number of important and urgent emails processed by employees at all levels. This thesis seeks to demonstrate the utility of this measure by exploring the relationship between email use and employee well-being. To achieve this goal, the sub-goals of this thesis are to: (1) develop a framework that describes how employees classify emails they receive into important and urgent constructs, (2) develop and empirically validate a measure that will allow the classification of email employees send/receive into important and urgent constructs, and (3) investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being. As there are clear distinctive sub-goals for this thesis, each of which employs a different research method, a multi-paper model approach is appropriate for this thesis. The three papers each use a different methodological perspective. The first paper in this thesis takes an emic approach, the second mixes emic and etic approaches depending on the phase of research, while the third paper employs an etic perspective. These approaches are defined as follows: “[t]he etic viewpoint studies behavior as from outside of a particular system, and as an essential initial approach to an alien system. The emic viewpoint results from studying behavior as from inside the system” (Pike, 1967, p. 37). The three papers are

described below. A summary of each paper including the research paradigm, methodological approach, and data sources are displayed in Table 1-1.

Table 1- 1: Roadmap to Thesis

Thesis Research Goals	The omnibus objective of this thesis is to develop and validate a research instrument, which can be used by researchers and practitioners to quantify the number of important and urgent emails processed by employees at all levels. This thesis seeks to demonstrate the utility of this measure by exploring the relationship between email use and employee well-being. To achieve this goal, the sub-goals of this thesis are to: (1) develop a framework that describes how employees classify emails they receive into important and urgent constructs, (2) develop and empirically validate a measure that will allow the classification of email into important and urgent constructs, and (3) investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being.
Paper Research Goals	<p>The first paper's main objective is to develop a framework that describes how employees classify emails they receive into important and urgent constructs (e.g., who sent the email, what is the subject of the email, what is the content of the email, etc.).</p> <p>The second paper's main objective is to develop and empirically validate a measure that will allow the classification of email employees send/receive into important and urgent constructs based on what was learned in our first paper. More specifically, we seek to create constructs of email type, which can be measured and theoretically analyzed from multiple perspectives (i.e., individual and organizational) by researchers to study how email use impacts outcomes of interest.</p> <p>The third paper's main objective is to use the measure developed in the second paper to investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being (e.g., perceived stress and email overload). This part of the study is theoretically anchored using Karasek's (1979) demand—control—strain model and seeks to determine how different patterns of email use impact employee well-being.</p>
Research Paradigm	Positivist
Methodological Approach	<p>Paper 1: Qualitative taking an emic approach</p> <p>Paper 2: Mixed-methods employing an "imposed etic—emic—derived etic" approach (Berry, 1969; 1989)</p> <p>Paper 3: Quantitative taking an etic approach</p>
Data Sources	Interviews and Surveys

The first paper's main objective is *to develop a framework that describes how employees classify emails into important and urgent constructs (e.g., who sent the email, what is the subject of the email, what is the content of the email, etc.)*. This paper helps us meet our first objective above as it increases our understanding of how employees evaluate the emails they receive. As with all the papers in this thesis, Paper 1 takes a positivist approach. The methodology for this paper is qualitative as we are taking an emic approach to our conceptualization of what constitutes important and urgent emails based on interviews of knowledge workers (we are using Dabbish and Kraut's (2006) definition of knowledge worker as those who frequently use communication for their work such as: management and professionals—the authors refer to these employees as white collar workers) who rely on email to do their work.

The second paper's main objective is *to develop and empirically validate a measure that will allow the classification of email into important and urgent constructs based on what was learned in our first paper. More specifically, we seek to create constructs of email type which can be measured and theoretically analyzed from multiple perspectives (i.e., individual and organizational)* by researchers to study how email use impacts outcomes of interest. This paper allows us to meet the second objective of this thesis of developing and empirically validating a measure that captures the importance and urgency of emails employees send/receive. This paper uses mixed-methods employing an “imposed etic–emic–derived etic” approach (Berry, 1969; 1989). The second paper starts where the first paper leaves off and uses the interview data to create a measure which quantifies the important email and urgent email constructs.

The third paper's main objective is to use the measure developed in the second paper *to investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being (e.g., perceived stress and email overload)*. This study is theoretically anchored using Karasek's (1979) demand—control—strain model and seeks to determine how different patterns of email use impact employee well-being. This paper will allow us to meet the third objective of this thesis of exploring the relationship between email use and employee well-being. Methodologically we take a positivist etic approach in our third paper and use survey data and Partial Least Squares Structural Equation Modelling (PLS-SEM) to evaluate our theoretically derived model.

This thesis makes a number of contributions to both the academic and practitioner literatures. Although several studies were identified that spoke to the need to classify emails, particularly with respect to their importance (e.g., Aberdeen, Pacovsky & Slater, 2010; Dabbish, Kraut, Fussell & Kiesler, 2005; Flores, Graves, Hartfield & Winograd, 1988; Wainer, Dabbish & Kraut, 2011) we could find no clear definition of what exactly constitutes an important and/or an urgent electronic communication, particularly from the employee's (i.e., emic) perspective. The important and urgent paradigm from Paper 1 and the important and urgent constructs from Paper 2 not only provide academics with clearer definitions of what constitutes an important and/or urgent electronic communication, but also give researchers and practitioners a way to measure them. Our third paper contributes to the email and well-being literature by investigating what the relationship is between our important and urgent constructs and stress. This contribution provides practitioners with a foundation for changing email practices to reduce email-related stress

in the workplace.

While some researchers (e.g., Dabbish et al., 2005) have investigated the issue of email importance, they took an etic perspective of the issue (i.e., researcher defined what constitutes an important email). Such studies ignore the fact that it is the employee's perception of the issues of importance and urgency that matters as it is the employee's perception which drives their decision making with respect to sending or receiving emails.

This thesis is structured as follows. We begin in Chapter 2 with literature reviews focusing on the main literature associated with each of the three papers. There is some overlap in the literature for each of the papers and as such the papers which the literature will inform shall be mentioned at the start of each literature review. Following the literature review, in Chapter 3 we outline our research methodologies, including: Building Theory from Case Studies (or the Eisenhardt (1989) approach), Act Frequency Approach (AFA), and Partial Least Squares Structural Equation Modeling (PLS-SEM). Chapters 4, 5, and 6 will present the three papers of this thesis. Finally, this thesis will conclude with Chapter 7 which will present a summary of the literature which led to this research being conducted and the methodological approaches taken, the main contributions and conclusions from our research, the main limitations of this thesis and possible future research, and finally the implications for practitioners.

Chapter 2: Literature Review

This chapter will review the main literature for each of the three papers in this thesis. As there is some overlap the papers which the literature will inform shall be mentioned at the start of each review. The literatures covered in this chapter include: importance and urgency, how others have classified email, and the relationship between email use and well-being.

2.1 Importance and Urgency

The main objective of this section is to provide a general review of the literature on the two constructs that were used to classify email in the three papers included in this thesis. To accomplish this, we undertook a review of the literature looking for papers that included the following terms: importan*, urgen*, and time management matrix (with * representing different variations of the root word – e.g., important and importance). The following databases were searched: Google Scholar, Business Source Complete, and PsycINFO. This section summarizes key findings from this review along with definitions of the constructs of interest as they will be used in our study. Following the literature reviews on importance and urgency, Covey's (1990) time management matrix, which ties the concepts of importance and urgency together, will be introduced as it is the theoretical framework upon which this thesis is based. Each section will conclude with the key implications for this thesis. This section is most relevant to Paper 1, but also helps to inform both Papers 2 and 3.

2.1.1 Importance.

“Philosophers who write about the theory of values have not, as far as I know, paid much attention to the meaning of ‘importance’. And yet it is a term of valuation which we are continually using. It may therefore even turn out to be ‘important’ that we should discuss what we mean by it.” (Emmet, 1946, p. 316)

As this is being written, it has been over 70 years since Emmet (1946) made the above comment. In the intervening years there has, however, been little discussion in the literature on the meaning of importance so we rely heavily on Emmet’s (1946) pivotal work in the area in our review.

According to Emmet (1946), people use the term “important” in two ways: in a relativist sense and an absolutist sense. The relativist sense of importance determines the importance of something in relation to something else (i.e., a means/end relationship). For example, it is important I grab an umbrella before going out into the rain, so I do not get wet. This use of importance is easy to comprehend because it is contextual. Some may argue that an umbrella is not needed if there is a raincoat available, but the point is to achieve the end of staying dry it is important that you have a waterproof barrier.

The absolutist sense of important, on the other hand, focuses on whether the goal itself is important (Emmet, 1946). So, in the above example, the absolutist sense would look at whether staying dry is important. This sense of importance is far more difficult to evaluate. While there is no doubt some shared commonalities in terms of what is considered important, especially for those who share a common value system because of having a similar upbringing (e.g., those with a shared culture, religion, ethical upbringing,

etc.), as Emmet (1946) points out, any evaluation system of importance can, and likely will, be challenged.

Cooper (1968) refers to theories which allow us to rank our activities in terms of importance as “monolithic” theories because they try to cram all decision criteria under one umbrella of what is “truly” important. For example, capitalists believe that the most important thing is the pursuit of profit. This pursuit may be fine for some people as a general guideline for what is important, but at its extreme many people would agree that profit should not be put before human life. This position can of course be argued at length. The point that Cooper (1968) makes is that we will never come up with a ranking of importance which everyone agrees with, not that we cannot come up with a ranking of importance which some people will agree with. What the criticisms of monolithic theories highlight is that when it comes to importance, context matters (Emmet, 1946).

There was little to no evidence in our search of the literature that what makes an email important, in either an absolute or relativistic sense, has been studied in the academic literature. This absence is unfortunate as a better understanding of how employees establish an email’s importance should help us better understand and manage email use. One exception to this is Dabbish et al.’s (2005) study mentioned in the introduction. This study will be discussed and critiqued further in Section 2.2 on how others have classified email.

2.1.1.1 Conclusion. This view of importance has relevance to our study which attempts to identify how email users make decisions with respect to the degree of importance of the various emails they process. Given that the absolutist sense of importance is based on the perspective of the individual decision maker(s) at the time the

decision is being made, the definition used in research such as that undertaken in this thesis must contain enough flexibility to allow for individual differences in perspective on what makes an email important. Covey (1990, p. 151) defines importance in terms of results: “If something is important, it contributes to your mission, your values, your high priority goals”. We have adapted this definition for our study and define an important email as *one that conveys information of great significance, consequence, or value to the recipient*.

2.1.2 Urgency. In doing the literature review for urgency, one of the things which stood out is the abundance of articles in the medical literature which discuss this topic. Upon reflection, it is not so surprising that those who work in an emergency environment would be the ones more focused on urgency. However, it was somewhat surprising that the term is defined almost exclusively for the desire to urinate. Cardozo (1986, p. 1419), for example, defined the term as follows: “Urgency is a strong and sudden desire to void which, if not relieved immediately, may lead to urge incontinence”. The above quote was taken from one of these medical papers for two reasons. First, it is one of the few definitions of the term we found in the literature. Second, because the need to urinate is something most of us can relate to when it comes to thinking about the construct of urgency. Covey (1990, p. 151) defined the term in a similar, albeit less colourful, manner: “urgent means it requires immediate attention”. The definition of an urgent email used in this thesis is, *one that is perceived by the recipient to require swift action*, and is adapted from Covey’s (1990) definition of the term.

Despite the scarcity of formal definitions for the term urgency in the academic literature there are a number of theoretical (but few empirical) articles on this topic in the

research literature on time (Goodman, Lawrence, Ancona & Tushman, 2001). In the review below we focus our attention on those theories of urgency relevant to this study: time urgency and time pressure. Time urgency is defined as “the tendency on the part of an individual to consider time as a scarce resource and to plan its use carefully. Time urgency is clearly a perspective on the part of the individual and, as such, represents an individual-difference variable” (Landy, Rastegary, Thayer, & Colvin, 1991, p. 645). Time pressure is defined as an individual’s perception of the limited time remaining to complete some goal relative to the difficulty of achieving that goal and is a function of the environment (Maruping, Venkatesh, Thatcher, & Patel, 2015).

2.1.2.1 Time urgency. Time urgency is identified in the literature as an element of a Type-A behaviour pattern (Conte, Landy, & Mathieu, 1995; Landy et al., 1991). The idea of time urgency was first discussed in Friedman, Rosenman, Carroll, and Tat’s (1958) study of coronary disease. The authors determined that individuals demonstrated physical symptoms of stress such as higher blood coagulations times and an increase in their serum cholesterol levels in periods of high time urgency. A follow-up study by Friedman and Rosenman (1959) investigated behavioural patterns the authors believed would result in coronary heart disease (i.e., behavioural patterns that would increase stress). They referred to this pattern of activities as “Type A” behaviour and reported that individuals who were high in this attribute felt harassed by their lack of time to accomplish everything they felt compelled to do and were competitive in everything they did. Friedman and Rosenman’s (1959) study is relevant to this research as it supports the idea that people have a self-imposed sense of time urgency (Waller, Conte, Gibson, & Carpenter, 2001). To quote Landy et al. (1991, p. 645), time urgency “is the tendency on

the part of an individual to consider time as a scarce resource and to plan its use carefully. Time urgency is clearly a perspective on the part of the individual and, as such, represents an individual-difference variable". Ancona, Okhuysen, and Perlow (2001) go as far as to suggest that organizations who wish to take advantage of people's tendency to be more or less time urgent should consider three temporal zones: a short-term fast paced environment for the Type A's, a medium paced environment for those in between, and a long-term slower paced environment for those with a Type B personality. These temporal zones fit well with Blount and Janicik's (2001) proposition that people with higher time urgency will react less negatively to "hastening" (i.e., having to complete something quickly) than those low in time urgency. Likewise, idea of temporal zones fits with Mohammed and Nadkarni's (2011) hypothesis that time-urgency diversity (i.e., a mix of Type A, Type B, and those in between) may contain synergies. They base this hypothesis on the assumption that a "speed-accuracy trade-off exists" and those high in time urgency will excel in situations where quick completion of tasks is desired and that those low in time urgency will excel where quality of work is desired. This implies that a team with diversity in terms of time-urgency levels could potentially deliver both high-quality work in a timely manner.

A difficulty Ancona et al. (2001) and Mohammed and Nadkarni (2011) acknowledge with temporal zones (or time-urgency diversity) is that they still need to be coordinated somehow for the organization to work successfully. Jansen and Kristof-Brown (2005) found that teams who were misaligned in terms of time urgency (they use the term hurriedness) were under greater strain, engaged in less helpful behaviours with colleagues, and were less satisfied. However, Mohammed and Angell (2004) found no

significant differences in relational conflict between groups with high degrees of time-urgency diversity versus those without.

Mohammed and Nadkarni (2011) suggest that the lack of a significant finding may be due to some moderating factor and suggest temporal leadership as a possibility. Temporal leadership is defined “as leader behaviors that aid in structuring, coordinating, and managing the pacing of task accomplishment in a team. The set of behaviors that comprise temporal leadership of a team are *scheduling [...]*, *synchronizing, [...]* and *allocating temporal resources*” (2011, p. 492). Their study found time-urgency diversity was more positively related to team performance when temporal leadership was stronger, lending support to their hypothesis. The takeaway for this thesis being that if the conflicts between diverse time urgency are not managed, they may result in strain between employees, whereas those that are well managed might result in greater performance.

2.1.2.2 Time Pressure. The idea of urgency can also be found within other forms of research, normally under the heading of “creating a sense of urgency” and can certainly be thought of in relation to the concepts from the well-being literature, such as overload and work-life balance, in terms of effects on employees (the email and well-being literature is discussed in more detail in Section 2.3). Some examples of literature which refer to the need to create a sense of urgency are: the change literature (e.g., Huy, 2001), the research and development (R&D) literature (e.g., Pinto and Slevin, 1989), and the literature on championing environmental issues (e.g., Anderson and Bateman, 2000). These bodies of literature are essentially trying to study how practitioners create a sense of urgency to convince others to act in a desired manner. In the change literature, for example, in Huy’s (2001) discussion on the leadership of change he states, “[t]he goal is

to create an economically performing organization weighed by clock time. The faster the lower levels of the organization can align themselves with the top's directives, the faster the desired economic performance is assumed to be realized" (p. 605). This tactic for creating urgency is accomplished through the influence of someone with power over the employees. In the R&D literature Pinto and Slevin (1989) list urgency as one of the critical success factors in R&D projects. They state, "[t]he importance of the Urgency factor is demonstrated during the earliest project life cycle stage. It is important for project managers to attempt to instill a sense of urgency, or importance, regarding the project to [those] who control needed resources" (p. 34). Finally, in terms of championing environmental issues Anderson and Bateman (2000) describe "issue framing" as a way to get attention and action on environmental issues. According to the authors, framing involves presenting the geographic impact, opportunity/threat of the environmental issues, and the urgency of the issue. The first two are essentially demonstrating the importance of the issue in relation to the organization. Regarding urgency they state, "[t]o generate a sense of *urgency* in organizations members, the importance, visibility, time pressure, and sense of organizational responsibility surrounding environmental issues must be emphasized" (p. 551).

It is interesting to note that importance keeps popping up when researchers discuss creating a sense of urgency. This fact implies that conveying a sense of importance to something is a key ingredient in convincing others to act in a timely manner (i.e., urgently). That being said, the relationship between important and urgent is not very well defined in the literature. This relationship is something which is addressed

within this thesis, filling a gap in our understanding of the relationship between these two constructs (at least with respect to email use).

The other issue which reoccurs in discussions of “creating a sense of urgency” is time pressure. Perceived time pressure is a concept which appears to be distinct from time urgency in that time urgency is seen as a stable personality trait (Conte et al. 1995; Landy et al., 1991), whereas perceived time pressure is an individual’s perception of the limited time remaining to complete some goal relative to the difficulty of achieving that goal and is a function of the environment (Maruping et al., 2015). While someone high in time urgency will feel they are under greater time pressure than someone who is low on time urgency, what is important to this study is understanding the effect of time pressure on employees.

Our review of the literature in the area revealed that the effect of time pressure in relation to performance is somewhat mixed (Maruping et al., 2015). On the positive side: Cavanaugh, Boswell, Roehling, and Boudreau (2000) found a positive relationship between job satisfaction and challenge-related self-report stressors (among them time pressure). Similarly, LePine, Podsakoff, and LePine (2005) found a positive relationship between performance and challenge-related stressors. On the negative side, McDaniel (1990) found a decrease in effectiveness and Kelly and McGrath (1985) found a decrease in quality with increases in time pressure. Finally, to further confuse things Baer and Oldham (2006) found an inverted U relationship between time pressure and creativity for those who score high on openness to experience.

To resolve these contradictory findings, at least in a team setting, and building on the work of Mohammed and Nadkarni (2011) with temporal leadership, Maruping et al.

(2015) focused on explaining under what circumstances time pressure has a negative or positive influence on employees. They did this by investigating the indirect effect of time pressure on team performance mediated through team processes which they defined as, “task management processes that teams use to handle interdependencies between the multiple task for which they are responsible” (p. 1314). Temporal leadership was conceptualized as a moderator. Their findings showed that when temporal leadership was strong time pressure has a positive indirect effect on team performance at intermediate and high levels, with a non-significant positive effect at low levels of time pressure. Conversely, when temporal leadership was weak time pressure has a negative indirect effect on team performance at intermediate and high levels, with a non-significant positive effect at low levels of time pressure.

2.1.2.3 Conclusion. A common theme within the urgency literature is the importance of temporal leadership in mitigating the negative effects of urgency on team performance (e.g., Mohammed & Nadkarni, 2011; Maruping et al., 2015). This theme has a couple of implications for this thesis. First, to resolve some of the issues related to email performance at the individual and organizational levels an email time management strategy should be considered. Second, to be effectively implemented any suggestions drawn from an email time management strategy in this research will require strong temporal leadership.

2.1.3 Covey’s (1990) important versus urgent framework. Covey’s (1990) time management matrix (taken from Dwight D. Eisenhower’s Decision Matrix) is used as the theoretical framework for Papers 1 and 2. Covey’s (1990) matrix seeks to help people “[o]rganize and execute around priorities” (Covey, 1990, p. 149). The author breaks up

all activities into two factors, “*urgent and important*” as defined in the previous sections. He then uses these concepts to conceptualize the 2x2 matrix. Although we did find many articles that used Covey’s (1990) time management matrix to offer suggestions on how to better manage one’s time (e.g., Haimes, 2001; Brunicardi & Hobson, 1996; Jensen, Malcolm, Phelps, & Stoker, 2002) and we even found a few research studies which discussed Covey’s (1990) matrix (e.g., Clarke & Wilcockson, 2001; George, Dixon, Stansal, Gelb, & Pheri, 2008); we did not find any studies which used the matrix as their theoretical framework as we do in this thesis. Nor did we find any evidence that Covey’s (1990) conceptualization had been applied by researchers studying email use.

In Figure 2-1 (see next page) we have adapted Covey’s (1990) matrix for use in our research. This is a recommendation consistent with Eisenhardt (1989) who suggests that researchers use “[a] priori specification of constructs [...] to shape the initial design of theory building research” (p. 536). Data from Paper 1 was then used to modify this matrix.

Theoretically the matrix is based on the idea that to be effective people need to spend their time on what is important to them, with importance being subjectively defined at the level of the individual (Covey, 1990). The author notes that for people to have time to spend time on what is important them, people should first reduce or even stop spending time on activities which are unimportant. The rationale is that this type of prioritizing should leave people with more time to work on important activities. The author suggests that for the most part people are good at getting the important/urgent activities done (i.e., firefighting activities) but notes important/not urgent activities tend to be put off until they become urgent or until it is too late. This suggestion means the time

Figure 2- 1: Covey's (1990) Time Management Matrix Adapted to Email

Important Email	High	Emails that impact the individual's ability to do their job, their career, their self-image, or how they are viewed by their colleagues, but do not require immediate action (e.g., something related to an important project that is due in the next couple of weeks)	Emails that impact the individual's ability to do their job, their career, their self-image or how they are viewed by their colleagues which require immediate action (e.g., something related to an important work project that is due soon)
	Low	Emails that serve no useful purpose for the receiver – attention to these emails leads to time being wasted/procrastination (e.g., mass communication emails that are only relevant to a specific person or group)	Emails that are not important in a strategic sense but require immediate action (e.g., request for information that is needed by a specific time)
		Low	High
		Urgent Email	

Source: Adapted from Covey (1990. 151)

saved from stopping or reducing the amount of unimportant activities can be moved to activities which the individual considers important. Covey (1990) also recommends that individuals seek to reduce the amount of time spent on important/urgent activities by attending to important activities before they become urgent. A second way to reduce the time spent on important/urgent activities is to make finding ways to reduce time spent on these activities important. This suggestion includes things like training, planning to reduce the occurrence of emergencies, thinking of better ways to achieve the same or better results while putting in less time, etc.

2.1.3.1 Conclusion. If the information provided by the employees in our research on what makes an email important and/or urgent can be classified into the categories shown in Figure 2-1, we can use the time management strategies proposed by Covey (1990) to offer suggestions for how email is handled from multiple perspectives, such as the individual and organizational levels.

2.2 How Have Others Classified Email

The objective of this section is to demonstrate the need for a typology of important and urgent emails such as the one we have developed in Paper 2 which is based on the employees' perspective of how they process both work and non-work-related emails. To achieve this objective, literature reviews will be presented on how email is currently classified within the literature (i.e., what the different perspectives of email are) and on how the concepts of important and urgent email are discussed in the literature. To accomplish this, we undertook a review of the literature looking for papers that included the following terms: email/electronic communication, email/electronic communication classification, Importan* email/electronic communication, and urgen* email/electronic communication (with * representing different variations of the root word – e.g., important and importance). The following databases were searched: Google Scholar, Business Source Complete, and PsycINFO. Each section will conclude with key implications for this thesis. This section is mostly relevant to Paper 2 and informs both Papers 1 and 3.

2.2.1 Current attempts at classifying email. Ducheneaut and Watts (2005) point out that there is a lot of research into email which seems to give important insights yet ends up having little to no effect on the design of email use. The authors attempt to resolve this issue by organizing email research into broad categories to inform future

studies. They categorize their findings from the literature into metaphors which each offer a different perspective on research. These metaphors seemed to be an excellent way to view the literature on email and as such they form the basis for how the literature is organized in this review. Accordingly, in the sections below the literature will be discussed using the following metaphors of email to categorize the literature: “email as a file cabinet”, “email as a production facility”, and “email as a communication genre”.

2.2.1.1 “Email as a file cabinet”. The email as a file cabinet literature focuses on the extent to which users’ email filing systems are structured (Ducheneaut & Watts, 2005). This research is based on early studies, such as Malone (1983), on how employees organize their workspace and how computer systems can help with this process. Malone (1983) noticed that employees stored information in two ways, as files and as piles. Although employees tended to use the piles for the purpose of helping them do their work (e.g., as a reminder to do the work in that pile) the piles could add up and get out of control, undermining the purpose for which the piles were initially created. The reasons identified for the creation of piles were the following:

- (1) The mechanical difficulty of creating labeled file folders, binders, and so forth, especially if multiple levels of classification are desired.
- (2) The cognitive difficulty of creating appropriate categories and deciding how to classify information in a way that will be easily retrievable.
- (3) The desire to be reminded of the tasks to be done.
- (4) The desire to have frequently used information easily accessible. (Malone, 1983, p. 110)

Malone’s (1983) suggestion was that automated computer systems could be used to handle the tasks which resulted in the creation of piles and free the employees to do their work.

Building on this research, Malone, Grant, and Turbak (1986) developed “The Information Lens system”, an “organizational interface” system designed to help organizations share information effectively. The system had five key ideas: messages can be organized by type (or frames), production rules can be put in place to automatically process messages, semi-structured emails can be facilitated by display editors, semi-structured messages and production rules can be simplified if they are organized by message type in a lattice, and the switch over to a new group communication system can be made easier by making small incremental changes while (a) allowing the users the option of using “their existing system” throughout the process, (b) rewarding individuals who make the changes, and (c) giving more benefits to groups that make the switch than the individual benefits they have already received (i.e., extra rewards tied to group compliance). This system allowed users to organize and prioritize email as well as provide them with semi-structured templates for their email messages. This system sounds great! So, why was the email problem not solved 30 years ago?

Perhaps the answer can be gleamed by looking at a relatively more modern system for managing email. Bälter and Sidner (2002) proposed classifying email by several distinct categories which allow the user to narrow in on a task. This system is based on the idea that our priorities change from moment to moment. So, for example, an employee’s highest-priority task first thing in the morning might change after a meeting with a colleague or manager. If priorities can shift at any moment the way email is organized needs to reflect the possibility of a shift and allow for users to quickly navigate through their email and narrow in on task-related emails easily. Bälter and Sidner (2002) believe that a classification system should meet the following four criteria:

- 1) No work, or as little work as possible, should be done manually. That is, the categorization should be based on information already in the message
- 2) All messages should be categorized. A category for “other messages” could make the user curious about the content and therefore waste time reading them.
- 3) The categorization should be scalable, that is be possible to use regardless of whether there are 50 or 5000 messages in the inbox.
- 4) No messages should be misclassified. (p. 2)

Using these criteria, Bälter and Sidner (2002) tested the following categories for email handling in their prototype. The first being a Timely category, which was composed of messages which contained upcoming dates in the text. Messages about a meeting in the next day or two would, for example, be in this category until the date passed. These messages would then be shifted into another category. The second category they referred to as VIP Platinum. This category is essentially composed of a list of people which the user considers to always be a high priority regardless of other information in the email which might lead to these messages being categorized as something the user would generally consider a low-priority category. The third category is the Personal one, which is messages where the recipient is the only person the message was sent to. The fourth category is Small distribution, which contains emails to a small group of recipients. Finally, the fifth category is Large distribution, which contains listservs and groups greater than seven people.

Like Malone et al.'s (1986) “Information Lens”, Bälter and Sidner (2002) seem to have developed a good system. For one it is not filtering out any emails, so nothing is being removed which could potentially be important. The categories certainly make sense and the categorization seems to generally follow how people go through their email. Another important issue Bälter and Sidner (2002) point out is that users' priorities change

so organizing emails by priority does not make sense. The question remains, however, why has there not been a widespread adoption of one of these systems?

Ducheneaut and Watts (2005) point out that a major flaw with the file cabinet view of email is that it focuses around the individual employee managing their email and ignores the organizational context and the communicative nature of email. Categorizing the inbox does not really change the fact that users must still go through all their email, even if they generally dismiss one of the categories such as the Large distribution category. They will probably want to skim over these emails just in case, so not all that much time has been saved. It seems as though the minor gains with this type of categorizations and the cost of having to perform some email management with the system (i.e., users have to at least maintain their VIP list) is the reason this type of email inbox categorization has not caught on. Also relevant is the fact that this categorization process does nothing about the volume or content of emails received. Granted, Malone et al.'s (1986) idea of email templates could help manage the content of the email by having a format for standard information, but the content of the email itself (i.e., the work) still needs to be managed. If an employee is overloaded by email, they still face all the potential negative effects of email without any potential solutions being offered from the file cabinet categorization.

2.2.1.2 “Email as a production facility”. This perspective is based on the “language/action perspective” on technology taken by Flores et al. (1988). They state,

What is special about human beings is that they produce, in language, common distinctions for taking action together. Language then is not a system for representing the world or for conveying thoughts and information. Language is ontology: a set of distinctions that allows us to live and act together in a common world. (p. 156)

In other words, we coordinate our actions in the world through language. If someone makes a request, for example, to have a thesis completed by such and such a date, and if the other party agrees (or disagrees) then it is expected that the agreed upon action will be taken by that date (or not). Likewise, if for some reason something changes for either party, for example the person doing the thesis will not have it done by the specified date for some reason, then the action can be cancelled or renegotiated. It is the language that creates action within organizations.

Unfortunately, the same words in a different context can mean something different (Flores et al., 1988). For example, “it’s cold in here” might be interpreted as a request to turn up the temperature in a cold room, it might simply be a statement of fact, or it might even be a joke in an overheated room. One must adapt one’s language to the context otherwise miscommunications will take place and undesired actions, or inactions, will result, a situation the authors refer to as a “breakdown”. To handle these breakdowns Flores et al. (1988) suggest the addition of something they call “The Coordinator”.

To reduce misunderstandings, The Coordinator provides a list of actions for the user to select from (Flores et al., 1988). Once an action, or actions, has/have been selected the user then fills in: who the recipients of the request are, a keyword to group the conversation under, and a heading. The user is then prompted to answer, “What is your request?” where they may then fill in anything they wish. The recipients then receive a message which they know contains certain actions based on which actions in the list the sender selected. For example, if the message were a request to have a project completed by a specific date, the receiver would see that “request” and a “completion

date” were selected and they would be given the option to accept or decline. The Coordinator is reducing ambiguity in the message by placing the message in context before it is even read.

Similar to Malone et al.’s (1986) semi-structured messages, Flores et al. (1988) contend that there are typical, reoccurring, conversational patterns within organizations and the use of something like The Coordinator should save time in interpreting emails and reduce the likelihood of a misinterpretation since these messages would be standardized. One of the main criticisms of such systems in the literature is users must follow the rules to use the system, whereas, users prefer some flexibility in order to fit the circumstances (Ackerman, 2000).

Carasik and Grantham’s (1988) study found that users did not think that learning The Coordinator system was worth the gains and it “severely constrains the pattern [of] interaction between people focusing [on] the task nature of the interaction” (p. 64). The authors clarify this statement by saying that The Coordinator seems to violate the norms of social interactions, removing “rationality, reciprocity, altruism status consistency and competition” (p. 64). The removal of basic social norms likely harmed the socio-organizational level coordination within the organization and left the individuals feeling uncomfortable (Ducheneaut & Watts, 2005).

Other attempts have been made to correct/improve upon Flores et al.’s (1988) Coordinator (e.g., Shepherd, Mayer, & Kuchinsky, 1990; Kaplan, Tolone, Bogia, & Bignoli, 1992); however, none have managed to establish themselves. Ducheneaut and Watts (2005) suggest this is due to their perspective on email as a communication system which requires structure.

2.2.1.3 “Email as a communication genre”. Yates and Orlikowski (1992) proposed “genres of organizational communication” as a useful concept to study the social processes within organizations. They define “a genre of organizational communication” as being “a typified communicative action invoked in response to a recurrent situation” (p. 301). Genres follow rules and a genre can develop over time or can be designed and adopted. A good example of a communicative genre in organizations is the meeting. Meetings are called to discuss something. They can be very formal with an agenda and minutes or they can be more informal, where those who go to the meeting have a general idea of what is going to be discussed and how they are expected to interact with each other in the meeting because there is some form of structure present. The authors point out that a chance meeting at the water cooler would not usually be considered a meeting in the sense of a genre as it lacks formal structure and was not preplanned. Therefore, if we are looking at email as a communicative genre, we are investigating the formal structure, or rules, under which email is used.

Most of the research which falls under this perspective has looked at email in terms of fit between message and media such as those that looked at information richness.

Information richness is defined as the ability of information to change understanding within a time interval. Communication transactions that can overcome different frames of reference or clarify ambiguous issues to change understanding in a timely manner are considered rich. Communications that require a long time to enable understanding or that cannot overcome different perspectives are lower in richness. In a sense, richness pertains to the learning capacity of a communication. (Daft & Lengel, 1986, p. 560).

Email would be considered low in richness. Information Richness Theory (IRT) essentially proposes that given the equivocality of the message employees will select the

medium which best matches their needs. Therefore, messages high in equivocality would require a medium high in richness such as face-to-face conversation and messages low in equivocality would more efficiently be communicated through a medium low in richness such as email.

Although this makes logical sense, it of course does not completely hold true within organizations. For example, Rice and Shook (1990) expected upper level managers to use email less than other forms of media because their work demands more conversations high in equivocality. Instead they found upper level managers in two of the organizations they investigated were more likely to use email. In an attempt to explain this finding within IRT the authors suggested that perhaps email belonged in a more information-rich category alongside the telephone. However, they did not explain how it could be equivalent to the telephone in its information richness.

A possible explanation offered by Lee (1994) is that email can act as a high-information medium within organizations because there is socially constructed meaning to the content of the messages which goes well beyond the written message itself (i.e., the messages are part of an ongoing organizational conversation which all the participants are part of and aware of the subtleties). Lee (1994) states,

In interaction with the e-mail system, they transform the data into information they find meaningful. In a sense, an e-mail system might be better described as a reagent than a medium. The users themselves (along with the social construction that they appropriate and that, in turn, appropriates them) join the hardware and software of the e-mail system as processors (or, even better, co-processors) of the data. It is through this interaction that communication richness can emerge. (p. 154)

Lee (1994) demonstrates the socially constructed meaning in organizations by using an email thread (email quotes from another study which looked at email in organizations)

which started as a request for training on how to use the organization's word processing system. The thread brings all kinds of organizational information into the conversation which was not in the original email, highlighting Lee's (1994) point. This view, however, seems flawed in a number of ways. First, the original sender was not aware of any of this information when the request was sent and yet used email to send a message high in equivocality. Second, although the recipients brought organizational information into the conversation which was not in the original email, most of their emails seemed to be probing for information they could far more easily get from a high-richness medium such as a face-to-face meeting. Consider the following excerpts from the quotes of the recipients: "Do you think we need to train [...]?" ... "They know how to use email. I would try the 'long distance' training approach first." ... "Yvonne, please coordinate with Nell" ... "Nell, how would you like to go about this?" ... "Yvonne, what is the nature of Nora's [word processing] – related contact with [...] to date?" ... "I think she wants to start learning from scratch" (p. 153). It should also be pointed out that the conversation is not resolved in the quotes given. These observations of Lee's (1994) quotes highlight that the recipients are struggling with a conversation high in equivocality over a low-richness medium. It seems more likely that the conversation was conducted over email because that is where the conversation started or because of the convenience offered by the medium. Perhaps the issues discussed in this email thread should have resulted in a meeting?

El-Shinnawy and Markus (1998) conducted a study looking at the reasons people select one medium over another, specifically, the choice between email and voicemail when they have access to both media. What they found was that despite email being

lower in richness people preferred it over voicemail even in situations of high equivocality. The possible explanations offered by the authors for why email is selected over voicemail are that social norms, greater functionality of email, and the ease of use make it a more attractive alternative.

Another possible alternative is that email is preferred over other media as it reduces social barriers and acts as a kind of equalizer, especially in situations where little is known about the other members of the email conversation (Dubrovsky, Kiesler, & Sethna, 1991). When power, physical characteristics, expertise, gender, etc., are not known everyone in the conversation's opinions/comments holds equal weight. This equalization may also give people access to people and information they would not be able to access through other media. Consider that one of the comments in Lee's (1994) quotes are that the person does not know who "Nora" is. Nor does anyone really seem to know what Nora's interaction is with the group which normally takes care of the word processing issues. Yet they are discussing whether to send her for training. For all we know Nora may have no business at all requesting training and would have been completely ignored through other channels (and maybe was).

The issue with research which looks at email as a communicative genre is that it ignores the previous two categories of email (Ducheneaut & Watts, 2005). Specifically, it ignores how people manage email at the individual level, and it ignores the actual communication strategies used between users. What Ducheneaut and Watts (2005) suggest is that research into email should consider email in all three of the categories they have identified. Ducheneaut and Watts (2005) basis for this suggestion is that each of the perspectives in the literature have ignored the other perspectives in their solutions. For

example, when Flores et al. (1988) proposed The Coordinator to help reduce problems with email in organizations, they violated social norms people expect from interactions with others (Carasik & Grantham, 1988). That is, they expected people to act as machines in a production facility and ignored people's need, and reasons, for interacting with other people (i.e., reciprocity, networking, learning, etc.). When viewed from an individual perspective not only does The Coordinator seem like a flawed system, but it seems like a system that will cause more problems than it will fix.

2.2.1.4 Conclusion. The key implications for this thesis from the above literature on the current categorization of email is that researchers have been using an etic (researcher theory) driven approach to classify email. This thesis uses an emic approach to the challenge of classifying email. More specifically, we turn to the email users themselves to help us better understand email use and how email is managed. This is consistent with some of the more recent research on email that also takes on more of an emic approach (e.g., Barley et al., 2011; Mazmanian, Orlikowski, & Yates, 2013; Mazmanian, 2013; Duxbury et al., 2014).

2.2.2 Important and urgent constructs in the email literature. Dabbish et al. (2005) investigated what characteristics make an email important, one of our goals with this thesis. To achieve this goal, they took an etic perspective and used a survey approach to create a model of individuals' email behaviour. The authors hypothesized, based on a review of the email literature, that the sender and content of the message were used to determine the importance of the message. The survey asked the employees to use the four-item scale provided in Table 2-1 (see next page) to rank importance of the last five non-spam emails they had received using a five-point Likert scale.

Table 2- 1: Four-Item Measure Index of Message Importance*

<i>How important is this message for YOUR work?</i>
<i>How important is this message for the SENDER's work?</i>
<i>How urgent are any deadlines associated with this message?</i>
<i>How much work does this message require of you?</i>

*Source: Adapted from Dabbish et al. (2005, p. 694).

Dabbish et al. (2005) then had respondents give the relationship between the sender of the email and themselves, the frequency with which they corresponded with the sender, and the total number of recipients of the message. The authors ranked all senders as either a “work-related contact” or a “non-work-related contact”. Finally, they hypothesized that certain message content would affect an email’s importance and had the respondents select which of the following categories the content of the message fell into. The survey allowed for multiple categories to be selected for each message.

- Request for action
- Request for information (link, contact information, etc.) or a document (file, image, etc.)
- Status update for an ongoing project or task
- Request for a meeting or other communication with you, or response to a meeting request
- Reminder for a meeting, event, or upcoming deadline
- Social greeting or thank you (Dabbish et al., 2005, p. 694).

Dabbish et al. (2005) found that sender characteristics and the content both affected the perceived importance of an email. They found that while perceived importance affected how people responded to emails, other factors also influenced how people responded. The number of recipients on the message also affected perceived importance of the message, with fewer recipients increasing the importance. So why not

use Dabbish et al.'s (2005) characteristics of an important email then and save our selves a lot of work?

There are two main issues with Dabbish et al.'s (2005) categorization of important email. The first issue is that the four-item scale (see Table 2-1 above) used to determine importance, which was constructed by the authors (no other source was given for the scale), makes unjustified assumptions about what makes an email important. The authors reviewed the literature and came up with well-reasoned arguments for why characteristics should be related to the importance of an email message, but then created a four-item scale (Table 2-1) to test these characteristics against without providing any justification for their scale. The first question in the four-item scale asks respondents to rank the importance of an email to their work. While work may be one way to categorize importance, such an approach excludes all other considerations of importance in the email (e.g., career advancement, maintaining a network, family/friends, etc.). The second question asks how important the email is to the sender's work. While interesting, we have no way of knowing from the survey whether the importance of the email to the sender will affect the importance of the email to the recipient. The third question is about urgency. This assumes an urgent message is an important one. Although there is likely a relationship between the urgency and importance of a message, we posit that important and urgent are separate constructs. Without evidence that urgency alone creates importance it should not be included as part of the scale of importance. The last question relates to the amount of work the email requires of the recipient, which may be important information to the recipient but has very little to do with the measure of importance one

would give the message. A medium or low-importance message may require a lot of work from the recipient.

The second issue is that even if Dabbish et al. (2005) created the scale based on an informed hypothesis, again something not provided in the paper, they still need to test the reliability and validity of the construct before using it as a measurement tool. Something which was not discussed at all in the paper.

Another study of relevance to this thesis was done by Wainer et al. (2011). Their research investigated why people prioritize certain emails over others. They did so by conducting a think-aloud study in which they had five participants engage in hour-long sessions where they verbalized their thought processes on how they were selecting email. They found that two themes emerged which determined why participants would select messages as a high priority to be opened: the utility of the message and their own curiosity about the message. Utility refers to messages which relate to the employee's work and are categorized as such by the employee's analysis based on who the messages are from and the subject line. Curiosity is defined in Wainer et al.'s (2011) study as a state where the sender of the message is unknown to the employee or the content of the message is unknown to the employee. Curiosity of the unknown, and no doubt discomfort over not knowing something which could potentially be important to them, moved these emails up in priority. Interestingly, the curiosity condition only held true under intrinsic-motivation conditions and when participants were not overloaded with email (i.e., when they had the time to satisfy their curiosity).

Wainer et al.'s (2011) categorization informs us as to why people choose to open certain emails and not others first. It is certainly a good start in determining what surface

cues are used to initially evaluate the importance of an email. For our purposes, however, the authors did not go far enough in depth into what makes an email important for it to be used as anything but a starting point for creating a measure.

Another way the importance of an email is discussed in the literature relates to automated systems which learn from the user what is important and prioritize their email for the user based on a set of learned rules (e.g., Malone et al., 1986; Losee, 1989; Bälter & Sidner, 2002; Neustaedter, Brush, & Smith, 2005). The main issue with these automated systems, as was discussed in the previous section, is that individuals still must go through all their email to assess the messages. Therefore, such a tool would not resolve the issues of volume or content. The problem in terms of using the automated systems literature to inform what makes an email important is that the automated systems learn from each individual user. While some general categories exist, such as Bälter and Sidner's (2002) VIP list, they cannot be generalized to create a measure of email importance because of the idiosyncratic criteria which are used to place someone on that list.

While research by Fogarty, Hudson, and Lai (2004) does not really contribute to our understanding of what an important or urgent email consist of, they do offer an interesting suggestion on how such information could be used. More specifically, they suggest that communication systems, such as email, could be programmed to delay unimportant and/or not urgent emails so that employees are not constantly interrupted by them. However, they do not go into detail about how the system could make the distinction between important/urgent and unimportant/not urgent. Still it is an interesting idea and it could maybe be tied into the high priority flag on emails. If the sender knows

that by checking the high priority flag the receiver will be interrupted, they may show more discretion in its use (maybe).

Importance and urgency of email is also discussed in the literature in terms of how people respond to their messages. In Tyler and Tang's (2003) interviews of 40 employees from mostly technological corporations, they found that if the user thought that a message was important or urgent, they were more likely to use email in conjunction with other media (specifically voicemail) to respond. Again, this paper does not provide much information with respect to how they defined these constructs. It does, however, highlight that employees (email users) are a great source for information on what constitutes an important or urgent email.

2.2.2.1 Conclusion. The use of importance as a defined construct is virtually non-existent in the research literature on email and we could find no evidence that the urgent email construct had been evaluated at all. The lessons learned from research into important and high-priority email have a few valuable implications for this thesis. First, any measure of important email and urgent email as constructs needs to be based on research, literature, or well-reasoned hypothesis. Second, measures need to be validated to show they measure the constructs of interest. Finally, employees (users of email) are a valuable source of information on what constitutes and important and/or urgent email.

2.3 Relationship Between Email Use and Employee Well-Being

“In the case of email, the evidence appears to suggest that this stress is self-imposed. Hence it would appear that the employees' behaviour is caused by their perceptions, which drive them to monitor and deal with incoming emails continuously.” (Hair, Renaud, & Ramsay, 2007, p. 2)

The objective of this section is to examine the research exploring the relationship between email use and employee well-being. Well-being is “the psychological and physical health of the employee” (Edwards, 1992, p. 252). The lack of psychological well-being can be anything from a variance in mood to full blown depression. The lack of physical well-being can be anything from minor change in blood pressure to diagnosed heart disease. In this thesis, we limit our scope to psychological well-being in the form of employees’ levels of perceived stress which we define as, “the extent to which one perceives one’s situation to be unpredictable, uncontrollable and burdensome” (Duxbury and Higgins, 2012, p. 55).

Paper 3 in this thesis involves an investigation of the relationship between important and urgent emails and employee well-being. Employee well-being is important to the employer, the employee, and society itself. From the employer’s perspective, research shows that higher levels of stress have been linked to absenteeism (e.g., Jacobson, et al., 1996), intent to turnover (e.g., Taylor, Daniel, Leith, & Burke, 1990), and job dissatisfaction (e.g., Tetrick & LaRocco, 1987). If a link can indeed be established between email use and employees’ levels of stress this may provide employees with a compelling reason to change their behaviour and employers a reason to address this issue. Finally, as stress and well-being drive use of the health care system (Hassard et al., 2014), with estimates that approximately 11 billion Canadian dollars a year of Canadian health care cost can be attributed to stress-related illness (Hassard et al., 2014). Finding ways to lower employees’ stress and increase their well-being can only have benefits to society.

This section will start with a review of the literature focusing on email use and employee well-being. This will be followed by a brief overview of the model that is used to theoretically inform the third paper in this thesis, Karasek's (1979) demand—control—strain model of occupational stress. To accomplish this, we undertook a review of the literature looking for papers that included the following terms: coping with email overload, email/electronic communication and well-being, Karasek demand control strain model, and buffer hypothesis. The following databases were searched: Google Scholar, Business Source Complete, and PsycINFO. Each section will conclude with key implications for this thesis. The relationships included in our predictive model will be described and the constructs will be defined in the conclusion of Section 2.3.2. This section of the review is most relevant to Paper 3.

2.3.1 Email and well-being literature. Barley et al. (2011) divide the email and well-being literature into two categories: work-life balance and email overload. The authors point out that both streams of research infer that email causes stress by taking up more of people's time and differ only in their explanation of how email contributes to this relationship. The work-life balance literature posits that technology allows work to invade people's personal time which, in turn, leads to increased levels of stress. The email overload literature, on the other hand, posits that technology increases the amount and overall variety of work people are confronted with, thus overloading them. Both the literatures are reviewed in the sections below. The last part of this section provides a short critique of the literature.

The email overload literature stems from the role overload theory originally developed by Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964). Role overload is

defined as, “having too many responsibilities and too little time in which to attend to them” (Higgins, Duxbury, and Lyons, 2010, p. 3).

2.3.1.1 Email and work-life balance. The work-life balance aspect of email comes from the fact the most people do not simply focus on one domain (i.e., people have more going on in their lives than just work). According to this school of thought, there can be a cumulative effect where stress in one part of someone’s life can carry over and affect the other. The two most significant domains for most people are work and family (Murray & Rostis, 2007). However, “[t]he blurring of work-boundary roles through the use of [information and communication technologies] denies the worker an opportunity to release work-related stresses” (Murray & Rostis, 2007, p. 257). When tethered to work by technology it is easy to see how work could be imposing itself on other domains and disturbing work-life balance of employees.

In Duxbury, Higgins, and Thomas’ (1996) study of a work-life balance comparison between adopters and nonadopters of computer-supported supplementary work at home (i.e., work accomplished outside of normal work hours by means of a computer), the authors found that adopters had “higher task variety, role overload, interference, and stress than nonadopters” (p. 1). They conclude that having a computer to do supplementary work at home (SWAH) does not help balance the expectations from both work and family.

In Murray and Rostis’ (2007) article, they state that any strategies used by employees to mitigate stress are being hampered by the ubiquity of communication technologies such as email. The authors introduced the concept of the “technology tethered worker” (p. 249) to describe employees’ inability to switch off or get away from

these communication technologies. They state that this inability to switch off is an issue as the only resolution to stress is to counter it with a “balancing response”. If employees are tethered to something stressful and can not switch it off, then no balancing response can take place.

Tethered workers can work from anywhere at any time and there is the expectation that they will do just that (Murray & Rostis, 2007). The lines of how much influence an employer can have over an employee’s traditional non-work hours seems to have become blurred. The authors suggest this blurring has led to tethered workers losing autonomy and self-efficacy (the two forms of perceived work control discussed later) that were expected to be gained through virtual work. Because of this loss of perceived work control Murray and Rostis (2007) propose that workers are more likely to shirk their duty and to become social loafers than their non-tethered counterparts (if those still exist). Therefore, the authors suggest that the inability to switch off is a construct that researchers should be including in research on stress and well-being.

It is not all bad news, however, as some have suggested the ubiquity of email and other technologies have advantages for work-life balance by enabling flexible work arrangements that would otherwise be impossible, thereby allowing employees to meet the demands in competing domains while still achieving their commitments (Hill, Ferris, & Mårtinson, 2003). In their study, Hill et al. (2003, p. 220) found no difference between virtual workers (i.e., those “with the flexibility to work wherever it makes sense”) and home office workers (i.e., those who “telecommute primarily from home”) in terms of performance. They also found that both resulted in higher job retention. In terms of work-life balance they found that virtual office workers reported significantly less work-life

balance than home office or traditional office workers. The possible explanation given is the same as Murray and Rostis (2007); they believe it's the blurring of boundaries which likely cause the issue. Hill et al. (2003) further state that the home office workers in their study did not generally have laptops or cell phones provided, perhaps lending support to Murray and Rostis (2007) idea that it is the tethering of workers which is leading to the problem.

Duxbury, Higgins, and Neufeld (1998) also found support for the advantages of teleworking for working parents as it gave the participants in their study more control over their work and family roles. Those in their study that teleworked also showed reduced role overload and some reduction in stress. The main disadvantage they found was teleworkers were having difficulty communicating with their co-workers. It should also be noted that the teleworkers were selected for their suitability for telework and this may explain, in part, the success these employees had teleworking.

Chesley (2005) had similar findings in her study on the blurring of boundaries in work-life balance and increased use of technology. She found that the persistent use of communication, not computer use, was significantly linked to issues with work-life balance. This inability to communicate might help explain why in Duxbury et al.'s (1998) teleworkers were so successful (i.e., they were not tethered workers). Perhaps even more distressing are Boswell and Olson-Buchanan's (2007) findings that employees who were classified as highly ambitious or high in job involvement were more likely to tether themselves and work after hours. Boswell and Olson-Buchanan (2007) note that demonstrating this type of behaviour is rewarded and now seen as a path to success. They too found that after hours work was associated with work-life conflict.

More recently Duxbury, Higgins, Smart, and Stevenson (2014) tried to resolve this issue of why some people receive benefits from mobile technologies while others do not by conducting a longitudinal study of 25 knowledge workers' use and adoption of Blackberry Smartphones. Based on their initial discussions with respondents they classified the participants into: segmentors (n = 13), integrators (n = 8), and those with no plan (n = 4). The segmentor group was going to create a boundary between their home and family lives as a strategy to manage the potential negative effects of being a tethered worker. They were going to achieve this boundary by doing things like shutting off their mobile device and setting expectations with their colleagues about when they would be answering emails (i.e., during their work hours). The integrators group was not going to try to set a boundary between work and family roles. Instead they were going to manage the negative effects of being a tethered worker through self-discipline in terms of their usage of the mobile device and through prioritizing/screening their email effectively.

In Duxbury et al.'s (2014) second set of interviews, seven months later, they found the participants had fallen into three distinct groups: "segmentors (n = 4), integrators (n = 8) and struggling segmentors (n = 13)" (p. 9). Only four of those that intended to be segmentors managed it. All eight of those that intended to be integrators stayed integrators after the second set of interviews. The remaining thirteen were classified as struggling segmentors as they either failed to implement the segmentor strategy they had intended to use, or they had failed to find a way to manage the negative effects of being a tethered worker.

Duxbury et al. (2014) found that the integrator strategy only worked when the integrator used self-discipline. The authors also found that the integrators had no expectation that the organization would help them manage being a tethered worker and that this group thought it was all about self-control. The integrators believed that their workplace had always expected employees to put in long hours and saw the technology as a way for them to do this from anywhere. The authors also mention that this was the only group that used the technology to interact with their families while at work. The segmentor group had to use self-discipline as well, to keep the separation between work and family (i.e., shutting off their mobile phones after work hours). They felt they were under increased pressure to answer outside of work time and rebelled against it by setting clear expectations of when they were available. The segmentor group saw no real advantages to having the mobile device, outside of times when they were working on the road. The struggling segmentor group failed to maintain a boundary between work/family roles, they caved to peer pressure and ended up working at home, on the weekend, and during vacations. They ended up working long hours like the integrator group but differed in how they viewed the technology. They lacked the self-discipline and self-control of their counterparts and blamed outside influences (e.g., changes in organizational culture to be available 24/7) for their extended uses of the technology. The group thought that the solutions should come from their organization in terms of training, policy, and rules.

Duxbury et al.'s (2014) main conclusion in terms of why some people succeed and others fail in managing the negative aspects of being a tethered worker is the individual's self-control and self-discipline. They also note that organizations likely

would not prefer a segmentor strategy in their employees as the purpose of tethering employees with mobile devices is to make their employees more productive.

2.3.1.2 Email overload. The definition of email overload provided by Thomas et al. (2006) is used in this thesis, that email overload is a specific type of information overload which is, “defined as a condition in which the volume of information exceeds a person’s capacity to process it” (Thomas et al., 2006, p. 255).

The term “email overload” was originally coined by Whittaker and Sidner (1996) “to describe the use of email for functions that it was not designed for” (p. 276). Specifically,

- (a) the inbox operates as a *task manager*, where people are *reminded* of current tasks, and where people can keep information relevant to those tasks *accessible*;
- (b) people find it hard to *file* information to remove it from their inbox, both because filing into folders is difficult and there may also be few benefits to creating folders. (p. 277)

The authors found employees use three strategies to organize their email: “*no filers* (no use of folders); *frequent filers* (folder users who try and clear up their inbox daily); [and] *spring cleaners* (folder users who clean up their inbox only periodically)” (p. 279). They note that all these strategies seem to have their faults. When it comes to role overload the “*no filers*” were overloaded because their inboxes grew out of control acting as poor “*filing*” and “*task management*” systems. The “*spring cleaners*” were little better as they only filed their inboxes when the problem was getting out of hand. This infrequent filing led them to forget their categorizations and resulted in duplication of categories and never reading folders they had forgotten about. While “*frequent filers*” were found to be the

most effective at using email as “*filing*” and “*task management*” systems, however, as the email volume grew this group became overloaded by the task of filing.

As a solution Whittaker and Sidner (1996) recommended that email be redesigned to handle both filing and task management. To do this they suggest: (1) a *threading* feature be added to email so that all emails within a conversation can be grouped together and that users be able to retrieve the context and status of the conversation thread quickly without searching through their inbox for the rest of the email; (2) and *systematic clustering* so that all similarly categorized emails show up together. Their description of systematic clustering was somewhat unclear, but the general idea seems to be that users can label emails with certain categories (e.g., active, project title, urgent, etc.) so that they can look at all emails within these categories quickly (i.e., they can find all their “active” emails quickly). The authors give two conditions for *systematic clustering* to work. First, it must be user defined and not automatic, to reflect the fact that users expressed a strong desire to view emails before they are categorized. Second, it needs to be a dynamic process, to allow the user to be able to change the categories as the status of the email changes.

Many of Whittaker and Sidner’s (1996) suggestions have since been implemented (Fisher, Brush, Gleave, & Smith, 2006). Email can now be grouped into threads and conversations can be flagged as a form of “*systematic clustering*”. Despite these improvements problems with email persist. Fisher et al.’s (2006) study shows the average number of folders and the size of email archives grew significantly over the ten-year period since Whittaker and Sidner’s (1996) study. Surprisingly, Fisher et al. (2006) found that although the inboxes of those in their study were still overloaded the size of the

inboxes had not change since Whittaker and Sidner's (1996) study. This increasing trend in email volume does not seem to have diminished since Fisher et al.'s (2006) study and according to The Radicati Group (2018) it is expected to continue to show growth in the future, especially with the increased use of mobile email (The Radicati Group, 2012). While Whittaker and Sidner's (1996) suggestions may have helped a lot with using email as a "*filing*" and "*task management*" system, they do not address the underlying problem of email being used for tasks it was not designed for, and the fact that volume of email processed by employees is ever growing.

Dabbish and Kraut (2006) conducted a study in which they "examin[ed] the relationship between email use and feelings of email overload and task coordination" (p. 431). They conducted a large survey of white-collar workers (i.e., knowledge workers) across the United States and asked these participants (n = 484) about their job, the importance of email for their work, and what strategies they used with email. They "used regression techniques to develop a path model of the relationship between job characteristics, email communication, email management strategies and feelings of email overload" (p. 432). Dabbish and Kraut (2006) found that feelings of autonomy, keeping the inbox smaller, and checking emails as they came were all associated with significantly lower levels of email overload. Conversely, they found email volume (i.e., new messages received, read, and sent in a 24-hour period), perceived importance of email to work, restricting email checking, and more email folders were all associated with increased levels of email overload.

Dabbish and Kraut's (2006) finding that restricting email checking frequency resulted in higher feelings of email overload seems counterintuitive. However, these

results are corroborated by Bradley, Brumby, Cox, and Bird's (2013) findings, in their investigation of different email checking strategies, which showed that while a once a day strategy resulted in significantly less time spent in email than a frequent checking strategy there was no difference in the amount of stress felt. The authors point out that people find it very difficult to change their email checking behaviour and posit that the reduced stress from spending less time working on email is negated by the perception that by not attending to their email the employee is missing something important.

Grevet, Choi, Kumar, and Gilbert (2014) claim that the word "email overload" is itself overloaded. They suggest that email volume, or information overload, is not the only type of email overload. Their findings showed that people's work email tended to be overloaded by email which they refer to as "email *status* (to read, to do)" and peoples' personal emails tended to be overloaded by what they refer to as "email *type* (bills, personal mail, promotional mail)" (p. 793). They, like the Radicati Group (2018), found that email volume had increased again since Fisher et al.'s (2006) study and they even found a slight increase in the size of the inbox. Interestingly, they found employees' personal email accounts were far less well organized and contained a much larger volume of email than their work email accounts, suggesting that people put a low priority on organizing personal email as compared to work email. The authors also mention that Gmail offers the ability for labeling emails, adding a more complete version of Whittaker and Sidner's (1996) "*systematic clustering*" suggestion to email management. They did not, however, offer any evidence that these capabilities have been widely adopted by Gmail users.

2.3.1.3 Critique of the email and well-being literature. According to Barley et al. (2011) there are three main issues with the email and well-being literature. The first issue is how researchers in the area measure stress. The email overload literature with few exceptions does not measure stress directly. Stress is instead inferred by referring to metrics like time spent in email and relating it to the much larger well-being literature. The one exception they give is Thomée, Eklöf, Gustafsson, Nilsson, and Hagberg's (2007) study into possible psychological risk factors for young "information and communication technology" users where they measured current and continuous stress with the QPS Nordic (a psychological and social questionnaire which includes a measure of stress²). While the email and work-life balance literature does sometimes include measures of stress, Barley et al. (2011) state that the measures of technology use and stress are "ambiguous or confounded". The authors give the example of Duxbury, Towers, Higgins, and Thomas (2007) asking participants to what degree did they feel each technology caused them stress and affected their work-life balance. Barley et al. (2011) point out that this measure of stress is not independent of the technology and is, therefore, confounded. This is an excellent point and we, therefore, made sure to measure stress directly for Paper 3 of our thesis using a measure of perceived stress (see Section 2.3.3).

The second issue Barley et al. (2011) point to is that the email and well-being literature ignore the use of electronic communications to increase control and reduce overload. They point to research which has suggested that it might do just this by

² The questionnaire can be found at: <https://www.qps-nordic.org/en/>

allowing people to avoid possibly stressful work activities such as meetings and face-to-face interactions. The fact that so much research has found a relationship between measures of well-being and the use of electronic communication such as email indicates that despite the possibility of enhanced control the negatives of electronic communication seem to outweigh the benefits in terms of well-being. However, the idea that control may help mitigate some of the stress related to email is something we will be investigating in Paper 3 in order to address Barley et al.'s (2011) criticism.

The final issue that Barley et al. (2011) have with the email and well-being literature is that it often ignores the role of social and cultural issues in organizations, usually just mentioning these as an afterthought. In our opinion, this criticism is not well founded as many authors either directly or obliquely link social and cultural issues in organizations to email behaviour. When authors like Murray and Rostis (2007) suggest that tethered workers are experiencing overload because of expectations from their employer to be connected 24/7, or when Boswell and Olson-Buchanan (2007) find that highly ambitious employees are more likely to use communication technologies to work outside of normal work hours, or when Duxbury et al.'s (2014) failed segmentors blame the expectations and norms of their workplace these can certainly be interpreted as social and cultural issues in organizations. These authors did not, however, explicitly state that these are social and cultural issues within organizations and perhaps they should have.

In 2011 Barley et al. (2011) examined the communications between employees at a high-technology firm. More specifically, they investigated “if—and if so, how—e-mail and other communication technologies contribute to the stress people experience” (p. 888). They collected both quantitative data (in the form of communication logs and

surveys) and qualitative data (in the form of interviews). For the communication logs and surveys, they had participants write down all work-related communications over a period of two workdays (including communications before and after work hours) and one non-workday's (i.e., weekend) work-related communications. Their surveys were conducted during the training sessions for the communication logs and included demographic information, technology usage questions, levels of stress, and ability to cope. They analyzed the quantitative data using ordinary least squares regression. Following the communication logs being submitted, the researchers interviewed 40 of the participants who submitted the communication logs. The interview included open-ended questions and did not ask participants about email overload or stress as they did not want to bias responses (i.e., any responses that included email overload and stress came unprompted from the interviewees' answers to the questions). The interview data was analyzed inductively and involved iterations of going back and forth between the quantitative and qualitative data until distinct patterns and relationships emerged.

One of Barley et al.'s (2011) interesting findings was that although participants discussed many different technologies interrupting their personal time (evenings and weekends), the participants only complained about email. These participants even went as far as to praise these other non-email technologies for the flexibility they provided. The authors state that the closest anyone came to complain about non-email forms of communication was to refer to meetings and teleconferences as often being a "waste of time".

Another interesting finding from Barley et al. (2011) was that participants claimed they often worked from home (mornings, evenings, and weekends) to clear up their

inboxes so they would not be overwhelmed by email when they got into work. The authors note that 60% of the communication logs submitted showed at least one session of working from home in the three days of logs. Those that did not work on email from home stated that they had done so in the past, but the conflict with their family life forced them to stop.

Barley et al.'s (2011) regression results from the communication logs and survey data show that the number of emails handled increased the number of hours employees worked and the time spent doing email resulted in increased role overload, corroborating their interview results. In contrast to their interview results, however, were data showing that while the number of phone calls and teleconferences also increased the number of hours worked, they were not related to role overload. Time in meetings was also associated with increased role overload, but no respondents had mentioned it in their interviews.

Barley et al. (2011) suggest their respondents' focus on email as the culprit (the respondents did not talk about other forms communication media) is due to a combination of three factors: email's asynchrony (i.e., a communication where the sender can send the communication at any time as the message will be sitting there waiting for the receiver when they check their messages—like snail mail in this sense), social norms regarding response times, and work being conducted across time zones. While people spend more time working if they have a lot of phone calls and meetings the authors note that the scheduling of phone calls and meetings both have social norms behind them, such that work-related phone calls and business meetings do not generally extend beyond work hours. Likewise, phone calls and meetings can be conducted across time zones, but

due to the social norms around them there is usually an attempt to choose a time convenient for all parties. The fact that email supports asynchrony, on the other hand, means that there is no expectation on the sender's part to pick a convenient time and yet there is the expectation with email of a quick response time. Barley et al. (2011) posit that these three factors together lead people to view email as their primary source or symbol of stress whether it is or not. Finally, while these authors faulted other researchers for not measuring stress directly it should be noted that they used role overload, an indirect measure of stress.

2.3.1.4 Conclusion. The implications for this thesis from the email and work-life balance literature is that it is the communication aspect of this work and not the technology itself which needs to be investigated (Chesley, 2005). Another implication from the email and work-life literature is that individuals' self-control and perceptions of control may be linked to individuals' ability to cope with the stress related to email (Duxbury et al., 2014).

The implications from the email overload literature are that control issues such as, autonomy to check email whenever can lower peoples' feeling of email overload (Dabbish & Kraut, 2006). The expectation of this is that it should also be able to help lower peoples' stress. Another implication is that since email volume and the importance of email for peoples' work increased email overload, we should select study participants for whom email is important to their ability to do their work and include the number of emails sent/received (i.e. email volume) in our predictive model. A final implication from the email overload literature is that while companies have added many of the suggestions from the research on email overload into their email handlers (e.g., Gmail, Outlook, etc.),

there is no evidence provided that these additions are being widely used. This would imply that we cannot rely on technology alone to solve stress reactions to email use.

Finally, Barley et al.'s (2011) critique of the email and well-being literature reaffirms the need to use a direct measure of stress in our study. We, therefore, do not use an ambiguous or confounded measure of stress which is linked to technology such as Duxbury et al. (2007) did in their study. Instead we use the independent measure of perceived stress (discussed Section 2.3.2.2). Barley et al.'s (2011) finding that the time employees spent doing email resulted in increased role overload implies that we should include hours in email (or email hours) in our predictive model as well. Another implication from Barley et al.'s (2011) critique is that we need to consider control as a possible moderator of stress when investigating email. Finally, we explicitly state in our papers where we see social and cultural issues impacting the relationships of interest instead of leaving this open to the interpretation of the reader.

2.3.2 Karasek's (1979) demand—control—strain model. Paper 3 of this thesis is theoretically based on Karasek's (1979) demand—control—strain model (see Figure 2-2 on next page). The model posits that workplace strain is a function of job demands and how much job control the individual has over these demands. "*Job demands* refer to the workload, and have been operationalized mainly in terms of time pressure and role conflict. *Job control*, which is sometimes called decision latitude, refers to the person's ability to control his or her work activities" (Van der Doef, & Maes, 1999, p. 88). This

Figure 2- 2: Karasek’s (1979 Demand—Control—Strain Model*

*Source: Adapted from Karasek (1979, p. 288).

model posits that employees will experience high strain when the demands they face at work are high and their control is low, a combination which leads to stress (Karasek & Theorell, 1990). The model defines passive jobs as ones where both demands and control are low and low strain jobs as a combination of low demands and high control. Research by Karasek and Theorell (1990) report that low strain jobs are associated with the lowest levels of stress. Finally, in active jobs employees experience high demands and have a high degree of control, a combination which has also been associated with lower levels of stress (Karasek & Theorell, 1990). Active jobs are the one's Karasek (1979) theorized would result in the highest levels of satisfaction.

Johnson and Hall (1988) added social support to the model in their study of stress on cardiovascular disease. The model proposed by these authors is somewhat overly complex so a figure will not be included here. These authors hypothesize social support as another moderator on top of control to reduce the effects of strain.

Van der Doef and Maes (1999) point out that although Karasek (1979) investigated the interaction effect of demand and control, he later stated that the interaction was not the focus of the model. Van der Doef and Maes (1999) note that researchers using this model have tested two different hypotheses: a strain hypothesis which implies that increasing control would not result in lower stress (only lowering demands would lower stress); and a buffer hypothesis which tests Karasek's (1979) original conceptualization that control is a moderator of the relationship between demands and stress. Van der Doef and Maes' (1999) paper reviewed the extant literature in the area to determine the support in the literature for either of these hypotheses. They report that while the strain hypothesis was well supported, tests of the buffer hypothesis had mixed results. Kain and Jex (2010) suggest that the inconsistent support of the buffer hypothesis has more to do with differences in how researchers measured demands, control, and strain.

We test the buffer hypothesis in this thesis. This decision was motivated by two factors. First, the inclusion of control was suggested by Barley et al. (2011). Second, there is some support for the buffer hypothesis in the empirical research, especially when the buffer constructs were carefully selected (Kain & Jex, 2010). To overcome Kain and Jex's (2010) issue of poor measures of the constructs being used, we use measures which seem to better reflect the components of Karasek's (1979) model that we are investigating.

2.3.2.1 Conclusion. As the objective of Paper 3 is to use the measure developed in the second paper to investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being. We

have reconceptualised Karasek’s (1979) demand—control—strain model to allow us to examine the relationship between email use (i.e., email demands), email strain (i.e., email overload), employee well-being (i.e., perceived stress), and the extent to which control at work moderates the relationship between email demands and email strain, see Figure 2-3 below for our predictive model. As was noted earlier in Section 2.3.1.4, the well-being literature provides us with an excellent basis to create a model of email as it relates to Karasek’s (1979) model. We followed the lead of researchers such as Higgins, Duxbury, and Julien (2014) and Duxbury and Halinski (2014) and reconceptualized demands, control, and strain in a manner consistent with our objective. Details on each are given below.

Figure 2- 3: Predictive Model of the Relationships between Constructs

2.3.2.1.1 Demands. As per the objective of Paper 3 we have reconceptualised demands in Karasek’s (1979) model to focus only on those demands manifested through email. We have conceptualized two types of email demands: objective and subjective. For the purposes of our study we have slightly adapted Bommer, Johnson, Rich, Podsakoff, and MacKenzie’s (1995) definitions for objective and subjective measures. “Objective measures are defined as direct measures of countable behaviors or outcomes, whereas subjective measures consist of [employee ratings of the constructs of interest]” (p. 588). By including two types of demands in our model we hope to get a more comprehensive appreciation of how demands relate to stress. Table 2-2 (below) has the list email demands used in Paper 3. The table includes how the constructs are defined and measured.

Table 2- 2: Email Demand Constructs and Measures for Paper 3

Construct	Definition	Measure
First Order Predictors		
Email Volume	The average number of emails sent and received at work (both personal and work emails) per day	Participants estimated the number of emails they sent and received in a typical workday
Email Hours	The average amount of time employees spent working on email at work (both personal and work emails) per week	Participants estimated the number hours spent working on emails in a typical week at work
Important Email	An email with something of great significance, consequence, or value	Important Email Scale developed in Paper 2
Urgent Email	An email requiring swift action	Urgent Email Scale developed in Paper 2

Our objective email demands are based on the email and well-being literature. Much of the literature which links email demands to well-being has used objective

indicators of email demands such as: the number of emails handled (i.e., email volume) and the amount of time spent managing email (i.e., email hours) (e.g., Dabbish & Kraut, 2006; Barley et al., 2011; Jerejian, Reid, & Rees, 2013). We, therefore, include both email volume (defined in this thesis as the average number of emails sent and received in a typical workday) and email hours (defined in this thesis as the average amount of time employees spent processing email at work per week) in our predictive model.

We use the important and urgent email scales developed in this thesis to measure subjective email demands (see Table 2-2). Grevet et al.'s (2014) finding that email type has more effect on people's perceptions of personal email overload than email status, provides evidence that a possible way to manipulate email overload is to manage the type of email employees are spending time on and supports the inclusion of our important and urgent email constructs as predictors of email overload. Further, our inclusion of these measures addresses Barley et al.'s (2011) suggestion that researchers include social/psychological pressures related to email in their analysis.

Our expectation is that perceived email overload will be positively associated with the perception that the emails one sends/receives are urgent and/or important. We base this assumption on the expectation that the more important and/or urgent emails an employee sends/receives the more challenging they will find it to process all these requests in a satisfactory and timely manner. This will, in turn, reasonably contribute to greater feelings of email overload.

2.3.2.1.2 Strain. To represent Karasek's (1979) concept of strain in our model we use the Email Overload Scale developed by Hogan and Fisher (2006). The placement of this email outcome in our model is based on the email and well-being literature's link to

email demands and email overload (e.g., Dabbish & Kraut, 2006; Barley et al., 2011; Jerejian, Reid, & Rees, 2013).

To address Barley et al.'s (2011) issues of researchers not measuring stress directly, we directly linked our measure of email strain (i.e., email overload) to a measure of stress (i.e., perceived stress). Perceived stress is defined as, "the extent to which one perceives one's situation to be unpredictable, uncontrollable and burdensome" (Duxbury & Higgins, 2012, p. 55). To measure perceived stress, we will use the Perceived Stress Scale developed by Cohen, Kamarck, and Mermelstein (1983). Perceived stress has been used successfully in the well-being literature (e.g., Higgins et al. (2010) used it in their study in which they found a strong correlation between role overload and perceived stress) and it, therefore, makes sense to use the same measure of stress here as it addresses Kain and Jex's (2010) issues of inappropriate measures being used to represent construct.

2.3.2.1.3 Work Control. People cope with stress by trying to minimize its effect on their well-being (Murray & Rostis, 2007). This can be accomplished in a positive way through coping mechanisms such as social support and perceived work control (i.e., the buffer hypothesis). Social support includes things like emotional support, mentorship, available informational assistance such as training, etc. Perceived work control can be defined as, "the amount of perceived control an individual has over their work (i.e., know how their work will be assessed, have some say over workload, work schedule, etc.)" (Duxbury & Higgins, 2012, p. 67). Perceived work control is measured in this thesis using a measure based on Dwyer and Ganster's (1991) Work Control Scale.

Perceived control can be interpreted two ways: the individual autonomy the employee has over their work, and their individual self-efficacy (Murray & Rostis, 2007). Karasek's (1979) original construct of decision latitude as a measure of control touched on autonomy with the decision authority factor but did not include self-efficacy within the skills discretion factor. Perceived work control fits well into Karasek's (1979) framework as one could hypothesize that those with higher perceived control over work are more able to cope with the demands they face on the job. For example, if someone gets advice from a mentor on how to achieve some goal, it is likely that this social support will translate into an increase of self-efficacy, increasing the employee's perceptions of their work control and moderating the amount of distress associated with achieving the goal. Therefore, we reasoned that work control was an appropriate measure of control for Paper 3 in of this thesis.

Duxbury et al.'s (2014) finding, that those who lacked self-control, self-efficacy, and had an external locus of control regarding email use were more likely to fail in their coping strategy than those who possessed self-control, self-efficacy, and an internal locus of control. Further supports the inclusion of perceived control over work to test the buffer hypothesis. The inclusion of perceived control over work also addresses Barley et al.'s (2011) criticism that within the email and well-being literature many researchers fail to include perceived control in research exploring the relationship between email use and well-being.

Chapter 3: Methods

The objective of this chapter is to convey the methodological approaches used for the papers in this thesis: Eisenhardt's (1989) building theory from case method for Paper 1; Buss and Craik's (1980, 1981, 1983a) Act Frequency Approach (AFA) for Paper 2; and Wold's (1975) Partial Least Squares Structural Equation Modeling (PLS-SEM) for Paper 3. Table 1-1 (in Chapter 1) provides a roadmap to this thesis including: the omnibus objective of the thesis, the individual objectives of each paper, the research paradigm and methodological approaches taken, as well as the data sources and the analytical techniques used for each paper.

This chapter starts with a discussion of the philosophical assumptions taken in the three papers for this thesis. Then each of the methodologies used in the three thesis papers will be presented. The coverage of the first two methodologies will begin with a definition of the methodology, including when it is used with a focus on the appropriateness of each method for this thesis. This definition will be followed by a brief historical overview of the method. Then a critique of the method from the literature will be presented. How the methodology is used in the papers for this thesis will then be presented and relevant criticisms will be addressed.

The PLS-SEM section will differ slightly in presentation as the justification for using PLS-SEM over Covariant Based Structural Equation Modeling (CB-SEM) is quite detailed and requires its own section. As well, it was decided there was too much overlap between the critique and the methodological presentation provided in the other parts of this section to justify having the critique as a stand-alone section. The PLS-SEM section will, therefore, begin with a definition of SEM in a broad sense. A brief history of SEM

with a focus on PLS-SEM will then be presented. This history is followed by a section comparing PLS-SEM and CB-SEM. The justification for using PLS-SEM in this thesis is also included in this section. Finally, how PLS-SEM is applied in this study will be presented.

3.1 Philosophical Assumptions

A good place to start our discussion on methodology is the philosophical assumptions which underlie our research as these assumptions helped determine our research questions, as well as how we sought to answer these questions. This discussion should also help the reader evaluate our thesis and papers by making relevant assumptions explicit (Creswell, 2012). Lincoln, Lynham, and Guba (2017) present five research paradigms: positivist, postpositivist, critical theorist, constructivist, and participatory. Based on the descriptions of research paradigms laid out by Lincoln et al. (2017) (discussed more in Section 3.1.1 below) we are decidedly taking a postpositivist perspective for all three of our thesis papers. For the purposes of this thesis, however, we will be taking Myers' (2009) view on the positivist paradigm as his book focuses on research paradigms in business and this is our intended audience.

This section of our method chapter will define the axiomatic assumptions researchers make for all five paradigms presented by Lincoln et al. (2017). This set of definitions is provided to help clarify what our philosophical assumptions are and what they are not, as well as to flesh out the differences Lincoln et al. (2017) see between positivism and postpositivism. Then the positivist (or postpositivist if the reader prefers the term) paradigm taken for our thesis papers will be discussed in terms of its positions on practical issues as laid out by Lincoln et al. (2017).

3.1.1 Research paradigms. “In its established usage, a paradigm is an accepted model or pattern” (Kuhn, 1970). Lincoln et al. (2017) present five established and emergent research paradigms (i.e., positivist, postpositivist, critical theorist, constructivist, and participatory). According to Creswell (2012) there are four axiomatic assumptions which researchers make when they conduct a study: ontology, epistemology, axiology, and methodology. Together, philosophical assumptions characterize the research paradigm being taken by the researcher in a study (Lincoln et al., 2017). The four axiomatic assumptions are defined by Creswell (2012, p. 20) as follows:

- Ontology refers to “the nature of reality and its characteristics”. The idea is that there are multiple realities. Researchers and participants being researched tend to embrace their own realities and qualitative studies have the intent of reporting the multiple realities of the studies’ participants.
- Epistemology refers to “what counts as knowledge and how knowledge claims are justified”. Put another way, epistemology refers to the relationship between the researcher and how knowledge is validated.
- Axiology refers to “the role of values in research”.
- Methodology refers to “the process of research”.

Table 3-1 (on the next page) summarizes the axiomatic assumptions for all five of Lincoln et al.’s (2017) paradigms.

The positivist paradigm is the dominant form of research in business (Myers, 2009). Myers’ (2009) positivist paradigm seems to encompass both Lincoln et al.’s (2017) positivist and postpositivist paradigms. In the section below, we begin with

Table 3- 1: Axiomatic Philosophical Assumptions of each Paradigm*

Item	Ontology	Epistemology	Axiology	Methodology
Positivism	Naïve realism	Dualist/objectivist	Excluded— influence denied	Experimental
Postpositivism	Critical realism	Modified dualist/ objectivist		Modified experimental/ manipulative
Critical Theory	Historical realism	Transactional/ subjectivist	Included— formative	Dialogic
Constructivism	Relativism	Transactional/ subjectivist		Hermeneutical/ dialectical
Participatory	Participative reality	Critical subjectivity in participatory transaction with cosmos		Political participation in collaborative action inquiry

*Source: Adapted from Lincoln et al.'s (2017, p. 111-112) tables 5.3 and 5.4

Lincoln et al.'s (2017) positivist perspective, and then present Myers' (2009) positivist perspective (which Lincoln et al. (2017) would consider postpositivist).

The ontological assumption of Lincoln et al.'s (2017) positivist perspective is that reality is real and positivist researchers conduct research in “hard science”. Myers (2009) positivist definition belongs with Lincoln et al.'s (2017) definition when he states that for positivists “reality is objectively given and can be described by measurable properties, which are independent of the observer (researcher) and his or her instruments” (p. 37). The epistemological assumption is that the researchers do not need to interact with those being researched; knowledge is gained through scientific rigor (Lincoln et al., 2017). The axiological and methodological assumptions are the belief in the scientific method (i.e., falsification principle, replication of findings, etc.).

The postpositivist paradigm is similar to the positivist paradigm and is even referred to by Lincoln et al. (2017) as “a modified form of positivism” (p. 114). Creswell

and Poth (2017) even go so far as to use postpositivism in their classification of paradigms instead of positivism. The ontological assumption of postpositivism is that there is an objective reality, but a lot of it is hidden from us so we may never be able to understand reality (Lincoln et al., 2017). Since we can only approximate nature, the epistemological assumption is that statistics aid researchers in making decisions with the incomplete data available to them (i.e., educated guesses based on probability). Contact with those being researched is limited to facts and should be kept to a minimum. Validity of the research is based on the research community's assessment of the research. Axiologically, postpositivists believe that useful information can be gained from the incomplete data gathered (otherwise there would be no point in doing research). Methodologically postpositivists value statistics and the scientific method; they differ from positivists here in that they tend to ask more questions because they assume there are more unknowns hidden in their data. While we are taking a postpositivist perspective, in this thesis, we use the term positivist perspective throughout our discussion to be consistent with how it is used in the business literature (e.g., Eisenhardt, 1989; Orlikowski & Baroudi, 1991; Myers, 2009).

Although this research is based on Myers (2009) positivist paradigm, it may be useful to discuss the remaining paradigms presented by Lincoln et al. (2017) to highlight what our positivist paradigm is not. The remaining three perspectives are discussed below.

The critical theorist paradigm is defined as, “creat[ing] change, to the benefit of those oppressed by power” (Lincoln et al., 2017, p. 114). The ontological assumption is that “human nature operates in a world that is based on the struggle for power” (p. 114).

This means that there are those who are privileged and those who are oppressed based on differences between groups (e.g., gender, race, class, etc.). The epistemological assumption for this paradigm is that knowledge comes from the study of social structures, liberties, oppression, and influence. It has the goal of reducing barriers for the oppressed through “empowerment”. The axiological assumption is that data which informs on how to reduce social inequalities is valuable. The methodological assumption of critical theorists is to conduct research through dialog with their groups of interest focusing on reducing oppression.

Constructivism is defined as gaining understanding through the interpretation of participants’ perceptions (Lincoln et al., 2017). The ontological assumption of the constructivist, or interpretivist, paradigm, is,

that access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments. Interpretive researchers do not predefine dependent and independent variables, but focus instead on the complexity of human sense-making as the situation emerges; they attempt to understand phenomena through the meanings that people assign to them. (Myers, 2009, p. 38)

The epistemological assumption is that knowledge is constructed through our interactions with others and surroundings (Lincoln et al., 2017). The axiological assumption is that the researcher cannot separate themselves from the research and this, therefore, should be explicitly stated and even embraced. The researcher’s values are “[i]nseparable from inquiry and outcomes” (p. 122). The methodological assumption is the researcher interprets the data and then analyses it logically with the aim of developing a new construction through consensus with the participants.

The participatory paradigm is defined as, “[t]ransformation based on democratic participation between researcher and subject” (Lincoln et al., 2017, p. 114). The ontological assumption is that reality is subjective-objective and is co-created by the mind’s interaction with its surroundings. The epistemological assumption is similar to the constructivist paradigm in that reality is socially constructed, however, it does not hold that rationality leads to improved knowledge. It is similar to Lincoln et al.’s postpositivism in that it believes there is an objective reality, however, it differs in that rather than using statistics to approximate reality for prediction, it co-creates reality with subjective interpretation. The axiological assumption is that the researcher’s values matter for the research and need to be understood. The methodological assumption is that the content and method are both co-created through democratization.

3.1.2 Positivist paradigm positions. Lincoln et al. (2017) present a list of issues they consider to be the most important to paradigms today. They then provide the positions each of their five paradigms take on each of these issues. Table 3-2 (on the next page) gives the list of issues and the positions our positivist paradigm, or Lincoln et al.’s (2017) postpositivist paradigm, takes on each of these issues. Lincoln et al.’s (2017) issues and the position taken for our positivist paradigm are discussed in more detail following the table. It should be noted that the “values” issue was removed from Lincoln et al.’s (2017) list as it was presented in the axiomatic assumptions in Section 3.1.1 as axiology (since it has historically been considered one of the four axiomatic assumptions).

Table 3- 2: Positivist Paradigm Positions Taken on Issues*

Issue	Position
Nature of knowledge	Nonfalsified hypothesis that are probable facts or laws
Knowledge accumulation	Accretion
Goodness or quality criteria	Rigor, internal and external validity, reliability, and objectivity
Ethics	Extrinsic
Inquirer posture	“Disinterested scientist” as informer of decision makers
Training	Technical; quantitative and qualitative

*Source: Adapted from Lincoln et al.’s (2017, p. 112) tables 5.4

- **Nature of knowledge** refers to how the knowledge from the research is viewed. Our positivist position is that the knowledge gained is an approximation of the “truth” and that the “truth” can never be fully known due to hidden variables.
- **Knowledge accumulation** is how knowledge from research builds off previous knowledge to further our understanding. Our positivist position is that knowledge accumulation is conducted through statistics and rigor (e.g., see Eisenhardt’s (1989) method below) in order to approximate reality and further our understanding.
- **Goodness or quality criteria** is simply how those that take the paradigm judge the quality of the research. Our positivist position is that quality of the research is judged through rigorous application of the methodologies selected, objectivity, and statistical analysis.
- **Ethics** refers to the relationship between the researchers and the participants as well as the intended effect on the population of interest. Our positivist position is that we will attempt to reflect our qualitative data as accurately and objectively as possible;

and strive to be statistically accurate with our quantitative data to approximate reality. The effect we hope to have on the population of interest is that the research produces accurate knowledge for these individuals to base decisions on. There is no agenda beyond producing accurate knowledge on email communication so that the population which uses email can use it more effectively.

- **Inquirer posture** is the perspective the researcher takes on the inquiry process. Our positivist approach is that we are outside of the process, at least as much as possible, and instead focus on the results from the research.
- **Training** refers how the researchers prepared to do the research. For our positivist position and for our research questions we prepared ourselves for a mixed-methods approach as will be discussed in more detail in the following sections.

3.2 Building Theory from Case

“Grounded theory [GT] methods consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories from the data themselves. Thus, researchers construct a theory ‘grounded’ in their data. [GT] begins with inductive data, invokes iterative strategies of going back and forth between data and analysis, uses comparative methods, and keeps you interacting and involved with your data and emerging analysis” (Charmaz, 2014, p. 1). Put another way, GT methods allow researchers to develop theory based on the patterns which emerge from the data. The initial patterns are used to inform the collection of more data which are used to clarify the theory. This is done repeatedly until no new avenues seem to be emerging (i.e., saturation).

In Paper 1 our objective is *to develop a framework that describes how employees classify emails they receive into important and urgent constructs (e.g., who sent the email, what is the subject of the email, what is the content of the email, etc.)*. As described in Section 2.2 of this thesis there is very little in the literature on how to classify email in terms of their importance and/or urgency. The one exception is Dabbish et al.'s (2005) attempt to classify email as important, which is limited by the fact that the creation of their construct was somewhat tautological, and they did not validate their measure. A method utilizing GT techniques is, therefore, appropriate for Paper 1 as research in the area has not adequately defined email use in this way, leaving researchers and practitioners unable to classify email by type in a way which could lead to suggestions on how employers/employees could better manage email.

Eisenhardt's (1989) building theories from case approach is a methodology which is well suited for this task and is used for Paper 1 of this thesis. This section will focus on Eisenhardt's (1989) building theories from case method and will discuss GT in broad terms only. It should be noted that we do not refer to Eisenhardt's (1989) building theories from case method as GT in our papers. Instead we refer to it as Eisenhardt's (1989) building theories from case method, or simply the Eisenhardt (1989) approach or method. This decision is supported by the following facts. First, Eisenhardt (1989) did not refer to her method as a GT approach, but instead referred to it as "blend[ing] case study and grounded theory logics" (Eisenhardt, Graebner, & Sonenshein, 2016, p. 1114). Second, Eisenhardt and Graebner (2007) recommend not using the term "grounded theory building" unless one is using Glaser and Strauss (1967) approach. Finally, although Eisenhardt (1989) building theories from cases method does seem to pass all

Suddaby's (2006) six criteria of "what grounded theory is not", this does not mean that the Eisenhardt (1989) method is GT.

Eisenhardt's (1989) method differs slightly from GT in that "[t]he central notion is to use cases as the basis from which to develop theory inductively. The theory is emergent in the sense that it is situated in and developed by recognizing patterns of relationships among constructs within and across cases and their underlying logical arguments" (Eisenhardt & Graebner, 2007). A general definition of what constitutes a case is, "an instance, incident, or unit of something and can be anything—a person, an organization, an event, a decision, an action, a location like a neighborhood, or a nation-state" (Schwandt & Gates, 2017, p. 341). Beyond this there seems to be some debate on the definition. Four different case study designs which Schwandt and Gates (2017) list are: "(1) description, (2) hypothesis generation or theory development, (3) hypothesis and theory testing, and (4) development of normative theory" (p. 346). Eisenhardt's (1989) approach falls into the second type of case study design.

"Inductive methods[, such as Eisenhardt's (1989) approach,] are especially helpful for making progress on grand challenges. They excel in situations for which there is limited theory and on problems without clear answers" (Eisenhardt et al., 2016, p. 1113). Grand challenges are defined by Eisenhardt et al. (2016) as, "complex problems with significant implications, unknown solutions, and intertwined and evolving technical and social interactions" (p. 1115). While, it is perhaps presumptuous to call solving the problems associated with email use a grand challenge, it does seem to fit the definition provided. As pointed out in the introduction issues with email have been growing and are expected to continue to grow. Eisenhardt et al. (2016) also point out that getting people's

understanding of situations (i.e., an employee's perspective) is particularly relevant to grand challenges as their understanding helps shape their actions. We follow this suggestion by taking an emic approach to this issue in Paper 1.

A benefit of GT techniques, such as those used in the Eisenhardt (1989) approach, is that the constant comparison between the data forces researchers to reconcile contradictions within the data (Eisenhardt, 1989; Myers, 2009). To quote Glaser and Strauss (1967, p. 5), “[GT] is derived from data and then illustrated by characteristic examples of data”. In terms of our data we have clear evidence in the form of quotes from interview data to point to as support for any theoretical claims we are making.

Another benefit of the Eisenhardt (1989) method is theory derived from case-based research is more likely to be valid (Eisenhardt, 1989). The close relationship between the theory to the data means the theory will more likely reflect reality. This comes down to the method helping to mitigate researcher bias.

The remainder of this section will give a brief historical overview of GT including Eisenhardt's (1989) approach. Then a critique of Eisenhardt's (1989) approach will be provided. This section ends with details on how the Eisenhardt (1989) approach is used in Paper 1 of this thesis.

3.2.1 Historical overview of GT. GT originated from Glaser and Strauss' (1967) publication *“The Discovery of Grounded Theory”* (Locke, 1996). This textbook describes the methodological approach they used in their research on patients dying in hospitals (Glaser & Strauss, 1967). The authors developed GT,

with several specific purposes in mind: to encourage researchers to use their intellectual imagination and creativity to develop theories relating to their areas of inquiry, to suggest methods for doing so, to offer criteria to evaluate the worth of discovered—as distinct from tested—theory, and to propose an alternate rhetoric, that of generation, to balance out the rhetoric of verification in journal articles and monographs. (Locke, 1996, p. 239)

According to Charmaz (2014), “Grounded theory marries two contrasting – and competing – traditions in sociology as represented by each of its originators: Columbia University positivism and Chicago school pragmatism and field research” (p. 8-9). “Glaser imbued the method with dispassionate empiricism, rigorous codified methods, emphasis on emergent discoveries, and its somewhat ambiguous specialized language that echoes quantitative methods [... whereas,] Strauss brought notions of human agency, emergent processes, social and subjective meanings, problem-solving practices, and the open-ended study of action to grounded theory” (p. 9).

Glaser and Strauss would eventually have a falling out in terms of what exactly grounded theory meant (Locke, 1996). The schism started when Glaser published “*Basics of Grounded Theory Analysis: Emergence vs Forcing*” in 1992 as a corrected version of Strauss and Corbin’s (1990) “*Basics of Qualitative Research*”. Below is a quote from Glaser (2002a) which seems to express the crux of the argument rather well,

Most writers on methodology DO NOT have a theoretical clue of what it means to be abstract of time, place, and people. The result is that GT is down-abstracted to just another [qualitative data analysis (QDA)] with some concepts. Strauss and Corbin (1998) do this in the following:

Grounded Theory procedures force us to ask, for example: What power is in this situation and under specified conditions? How is it manifested, by whom, when, where, how, with what consequences (and for whom or what)? Not to remain open to such a range of questions is to obstruct the discovery of important features of power in situ and to preclude developing further conceptualization. Knowledge is after all linked loosely with time and place. We carefully and specifically build conditions into our theories.

Thus, Strauss and Corbin force descriptions, irrespective of emergence, on the theory to locate its conditions, to contextualize it and to make it "appear" accurately pinned down, thereby losing its true abstraction and, hence, generalizability. (p. 25)

In essence, Strauss and Corbin were suggesting researchers force something to happen in a certain way rather than simply allow it to emerge. For example, if a researcher wanted to know something about how people behaved with wet shoes rather than dry shoes while working, they would give participants wet shoes to wear and observe them. Glaser clearly thought that this would corrupt the data. The three main criticisms of Strauss and Corbin's (1990) book which Glasser (1992) made are: "(1) forcing data and analysis into preconceived categories, (2) negating the foundation of grounded theory in constant comparative methods and emergent categories, and (3) imposing unnecessary complexity on the analytic process" (Charmaz, Thornberg, & Keane, 2017, p. 414). Charmaz et al. (2017) point out that Glasser's tone overshadowed the validity of his criticisms for most readers.

Today there are two main approaches to conducting GT research, the objectivist's approach (e.g., Glaser & Strauss, 1967) and the constructivist's approach (e.g., Charmaz, 2014). The objectivist's, or positivist's, approach holds assumptions about an objective world which can be observed by a neutral observer. The "constructivist[s]" approach theorizes the interpretive work that research participants do, but also acknowledges that the resulting theory is an interpretation. The theory depends on the researcher's view; it does not and cannot stand outside of it" (Charmaz, 2014, p. 239). Therefore, the constructivist approach assumes reality is perceptually constructed, subjective, and acknowledges that the researcher themselves colour the findings with their perceptions.

Constructivist's contend that such biases must be considered in the research (i.e., it takes an emic view and assumes that if someone else had conducted the research they would arrive at very different results). A more detailed discussion on paradigms was presented in Section 3.1.

Glaser (2002b) strongly disagrees that there are two or any number of competing versions of GT. He states that subjective and objective data do not exist in GT and argues that abstraction of the data and comparative analysis can control for bias and that the constructivist viewpoint is "just another QDA". It should be pointed out that any deviation of GT from Glaser and Strauss' (1967) seems to be referred to as another QDA by Glaser and he would very likely consider Eisenhardt's (1989) method as another QDA had she referred to it as a GT method.

When Eisenhardt (1989) wrote her paper in the late 1980s she reasoned that there were some issues distinguishing between, "qualitative data, inductive logic, and case study research" (p. 532). She also thought there was a lack of clarity in what the process for building theory from cases entailed. She saw Glaser and Strauss' (1967) GT as providing part of the process, but thought it was too prescriptive and decided to integrate some "newer" ideas from other methodologists (She gives Yin's (1984) "Case study research" and Miles and Huberman's (1984) "Qualitative data analysis" as examples of newer methodologists) with GT techniques to create a roadmap for building theories from case studies. Eisenhardt's (1989) roadmap (discussed in greater detail in Section 3.2.3) extended GT techniques and the "newer" qualitative methodologists' ideas by adding "a priori specification of constructs, triangulation of multiple investigators, within-case and cross-case analyses, and the role of existing literature" (Eisenhardt, 1989, p. 533).

Eisenhardt (1989) described her approach as taking “a positivist view of research” (p. 546) because it’s focused on the creation of testable hypotheses and on the development of theory which is generalizable beyond the case(s) being studied. Since Eisenhardt (1989), other variations on inductively building theories from cases have emerged which take a non-positivist view. For example, Gioia and Pitre’s (1990) takes a more constructivist approach.

3.2.2 Critique of Eisenhardt’s (1989) method. Eisenhardt (1989) lists two main potential problems with her approach. The first is that because of the large volume of data and the desire for completeness in developing a theory from all the data, there is a tendency to create overly complex theories to the point where the theory can become useless. For our paper we were mindful of this issue and made every effort to keep our theoretical contributions to the constructs of interest simple and to the point.

The second potential problem is that case-based studies can be too distinctive and narrow in scope (Eisenhardt, 1989). This narrowing makes generalizability of such theory to broader organizational phenomena challenging. An issue we try to mitigate somewhat through our selection process of participants (i.e. different job types, positional differences, etc.).

3.2.3 How the Eisenhardt (1989) approach is used in this thesis. An issue that can affect the findings in GT is the literature review. Like all research the literature review plays a key role in GT to place the research findings within context of the literature (Dunne, 2011). However, there is some debate as to whether the literature review should be conducted before or after the research. Glaser and Strauss (1967) suggest ignoring the literature in the early stages of the research as the researcher wants

their findings to be novel and uncontaminated by the current thinking on the subject. It has also been suggested that the unpredictable nature of GT research means the researcher is not actually aware of what literature they will need to review until they are in the later stages of the research. This implies it would be a waste of time to conduct a literature review on subjects that are not needed.

The arguments for doing the literature review before the research, at least in part, are quite compelling. One point, which particularly resonates here, is that not doing the literature review beforehand (at least in part) is unworkable for many researchers (Dunne, 2011). Consider, for example, a PhD student who required some form of literature review to get research funding, ethics approval, and to have their thesis proposal approved! A second point is that GT is an excellent method for conducting research in areas which currently have had little to no research conducted on them. For example, a prospective researcher may in fact be looking for gaps in the research on email by reading the literature and decide after conducting a literature review that GT may be an appropriate method to investigate these shortcomings. Third, a researcher needs to provide some justification for using GT as the methodology (Dunne, 2011). This may be very difficult to do without having first looked at the literature. There is also the notion that one does not want to reinvent the wheel. If the researcher does not at least look through the literature to check if what they are going to be researching has been done, then they may just be repeating old news. The literature can also help the researcher develop sensitizing concepts as the foundation for analyzing the research data (Charmaz, 2003; Dunne, 2011). A final point in favour of conducting some form of literature review in advance is that to conduct research one needs a clear research question based on some form of

theory (Eisenhardt, 1989; Suddaby, 2006). To do this without going over some of the literature is likely very difficult.

Based on the above, and the fact that a partial literature review had been conducted before we decided on using the Eisenhardt (1989) approach, a preliminary literature review was, therefore, conducted for this thesis.

Eisenhardt's (1989) "roadmap for building theories from case study research" (pp. 532) lays out clear steps for conducting research (see Table 3-3 on the next page). These steps are discussed below with a focus on how they have been used in Paper 1.

3.2.3.1 *Getting started.* The first step is to define a clear research question to provide focus to avoid becoming overwhelmed by the data (Eisenhardt, 1989). To quote Suddaby (2006), "the idea that reasonable research can be conducted without a clear research question and absent theory simply defies logic" (p. 634). As stated earlier in Table 1-1, the main objective of this thesis is to investigate employees' perceptions of the emails they send/receive to offer solutions on how email can be managed more effectively at all levels (e.g., individual and organizational). To help meet this objective we have articulated three pieces of research, each with their own objectives or research questions. Paper 1 addresses our first research question: *what constitutes an important and/or urgent email from an employee's perspective?*

3.2.3.2 *Selecting cases.* The second step is selecting cases (Eisenhardt, 1989). We used a theoretical sampling approach to identify a sample of employees to participate in this research. Theoretical sampling involves selecting subjects for inclusion in the sample for theoretical purposes and "to choose cases which are likely to replicate or extend the emergent theory" (Eisenhardt, 1989, p. 537).

Table 3- 3: Steps to Eisenhardt (1989) Method*

Step	Activity	Reason
Getting Started	Definition of research question Possibly a priori constructs Neither theory nor hypothesis	Focuses efforts Provides better grounding of construct measures Retains theoretical flexibility
Selecting Cases	Specified population Theoretical, not random, sampling	Constrains extraneous variation and sharpens external validity Focuses efforts on theoretically useful cases – i.e., those that replicate or extend theory by filing conceptual categories
Crafting Instruments and protocols	Multiple data collection methods Qualitative and quantitative data combined Multiple investigators	Strengthens grounding of theory by triangulation of evidence Synergistic view of evidence Fosters divergent perspectives and strengthens grounding
Entering the Field	Overlap data collection and analysis including field notes Flexible and opportunistic data collection methods	Speeds analyses and reveals helpful adjustments to data collection Allows investigators to take advantage of emergent themes and unique case features
Analyzing Data	Within-case analysis Cross-case pattern search using divergent techniques	Gains familiarity with data and preliminary theory generation Forces investigators to look beyond initial impressions and see evidence thru multiple lenses
Shaping Hypotheses	Iterative tabulation of evidence for each construct Replication, not sampling, logic across cases Search evidence for “why” behind relationships	Sharpens construct definition, validity, and measurability Confirms, extends, and sharpens theory Builds internal validity
Enfolding Literature	Comparison with conflicting literature Comparison with similar literature	Builds internal validity, raises theoretical level, and sharpens construct definitions Sharpens generalizability, improves construct definition, and raises theoretical level
Reaching Closure	Theoretical saturation when possible	Ends process when marginal improvement becomes small

*Source: Adapted from Eisenhardt (1989, p. 533)

3.2.3.3 Crafting instruments and protocols. The third step is selecting how the data will be collected and creating the instruments (Eisenhardt, 1989). It is suggested that multiple methods be used to do this step to provide triangulation of the data (i.e., multiple sources saying the same thing creates a much stronger argument for the findings). Triangulation is usually achieved through combining different data collection methods as it provides stronger evidence than a single source of data for the constructs and hypotheses which have emerged.

3.2.3.4 Entering the field. The fourth step Eisenhardt (1989) calls, entering the field. This fourth step is the overlap between data collection and data analysis. This step involved the iteration of data collection, data coding, and data analysis using semi-structured interviews as the data collection approach. One reason we used semi-structured interviews, as opposed to structured interviews, is that GT needs to have enough flexibility in the interviews to allow the data to drive the research (Corley, 2015). In other words, there needs to be enough flexibility in the interview process to allow for adjustments based on the data. To paraphrase Corley (2015): GT is like making a stew—we have a general idea of what we want to end up with, but we make adjustments throughout depending on how it tastes until it tastes good. Corley (2015) argues that GT can not be considered deductive research which he reasons is more like baking a cake. You put the ingredients together and place it in the oven without changing it until it's cooked.

3.2.3.5 Analyzing data. The fifth step is the analysis of the data (Eisenhardt, 1989). Analysis of data is the core of case-based research. There is, however, always the

possibility when using this approach of becoming swamped by too much data and losing focus. To resolve this issue Eisenhardt (1989) prescribes within-case analysis. She states,

[w]ithin-case analysis typically involves detailed case study write-ups for each site [or in this case email users]. These write-ups are often simply pure descriptions, but they are central to the generation of insight [...] because they help researchers to cope early in the analysis process with the often enormous volume of data. [...] The overall idea is to become intimately familiar with each case as a stand-alone entity. This process allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases. In addition, it gives investigators a rich familiarity with each case which, in turn, accelerates cross-case comparison. (p. 540)

Cross-case analysis helps researchers identify patterns which emerge during the research and is used in conjunction with within-case analysis (Eisenhardt, 1989). She states,

[t]he tactics here are driven by the reality that people are notoriously poor processors of information. They leap to conclusions based on limited data [...], they are overly influenced by the vividness [...] or by more elite respondents [...], they ignore basic statistical properties [...], or they sometimes inadvertently drop disconfirming evidence [...]. The danger is that investigators reach premature and even false conclusions as a result of these information-processing biases. Thus, the key to a good cross-case comparison is counteracting these tendencies by looking at the data in many divergent ways. (p. 540)

3.2.3.6 *Shaping hypotheses.* Eisenhardt's (1989) seventh step is creating hypotheses. This step involves taking any impressions, patterns, themes, or relationships between the groups from both the within-case and cross-case analyses and trying to view the data from a higher level of abstraction. As noted by Martin and Turner (1986) "[t]he researcher seeks to discover (identify) a slightly higher level of abstraction – higher than the data themselves – that allows the application of a name to the action or object observed or referred to" (p. 147).

3.2.3.7 Enfolding literature. The eighth step involves taking the hypothesis or hypotheses which have been developed and enfolding them into the existing literature (Eisenhardt, 1989). This step involves looking not only what the hypothesis is similar too, but also what it contradicts. Addressing any contradictory findings can be important as it strengthens the hypothesis or hypotheses by adding richer context to them. Besides, if the researcher does not include this step people may dismiss their findings. This is where any models to explain the data are developed, the resulting models should be supported by both data and the literature.

3.2.3.8 Reaching closure. The final step is theoretical saturation (Eisenhardt, 1989). This is the point when minimal amounts of new information are being added by the addition of new cases. For this research, theoretical saturation was reached when no new answer statements to our questions were being made in the interviews.

3.3 Act Frequency Approach

The second paper's main objective is *to develop and empirically validate a measure that will allow the classification of email employees send/receive into important and urgent constructs based on what is learned in our first paper*. More specifically, we seek to create constructs of email type which can be measured and theoretically analyzed from multiple perspectives (e.g., individual and organizational) by researchers to study how email use impacts outcomes of interest. The reason for creating the constructs is that there is currently no clear way to classify important and urgent email within the literature.

The one possible exception is Dabbish et al.'s (2005) measure of important email. However, we did not believe that it was appropriate for our research (see Section 2.2 for more discussion on Dabbish et al.s, 2005 measure). It is our hope that with the addition of

valid measures of important and urgent email constructs to the literature, researchers will be able to test models exploring the antecedents and outcomes of email use as well as moderators of these relationship (as we do in Paper 3).

Cooper, Dyke, and Kay (1990) suggest the Act Frequency Approach (AFA) as a “useful technique” for creating constructs in the field of organizational behaviour (OB) in cases where you have hit a wall in your research due to a lack of measures for your domain of interest or when the current measures lack validity. Since we found ourselves without any good measures for important and urgent email, and as we were dealing with subjective constructs, the AFA was a good approach for developing our measures.

The AFA is a method which “combin[es] qualitative and quantitative approaches to develop behaviorally based composite measures” (Cinite, Duxbury, & Higgins, 2009, p. 268). The AFA is essentially composed of three phases: the “act nomination” phase, the “prototypicality” phase, and the validation and evaluation of the measure phase. Each of these phases is described below.

In the act nomination phase participants are asked to give a list of characteristics, acts, or behaviours they believe best describes the domain of interest (Buss & Craik, 1983a). For example, for this thesis we asked respondents to provide a list of acts which they believe best describes an important email. The intent of this phase of the research is to provide an exhaustive list. The list is then refined into a list of ‘acts’ which the researcher believes fit the category and the prototypicality ratings phase begins.

The prototypicality phase involves a panel judging each act identified in the initial list to highlight those acts which the panel members collectively think best characterize the domain (Buss & Craik, 1983a) – in this case urgent/important email.

The validation and evaluation of the measure phase involves: (1) evaluating the psychometric properties of the measures developed in the second phase (Paper 2 of this thesis), and (2) using the measures developed in the second phase to help answer research objectives (Paper 3 of this thesis). As per Hinkin's (1995) suggestions on the "best practices" of scale development, we ensured that our measures demonstrate: "content validity, criterion-related validity, construct validity, and internal consistency" (p. 968). The below definitions on these terms are provided by Hinkin (1995, p. 968).

- "Content validity refers to the adequacy with which a measure assesses the domain of interest."
- "Criterion-related validity pertains to the relationship between a measure and another independent measure."
- "Construct validity is concerned with the relationship of the measure to the underlying attributes it is attempting to assess."
- "Internal consistency refers to the homogeneity of the items in the measure or the extent to which item responses correlate with the total test score."

As the first two phases provide the measure with content validity (Cooper et al., 1990), the evaluation of the psychometric properties portion of Phase 3 focuses on evaluating the internal consistency (i.e. reliability) and the remaining validity types. As suggested by Hinkin (1998) the following techniques will be used in this study to refine and evaluate our scales: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Internal consistency is tested with Cronbach's alpha as suggested by Hinkin (1995) and Fornell and Larcker's (1981) composite reliability (CR) as suggested by Hair et al. (2012). Criterion-related validity is assessed through convergent and discriminant validity tests, and by testing the predictive validity of the measures against an outcome we expect them to theoretically predict (i.e. email overload) (Hinkin, 1998). Taken together these tests lend weight to the measures construct validity.

The remainder of this section will provide a brief historical overview of the AFA and a critique of the methodology. How the approach is used in Paper 2 of the thesis will be discussed in Section 3.3.3.

3.3.1 Historical overview of the AFA. The AFA began with Buss and Craik's (1980, 1981, 1983a) papers on a method to create measures of dispositional (i.e., temperament such as dominance, gregariousness, etc.) constructs. The premise was that individuals who are considered to embody some disposition (e.g., dominant, gregarious, etc.) do not always act in a manner which is consistent with that dispositional domain. What makes a person appear to embody the dispositions which others assign to them is that they display acts which are consistent with that disposition at a higher frequency than those who do not. Therefore, it is these acts of the dispositional domain which should be used as its measure. The AFA was developed by Buss and Craik (1980, 1981, 1983a) to identify the central to more periphery acts which constitute a dispositional domain of interest (Cooper et al., 1990). The central acts, those identified as most typifying the dispositional domain of interest, are then used as the measure of that dispositional domain.

The AFA was critiqued by Block (1989) as the author did not think prototypicality ratings alone were enough to validate constructs and suggested further psychometric testing was required (more issues with the AFA are provided in Section 3.3.2 below). Cooper et al. (1990) took Block's (1989) suggestion and added a validation of the construct phase when they proposed repurposing the method to create scales of OB constructs.

Since Cooper et al.'s (1990) repurposing of the method for OB a number of researchers have used the method for just that. For example, Allen (1993) used the AFA to create a list of acts which characterize a librarian who is a good fit for their job. The idea was to create a construct of "person-job fit" for librarians to aide in with the selection and job assignment process. More recently the AFA was used by Cinite et al. (2009) to develop "two constructs: perceived organizational readiness for change and perceived organizational unreadiness for change" (pp. 265). They did so through a six-step process in a manner similar to how the AFA is used in this thesis, these six steps are described in greater detail below (see Section 3.3.3).

3.3.2 Critique of the AFA. Block (1989) and Moser (1989) both point out issues with the AFA. This section will discuss their issues with the method and the next section will discuss how the relevant issues are handled in this thesis.

Block's (1989) first issue with the AFA is that no actual acts are being observed. It is instead based on participants' rankings of statements which other participants have given as acts they believe meet the criteria for the construct of interest (Block, 1989). The author states that this lack of observed acts is an issue because it is based on the recollection of an act which may not be completely accurate, especially if the act has not occurred in a long time and/or it is an act which has occurred infrequently or never for the participant. In such cases the participants will have to rely on an inaccurate reflection of the act or to infer based on the available information how well the act meets the construct of interest, "the indisputable fact remains that nowhere have acts been directly observed in the AFA" (p. 237).

Block (1989) also argues that the AFA fails to consider the qualities of the individual, the situation under which the act occurred, or the context under which the act meets the criteria of the construct of interest. As an example, the author points to Buss and Craik's (1980) act of dominance being a statement of demanding a back rub from someone. Demanding a back rub could certainly be considered a non-dominant act. Perhaps the individual demanding the back rub has just paid for a massage in a massage parlour (i.e., in context). Moser (1989) mirrors these concerns when he points out that prototypical acts are not necessarily limited to the construct under question. He gives the example of the construct of "power motive" containing the act of drinking and then points out that drinking also belongs to other personality traits such as neuroticism.

In this thesis, we address Block's (1989) critique, that no acts are observed and that the individual situation and context are not taken into account, by taking care in the sample selection process of our study. More specifically, study participants were selected because they worked in jobs which use email regularly (i.e., knowledge workers). We note also that the participants in this research send/receive multiple emails on a daily basis such that poor recollection and the need to infer is likely minimal. For the most part, participants were not trying to remember specific incidents which made them consider an email important or urgent, but instead what in general they look for in an email which makes it important and urgent (i.e., they were acting out receiving an important and/or urgent email). The examples given were for the purposes of clarification of what the participants were saying rather than the only source of the act (i.e., putting the act it into context).

Although the AFA as Buss and Craik (1980, 1981, 1983a) proposed it does provide the measure with content validity (Cooper et al., 1990), Block (1989) points out the method lacks both convergent and discriminant validity tests of the measure. Block (1989) also states that many measures constructed through the AFA contain so many vague and ambiguous statements that they correlate with other measures created by the AFA which should have no relation. He gives Buss and Craik's (1983b) study as an example, they reported a strong (.6) correlation between "act density" and "act extensity". There is also an issue with statements which one cannot say yes to or which cannot reasonably be given a low rating.

To address the lack of convergent and discriminant validity in the AFA (Block, 1989), we have adopted a validation of the measure phase to our AFA process as suggested by Cooper et al. (1990). To validate our measure, we followed the scale development steps as laid out by Hinkin (1995). In terms of the question/statements which force participants to give it a high or low rating because the opposite does not exist, we took care to remove any such items from our measures.

One final criticism both Block (1989) and Moser (1989) make is that the dispositional constructs created with the AFA may be used to predict behaviour; however, they cannot be used to explain behaviour. Block states, "[t]he AFA ignores the explanatory endeavor of scientific personality psychology. It is less than inspiring, speaking as a scientist, to aspire only to providing descriptions of phenomena. In addition, is it wise and indeed possible to be so atheoretical? Can one provide deep or "thick" scientific description without having in mind explanatory concepts in terms of which to organize observations? I do not think so." (p. 244)

On Block (1989) and Moser's (1989) point of constructs not being able to explain behaviour, it comes down to why the constructs are needed. If researchers are developing constructs without purpose, then Block (1989) and Moser (1989) would have an excellent point. However, if the lack of these constructs is standing in the way of research then they are being developed for good reason. We found the literature lacked a good email classification measure which could be used to analyze email use and make suggestions to individuals and organizations on how to better manage their email. This measure could, we believe, also be used to explore why people evaluate email as important/urgent by exploring the antecedents of these constructs. Therefore, as Cooper et al. (1990) suggest doing, we decided to develop our own measures to proceed with our research.

3.3.3 How AFA was applied in this thesis. Cinite et al. (2009) laid out six steps for conducting the three phases of the AFA which includes Cooper et al.'s (1990) addition to the methodology of validating and evaluating the measure and follows Hinkin's (1995) stages of how to develop measures based on "best practices" from the literature. These six steps are, therefore, the process followed in our thesis. How these six steps were applied in this thesis is summarized in Table 3-4 (see next page) and discussed below in terms of where the steps fit within Hinkin's (1995) "best practices" for scale development. The remainder of this section will discuss how the AFA will be applied in this thesis using Hinkin's (1995) three stages of: "item generation", "scale development", and "scale evaluation". It should be noted that since we developed the important and urgent constructs from the employees' perspective the unit of analysis is at the individual not organizational level.

Table 3- 4: Steps to Conducting AFA Research*

Step 1	Selection of research sites and employee groups within those sites that use email regularly (i.e., knowledge workers)
Step 2	Interviews with a sample of employees at each site to identify acts which typify an important or urgent email (Phase 1)
Step3	Administration of a survey containing all nominated acts identified in Phase 1 to a sample of employees at each site. The survey asked participants to rank acts based on how prototypical they were to the constructs of interest (Phase 2)
Step 4	Analysis of Phase 2 data to develop measures of important and urgent email
Step 5	Administration of a survey which included: demographics, the important and urgent email measures, and outcomes of interest used to validate our measures (Phase 3)
Step 6	Statistical analysis of the survey data to further validate the important and urgent email measure and answer research questions for Paper 3

*Source: Adapted from Cinite et al. (2009, p. 267)

3.3.3.1 “Item generation”. For creating scales, Hinkin’s (1995) item generation stage of measure development is the most important aspect of content validity and is the first step in establishing construct validity of the measures. The AFA uses an inductive item generation approach (accomplished in step 2 of Table 3-4) and, as noted earlier, the first two phases of the AFA (steps 1 through 4 in Table 3-4) do an excellent job of helping to ensure the content validity of the measures (Cooper et al., 1990).

3.3.3.2 “Scale development”. Hinkin’s (1995) second stage is scale development. This stage consists of designing the study (accomplished in steps 1 through 5 in Table 3-4), constructing the scale(s) (accomplished in steps 4 and 6 in Table 3-4), and assessing reliability (accomplished in step 6 in Table 3-4). This stage takes the items identified to represent the construct(s) in the previous section and administering them (i.e., in a survey) to evaluate the items in the scale and examine the relationships of the construct(s)

to other variables. Hinkin's (1995) five issues with designing the study for scale development are discussed below.

- The first issue in the design of the study is selecting participants (accomplished in step 1 of Table 3-4). As stated earlier, we focused on knowledge workers (e.g., managers and professionals) to have a population that uses email in their work with great enough frequency to provide generalizable results.
- The second issue is reverse coded questions, Hinkin (1995) points out that although these questions have often been included to reduce pattern bias they have resulted in the item loadings of these negative questions being lower than their positive counterparts. We, therefore, did not include any reverse coded questions in our measures (accomplished in step 5 of Table 3-4).
- Hinkin's (1995) third issue is the number of items being used in the measure. Measures with too many items can result in response bias, but too few items can affect the validity of the measure. Although Hinkin (1995) does give a lower limit of three, he does not provide an upper limit. We, therefore, arbitrarily set an upper limit of 15 and kept our measures within this range (accomplished in step 4 and 6 of Table 3-4).
- Hinkin's (1995) fourth issue with designing the study for scale development is that there needs to be enough variance in respondents' answers for statistical analysis. The author states that reliability of measures with Likert-type scales increased in reliability up to 5 points (e.g., never, almost never, sometimes, almost always, always) and then leveled off. For the purposes of our measures we, therefore, used a

5-point Likert scale for each of the items in our important and urgent constructs (accomplished in step 5 of Table 3-4).

- The fifth issue which Hinkin (1995) found with how scale development studies are designed is the use of an insufficient sample size. As with most statistical tests, the larger the sample the more confidence one can have in their results. The author notes that both EFA and CFA have been shown to be “particularly susceptible to sample size effects” (p. 973) and suggests a minimum sample size of 200 for CFA. Our study exceeds this number by a large margin as we had just under 1500 participants complete our phase 3 survey (accomplished in step 5 of Table 3-4).

Hinkin’s (1995) second step in the scale development stage is that of scale construction. The most common technique for “reducing and refining” the items in constructs is factor analysis. Factor analysis helps with this “reducing and refining” by allowing researchers “to examine the stability of the factor structure and provide information that will facilitate the refinement of a new measure” (p. 977). Hinkin (1995) recommends the use of CFA as it allows for more precision in this task than does EFA. The author warns that factor analysis should not be used to derive scales “post hoc”, they still need to be part of the theoretical construct being developed. Hinkin (1998), however, recommends the use of EFA then CFA.

We, therefore, used EFA using IBM’s SPSS then CFA using SmartPLS (v. 3.2.7 - Ringle, Wende, & Becker, 2015) to reduce and refine our measures (accomplished in step 6 of Table 3-4). Along with Hinkin (1998) suggesting the use of EFA first, we additionally wished to categorize any overlapping items between both the constructs. We speculated that this overlap might result in a third construct (important and urgent email),

it did not. To avoid developing our scales “post hoc” we ensured that the items remaining in the measure after the EFA was performed were with the measure in which they started (i.e., no measures made the transition from important to urgent or vice versa). A CFA analysis on the remaining items was then performed following the EFA to further refine our measures.

Hinkin’s (1995) third step in the scale development stage is to assess the reliability of the measure(s) (accomplished in step 6 of Table 3-4). The author places this step within scale development rather than in the evaluation stage as many authors use factor analysis to remove items from their scales creating two issues concerning the reliability of the measure being developed: consistency and stability. When testing the internal consistency of the measure being developed using Cronbach’s alpha, although Hinkin (1995) suggests that the old standard of .7 continue to be the minimum acceptable. Hair et al. (2012), however, point out that for exploratory research .6 is considered acceptable. We will, therefore, test the internal consistency of our measures using Cronbach’s alpha and use .6 as our minimum standard for internal consistency. Additionally, as recommended by Hair et al. (2012) we use Fornell and Larcker’s (1981) CR measure to test internal consistency. Hair et al. (2012) recommend a minimum standard of .7 to demonstrate internal consistency with CR.

3.3.3.3 “Scale evaluation”. Hinkin’s (1995) third stage is the scale evaluation stage (accomplished in step 6 of Table 3-4). The author points out that all the previous steps are used to help develop measures with high validity and reliability to ensure construct validity. This final stage is to further test the construct validity of our scales by testing their criterion-related validity, which can be accomplished through convergent

and discriminant validity tests (Hinkin, 1995). We further test the criterion-related validity using predictive validity a sub-type of criterion-related validity (Trochim, 2002). These analyses are conducted using SmartPLS (v. 3.2.7 - Ringle, Wende, & Becker, 2015) software.

Hair et al. (2012) recommend evaluating convergent validity by examining the Fornell and Larcker's (1981) Average Variance Explained (AVE). The AVE measures the level of variance captured by a construct versus the level of variance due to measurement error. Scales with an AVE greater than .5 are generally considered to have adequate convergent validity.

Henseler, Ringle, and Sarstedt (2015) demonstrate that the Fornell-Larcker criterion (having the square root of AVE greater than any of the correlations between constructs) for discriminant validity does not reliably find discriminant validity in PLS-SEM. They recommended that researchers who wish to use PLS-SEM to evaluate discriminant validity use the heterotrait-monotrait ratio of correlations (HTMT). Henseler et al. (2015) offered three different cut-off criteria for finding problems with discriminant validity reliably, less than .9, less than .85, and less than inference. In this paper we tested the discriminant validity of our measures against the Fornell-Larcker criterion (as suggested by Fornell & Larcker, 1981 and Hair et al., 2012), the loadings and cross loadings of our measures (as suggested by Hair et al., 2012), and the HTMT (as suggested by Henseler et al., 2015).

Finally, predictive validity is evaluated in Paper 2 by theorizing that our constructs (i.e., important email and urgent email) predict email overload and then checking these hypotheses using PLS-SEM path analysis (Trochim, 2002). These

hypotheses are based on the same literature which was used to develop our predictive model (Figure 2-3) for Paper 3.

3.4 Structural Equation Modeling

“Structural equation modeling (SEM) is a comprehensive statistical approach to testing hypotheses about relations among observed and latent variables” (Hoyle, 1995, pp 1). The objective of Paper 3 in our thesis is *to use the measures developed in the second paper to investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being outcomes (i.e., perceived stress and email overload)*. As we wish to test the relationship between our constructs (important email/urgent email) to outcomes of interest, SEM is a suitable technique for use in Paper 3 in this thesis. Before explaining SEM, we provide a list of definitions (adapted from: <http://davidakenny.net/cm/basics.htm>) to help the reader follow the information in this section.

- Latent variable: Is a variable that is not directly measured or observed in the model. That is, it is believed to be composed of the characteristics (or indicators) within the measure which are directly measured or observed. For example, in our model we do not have a direct measure of important email, instead we measure the frequency of acts which we have identified as typifying an important email as an indirect measure of important email.
- Exogenous Variable: This variable causes other variables in the model but is not caused by other variables in the model. That is, it has arrows pointing out of it but not towards it. For example, our important email construct in our model is a predictor of email overload but there are no predictors of important email.

- Endogenous variable: This variable can cause other variables in the model but is distinct from an exogenous variable as it is caused by other variables. That is, it has arrows going into it and can have arrows going out of it. For example, the email overload construct in our model is a predictor of perceived stress and is being predicted by the exogenous variables in the model.

The subsections of this chapter will first present a brief historical overview of SEM with a specific focus on Partial Least Squares Structural Equation Modeling (PLS-SEM). This overview will be followed by the justification for using PLS-SEM over Covariant Based Structural Equation Modeling (CB-SEM). Finally, a description of how PLS-SEM is used in Paper 3 of this thesis will be provided.

3.4.1 Historical overview of SEM. Hair, Ringle, and Sarstedt (2011) credit Sewall Wright with the development of the first path analysis in the 1920. SEM as it is used today began as a hybrid of factor analysis from psychology and psychometrics, and simultaneous equation modeling from econometrics and genetics (Kaplan, 2008). Reinartz, Haenlein, and Henseler (2009, p. 332) state that SEM gained popularity after Jöreskog's (1967) "seminal work on maximum likelihood factor analysis" and Jöreskog's (1973) "later extensions to the estimation of structural equation systems". SEM first made its appearance in the social sciences in the 1970s (Hair et al., 2011). The increasing usage of SEM mirrored the availability and ease of use of SEM software. Today SEM is commonly used in social science research. The application of SEM by researchers usually means using CB-SEM (Reinartz et al., 2009). However, when certain assumptions of CB-SEM cannot be met or when the research is predictive, PLS-SEM is the preferable option (Reinartz et al., 2009). As PLS-SEM is the methodology which we

use for Paper 3 of this thesis the remainder of this overview section will focus on PLS-SEM.

PLS-SEM started with Jöreskog's doctoral advisor Herman Wold (Reinartz et al., 2009) and was originally called nonlinear iterative partial least squares (NIPALS) in Wold's (1975) paper. It was later modified by Lohmöller (1989) (Hair et al., 2012). PLS-SEM was created to be a more forgiving model than CB-SEM (in terms of data requirements) as well as to change the focus from confirmatory structure to prediction.

In the late 90s three influential articles changed how PLS-SEM research was being conducted (Hair et al., 2012). The first of these three was Chin's (1998) article which highlighted PLS-SEM as an alternative to CB-SEM and discussed the conditions under which it was beneficial to select the former over the latter. The second of these articles was Chin and Newsted's (1999) article which according to Hair et al. (2012) contrasted CB-SEM against PLS-SEM and pointed out the identification issue in CB-SEM when the model becomes too complex (an issue that does not affect PLS-SEM). Finally, Hair et al. (2012) wrote their paper to establish some standards for evaluating PLS-SEM as a result of Hulland's (1999) review of four "recent" articles that used PLS-SEM and found that PLS-SEM was used inconsistently, sometimes inappropriately.

In Hair et al.'s (2012) evaluation of PLS-SEM articles in marketing journals they found a significant shift in the justification for using PLS-SEM from articles published before 2000 and those published in 2000 and after (i.e., following the publication of the influential articles in the late 90s mentioned above). For example, the 2000 and after papers group tended to have a larger sample size than those before 2000, perhaps demonstrating an increased awareness of sample size following the articles mentioned

above. The authors also found that the number of latent variables used in PLS-SEM path models were higher than the number used in CB-SEM models, as well as an increase in the number of latent variables from studies published before 2000 and those published 2000 and after. Their findings also showed an increase in the number of inner model relationships which, while notable, was not significant. The use of models with more exogenous latent variables (i.e., latent variables without arrows pointing to them in the model) as compared to endogenous latent variables (i.e., latent variables with arrows pointing to them in the model) has also increased in the 2000 and after publications.

3.4.2 Justification for using PLS-SEM over CB-SEM. There are two types of SEM researchers can choose from: CB-SEM and PLS-SEM (Hair et al., 2012). For the purposes of this thesis PLS-SEM was used. “PLS-SEM is a causal modeling approach aimed at maximizing the explained variance of the dependent latent constructs. This aim is contrary to CB-SEM’s objective of reproducing the theoretical covariance matrix, without focusing on explained variance” (Hair et al., 2011, p. 139). Like CB-SEM, “PLS[-SEM] consist of a structural part, which reflects the relationships between the latent variables, and a measurement component, which shows how the latent variables and their indicators are related; but it also has a third component, the weight relations, which are used to estimate case values for the latent variables” (Haenlein & Kaplan, 2004, p. 290). CB-SEM and PLS-SEM are considered complementary methods in the sense that the weaknesses of one are the strengths of the other (Hair et al., 2011). Therefore, Hair et al. (2012) suggest researchers select the SEM technique which best fits “their research objective, data characteristics, and model set-up” (p. 416).

PLS-SEM is often used when one or more of the requirements of CB-SEM cannot be met (e.g., minimum sample size, normality of the data, etc.) or when the objective is prediction not confirmation. PLS-SEM allows the researcher to design the model based on theory, rather than model design being forced on the research due to rules and constraints.

The use of PLS-SEM in this thesis can be justified as our model is using constructs to predict outcomes informed by theory which is what PLS-SEM is designed for and CB-SEM struggles with.

3.4.3 How PLS-SEM is used in this research. For the purposes of Paper 3 of this thesis we followed Hair et al.'s (2012) guidelines for conducting PLS-SEM. Each of the criteria and recommendations/rules of thumb will be discussed here in terms of how PLS-SEM is used in Paper 3 of this thesis, including: “data characteristics”, “model characteristics”, “PLS-SEM algorithm settings and software used”, “parameter settings for procedures used to evaluate results”, “outer model evaluation” (referred to as measurement model in Paper 3), and “inner model evaluation” (referred to as structural model in Paper 3).

3.4.3.1 “Data characteristics”. Although Reinartz et al. (2009) found a sample size of 100 or greater as the number to achieve statistically significant results in PLS-SEM, a generally accepted rule of thumb proposed by Barclay, Higgins, and Thompson (1995) is to use ten times the number of paths to the outer and inner model as a rough estimate. We far exceeded this rule of thumb with just under 1500 participants in our sample.

Due to the concern over highly skewed distributions possibly causing bootstrapping errors and PLS-SEM's "tendency to underestimate inner model relationships" (Hair et al., 2012, p. 421), we report on whether the data distributions are normal or not.

Finally, as per Hair et al.'s (2012) suggestion a correlation matrix is presented in Paper 3.

3.4.3.2 “Model characteristics”. Our inner model is presented in Section 2.3.2.1. The model is composed of 4 exogenous variables (two of which are latent variables) and 2 endogenous latent variables making it a focused model according to Hair et al.'s (2012) criteria. The exogenous latent variables are composed of our first order predictors including the 2 objective demands (i.e., email volume and email hours—see Table 2-2 for definitions and measures), the 2 subjective demands (i.e., important email and urgent email—see Table 2-2 for definitions and measures), and our moderator of work control (see Section 2.3.2.1.3 for definition and measure). The first endogenous latent variable is our measure of email strain (i.e., email overload—see Section 2.3.2.1.2 for definition and measure). The other endogenous latent variable is our employee well being outcome (i.e., perceived stress—see Section 2.3.2.1.2 for definition and measure).

The description of the relationships between our latent variables and the justification of these relationships is provided in Section 2.3.2.

Our two objective demand constructs are all single item continuous variables. Our important email construct has 6 indicators. Our urgent email construct has 8 indicators. The email overload construct has 7 indicators, one of which is reverse scored, 2 of the indicators were removed. The work control construct has 5 indicators. Finally, our

perceived stress construct has 10 indicators, four of which are reverse scored, 2 of which were removed.

3.4.3.3 “PLS-SEM algorithm settings and software used”. The settings suggested by Hair et al. (2012) for testing PLS-SEM were used. SmartPLS (v. 3.2.7 - Ringle, Wende, & Becker, 2015) software was used to conduct the analysis.

3.4.3.4 “Parameter settings for procedures used to evaluate results”. The parameter settings suggested by Hair et al. (2012) were used to evaluate results.

3.4.3.5 “Outer model evaluation”. The outer model was evaluated by examining the indicator reliability, internal consistency, convergent validity, and discriminant validity (Hair et al., 2012).

Indicator reliability was assessed by checking the items loadings. Indicator loadings of .4 or greater are acceptable for exploratory research (Hair et al., 2012) and indicator loadings between .4 and .7 should only be removed if the composite reliability (CR) is below the recommended range (Hair et al., 2011). We used CR of greater than or equal to .7 to evaluate internal consistency as suggested by Hair et al. (2012). We also used Cronbach’s alpha as suggested by Hinkin (1995), values above .6 but below the absolute cut-off of .95 were considered acceptable (Hair et al., 2016). Convergent validity was assessed using Fornell and Larcker’s (1981) AVE, values greater than or equal to .5 were considered acceptable (Hair et al., 2012). Discriminant validity was assessed using the Fornell-Larcker criterion (i.e., the square root of each constructs AVE should be higher than its correlations with any other construct assessed) and by ensuring that each construct’s indicator loadings were higher on that construct than any of the cross-loadings (Fornell & Larcker, 1981 & Hair et al., 2012). According to Hair et al. (2012), cross-

loadings of .4 or greater may indicate multicollinearity issues between constructs. If multicollinearity is present in our data, we will calculate the Variance Inflation Factor (VIF). As a rule of thumb, VIF should be less than 5 (Hair et al., 2016).

3.4.3.5 “Inner model evaluation”. The inner model was evaluated by the R^2 s of our outcomes (i.e., email overload and perceived stress) and the path coefficient estimates using bootstrapping to assess their significance (Hair et al., 2012).

Chapter 4: Paper 1

This chapter presents the first of the three papers in this thesis. Each paper has been given its own chapter in the thesis. The three papers presented in this thesis follow a similar format. First, a brief introduction to the paper will be presented at the start of the chapter which ties the paper to the overall objective of this thesis. Second, a brief abstract of the paper is provided. Third, the research paper is presented. The references for each paper are included in the full reference list at the end of this thesis. It should be noted that for presentation purposes, with the exception of the papers titles, the levels of the headings for each of the papers are presented as they were in the papers when submitted (e.g., a main section of the paper will start positioned as a level 1 heading). The headings within the papers also will not be numbered to avoid confusion.

The first paper's main objective is *to develop a framework that describes how employees classify emails they receive into important and urgent constructs (e.g., who sent the email, what is the subject of the email, what is the content of the email, etc.)*. This objective fits into the omnibus objective of this thesis as the goal of constructing a framework of how employees make decisions on the importance and urgency of emails provides us with a way to classify employees' emails and, therefore, allows us to offer suggestions on how employees can better manage their emails based on this classification. The interview script for the interviews this paper's data are based on can be found in Appendix A.

4.1 Abstract

This paper presents the results from a study designed to help us better understand the cues that employees use to identify an email as important and/or urgent. The research takes an emic perspective and uses a qualitative research methodology to analyze the responses from semi-structured interviews conducted with 30 knowledge workers. The study makes three significant contributions to the extant literature in this area. First, knowledge workers define an email's importance by considering its salience as described in the stakeholder literature. More specifically, an important email comes from a stakeholder with power and pertains to an issue or stakeholder that has legitimacy. Second, knowledge workers evaluate an email's urgency in terms of its time-sensitivity and importance. Third, we found that context is critically important to the email evaluation process. The framework developed in this study, which posits how knowledge workers classify emails into important and urgent constructs, should be of use to both researchers and practitioners who seek to address issues associated with email management.

4.2 Important And/Or Urgent: Classifying Employee Email Use

“What is important is seldom urgent and what is urgent is seldom important.”

Dwight D. Eisenhower

Time is a fixed resource and excessive hours in any activity inevitably decreases the time that can be devoted to other pursuits. Over the past several decades, there has been a growing recognition of the importance of the temporal dimension of work in the management literature (Claessens, Van Eerde, Rutte, & Roe, 2007). In their recent review of the time management literature, Claessens et al. (2007, p. 255) present evidence which

supports the idea that time pressures associated with expanding global competition, growth in the use of information technology at work, and increased demands for immediate availability of products and services have resulted in an increased pace of life. They attribute this increase to the fact that employees are expected to do things faster (acceleration) and manage by contracting their time expenditures (e.g., eating faster, sleeping less), and compressing their actions (e.g., making a phone call while having lunch). In recognition of the link between time and employee well-being, research in this area often includes time-based predictors to either capture role demands or predict employee well-being outcomes such as stress and depression (Duxbury, Lyons, & Higgins, 2008). Similarly, the Conservation of Resources (COR) Model (Hobfoll, 1989) which is often used to theoretically ground research in the work-life domain classifies time and energy as key resources that individuals pursue/seek to preserve and argues that stress occurs when there is either a loss of resources (i.e., time) or such loss is threatened.

Writings in both the popular and academic press implicate an increased reliance on and use of email as a major contributor to employees' sense of not having enough time to meet competing demands (i.e., role overload) (Fisher, Brush, Gleave, & Smith, 2006; Dabbish & Kraut, 2006; Grevet, Choi, Kumar, & Gilbert, 2014). Recent statistics from The Radicati Group (2017) provide evidence to support this contention. They predict that the daily email volume (i.e., the number of email messages sent and received) for businesses and consumers will grow from 269 billion in 2017 to 319.6 billion by 2021. They also anticipate a growth in the number of worldwide mobile device users from 6.7 billion by 2017 to 7.1 billion by the end of 2021 (The Radicati Group, 2017).

Email has a substantial user base (Mohamed, Ku-Mahamud, Ramli & Abdullah, 2017). In fact, it has been reported that roughly half the world's population (3.7 billion) use email to communicate with others (The Radicati Group, 2017). While the exact mechanisms behind emails dominance as a form of work-related communication are unknown, we speculate "that the move to this new era of communication is driven more by the immediate, practical advantages, and the availability of the technology, rather than a rational assessment of its advantages and disadvantages" (Taylor, Fieldman & Altman, 2008, p. 159).

Researchers have responded to this phenomenon by studying the link between email use and employee well-being. This literature can be divided into two main streams (Barley, Meyerson, & Grodal, 2011): (1) studies connecting email use to work-life balance (e.g., Chesley, 2005; Murray & Rostis, 2007; Duxbury, Higgins, Smart, & Stevenson, 2014) and (2) research which links email use to perceptions of email overload (e.g., Whittaker & Sidner, 1996; Fisher, Brush, Gleave, & Smith, 2006; Dabbish & Kraut, 2006; Grevet, Choi, Kumar, & Gilbert, 2014), which was defined by Thomas et al.'s (2006, p. 255) as "a condition in which the volume of information exceeds a person's capacity to process it". Findings from both these streams of research support the idea that a high reliance on email comes at a cost to individual users (declines in employee well-being), the organizations they work for (increased absenteeism, increased benefit use, declines in job satisfaction), and the societies in which they live (increased use of the health care system) (Duxbury et al., 2014; Dabbish et al., 2005; Barley, et al., 2011).

One of the first studies on email overload was done by Whittaker and Sidner (1996). Ten years later Fisher, Brush, Gleave, and Smith (2006) duplicated this study and

concluded that, despite the development of numerous tools intended to assist users in managing their email, email inboxes were still overloaded. Eighteen years later Grevet, Choi, Kumar, and Gilbert (2014) duplicated this study, yet again, and concluded that despite the proliferation of tools developed to help users manage their email, individuals were still victims of two forms of email overload: (1) overload associated with the volume of the messages received, and (2) overload relating to what the authors termed status (i.e., emails communicating things to do, things to read, outstanding tasks, outstanding communication). They also noted that perceptions of email overload had increased over time due to the “pervasiveness of smart phones and tablets, the ever-increasing availability of internet connectivity and the wider spread of social networking (Grevet et. al. 2014, p. 793).

Ducheneaut and Watts (2005, p. 11) observed that “E-mail research encompasses a vast and diverse body of work” and proposed a taxonomy describing the three main approaches to email research conducted pre-2005: email as a file cabinet, email as a production line, and email as a communication genre. More recently, this taxonomy has been augmented by research that has focused on email as a social/cultural phenomenon in organizations (e.g., Mazmanian, Yates, & Orlikowski, 2006; Barley et al., 2011; Mazmanian, Orlikowski, & Yates, 2013; Mazmanian, 2013; Duxbury et al., 2014), individual differences in email use (e.g., Hair, Renaud, & Ramsay, 2007; Duxbury et al., 2014), and proposed systems or strategies to help email users manage/organize their email (Mann, 2007; Duxbury et al., 2014). These studies all inform our understanding of how email use impacts a variety of key stakeholders, but do not provide insights into why employees use email the way that they do. We do not, for example, know how employees

classify the emails they send and receive and how their perceptions of the importance and urgency of these messages impact both their use of email and the outcomes associated with different types of use. Nor do we have a reliable research instrument that allows us to classify the types of emails received and sent from the end user's perspective. Such an instrument would increase our understanding of the etiology of email use beyond the simple counting of messages sent/received in a certain time period (i.e., email volume) or the number of hours spent per specified time period "doing email" at work and/or outside of work.

Although several studies were identified that spoke to the need to classify emails, particularly with respect to their importance (e.g., Aberdeen, Pacovsky & Slater, 2010; Dabbish, et al., 2005; Flores, Graves, Hartfield & Winograd, 1988; Wainer, Dabbish & Kraut, 2011) we could find no clear definition of what exactly constitutes an important and/or an urgent electronic communication, particularly from the employee's (i.e., emic) perspective. While some researchers (e.g., Dabbish et al., 2005) have looked at the issue of email importance, they took at etic perspective of the issue (i.e., the researchers defined what constitutes an important email). The lack of an emic perspective is unfortunate as it is the employee's perception of the importance and urgency of their emails that is likely to drive their decision-making with respect to their email use.

In 2017 we began a multi-method research program designed to address these issues. This paper presents the results of the first study undertaken as part of this research agenda: a qualitative study exploring how knowledge workers classify the work-related emails they receive with respect to their importance and urgency. We take an emic perspective as our goal is to better understand the cues that employees use to identify an

email as important and/or urgent, an approach that is consistent with our focus on the temporal dimensions of email use (Claessens et al., 2007). Data from this study are used to develop a framework describing how employees classify emails they receive into important and urgent constructs (e.g., who sent the email, what is the subject of the email, what is the content of the email, etc.). This framework should facilitate the development of a measure to quantify these constructs as well as expedite theory development in this field.

This paper is structured as follows. We begin with a brief review of the importance and the urgency constructs. This review is followed by a description of the theoretical frameworks which were used either as sensitizing concepts in this study (Covey's, 1990 time management matrix) or to help us interpret our findings (salience). It should be noted that although we include salience in the literature review section of this paper the relevance of this concept to the development of our typology emerged during the analysis of our data. Following the literature review we outline the research methodology used (Eisenhardt's 1989 approach to building theory from case studies) to collect our data and discuss key findings from our analysis. Conclusions are summarized in the final section of the paper.

Literature Review

This section is broken down into four main parts. We begin by providing a brief overview of research on the two constructs used to classify email within this paper: importance and urgency. This overview is followed by an overview of Covey's (1990) time management matrix which ties the concepts of importance and urgency together. Finally, we provide a summary of the literature on salience as it relates to this research.

Importance

“Philosophers who write about the theory of values have not, as far as I know, paid much attention to the meaning of ‘importance’. And yet it is a term of valuation which we are continually using. It may, therefore, even turn out to be ‘important’ that we should discuss what we mean by it.” (Emmet, 1946, p. 316)

Although it has been just over 70 years since Emmet made the above comment, we could find little academic research going beyond her pivotal treatise on the topic. Emmet (1946) identifies two conceptualizations of the term importance: relativist and absolutist. The relativist sense of importance refers to something in relation to something else (i.e., a means/end relationship). For example, it is important that I have fuel in the tank of a car if I am going to be driving the car anywhere. This sense of importance is easy to evaluate because it is contextual (i.e., the car cannot run without fuel, so in this context fuel is important).

This type of evaluation of importance is found in the project management literature (Ward, 1999) which assesses risk as the probability of something occurring (e.g., will the car run out of fuel before it reaches its destination) times the expected impact of something occurring (e.g., the project will fail if the car does not reach its destination). Situations where the impact and probability are both high, are considered important relative to the project.

The absolutist sense of importance, on the other hand, focuses on whether the goal itself is important (Emmet, 1946). This sense of importance is far more difficult to evaluate. While there is no doubt some shared commonalities in terms of what people consider important, especially for those who share a common value system due to a

similar upbringing (e.g., those with a shared culture, religion, ethical upbringing, etc.), as Emmet (1946) points out, any evaluation system of importance can, and likely will, be challenged.

Cooper (1968) refers to theories which allow us to rank our activities in terms of importance as “monolithic” theories because they try to cram all decision criteria under one umbrella of what is “truly” important. For example, capitalists believe that the pursuit of profit is truly important. While many people would accept this capitalistic view to be an acceptable “general” guideline to evaluate importance, at its extreme few people would agree that profit should be put before human life. The point that Cooper (1968) makes is that we will never come up with a ranking of importance which everyone agrees with, not that we cannot come up with a ranking of importance which some people will agree with. What criticisms of monolithic theories highlight is that when it comes to importance, context matters (Emmet, 1946).

Our search of the literature uncovered only one study (that done by Dabbish et al., 2005) that focused on what makes an email important, in either an absolute or relativistic sense. This lack of studies in the area is unfortunate as a better understanding of how employees establish an email’s importance could help us better understand and manage email use.

As noted above, importance is based on the perspective of the individual decision maker(s) at the time a decision is being made (in context). This fact means that if we want to understand what the broad criteria are for classifying an email as important in any given moment, we need to focus our attention on the individual employee. Moreover, our methodology should be flexible enough to allow for individual differences in perspective

on what makes an email important. Covey (1990, p. 151) defines importance in terms of results: “If something is important, it contributes to your mission, your values, your high priority goals”. We have adapted this definition for use in our study in which we defined an important email as *one that conveys information of great significance, consequence, or value to the recipient*.

Urgency

One of the things which stood out in our review of the urgency literature is the abundance of articles in the medical journals which discuss this topic. In reflection, it is not so surprising those who work in an emergency environment would be the ones more focused on urgency. It was, however, somewhat surprising that the term is defined almost exclusively for the desire to urinate. Cardozo (1986, p. 1419), for example, defined the term as follows: “Urgency is a strong and sudden desire to void which, if not relieved immediately, may lead to urge incontinence”. The preceding quote was taken from one of these medical papers for two reasons. First, it is one of the few definitions of the term we found in the literature. Second, because the need to urinate is something most of us can relate to when it comes to thinking about the construct of urgency. Covey (1990, p. 151) defined the term in a similar, albeit less colourful, manner: “urgent means it requires immediate attention”. In this paper we have adapted Covey’s definition of the term and defined an urgent email as *one that is perceived by the recipient to require swift action*.

We uncovered a number of theoretical (but few empirical) articles that explored issues associated with urgency in the research literature on time (Goodman, Lawrence, Ancona & Tushman, 2001). In the review below we focus our attention on two related theories of urgency relevant to this study: time urgency and time pressure.

Time urgency is defined as “the tendency on the part of an individual to consider time as a scarce resource and to plan its use carefully. Time urgency is clearly a perspective on the part of the individual and, as such, represents an individual-difference variable” (Landy, Rastegary, Thayer, & Colvin, 1991, p. 645). Research in the area supports the idea that the sense of time urgency can be conceptualized as a stable personality trait (Conte, Landy, & Mathieu, 1995; Landy et al., 1991) and tends to be self-imposed (Waller, Conte, Gibson, & Carpenter, 2001).

Perceived time pressure, on the other hand, is defined as an individual’s perception of the limited time remaining to complete some goal relative to the difficulty of achieving that goal and is a function of the environment (Maruping et al., 2015). Most of the mentions of time pressure uncovered in our literature search either reference “creating a sense of urgency” and/or are related to concepts from the well-being literature, such as role overload and work-life balance (e.g., Barley et al., 2011). Papers which refer to the need to create a sense of urgency can be found in the change management literature (e.g., Huy, 2001), the research and development literature (e.g., Pinto & Slevin, 1989), and the literature on championing environmental issues (e.g., Anderson & Bateman, 2000). All these authors focus their attention on how practitioners can create a sense of urgency to convince others to act in a desired manner.

Finally, we note that while many researchers mention importance when discussing urgency and vice versa the relationship between these two constructs is not clearly articulated within the literature.

Covey's (1990) Time Management Matrix

Eisenhardt (1989), whose methodology we followed in this study, suggests that researchers use “[a] priori specification of constructs [...] to shape the initial design of theory building research” (p. 536). Covey's (1990, p. 149) time management matrix (taken from Dwight D. Eisenhower's Decision Matrix), which seeks to help people “*[o]rganize and execute around priorities*”, was used in this study to help us build a theoretical framework to guide this research. Covey posits that all work tasks can be classified within a two-dimensional matrix by arranging tasks by their importance and urgency. Covey claims that to become more effective people need to spend more time on what is important to them by reducing (or even stopping) the time spent on activities which are unimportant. Covey (1990) also suggests that people should find ways to reduce the amount of time spent on important/urgent activities (which he claims trigger higher levels of stress) through things like training, planning to reduce the occurrence of emergencies, thinking of ways to be more effective with your time, etc. Covey's 2x2 matrix was adapted (see Figure 4-1 on next page) to describe how employees may evaluate the importance/urgency of one specific work-related task: processing the email messages they receive.

Our review of the literature identified a number of articles which use Covey's (1990) time management matrix to offer suggestions on how to better manage one's time (e.g., Haimen, 2001; Brunnicardi & Hobson, 1996; Jensen, Malcolm, Phelps, & Stoker, 2002). We also identified a number of articles which discussed the matrix itself (e.g., Clarke & Wilcockson, 2001; George, Dixon, Stansal, Gelb, & Pheri, 2008). We were

Figure 4- 1: Covey’s (1990) Time Management Matrix Adapted to Email*

Important Email	High	Emails that impact the individual’s ability to do their job, their career, their self-image, or how they are viewed by their colleagues, but do not require immediate action (e.g., something related to an important project that is due in the next couple of weeks)	Emails that impact the individual’s ability to do their job, their career, their self-image or how they are viewed by their colleagues which require immediate action (e.g., something related to an important work project that is due soon)
	Low	Emails that serve no useful purpose for the receiver – attention to these emails leads to time being wasted/ procrastination (e.g., mass communication emails that are only relevant to a specific person or group)	Emails that are not important in a strategic sense but require immediate action (e.g., request for information that is needed by a specific time)
		Low	High
		Urgent Email	

*Source: Adapted from Covey (1990, p. 151)

unable, however, to find any evidence that Covey’s (1990) matrix had been used by researchers studying email use.

Salience

When analyzing the data collected for this study, we noted the relevance of the salience construct to our ability to make sense of our findings. Pragmatically we elected to provide a brief overview of the ideas of salience in this section of the paper (rather than the results section) to facilitate the weaving together of the theory and the findings in the discussion.

Mitchell et al. (1997, p. 869) define salience as, “the degree to which managers give priority to competing stakeholder claims”. Attention-based theory connects the idea of salience to our theme of time urgency and our focus on context. Ocasio (1997) defined

attention as, “the noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both (a) issues; the available repertoire of categories for making sense of the environment: problems, opportunities, and threats; and (b) answers: the available repertoire of action alternatives: proposals, routines, projects, programs, and procedures” (p. 189). Ocasio (1997, p. 188) developed three principles to explain how organizations “distribute and regulate the [salience and] attention of their decision-makers”: (1) “focus of attention” (i.e., what the decision maker is currently paying attention to affects what they find salient and what they will pay attention to), (2) “situated attention” (i.e., the situation decision makers find themselves in affects what they find salient and what they will pay attention to), and (3) “structural distribution of attention” (the culture, policies, structure, etc., of the organization affects what decision makers find salient and what they will pay attention to).

In this paper we adapt Mitchell et al.’s (1997) definition and define email salience as the degree to which an employee will give priority to emails that are competing for attention (i.e., “the noticing, encoding, interpreting” portion of Ocasio’s (1997) definition of attention) and we shorten Ocasio’s (1997) definition of attention to the focusing of time and effort employees spend on emails. In the section below, we provide a short review of the salience literature that has relevance to this paper: the neurobiology of salience and operationalization of the construct.

Neurobiology of salience. The popular press claims that email is addictive and blames the neurotransmitter dopamine for our inability to ignore email, twitter, etc. Dopamine causes people to want, desire, seek out, and search for information – and leads to what pundit’s label email addiction. Scientific evidence backs up these claims (Kuss &

Griffiths, 2012). In Berridge's (2007) review on the topic of dopamine's role in reward seeking behaviour (e.g., consumption, addiction) he notes a strong link between salience and how people function, a connection that he attributes to dopamine's role in the evaluation of salience. According to Berridge (2007) dopamine impacts behaviour by playing a role in "wanting something" rather than liking or learning about something. Although dopamine's role in wanting something does not mean that it plays a role in making something initially salient, it does mean that dopamine plays a role in keeping something salient in our awareness. To use an itch as a basic analogy, dopamine does not cause the itch, it plays no role in how much relief one feels in scratching the itch or any learnings which come from scratching an itch. Instead dopamine plays a role in our desire to scratch the itch by keeping it in our awareness. In Lammel, Lim, and Malenka's (2014) discussion on the activation of dopamine neurons they cite evidence that dopamine neural activity can be activated by reward, aversive, stressful, and salient events - all of which may explain some people's compulsive email use (they "need their fix").

Operationalization of salience. Researchers also discuss what attributes makes something salient to stakeholders such as organizations and the employees within those organizations (Mitchell, Agle, & Wood, 1997; Agle, Mitchell, & Sonnenfeld, 1999). Mitchell et al. (1997) proposed a typology which operationalized stakeholder salience into three categories: power, legitimacy, and urgency. Their model (shown in Figure 4-2 on the next page) serves two purposes: (1) to show which stakeholders managers are paying attention to (i.e., which are salient) and (2) to help identify which stakeholders managers should pay attention to.

Figure 4- 2: Stakeholder Salience Model*

*Source: Adapted from Mitchell et al. (1997, p. 873)

The first category of salience, power, is perhaps the simplest to understand, yet as Mitchell et al. (1997) point out it can be difficult to define. Mitchell et al. (1997, p. 865) define a powerful stakeholder as, “the extent [... a stakeholder] has or can gain access to coercive, utilitarian, or normative means, to impose [... their] will in the relationship”. In other words, powerful stakeholders are salient because they can, or are perceived to be able to, affect our lives to some degree in a positive or negative way.

The second category of stakeholder salience, legitimacy, has more to do with “what” rather than “who”. Mitchell et al. (1997) used Suchman’s (1995, p. 574) definition of legitimacy as, “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions”. The authors linked the power and legitimacy constructs as follows: “[a]n entity may have legitimate standing in society, or it may have

a legitimate claim on the firm, but unless it has either power to enforce its will in the relationship or a perception that its claim is urgent, it will not achieve salience for the firm's managers" (p. 866).

Mitchell et al. (1997, p. 887) state that urgency "exists only when two conditions are met: (1) when a relationship or claim is of a time-sensitive nature and (2) when that relationship or claim is important or critical to the stakeholder". While the definition of the urgency construct given by Mitchell et al. (1997) is similar to the conceptualization included in this study (i.e., we also focus on the time-sensitive nature of the claim), we do not require that the claim also be important. While the authors include in their paper examples of *what* could be considered important (e.g., ownership, sentiment, expectations, exposure) they offer no insights as to *why* something would be considered important. This study could provide insights into this issue, at least with respect to the classification of email.

There is a strong link between how Mitchell et al. (1997) define power and legitimacy, and the concepts discussed in the importance literature. More specifically, most criticisms of stakeholder theory note that the problem with stakeholder identification comes down to an argument of what is important in the absolutist sense of the word (e.g., Phillips, 2003). When researchers try to determine which stakeholders need to be paid attention to, they are essentially taking the perspective of what Cooper (1968) called a monolithic theory of importance to rank stakeholders. As has already been discussed, any attempt to create a ranking of importance can, and likely will, be challenged. Mitchell et al. (1997) semi acknowledge this point when they state, "we treat

managerial characteristics as a variable and suggest that it will be an important moderator of the stakeholder-manager relationship” (p. 872).

Finally, we note that Mitchell et al. (1997) argue that the three components of salience are additive such that areas where categories of salience overlap have higher salience to the stakeholder than areas where fewer salience factors overlap. According to Mitchell et al. (1997), therefore, section 7 in Figure 4-2 represents a situation of high salience, while sections 1, 2, and 3 depict areas of lower salience, and sections 4, 5, and 6 denote areas of moderate salience.

While Mitchell et al.’s (1997) original conceptualization of stakeholder salience has been advanced over time (see for example Phillips, 2003; Driscoll & Starik, 2004; Schwartz, 2006; Eesley & Lenox, 2006; Parent & Deephouse, 2007; Fassin, 2009), none of the recent work in the area has really changed how salience is conceptualized beyond that presented in Mitchell et al.’s (1997) original treatise on the topic (Mitchell, Lee, & Agle, 2017). Accordingly, we rely on Mitchell et al.’s (1997) conceptualization in this study.

Methodology

This study seeks to identify a meaningful way to classify email into important and urgent constructs – an important first step in development of a tool to measure email use within organizations and explore the relationship between different types of email use and employee well-being. We elected to use Eisenhardt’s (1989) building theory from case methodology (i.e., the “Eisenhardt approach”) to achieve our research objectives. This decision is supported by a number of factors. First, this approach supports one of our key research goals: the development of a theoretical paradigm to help us better

understand how employees classify email with respect to their importance and urgency. Second, the Eisenhardt approach is well suited to research which uses an emic approach. Finally, the Eisenhardt approach facilitates the use of inductive methods and is well suited to researchers who wish to tackle “grand challenges” that currently have no obvious solution (Eisenhardt et al., 2016). Email use certainly seems to fit this description.

Sample

To answer our research questions, we needed to identify (and select from) a population of employees who deal with email regularly in their day to day work lives. Two organizations (one public sector and one private sector) volunteered to participate in this research study. Both organizations were motivated to join this study by the fact that they viewed email overuse as an issue within their organizations.

Following the advice of Dabbish and Kraut (2006) we elected to focus our study into how employees classify the emails they receive on managers and professionals (i.e., knowledge workers) with high communication needs working within our target organizations. The two organizations who participated in this study solicited participants by sending out an email describing the research project and requesting volunteers. The researchers randomly selected from this list of volunteers a sample of 30 managers and professionals to be interviewed: 15 from each of the two participating organizations. Each of these individuals were then contacted by the researchers to set up interview times, conduct the interviews, and collect signed consent forms. Saturation was reached after 30 interviews were completed.

Thirty managers and professionals were interviewed: half worked for the private-sector organization (n = 15) and half were employed by the public-sector organization (n = 15). Our unit of analysis is the individual employee (i.e., thirty cases), a decision that is consistent with the emic perspective taken in this research.

The sample consisted of 6 males (2 from the private-firm and 4 from the public-firm) and 24 females. Our informants estimated that, on average, they sent and received 111.8 emails in a typical workday (63.4 received and 48.4 sent). Roughly 87% of these emails were considered to be work related. They also reported sending and receiving, on average, 19.9 emails in a typical non-workday (14.8 received and 5.1 sent). Approximately 29% of these emails were considered to be work related.

Data Collection

Semi-structured telephone interviews were used to collect data from our sample of 30 knowledge workers. All interviews were done by the first author. Responses to the following two interview questions were the main basis for this paper:

- What factors do you consider when deciding whether or not an email that you have received is an important email? In other words, what factors would cause you to think that an email is significant or of consequence?
- What factors do you consider when deciding whether or not an email that you have received is an urgent email? In other words, what factors would cause you to think that it is critical that you deal with a particular email immediately?

A third question which we had not initially intended to use in this study ended up helping us better understand how employees assess email's importance and urgency: "What one workplace change would help you better manage your use of email?"

Data Analysis

Eisenhardt (1989) identifies two stages of the data analysis process: within-case analysis and cross-case analysis. Following Eisenhardt's (1989, p. 540) advice we completed detailed and descriptive case write-ups for each email user we interviewed (i.e., each case). These write-ups were done immediately following each interview, so the details were still fresh in the interviewer's mind. These memos included a description of what was discussed in the interview along with some interviewer notes/comments. The write-up process allowed us to become intimately familiar with each case as a stand-alone entity and accelerated the next step of the data analysis process - cross-case comparison (Eisenhart, 1989). It also enabled us to amend the questions for the next interview as required.

We used Gioia, Corley, and Hamilton's (2013) coding approach to analyze our interview data. First level coding was undertaken as follows. We began by adding each response from each informant to a master coding sheet. We then reviewed all statements on the master coding sheet and identified and grouped responses which were similar to each other. We gave this grouping a label that corresponded to the response that we thought typified this grouping and then kept track on our master coding sheet of all those who responded this way.

Once our first order codes were reviewed by both authors to ensure clarity and uniqueness, the second level of coding then began. This process involved grouping statements from our first order codes into patterns, or themes, that emerged from the data (Gioia et al., 2013). Second level coding was originally done by each researcher on their own. They then got together and discussed all discrepancies. Discussions continued until

both members agreed on the patterns in the data. The researchers further refined the patterns identified during the second level coding by combining them into aggregate dimensions that both researchers believed represented the data. We then examined the results in light of theory. It was at this point we realized the link between our findings and salience, specifically, as it was operationalized in Mitchell et al.'s (1997) stakeholder salience model.

Results

Important Email

A summary of key findings relating to the factors considered when evaluating an email's importance that emerged from our analysis of the interview data are shown in Table 4-1 (on the next page). The knowledge workers in our sample identified 26 things (i.e., first-order codes) that they considered when determining whether or not an email was important. Further analysis of the data showed that the characteristics of important emails could be described in terms of who sent the message ($n = 68$), the content of the message (i.e., what it was about) ($n = 79$), and both who sent the message and the content (i.e., the who and the what) ($n = 22$). A complete list of the responses included within each of these second order codes is provided in Tables 4-1.

Urgent Email

A summary of the key findings relating to the factors considered when evaluating an email's urgency that emerged from our analysis of the interview data are shown in Table 4-2 (immediately following Table 4-1). The knowledge workers in our sample identified 16 things (i.e., first order codes) that they used to determine the urgency of an email. Further analysis of the data determined that the characteristics of urgent emails

Table 4- 1: Factors Considered when Evaluating an Email's Importance

Second Order Codes	First Order Codes (with Aggregate Themes)
	An important email is either: (1) from someone with legitimacy and perhaps power, or, (2) deals with a legitimate issue that may be urgent
Who (n = 68)	Legitimate (n = 25): <ul style="list-style-type: none"> • Work team member (n = 10) • A close friend; (n = 6) • A direct report (n = 3) • An organizational representative (e.g., HR, IT, Finance) (n = 3) • An external contractor (n = 2) • The Union (n = 1)
Content (n = 79)	Legitimate/Power (n = 43): <ul style="list-style-type: none"> • Anyone above you in the hierarchy (e.g., immediate manager, your manager's manager, senior management) (n = 26) • An immediate family member (n = 10) • A client (n = 7) Legitimate: (n = 49) <ul style="list-style-type: none"> • Anything work related (n = 15) • Explicitly flagged as important in subject line (work or personal) (n = 10) • Information that will impact informant's ability to do their work (n = 9) • Deals with a personal matter (n = 6) • Does not require a response but is sent to keep informant in the loop (n = 6) • Other (Involves a task that impacts many people; any issues that are of consequence to the organization) (n = 3)
Who and Content (n = 22)	Urgent: (n = 23) <ul style="list-style-type: none"> • Anything with a deadline (or time-sensitive) (n = 16) • Explicitly flagged as urgent in the subject line (work or personal) (n = 7) Legitimate/Urgent (n = 7): <ul style="list-style-type: none"> • Anything that needs to be actioned immediately (e.g., suicidal employee, threatening comments, colleagues work cannot start until you do something) (n = 7) Legitimate /Legitimate (n = 11) <ul style="list-style-type: none"> • From a team member or co-worker and contains information that is critical to informant's ability to do their job/a colleague's ability to do their job (n = 7) • From a sender with legitimacy which relates to an issue which will negatively impact the informant's relationship with the sender if the issue outlined in the email is not immediately dealt with (n = 3) • From a work-related contact who rarely sends the informant an email (n = 1) Legitimate/Power (n = 10): <ul style="list-style-type: none"> • From a client or someone above you in the hierarchy -- involves an issue where a legitimate "who" will be negatively impacted if the matter outlined in the email is not dealt with immediately (n = 5) • From a client or someone above you in the hierarchy and regards a complaint (n = 3) • From client or someone above you in the hierarchy which relates to an issue which will negatively impact the informant's career if the issue outlined in the email is not immediately dealt with (n = 2) Legitimate/Urgent (n = 1): <ul style="list-style-type: none"> • It is going to negatively affect a legitimate someone if the issue outlined in the email is not immediately dealt with (n = 1)

Note: Multiple responses allowed

Table 4- 2: Factors Considered when Evaluating an Email's Urgency

Second Order Codes	First Order Codes (with Aggregate Themes)
	An urgent email is that is either: (1) from someone with both legitimacy and power, (2) or that deals with an issue that is urgent (and may also be legitimate and/or sent by someone with power).
<p>Who (n = 29)</p> <p>Content (n = 48)</p> <p>Who and Content (n = 21)</p>	<p>Legitimate/Power (n = 29):</p> <ul style="list-style-type: none"> • Anyone above you in the hierarchy (e.g., immediate manager, your manager's manager, senior management) (n = 19) • Client (n = 8) • Immediate family member (n = 2) <p>Urgent (n = 34):</p> <ul style="list-style-type: none"> • Anything with a deadline (or time-sensitive) (n = 15) • Explicitly flagged as urgent in subject line (n = 9) • Conveys the urgency of the message by clearly conveying within the message why the issue is time-sensitive/an emergency (n = 7) • Includes a request to talk to informant on the phone (n = 2) • An issue where the image of the organization is on the line) (n = 1) <p>Legitimate/Urgent (n = 14):</p> <ul style="list-style-type: none"> • Anything that needs to be actioned immediately (e.g., suicidal employee, threatening comments, others work cannot start until you do something, legal issues) (n = 11) • Involves correcting an incorrect message that was sent out previously (n = 3) <p>Legitimate (n = 9):</p> <ul style="list-style-type: none"> • From a Team Member or Co-worker and contains information that is critical to your ability to do your job/a colleague's ability to do their job (n = 8) • From a work-related contact who rarely sends the informant an email (the fact that this person rarely sends the informant an email makes the content of the message, whatever it is, important (n = 1) <p>Legitimate/Power (n = 4):</p> <ul style="list-style-type: none"> • From a client or someone above you in the hierarchy and regards a complaint (n = 4) <p>Legitimate/Power/Urgent (n = 8):</p> <ul style="list-style-type: none"> • From a client or someone above you in the hierarchy - involves an issue where a legitimate "who" will be negatively impacted if the matter outlined in the email is not dealt with immediately (n = 4) • From client or someone above you in the hierarchy which relates to an issue which will negatively impact the recipient's career if the issue outlined in the email is not immediately dealt with (n = 2) • From a sender with legitimacy and which relates to an issue which will negatively impact the recipient's relationship with the sender if the issue outlined in the email is not immediately dealt with (n = 2)

Note: Multiple responses allowed

could be described in terms of who sent the message (n = 29), the content of the message (n = 48), and both who sent the message and the content (n = 21). A complete list of responses that were included within each of these second order codes is provided in Table 4-2. While we note an overlap in the second order codes typifying important and urgent

emails (who, content, and who/content), in most cases the first level codes within these groupings differed substantively. For example, the who sending an important email list included a list of seven different stakeholder groups while the who sending an urgent email referred to only senior management, clients, and immediate family members. It should be noted that while we did not ask our participants about urgent and important emails, many of our informants used virtually the same words to describe an email that they considered urgent as they used to explain one that they considered important (i.e., overlap in the who and content). All emails where important and urgent descriptors overlapped were, therefore, considered to represent communications displaying both characteristics.

Discussion of Findings

Our findings support the notion that employees use ideas similar to those encapsulated in Mitchell et al.'s (1997) operationalization of stakeholder salience when evaluating an email as important and/or urgent. Specifically, they made judgements on the importance and urgency of a work-related email in terms of the power of the sender (who the email is from) the legitimacy of both the sender and the message (who the email is from and the content of the message in terms of the level of consequences, impact, and risk), and urgency (whether the content of the message was time-sensitive in some way)—all of which are constructs used in Mitchell et al.'s (1997) model. We adapted our original theoretical framework to incorporate the results of our data analysis into a framework that can be used to describe how knowledge workers assess the emails they receive (See Figure 4-3 on next page). This framework, along with relevant ideas from

Figure 4- 3: Important/Urgent Email Framework

		Urgent Email	
		Low	High
Important Email	High	<p>Who: Legitimate A close friend A contractor A direct report A work team member The union Organizational representative (e.g., HR, IT, Finance)</p> <p>Content: Legitimate Explicitly flagged as important in subject line (work or personal) Deals with a personal matter Does not require a response but is sent to keep recipient in the loop Information that will impact recipient's ability to do their work Involves a task that impacts many people Any issues that are of consequence to the organization Anything that relates specifically to recipient's work</p>	<p>Who: Power and Legitimate Immediate family member, anyone above recipient in the hierarchy (e.g., immediate manager, your manager's manager, senior management), client – content is less important with a powerful who</p> <p>Content: Legitimate and Urgent Anything that needs to be actioned immediately Someone will be negatively impacted if the issue outlined in the email is not immediately dealt with Involves correcting an incorrect message that was sent out previously (i.e., wrong information was sent)</p> <p>Who (Legitimate) and Content (Urgent) <i>Who</i> Team member or co-worker: <i>Content</i>: Missing a work-related deadline <i>Who</i> Team member or co-worker: <i>Content</i>: Information that is critical to recipient's ability to do their job/a colleague's ability to do their job <i>Who</i>: Work-related contact who rarely sends the recipient an email: <i>Content</i>: The fact that they rarely contact the person makes their content, whatever it is, legitimate <i>Who</i>: Sender with legitimacy: <i>Content</i>: recipient's relationship with the sender will be negatively impacted if the issue outlined in the email is not immediately dealt with</p> <p>Who (Power, Legitimate) and Content (Urgent) <i>Who</i>: Client, someone above recipient in the hierarchy; <i>Content</i>: Complaint from client <i>Who</i>: Client, someone above recipient in the hierarchy; <i>Content</i>: legitimate "who" will be negatively impacted if the matter outlined in the email is not dealt with immediately <i>Who</i>: Client, someone above recipient in the hierarchy; <i>Content</i>: Recipient's career will be negatively impacted if issue outlined in the email is not immediately dealt with <i>Who</i>: Organization; <i>Content</i>: Image will be negatively impacted</p>
	Low	<p><i>Who</i>: No power, no legitimacy <i>What</i>: No legitimacy, no urgency</p>	<p>Content: Urgent Explicitly flagged as urgent in subject line (work or personal) Anything with a deadline (or time-sensitive) Conveys the urgency of the message by clearly conveying within the email why the issue is time-sensitive/an emergency Includes a request to talk to the recipient on the phone (sender has not been able to get hold of them any other way)</p>

Mitchell et al.'s (1997) stakeholder salience model (Figure 4-2) will act as a guide to our discussion of our findings.

In the sections below, we focus on our findings with respect to what makes an email: high in importance but not urgent, high in both importance and urgency, high in urgency but not importance, and what our thinking is on emails with neither importance or urgency.

What Makes an Email Important – but Not Urgent?

Examination of the interview data helps us better understand the factors that lead knowledge workers to evaluate an email as being important (i.e., conveys information of great significance, consequence, or value to the recipient) but not urgent (i.e., does not require swift action). More specifically, we note (see Figure 4-3) that importance seems to be a function of who is sending the email and what the email is about (i.e., content). Details on each are given below.

Who. Knowledge workers consider who is sending email when considering whether an email that they received is important. Who makes an email important? Senders uniquely mentioned in discussions of what makes a message important included a close friend, a direct report, a work-team member, a contractor, the union, and someone who represents the organization. These individuals can all be considered to have a legitimate claim on the email recipient's time but do not have any real power over the recipient - at least at work (Mitchell et al., 1997). This observation implies that the context in which the email is received is important (received at work) as well who it is from (legitimate sender) in the determination of importance.

We note that the majority of our informants did not consider emails from family or friends to be important (n = 10 identified a family member and n = 6 identified a friend as an important who). One informant stated: “*Most correspondence between friends are not that important*” while another added context by stating, “*Family and friends are not the priority while at work*”. Others observed that neither their family nor their friends would send them an important email but would instead use some other media to contact them, “*Email from friends and family aren’t important [...] if it is important or urgent friends and family will use phone or some other quicker way to get in touch*”. The fact that all informants were interviewed when they were at work seemed to influence which senders they found salient – a finding that is consistent with Ocasio’s (1997) principle of situated attention.

Content. The results also support the idea that knowledge workers use the content of an email message to make judgements on its importance. More specifically our data shows that our respondents used a two-step process to evaluate whether or not the email has a legitimate claim on their time (see Figure 4-3). In all cases, the informants first impressions regarding importance of the content were obtained from the subject line of the message. Additional information was then obtained by scanning the message itself. Details on each of these two steps are provided below.

The subject line. What types of information in the subject line of an email make knowledge workers view the message as important? First, most of the informants agreed that they considered a subject line that referred specifically to a work-related project, task or event that the informant perceived to be important (typically they were working on this project) was a good indicator of the importance of the email. Many also thought that any

email with the word “important” in the subject line of the message was probably important. There was less agreement, however, in terms of how respondents interpreted subject lines that contained words like “urgent”, “action item”, or the high priority exclamation mark. In these cases a majority of our informants viewed these types of subject lines with a certain degree of skepticism, noting that they required additional information either about who the message was from (“*people who know me use the word ‘urgent’*”) or what was in the message (“*unless the content of the message itself is described I will ignore it until I have time*”) before they decided that the message was in fact important. A third group of informants said that within their group they had the understanding that if the content of the message was important then that word should be placed in the subject line. These comments emphasize the relevance of context to the determination of email importance and are aligned with Mazmanian’s (2013) concept of heterogeneous practices within organizations (different sub-groups within the organization having different practices than the rest of the organization with regard to email/communication expectations).

Many informants pointed out that the person sending the message helped determine whether indicators like the high priority exclamation mark, all caps, or the word “urgent” were indicators of an important email. Some stated that if the message was from someone who always used the “*high priority exclamation mark*” then the “*high priority exclamation mark*” was meaningless in determining the importance of the email. If, however, the message was from someone who almost never used this type of indicator then they evaluated the message as one that was very likely important. The way one informant described it reminded us of the story “The boy who cried wolf” – people have

expectations of the extent to which an email's subject line accurately represents the content/importance of an email based on this person's past behaviour.

Content of the message. Our informants attributed importance to an email message if the content touched on one or more of the following topics: (1) anything that relates specifically to their work (e.g., includes a work-related meeting request, is a follow up request for work-related information, is a reply to a request for guidance on a work-related matter), (2) deals with a personal matter, (3) impacts their ability to do their work, (4) involves a task that would impact a number of people, (5) includes information that keeps the recipient in the loop with respect to important work-related matters, and (6) is an issue of consequence to the organization. In all cases the content of the message has legitimacy (i.e., perceived to be desirable, proper, or appropriate) as defined by Suchman (1995).

Emails whose contents were related specifically to an employee's job, and (for many) their personal life, were generally considered to be important. A review of the features of emails informants described as important shows that in all cases the content of the message could be expected to have an impact on either the recipient of the message or legitimate others. For example: *"if I have not spoken to a friend in a while I will respond back sooner because I want to maintain the relationship"*, *"a request for guidance or information"*, and *"I get copied on a lot of email, just FYI to keep in the loop, not urgent but they are important because they keep me informed"*.

Finally, as an example highlighting the key role context plays in the email evaluation process (i.e., situated attention), we provide a quote from one employee who said, *"Frivolous emails and IMs are important when not busy. It's good for down time.*

However, I don't want the distraction when busy with work". This informant stated that in situations where he had a little time (i.e., did not have to deal with any legitimate work-related emails), his priorities shifted to emails which were legitimate in another context (e.g., relationship, entertainment, etc.). In other words, emails with unimportant content could be considered important if they helped maintain relationships and were received at an appropriate time from a legitimate stakeholder.

What Makes an Email Both Important and Urgent?

What makes an email both important and urgent? Our analysis identified three features of an email in this quadrant of our typology: it was sent by a person who the email recipient viewed as having power (i.e., who), or its content was considered to be both legitimate and urgent (i.e., content), or it came from a legitimate (and sometimes powerful) sender and involved a time-sensitive issue (i.e., who and content). As the *content of the message alone* discussion is very similar to the *content of the message from an important who* discussion, we examine both under the *Who and Content* section below.

Who. When analyzing the interview results, we noted that many informants thought that an email was urgent and important if it came from a sender who had both legitimacy and power (i.e., had the ability to get the recipient to do something that they would not otherwise do) as defined by Mitchell et al. (1997). All legitimate "whos" with power mentioned by our informants were either people who were above the recipient in the organizational hierarchy, their clients, or (in two cases) their immediate family. For example: "*Anything from the boss*", "*Anything from my boss' boss*", "*Something from a client*", "*Anything from a member of senior management*", and "*An email from the*

president”. In these cases, respondents said that they did not care about the content of the email, but instead treated it as both important and urgent because of who it was from. In other words, our informants interpreted an email from someone who was above them in the hierarchy (i.e., someone with a degree of power and influence over them) as both important and urgent.

Our data also suggests that an influential “who” can make something urgent and important without the content of their message being legitimate. They create this urgency by expressing it either within the subject line or in the content of the message. Informants identified two types of emails that they perceived as important and urgent but not legitimate: careless requests from senior management and abuse of power. As an example of carelessness, we refer to the case of a manager who stated that he would like it if upper management would think through emails before they sent them out. He gave the following example:

I get messages from VPs saying that they expect some action by a specific deadline. So, I and the other managers email our staff and get them to work on what the VP asked for. Only to have the VP change their mind on what is being done or decide that the project can wait, and the deadline is moved. This means that a retraction needs to be sent out [...] I would like it if there was some thought put into the emails and projects before they send them out.

Initially this email was evaluated by the manager as being a legitimate/urgent request from a powerful/legitimate stakeholder. Upon consideration, however, it was an illegitimate/urgent request from a powerful/legitimate stakeholder.

Several informants talked about abusive emails. For example, one informant talked about a powerful/legitimate stakeholder who sent her emails asking her to stop what she was working on to urgently find a piece of “*trivial information*” (respondent’s perceptions of the request). While she did as requested (because of the sender’s power/legitimacy) she did so grudgingly, observing that “*Anything that a person can answer on their own should be answered on their own. They can look it up on Google just as easily as I can*”. The employee who gave this quote was being asked repeatedly to look up trivial information which had nothing to do with her job (in her opinion) for someone they perceived as having power over their career. The occasional request like this, stated correctly, would no doubt be considered a favour. Repeatedly requesting an employee waste their time without gain or reward for the employee, however, was considered by the employees who reported this issue to be an example of an abusive email.

In the case of careless and abusive emails we reasoned the legitimacy of these stakeholders seemed less relevant to how the email was perceived than did the fact that these stakeholders had power and influence over the recipient. They are legitimate stakeholders, but their legitimacy is not what places their emails into the important/urgent email category. Our findings suggest, therefore, that power trumps legitimacy in terms of how knowledge workers prioritize email messages.

Who and content. Also included in the important/urgent quadrant of our email typology were emails sent by a legitimate stakeholder (i.e., a team member, a co-worker, a work-related colleague who rarely emails the recipient, a client, someone above them in the hierarchy) where the content of the message was considered both legitimate and

urgent (e.g., missing a work-related deadline; information that is critical to recipient's ability to do their job/a colleagues ability to do their job, a complaint from a client, something that will have a negative impact on someone if it is not dealt with immediately). In all cases, the content of email messages considered important/urgent by the recipient was associated with the legitimacy and urgency constructs as identified by Mitchell et al. (1997). Our informants used the same two-step process discussed earlier to render judgement on these messages (i.e., the content of the message was evaluated by first looking at the subject line of the message and then the message itself was examined).

Subject line. Respondent's frequent mention of the word "*urgent*" when asked how they determined the importance of an email message was initially confusing and we sought clarification from the respondents by asking them if they meant to give the word "*urgent*" in the subject line as an example of an indicator of an important email or if they wanted it to be viewed as an indicator of an urgent email only. Their answer was almost always that they interpreted the word urgent as an indicator of an important email that could potentially also be urgent. They justified their response by noting that people generally do not send urgent/unimportant emails with the word "*urgent*" in the subject line. This justification suggests that the receiver of an email interprets the word "*urgent*" in the subject line as an indicator that the sender of the message believes the issue is important and urgent. The receiver still needs, however, to judge whether the email is important as well as urgent for themselves. They conduct this evaluation by examining the content of the message.

Content of the message. Employees described important/urgent email content from a legitimate who in terms of the possible negative impact on themselves or others

along with an explicit mention of time urgency. When asked to explain how an urgent email differed from an important one, a respondent stated,

It's the same factors that make an email important as make it urgent, except its stuff that has to be dealt with immediately. A client complaint, a deadline, something that is going to escalate into something bigger if it's not dealt with now.

A few examples of these type of emails are: “anything related to the reputation of my employer”, “if it involves scheduling how personal time will be spent (e.g., sporting events)”, and “if the sender cannot proceed with what they are referencing in the email without a response”. Many of the statements regarding emails which fell into this category explicitly mentioned negative consequences to either the recipient of the email or someone else if the issues outlined in the message were not addressed immediately.

Some of our respondents referred to the content of the email alone (without a legitimate who) in terms of importance and urgency (See Figure 4-3). In these cases, the emails outlined how either the email recipient and/or someone else would suffer negative consequences if the issue was not addressed immediately (i.e., content was legitimate and time-sensitive). For example, “Someone will be negatively impacted if the issue outlined in the email is not immediately dealt with” and “involves correcting an incorrect message that was sent out previously” (implying that there could be negative consequences if the information is not corrected). We also included, “Anything that needs to be actioned immediately” in the urgent/important cell of our typology as the examples given when we asked participants to expand on what they meant were all what we would consider to be legitimate and involved negative consequences (e.g., a suicidal employee,

threatening comments, others work cannot be started until you do something, and legal issues). Finally, we note that not only can our informant's descriptions of important and urgent emails be explained using Mitchell et al.'s (1997) framework, they are also consistent with how the project management literature classifies risk as an assessment of the impact and the probability of occurrence (Ward, 1999).

What Makes an Unimportant Email Urgent?

Analysis of our data shows that an email's urgency is a function of the message's content rather than who sent it. More specifically, we note that our informants only consider an email message to be urgent if it is time-sensitive in some way or another. Respondents talked about urgency in terms of due dates, or the expectations created by the organization/subgroup/individual. The strong link between urgency and organizational expectations with respect to response time came up several times (i.e., time urgency) in our analysis of the data. For example, one employee said, *"[Organization]'s policy makes answering email within 48 hours urgent"*. Another noted: *"We have a working agreement that any email from each other [in reference to the group he works with within the organization] are paid attention to. I may need them to do something for me later, so their emails are answered with urgency"*. Another said, *"I am expected to respond as soon as possible"*. One employee in recognition of creating expectations stated, *"I try not to respond to messages right away because people get used to it and expect an immediate response in the future. Also, I like to think things over before answering"*. This respondent recognized that by answering too quickly when he had the time to do so was increasing his colleagues' expectations of how quickly he would respond to their emails and their expectations were increasing his time urgency.

He, therefore, decided to modify peoples' expectations by adding a delay in his response time so that when he needed to work on more important tasks his own time urgency with respect to answering less important emails would be lower (Landy et al., 1991).

Analysis of our data also shows employees have difficulty disentangling the urgency (time-sensitivity) of an email and its importance. When asked for examples of urgent/unimportant emails, everyone in our sample had great difficulty coming up with an answer. One employee stated, "*Urgency is always based on need*", implying that urgency without need or importance, is not urgent. Another employee we pressed to give an example of an urgent email said, "*I do not get many truly urgent emails*". This same employee stated that, "*what is urgent to someone else may not be a high priority for me*". This statement implies that while this employee recognized the urgency (time-sensitivity) of the email message, she did not view it as being very important (i.e., it was low on power and legitimacy). We interpreted our findings as an indication that emails which deal with issues, information, or tasks that are perceived as being time-sensitive to the sender of the email may not be viewed as such by the recipient of the message. This interpretation is consistent with Mitchell et al.'s (1997) view that urgency is defined by the decision maker (in this case the email recipient).

Further analysis of the data suggests that "who", on its own, does not make an email urgent. Rather, our findings suggest it is the content of the message which determines urgency with the main indicator here being some element of time-sensitivity (i.e., time pressure) or pressures that can be linked to structural attention such as image management. The following is an example of this second type of urgency: "*I answer emails within my department immediately because it makes me look better*". What "who"

appears from our data to do is change the salience and the perceived importance of the email. The more perceived influence the sender has over the recipient of the email, or the greater the interdependence between the sender and the recipient, the more salient the email and the more attention it will receive. In other words, the “who” makes the email important even if the content of the message is not urgent and unimportant, but “who” alone does not affect time-sensitivity. Rather, the “who” makes checking the content of the email urgent. As one interviewee stated, “*Who it is coming from makes me look at the content to decide if it’s urgent*”. It is for this reason that we included email messages sent from a powerful who in the important and urgent quadrant of our typology.

Unimportant/Not Urgent

During the interviews, very few of our respondents talked about emails that had content which was both unimportant and not urgent. This fact is not that surprising given that our interview questions asked what makes emails important or urgent. As mentioned, a few respondents did suggest that email from family and friends were unimportant/not urgent, however, we suspect that these responses were more a function of situated attention (the interviews were done when the informant was at work) and might not hold under different circumstances (i.e., when there is a high risk of negative consequences). We extrapolate from our findings, therefore, and assume that emails low in both urgency and importance would be from senders without legitimacy or power and that the content of the message would also not have legitimacy or urgency from the perspective of the receiver.

Conclusions

Results from this study support the following conclusions. First, the evaluation of the importance and urgency of any given email is context specific. This conclusion makes it challenging to study these constructs and to offer suggestions on how companies and individuals can best manage this form of communication.

Second, the employees who we interviewed talked about the important and/or urgent email constructs in terms that were analogous to those used by Mitchell et al. (1997) in their typology of stakeholder salience. More specifically, employees seem to define an email's importance by looking at who sent the message (powerful and/or legitimate stakeholders) and the content of the message (legitimacy).

Urgency, on the other hand, was described in virtually the same way as importance with a higher level of immediacy due to risk or consequences. Of note is the fact that respondents had a great deal of difficulty separating urgency from importance (see the high importance/high urgency quadrant of Figure 4-3). We did have statements which fit into the low importance/high urgency quadrant of Figure 4-3, but these statements are somewhat vague. Statements such as, "*what is urgent to someone else may not be a high priority for me*" imply that urgent emails (e.g., anything with a deadline) still require some level of importance to the receiver to be a priority. This implication is consistent with Mitchell et al. (1997, p. 887) argument that urgency "exists only when two conditions are met: (1) when a relationship or claim is of a time-sensitive nature and (2) when that relationship or claim is important or critical to the stakeholder". Our findings leave us wondering, in fact, if there is such a thing as a salient email that falls outside the power and/or legitimacy sections of Mitchell et al.'s (1997) stakeholder

salience model (See Figure 4-2). In our data we found none but this issue is definitely an area which would benefit from further study.

Third, many employees are checking emails regularly because they perceive that there is an expectation that they need to respond quickly. This expectation can be conveyed by the organization “[*Organization*]’s policy makes answering email within 48 hours urgent”, by their work group “*We have a working agreement that any email from each other (in reference to the group he works with within the organization) are paid attention to. I may need them to do something for me later, so their emails are answered with urgency*”, or can be self-inflicted for those employees with a high sense of time urgency “*I am expected to respond as soon as possible*”. This expectation connects email salience to Ocasio’s (1997) structural principle (i.e., policy, culture, procedures, etc.). The issue we see here is that these expectations need to be clearly managed at the organizational level and enforced by management otherwise those with a high sense of time urgency will feel the need to answer as soon as possible, what Mazmanian, Orlikowski, and Yates (2013) refer to as the autonomy paradox (i.e., without clear guidelines the expectations of employees on email behaviour such as, how quickly an email is responded to and whether it is answered during non-work hours, will increase).

Finally, those in positions of power (e.g., managers, senior executives, etc.) need to be very mindful about the emails they send out as these emails will be perceived as highly salient and take priority over other emails, and work in general, that employees are spending time on. The more power you have over others the greater the need to, think before you send.

Limitations and Future Research

A limitation of this study touched upon earlier is that the focus of the interviews was on what makes an email important or urgent and not one what constitutes an unimportant or not urgent email. The absence of the constructs of interest might have been as enlightening as their presence and certainly would have yielded more interesting results had we thought to pursue it at the time.

Future email studies into important email and urgent email could explicitly ask what constitutes an unimportant email and/or not urgent email. They could even ask participants to juxtapose the extremes of the constructs (i.e., important email vs unimportant email and urgent email vs not urgent email) as a way to further refine our understanding of the constructs.

Another limitation is that the study was conducted through respondents' place of work. As such, respondents' answers were very much work focused and some had a great deal of difficulty assigning importance to personal emails.

Future email research could focus on recruiting respondents outside of the workplace. As our research was somewhat limited to the workplace setting due to how we recruited our participants, future researchers could recruit respondents from other settings. Researchers could, for example, recruit and interview parents picking up their children from a daycare setting, or recruit and interview people visiting their parents in an elder care facility. The idea being to take advantage of Ocasio's (1997) first two principles (focus of attention and situated attention), if participants are focused on their children or their parents their priorities might be more on their children or their parents and less on their work.

Finally, we note that the fact we asked employees about the emails they do receive and ignored asking them about the kind of emails they should be receiving limits our analysis. It is possible that employees possess valuable insights on the kind of emails they should be receiving to facilitate their work that they would be willing to share if asked.

Future email research should not only focus on what is happening, but also what should be happening. Asking employees what type of important and/or urgent emails they should be receiving could lead to insights how to mitigate organizations email issues (e.g., perhaps missing pieces of information in the goings on in other parts of the organization are resulting in more clarification emails than there should be). It could also reveal areas where organizations are perhaps dropping the ball as email communications provide an insight into what organizations are paying attention to (e.g., employers may not be holding some employees accountable for doing their work because no one is seeing if it is done, this lack of accountability, in turn, could be generating more issues and email in other parts of the organization to compensate).

Key Implications

The results from this study have a number of important implications for organizations who are concerned with effective email management. The findings point to the need for individuals, organizations, and perhaps societies to use Ocasio's (1997) principle of structural distribution of attention to help clarify priorities, goals, and expectations so that behaviour which leads to desired goals will be more salient and given more attention (Latham & Locke, 2007). If employees have a set of criteria that they can use to assess the importance and urgency of the emails they receive, they can use these

criteria as a lens through which to make an initial evaluation of email importance. Care should be taken when creating this set of “important” criteria to align what the individual, group, organization, and society consider to be important. Failure to establish these “important” criteria could result in wasted time, interpersonal and between group conflicts, and perhaps even harmful or illegal activities. This suggestion is in line with Covey’s (1990) idea of making the important/not urgent items a higher priority by making them somewhat more urgent and addresses Mitchell et al.’s (1997) claim that legitimacy without some level of power or urgency will not be salient.

Increasing the urgency of important emails would certainly raise the salience of these messages for employees and could have the benefit of tackling important issues before they become emergencies. Ocasio’s (1997) principle of structural distribution of attention suggests that this increase of urgency could be accomplished by making it clear what the organization considers “mission critical”. For example, organizations could create policies with respect to email use or change the structures within the organization in such a way that the employees know what is salient to their employer. For these types of changes to be achieved there needs to be a clear picture of what is considered important in the absolutist sense. If the goals (i.e., the absolutist sense of what is important) are not clear, then the priority (i.e., the level of salience) given to an email will be based on the employee’s context at the time the emails come in (Latham & Locke, 2007). If, however, employees have a clear idea of what they are trying to achieve, what the organization is trying to achieve, and perhaps even what society considers worthwhile (and they know how to achieve them) then important emails are more likely to be salient to the recipient as they are relevant to those goals.

Covey (1990) also suggests that people get rid of anything which falls in the unimportant portion of the matrix as they are a waste of time. Our informants had a great deal of difficulty separating importance out of urgency when discussing their emails. Our findings support Mitchell et al.'s (1997) argument that importance is required for something to be considered urgent. Our data adds to this discussion with the observation that importance is limited in our findings to power and legitimacy (at least in terms of email). This observation implies that any emails in the urgent only quadrant must contain some level of importance and reinforces our recommendation that organizations and employees spend time articulating what makes an email important and how such emails should be handled. While this recommendation is not entirely novel, the findings from this study support the need for these types of discussions to be held.

Finally, we note that emails high in both importance and urgency often describe a situation where either the recipient of the email, their work group, or their organization are at risk. To reduce the amount of time spent by employees in this quadrant (a recommendation made by Covey), both individuals and organization need to identify ways to reduce and mitigate the risk of these consequences occurring. This recommendation could be accomplished by things like: not leaving work/projects to the last minute, especially when help is needed from co-workers (I need X done by Monday morning is not a welcome email on Friday evening); more carefully crafting the emails sent out to ensure that they are clearly written and unambiguous; and having people in positions of power putting thought into the request they make of subordinates. These suggestions are, we recognize, easier to articulate than to put into practice. That being said, we note that inattention to the issues identified in our study condemn knowledge

workers, their families, and their employers to a future not unlike the past where email overload is omnipresent and employee well-being continues to decline.

Chapter 5: Paper 2

The second paper's main objective is *to develop and empirically validate a measure that will allow the classification of email employees send/receive into important and urgent constructs based on what is learned in our first paper*. This objective fits into the omnibus objective of this thesis by creating constructs of email type which can be measured and analyzed from multiple theoretical perspectives. The findings from the previous paper (see Chapter 4) help inform the measures presented in this paper by provided a deeper understanding of what the items in these measures represent (i.e., they are expressed in terms of power, legitimacy, and urgency). The interview script and the two surveys used for this paper can be found in the Appendices. Specifically, Appendix A (Interview script), Appendix B (prototypicality survey), and Appendix C (survey used to evaluate the psychometric properties of the important email and urgent email measures).

5.1 Abstract

This paper reports on the development and validation of two measures that categorize the email employees send/receive into important (of consequence) and urgent (time-sensitive) constructs. Buss and Craik's Act Frequency Approach (AFA), which uses a mixed-methods "imposed etic-emic-derived etic" approach to scale development was used in this study. The AFA is considered to be a "useful technique" for creating constructs in situations where there is no existing measure of the domain of interest and/or when existing measures lack validity. Our six-item important email measure and our eight-item urgent email measure were both found to be reliable and valid measures of the constructs. Both constructs were found to significantly predict email overload. These

measures can be used by researchers and practitioners to identify key predictors of different types of email use, clarify how email use impacts outcomes of interest, and identify moderators and mediators of these relationships.

5.2 Measurement of Perceived Important and Urgent Email: An Employees' Perspective

“The average corporate worker spends a quarter of his/her work day on various email-related tasks. In comparison, the time spent in personal meetings accounts for about 14% of the typical day at the office, and phone conversations occupy only 9% of the typical workday.” (Radicati Group, May 2009, p. 4)

Over the last two decades, the amount of email employees send and receive has been growing at a staggering rate (Whittaker & Sidner, 1996; Fisher, Brush, Gleave, & Smith, 2006; Dabbish & Kraut, 2006; Grevet, Choi, Kumar, & Gilbert, 2014; The Radicati Group, 2017). Research in the area links email use to perceptions of role overload – the perception that one has “too many responsibilities and too little time in which to attend to them” (Higgins, Duxbury & Lyons, 2010, p 3) and perceived stress (Towers, Duxbury, Higgins & Thomas, 2006; Duxbury & Smart, 2011). Researchers also report that employees are not only feeling overwhelmed by the volume of email they receive, but that they associate email with role overload independent of the number of hours spent in paid employment (Barley, Meyerson, & Grodal, 2011).

In 2005, Ducheneaut and Watts critically examined the vast and diverse body of email research that had accumulated in the 30-year period prior to their review. They classified the email literature into three categories described using the following

metaphors: “email as a file cabinet”, “email as a production facility”, and “email as a communication genre”. They concluded their analysis by noting that despite the large number of studies undertaken within each of these three streams of email research, little is known about how best to address the ever-growing email problem.

This conclusion is borne out by the fact that statistics show that email use has increased in the decade since Ducheneaut and Watts (2005) published their review article. A recent report by the technology marketing research firm The Radicati Group (2018), reports that globally, the number of emails sent per day is expected to reach 281.1 billion in 2018. They note that over half the world’s population currently uses email and predict that the number of users will reach 3.8 billion in 2018

Claessens, Van Eerde, Rutte, & Roe’s (2007) review of the time management literature supports the idea that as our technologies increase our ability to meet people’s demands they also increases people’s expectations that their demands will be immediately met. These expectations result in employees being under pressure to finish work faster, to manage the lack of available time by reducing the time spent on non-productive activities (e.g., sleeping, personal time, etc.), or when possible doing these activities in conjunction with productive ones (e.g., eating lunch during a conference call). This link between time pressure and well-being has been recognized by previous researchers as being an integral part in outcomes such as stress (e.g., Hobfoll, 1989; Duxbury, Lyons, & Higgins, 2008; etc.).

Time is a precious resource that expires every day. Once time is gone, it's gone forever. Why then do people chose to spend so much of this precious resource dealing with email? What makes an email so urgent that it requires an employee’s immediate

attention? Alternatively, what makes an email important enough to justify spending time answering the email as compared to on other things? Unfortunately, the answers to these questions remain unknown. Our review of the literature uncovered a number of studies exploring a number of different drivers of email use including the availability of mobile devices (e.g., Murray & Rostis, 2007; Barley et al., 2011; Duxbury, Higgins, Smart, & Stevenson, 2014; etc.) and social and cultural norms within organizations (e.g., Mazmanian, Yates, & Orlikowski, 2006; Barley et al., 2011; Mazmanian, Orlikowski, & Yates, 2013; Mazmanian, 2013; Duxbury et al., 2014). We also identified a number of studies identifying email strategies designed to help users manage/organize their email use (e.g., Mann, 2007; Duxbury et al., 2014). Aside from our own work in the area (Authors, under review), however, we could find no research exploring the cues employees use to evaluate the emails that they send/receive as being something that requires them to devote time to this form of communication (i.e., an email relating to a matter that is urgent and/or important).

This study addresses this gap in our understanding by developing and empirically validating a measure that will allow the classification of email employees send/receive into important and urgent constructs. These measures can then be used by researchers and practitioners to identify key predictors of different types of email use, clarify how email use impacts outcomes of interest (i.e., well-being, email time management, etc.), and identify moderators and mediators of these relationships.

The important and urgent classifications used for our measures are theoretically based on Covey's (1990) time management matrix. Buss and Craik's (1980, 1981, 1983a) Act Frequency Approach (AFA) along with Cooper, Dyke, and Kay's (1990) validation

stage are used to develop and validate our measures. The paper begins with a brief review of relevant research in the area including how other researchers have conceptualized the constructs of important and/or urgent email in their research and the theory underlying our study - Covey's (1990) time management framework. The methodology section that follows provides the reader with a description of how the AFA (Buss & Craik, 1980, 1981, 1983a) was used in our research to construct and validate measures of the two constructs of interest: important email and urgent email. Results are then presented for each stage of the AFA process. The paper ends with a brief discussion of our measures and how we envision them being used by researchers and practitioners.

Literature Review

We begin this section by providing a brief review of research that addresses email importance and/or urgency. This review is followed by a short overview of the theoretical framework underpinning this study: Covey's (1990) time management matrix.

Important and/or Urgent Email

Our review of the literature uncovered only one study into what makes an individual perceive that an email is important – an etic study done by Dabbish, Kraut, Fussell, and Kiesler (2005). The authors took the position that an employee's assessment of an email's importance would be related to who sent the message and the content of the message. To test their hypotheses, they created the following 4-item scale of message importance: (1) "How important is this message for YOUR work?" (2) "How important is this message for THE SENDER's work?" (3) "How urgent are any deadlines associated with this message?" and (4) "How much work does this message require of you?" (Dabbish et al., 2005, p. 694). This scale was then embedded in a survey and

respondents were asked to quantify the importance of the last five non-spam emails they had received using a five-point Likert scale. The authors then asked the respondent to provide the following information for each of these five emails: (1) the relationship between themselves and the sender of the email (“work-related” or “non-work-related” contact), (2) the frequency with which they corresponded with this sender, (3) the total number of recipients the email had been sent to, and (4) the category/categories which best represented the content of the message: (a) “request for action”, (b) “request for information”, (c) “status update for an ongoing project or task”, (d) “request for a meeting or other communication with you, or response to a meeting request”, (e) “a reminder for a meeting, event, or upcoming deadline”, and (f) a “social greeting or thank you” (Dabbish et al., 2005, p. 694).

While Dabbish et al.’s (2005) categorization of important email is significant to our understanding of this issue it has a number of limitations which we seek to address in our own work. First, the basis for the four-item scale constructed by the authors is not provided. This limitation is unfortunate as the authors make a number of unsubstantiated assumptions about what constitutes an important email. The first question, for example, asks employees to rank the importance of the email to their work. While work may be important to employees, and in context of emails at work it no doubt is, this question excludes all other considerations of email importance for the employee (e.g., career related, family/friends, maintaining social network). The second question asks the employee to rank the email in terms of how important it is to the sender’s work. This question assumes that what is important to the sender is also important to the recipient, an assumption that is at odds with their hypothesis that the importance of an email is related

to who it is from. The third question conflates urgency with importance but offers no justification as to why this might be the case. The last question in their scale asks the employee to rank the email in terms of how much work it requires of them. Again, the authors are assuming that the amount of work associated with a message is a good indicator of its importance without any data or theory to back up their claim. Second, we note that Dabbish et al. (2005) do not provide any information on the reliability and validity of their measurement tool. Nor do they specify the anchors used for their Likert scale.

The email literature includes other research which informs our study into the important and/or urgent email constructs. Wainer, Dabbish, and Kraut (2011), for example, investigated why people prioritize opening certain emails over others which provides us with an idea of what they consider important and/or urgent. They found two themes that determined which emails a participant would give high priority to: the degree to which the message related to the employee's work (categorized based on the employee's analysis of who the message was from and the subject line) and the participant's curiosity with respect to the content of the email message (cases where the sender and/or content was unknown). This curiosity meant that the recipient had to open the emails to check if it was important and/or urgent. The curiosity condition only held when employees were not overloaded with other email (i.e., when they had time to satisfy their curiosity).

Importance of an email has also been discussed in the literature in terms of using automated systems to learn and prioritize emails for the user based on rules (e.g., Malone, Grant, & Turbak, 1986; Losee, 1989; Bälter & Sidner, 2002; Neustaedter, Brush, &

Smith, 2005). These systems are, however, designed to learn from each individual user (e.g., Bälter & Sidner, 2002) and have limited generalizability.

The email literature also discusses the importance and urgency of emails in terms of how people respond to emails. Tyler and Tang (2003), for example, found that if users thought a message was important/urgent they were far more likely to use email in conjunction with another medium such as telephone to respond. While this line of research does not go into any depth on how important and urgent constructs are defined, it does highlight the fact that email users are an excellent source of information for determining what constitutes an important and/or urgent email.

Covey's (1990) Time Management Matrix

Theoretically, our work is framed using Covey's (1990) time management matrix. The matrix, also known as Eisenhower's Urgent-Important Principle, distinguishes between importance (contributes to the achievement of the person's goals) and urgency (responsibilities that require immediate attention). Covey's matrix includes four different quadrants that are organized by importance (high, low) and urgency (high, low). Tasks and responsibilities in quadrant 1 are evaluated as both urgent and important and require immediate attention. Those in quadrant 2 are important tasks that do not require immediate action. Quadrant 3, on the other hand, includes tasks that are urgent, without being important. Finally, tasks included in quadrant 4 are neither urgent or important (i.e., do not contribute any value) and can be considered time wasters. Covey's matrix along with how it has been adapted for use in our study is shown in Figure 5-1 (see next page).

Figure 5- 1: Covey's (1990) Time Management Matrix Adapted to The Evaluation of Email Messages*

Important Email	High	Quadrant 2 Emails that impact the individual's ability to do their job, their career, their self-image, or how they are viewed by their colleagues, but do not require immediate action (e.g., something related to an important project that is due in the next couple of weeks)	Quadrant 1 Emails that impact the individual's ability to do their job, their career, their self-image or how they are viewed by their colleagues which require immediate action (e.g., something related to an important work project that is due soon)
	Low	Quadrant 4 Emails that serve no useful purpose for the receiver – attention to these emails leads to time being wasted/procrastination (e.g., mass communication emails that are only relevant to a specific person or group)	Quadrant 3 Emails that are not important in a strategic sense but require immediate action (e.g., request for information that is needed by a specific time)
		Low	High
		Urgent Email	

*Source: Adapted from Covey (1990, p. 151)

Covey (1990) posits that for people to become more effective, they need to organize their time so that they can devote more time to work that is important by spending less time on unimportant work. Extrapolating this advice to email use implies that to be more effective at their work, employees should spend less time on emails that are neither urgent or important so that they have more time in their day to devote to the important emails they receive.

Our search of the literature did not reveal anyone having previously used Covey's (1990) matrix as their theoretical framework as we are doing with this research study. Nor did we find anyone who used this matrix in conjunction with email use. We did, however, find quite a few articles that used the matrix to offer suggestions on how people can better manage their time (e.g., Haimes, 2001; Brunnicardi & Hobson, 1996; Jensen, Malcolm, Phelps, & Stoker, 2002) including several research studies which used Covey's framework (e.g., Clarke & Wilcockson, 2001; George, Dixon, Stansal, Gelb, & Pheri, 2008).

Methodology

Our review of the literature supports the need for research which takes an emic (i.e., based on the perception of the person evaluating the email) perspective with respect to the classification of email. With this point in mind we elected to use Buss and Craik's (1980, 1981, 1983a) Act Frequency Approach (AFA) to develop and empirically validate a research instrument that will allow the classification of email employees send/receive into important and urgent constructs. To address the main criticisms of the AFA (see Block, 1989; Moser, 1989; Cooper et al., 1990) we also use Cooper et al.'s (1990) "validation of the measure" stage in our study.

The AFA uses a mixed-methods "imposed etic-emic-derived etic" approach to scale development (Berry, 1969; 1989). Cooper et al. (1990) argue that the AFA is a "useful technique" for creating constructs in organizational behaviour research when there is no existing measure of the domain of interest or when existing measures lack validity. As our review of the literature uncovered only one unvalidated measure that could be used to evaluate the importance of an email message and no research

instruments at all to quantify the urgent email construct the AFA is an appropriate choice for creating our constructs.

This study follows the six steps of the AFA laid out by Cinite, Duxbury, and Higgins (2009). These six steps (see Table 5-1) include Buss and Craik's (1980, 1981, 1983a) original conceptualization of the method augmented by the stage recommended by Cooper et al. (1990) to validate the measure (Stage 3 in Table 5-1). Our approach adheres to Hinkin's (1995) stages for measure development based on the "best practices" from the literature.

Table 5- 1: Steps to Conducting AFA Research*

Stage 1: Act Nomination	
Step 1	Selection of research sites and employee groups within those sites that use email regularly (i.e., knowledge workers)
Step 2	Interviews with a sample of employees at each site to identify acts which typify an important or urgent email (Phase 1)
Stage 2: Act Prototypicality	
Step3	Administration of a "prototypicality" survey containing all nominated acts identified in Phase 1 to a sample of employees at each site. This survey asked participants to rank acts based on how prototypical they were to the constructs of interest
Step 4	Analysis of Stage 2 data to develop measures of important and urgent email
Stage 3: Analysis of Psychometric Properties of Measures	
Step 5	Administration of a measurement validation survey. This survey included demographic questions, the important and urgent email measures, and outcomes of interest used to validate our measures
Step 6	Statistical analysis of the survey data to further validate the important and urgent email measure.

*Source: Adapted from Cinite et al. (2009, p. 267)

The three stages of the AFA are as follows: (1) act nomination, (2) act prototypicality, and (3) analysis of psychometric properties of the measures (Howell, Shea, & Higgins, 2005; Cinite et al., 2009; Cinte & Duxbury, 2018). To accommodate

the fact that the outcomes of the first and second stages are the input for the following stage (i.e., the stages are accomplished sequentially and in order from one to three) and to increase the readability of the paper, we elected to structure this paper around the three stages of AFA. In each section we will present the information on how the stage was applied in our study along with the results from this stage of our study.

We note that Cinite et al.'s (2009) description of the AFA overlaps considerably with Hinkin's (1995) recommendations with respect to scale development. In the sections below, we highlight those areas where they differ. Finally, it should be noted that as we developed our scales of important and urgent email from the employees' perspective, we consider the unit of analysis, a case, to be at the individual level not the organizational level.

Stage 1: Act Nomination

Hinkin (1995) states that the item generation stage of measure development is the first, and most important, step in establishing content validity of the measure. Steps 1 and 2 in Table 5-1 describe how potential scale items are generated using the AFA approach. As noted by Cooper et al. (1990) one of the key strengths of the AFA methodology is the fact that this approach does an excellent job of ensuring content validity of the measures.

Step 1. One of Hinkin's (1995) issues with scale development is that often the participants selected for the study do not have enough knowledge about the topic being researched to provide meaningful information. To avoid this problem, we used theoretical sampling (Eisenhardt, 1989) to select a sample of knowledge workers (those employees who deal in information/knowledge—Drucker, 1959) who used email on a regular basis. We followed the lead of Dabbish and Kraut (2006) and operationalized knowledge

workers as white-collar managers and professionals under the assumption that such individuals regularly use email during their workday and can speak in an informed fashion on how they evaluate the messages that they send and receive in terms of the two constructs of interest: importance and urgency.

Initially two organizations (one public sector and one private sector) volunteered to take part in this study. Their involvement was motivated by their perception that email overload was an issue within their organizations. Knowledge workers from these two organizations participated in all stages of the AFA research. The sample of knowledge workers for our Step 1 interviews was identified as follows. First, the two participating organizations sent out an email to all employees describing the study and asking people in managerial and professional positions to volunteer to be interviewed. The request included a consent form as required by ethics. A random sample of volunteers from both organizations was then contacted by the researchers and an interview time arranged. Interviews continued until saturation, defined by Charmez (2006) as the point where we received no new information related to our research question, was reached.

Step 2. The act nomination stage was accomplished through semi-structured interviews with a sample of employees at each site ($n = 15$ at the public-sector firm and $n = 15$ at the private-sector firm). Six (2 from the private-sector firm and 4 from the public-sector firm) of the 30 participants from the sample were male. On average the participants estimated that they handled 111.8 emails (63.4 received, 48.4 sent) during a typical workday, the vast majority of which (87%) were work related. They also reported that they dealt with an average of 19.9 emails (14.8 received, 5.1 sent) during a typical non-workday. Most of these emails (71%) were not work related.

The act nomination stage uses an inductive item generation approach to create an exhaustive list of characteristics, or “acts”, that participants believed most typified an important email or an urgent email (Buss & Craik, 1983a). To this end we asked our informants the following two questions:

- What factors do you consider when deciding whether or not an email that you have received/sent is an important email? In other words, what factors would cause you to think that an email is significant or of consequence?
- What factors do you consider when deciding whether or not an email that you have received/sent is an urgent email? In other words, what factors would cause you to think that it is critical that you deal with a particular email immediately?

While the sent and received part of these questions were asked separately (i.e., first we asked about received messages then we asked about sent messages), during the analysis we noticed that responses were essentially the same for the two questions. Accordingly, we combined the responses into two groups: (1) factors that make an email that is sent/received important, and (2) factors that make an email that is sent/received urgent. Participants’ answers to these two questions were tabulated into two lists of acts: one representing important emails, the other characterizing urgent emails. These lists were then collaboratively reduced and refined by both researchers so that all redundant, vague, and irrelevant statements were removed. From this process we identified 43 unique acts which were considered typical of an important email and 46 unique acts which were considered typical of an urgent email.

Stage 2: Act Prototypicality

In this stage, we took the inventory of unique “acts” generated in Stage 1 of the AFA and used the procedures outlined by Cinite et al. (2009) (steps 3 and 4 in Table 5-1) to refine this list so that it only included the most prototypical examples of each act.

Step 3. Prototypicality ratings were achieved by administering an electronic survey (20-30 minutes in duration) to a subset of knowledge workers at each of the two organizations who participated in the first stage of this research (n = 52 from the private-sector firm and n = 34 from the public-sector firm for a total of n = 86).

The survey started with a description of the study including the goals of our research. The survey contained three sections: demographic information (e.g., age, gender, job type, number of emails received per day, etc.), the exhaustive list of unique important email acts (43 acts in total), and the exhaustive list of unique urgent email acts (46 acts in total).

The Stage 2 sample was well distributed with respect to age (15 respondents 25 to 34 years of age; 21 respondents 35 to 45 years of age; 28 respondents 46 to 54 years of age; and 21 respondents 55 to 64 years of age). The majority of respondents were female (n = 64) in professional (n = 63 professionals, n = 22 managers) positions. One participant provided only one piece of demographic data - their organization.

The average number of emails sent in a typical workday for our sample was 28 and the average number received was 40.7. The average number of emails sent in a typical non-workday for our sample was 4.8 and the average number received was 13.2. These data support the idea that these respondents have the knowledge needed to participate in this study.

Hinkin (1995) warns against the inclusion of reverse coded questions during measure development, noting that such items were found to have lower item loadings than their positive counterpart questions for the same factor. Following this advice, no reverse coded questions were included in the measures being developed in either of the surveys used in this study.

Hinkin (1995) also discusses the problems that can arise during scale development associated with having insufficient variance in respondent's answers for statistical analysis. This concern was addressed by using a 7-point Likert Scale in the survey used to determine prototypical acts (i.e., the Stage 2 survey). The prototypicality ratings for each item were measured by having employees rank each act using a Likert scale from 1 to 7. A "1" on the scale indicated that an act was not at all representative of an urgent/important email, a "4" on the scale indicated the act was somewhat representative of an urgent/important email, and a "7" on the scale indicated the act was very representative of an urgent/important email.

Step 4. Mean prototypicality ratings were then calculated for each item. None of the acts in our important email list received a mean score of less than 4 (Neutral). Only two of the acts in our urgent email list received a mean score of less than 4 (they were both higher than 3). Following the procedure outlined by Cinite et al. (2009) we considered those items with the highest mean scores (roughly the top quartile) to be the most representative of the important/urgent email constructs from the employees' perspective. We then undertook further analysis using the demographic information as recommended by Cinite et al. (2009) to see if there were any significant differences in prototypicality ratings associated with either job type or gender. None were found.

This stage of the analysis resulted in the identification of 12 acts which were considered prototypical of an important email and 12 acts which were considered prototypical of an urgent email. Of these acts 5 were found in both constructs. The measures developed at the end of the fourth step of the AFA included 7 items that were unique to our important email construct, 7 items were unique to our urgent email construct, and 5 items were shared between the two constructs and were potentially evidence of a third important and urgent email construct (see Table 5-2).

Table 5- 2: Prototypical Acts for Important and/or Urgent

<p>Important and Not Urgent</p> <ul style="list-style-type: none"> • A message from a client • A message from my immediate manager • A message that includes information/is a request for information that is critical to your ability to do your job • A message that explicitly states, in the subject line, that a reply or a deliverable is required by a certain date • A message that relates to client services • A message that comes from the organization and provides information on something that will impact my work (i.e., internet will be down, new policy) • A message that contains job-related instructions from me to those who report to me/ to me from management 	<p>Important and Urgent</p> <ul style="list-style-type: none"> • A time-sensitive message (i.e., one that requires you or someone else to take action immediately) • A message which relates to an issue where a client is (or will be) negatively impacted (especially if you do not respond) • A message which relates to an issue where a colleague at work is (or will be) negatively impacted (especially if you do not respond) • Is a follow up on a complaint from a client • Is a follow up on a complaint from an employee
<p>Unimportant and Not Urgent</p>	<p>Unimportant and Urgent</p> <ul style="list-style-type: none"> • Involves someone who is in distress • Is a follow up on a complaint from my manager • Involves sensitive issues (e.g., colleague is fired; client, colleague is emotional) • Involves trying to get a hold of someone to talk to them about something urgently • Is a request made by a senior manager • Involves correcting an incorrect message that was sent out previously (i.e., wrong information was sent) • A message that contains information you have been waiting for/provides information that others have been waiting for

Hinkin (1995) noted that during the scale development process researchers need to keep in mind the number of items to include in the measure. Too few items can negatively affect the content and construct validity of the scale as well as the internal consistency. Scales with too many items, on the other hand, can result in response bias and respondent fatigue. Hinkin (1995) states that measures should include at least three items to allow for the calculation of Cronbach's alpha but did not give advice on the maximum number of items to include in a measure. Both the measures identified in the next stage of the AFA had more than 3 items. Neither were onerously long.

Stage 3: Analysis of Psychometric Properties of Measures

This final stage of the AFA involves administering a survey to check the reliability and validity of the measures (see Steps 5 and 6 of Table 5-1). It should be noted that this stage, as Cinite et al. (2009) point out, has some overlap with Hinkin's (1995) second stage of scale development as the items are further refined in these steps through EFA and/or CFA. As EFA is used to assess possible subfactors within scales and because using EFA and CFA for item refinement are not part of Buss and Craik's (1980, 1981, 1983a) original conceptualization of the method, we followed the lead of Cinite et al. (2009) and placed our discussion of the steps we followed to validate the measures in Stage 3 of the AFA methodology.

We began by testing each item for normality using Kolmogorov-Smirnov and Shapiro-Wilk tests in SPSS. For all items we reject the null for both tests at $p < .001$ and, therefore, the items cannot be assumed to be normal. This lack of normality influenced which methods we selected for our EFA, CFA, and other validation tests as we needed to avoid methods which assume normality (Hinkin, 1995).

Step 5. The first step in the evaluation of our measures was to include the items identified in Step 4 of the AFA methodology in a survey. This step gave us the data we needed to test the measures. As with previous stages, we used theoretical sampling and only surveyed knowledge workers. Following Hinkin's (1995) advice we did not use reverse coded questions in the measures we were developing to quantify the important and urgent email constructs.

To ensure the reliability of our measures in our statistical analysis we used a 5-point Likert scale as suggested by Hinkin (1995). Another of Hinkin's (1995) issues with scale development, which is relevant in this step, is insufficient sample size. As with most statistical tests, the larger the sample size the more confidence the researchers can have in their results. The author points out that both EFA and CFA are "particularly susceptible to sample size effects" (p. 973) and suggests a minimum sample size of 200 for CFA. A sample size this large would require that 100% of the managers and professionals in the two organizations we were working with to participate in a second survey – an unrealistic expectation. To address this issue, we set out to find more organizations to participate in the final stage of our study. A snow ball sampling technique identified three additional public-sector organizations and one private-sector firm who were willing to send information on our survey out to the knowledge workers in their companies. The Stage 3 measurement validation survey was sent out by our contacts within each of the organizations to all managers and professionals working for these six organizations. While most of the organizations sent an email to their managers and professionals informing them of this study, one organization used their electronic message board (i.e., their listserve) to increase awareness of the study.

The survey itself included the following five sections: demographic information, information about the employee's job, demands of the employee's job (e.g., hours worked, hours spent on supplementary work at home), employee well-being, and electronic communication. This final section of the survey included our measures of important/urgent email. This question was worded as follows: Please think about a typical workday. How often on a typical workday do you deal with (i.e., send, receive) the following types of email messages? This question was followed by the 19 items identified in Step 4 of the AFA (see Table 5-2 for the list of items). Respondents were given a 5-point Likert scale (1 = Never, 3 = Sometime (i.e., 4-6), 5 = Very Often (i.e., 10 or more)) to use when providing their response.

The final section of the survey also included a number of questions to help us quantify the email use of our respondents:

- Please think about a typical workday and indicate in the space below approximately how many (work and non-work): emails you receive? emails you send?
- Please think about a typical non-workday and indicate in the space below approximately how many (work and non-work): emails you receive? emails you send?
- Approximately how many hours per week do you devote to email-related activities while at work (please include both work and non-work-related emails)?
- Approximately how many hours per week do you devote to email-related activities while at home (please include both work and non-work-related emails)?

Finally, to help us test the validity of our measures we included Hogan and Fisher's (2006) 7-item measure of email overload in section 5 of the survey. This

measure asks respondents to “Please indicate the extent to which you agree or disagree with each of the following statements”. A Likert Scale is provided for the responses where 1 = Strongly Disagree, 3 = Neutral, and 5 = Strongly Agree. Email overload was calculated as the summed average of 5 of the 7 items in the scale (two items were removed as they did not factor, the cross-loadings for the remaining items all exceeded .7). Higher scores reflect greater levels of email overload. The psychometric properties of this construct were also assessed and considered acceptable: a Cronbach’s Alpha of .90 and Fornell and Larcker’s (1981) composite reliability (CR) of .93. The convergent validity was assessed with Fornell and Larcker’s (1981) measure of average variance explained (AVE) and was also acceptable (value of .73).

In total, 1491 participants completed all sections of the survey. The percent of our total sample from each of the four public-sector organizations was 9.9%, 6.6%, 72.1%, and 3.3%. The percent of our total sample from each of the private-sector firms was 7.1% and 1%. Two of our participants did not identify which organization they came from. The respondents identified as 60.2% female, 39.6% male and .2% other. The sample for this survey had an average age of 46.8 years. The demographic characteristics were consistent with what we would expect from knowledge workers. Respondents were highly educated (i.e., 87% had at least one university degree and 57.3% had at least one post-graduate degree). While the majority were managers (82.5%), 9.0% were professionals and 8.6% selected ‘other’. Consistent with the job type and age data, we noted that the respondents had a lot of years of work experience. The average number of years in the current organization was 16.3 years (SD of 9.3 years) and the average number of years tenure in their current job was 5.3 years (SD of 4.7 years).

The email usage statistics were also consistent with what we would expect from knowledge workers. On average on a typical workday our respondents received 54 emails (SD 46.6 emails) and sent 32.5 emails (SD 27.4 emails). The average number of emails received on a typical non-workday was 16.9 emails (SD 22.9 emails) and the average number of emails sent on a typical non-workday was 8.2 emails (SD 11.1 emails). The average number of hours per week devoted to email-related activities while at work was 11.6 hours (SD 8.4 hours) and the average number of hours per week devoted to email-related activities while at home was 5.2 hours (SD 6 hours). Email overload was also high as our sample reported an average score on this scale of 3.80 (SD .91).

Step 6. To assess the psychometric properties of our scales we use a similar process to the one described by Howell, Shea, and Higgins (2005). Measurement assessment was done in three stages: (1) identification of the factor structure of our scales, (2) determination of the scales' reliability, (3) determination of the scales' validity.

Factor Structure. EFA and/or CFA can be used to further refine the constructs being developed by assessing the items in our scales (Hinkin, 1998; Pituch & Stevens, 2016). Following Hinkin's (1998) suggestion we undertook an EFA using SPSS to assess the factor structure of our measures. We then undertook a CFA using SmartPLS v. 3.2.7 (Ringle, Wende, & Becker, 2015) to examine the factor structure of the items that remained under consideration after the EFA.

Hinkin's (1995) warns that factor analysis should not be used to derive scales "post hoc". Accordingly, we refrained from moving items from the important email

measure to the urgent email measure or vice versa, even if the factor loadings suggested that this move might be appropriate.

We followed Pituch and Stevens' (2016) recommendation and used multiple criteria when calculating our EFA. This analysis was done using principal component analysis (PCA) and SPSS.

We began our analysis with Kaiser's (1960) criterion which has been found to be more accurate when the number of items is between 10-30 (we have 19 items). Kaiser (1960) recommends researchers retain only those factors with eigenvalues greater than 1. This analysis identified three components with eigenvalues greater than 1. Based on the Kaiser (1960) criterion we should, therefore, consider three potential factors.

We then used Cattell's (1966) recommendation that researchers use a scree test to determine the number of factors as this test has been shown to be reasonably accurate with samples of $N > 250$ (we have just under 1500 cases). The scree plot from the PCA also supported the idea that there were three factors we should consider.

The third suggestion we followed was Horn's (1965) which involves using parallel analysis to compare the dataset's eigenvalues to that of randomly generated dataset's eigenvalues. Horn recommends that researchers only retain a factor in the original dataset if its eigenvalue is greater than the average of the randomly generated dataset's eigenvalues. In this case our analysis determined that we had three components which were above the average (50%) eigenvalue randomly generated from the Monte Carlo simulation – again implying that there are three factors we should consider.

Finally, we followed Pituch and Stevens' (2016) advice and interpreted the meaning of the factors based on our knowledge of the area. This stage of the analysis

revealed that the potential third factor is composed solely of one item “A message from a client”. It is hard to understand this finding. It may be that this item taps into some factor we did not fully explore in our interviews. Alternatively, the results may be attributed to the fact that the employees’ espoused criterion of the client being important is not reflected in their actual perception of their email use (i.e., it is perhaps important to give the impression that the client is important, but the client's emails are not as important as others). We simply do not have enough information to know for sure. We also note that in this case a three-factor solution would break Hinkin’s (1995) requirement that scales have at least 3 items per factor. With this requirement in mind we elected to assume there are only two factors to assess: important email and urgent email.

In order to test the orthogonality of our constructs we conducted a PCA using direct oblimin rotation (Pituch & Stevens, 2016). The component correlation matrix showed a correlation of $r = .578$ between our factors, demonstrating that our constructs are oblique.

We conducted our EFA using Principal Axis Factoring (PAF) with a direct oblimin rotation (see Table 5-3 on next page). Items with a correlation of $r < .5$ (or 25% explained variance) or greater were removed as this cut-off was the strictest suggested by Pituch and Stevens (2016). Based on Hinkin's (1995) warning, and Brown’s (2014) suggestion that researchers need to provide a theoretical basis for factors/constructs, we also removed items which factored with the construct they were not originally generated for as we had no theoretical basis to include them (i.e., important email items that factored better with urgent email were removed and vice versa). Items were removed one

at a time and then the analysis was redone in case the removal of the items changed how the items loaded with the factors. The items were removed in the following order: “A

Table 5- 3: EFA of Important Email and Urgent Email Measures

Items	Important Email	Urgent Email
A message that includes information/is a request for information that is critical to your ability to do your job	.678	-.023
A message that explicitly states, in the subject line that a reply or a deliverable is required by a certain date	.664	-.020
A message that relates to client services	.513	.148
A message that comes from the organization and provides information on something which will impact my work (i.e., internet will be down, new policy)	.741	-.061
A message that contains job-related instructions from me to those who report to me/ to me from management	.704	.020
A time-sensitive message (i.e., one that requires you or someone else to take action immediately)	.682	.129
Is a follow up on a complaint from a client	-.022	.662
Is a follow up on a complaint from an employee	-.001	.725
Is a follow up on a complaint from my manager	.019	.637
Involves someone who is in distress	-.094	.826
Involves sensitive issues (i.e., colleague is fired; client, colleague, student is emotional)	-.063	.792
Involves trying to track down someone that you need to talk to urgently	.191	.551
A message which relates to an issue where a client is (or will be) negatively impacted (especially if you do not respond)	.125	.619
A message which relates to an issue where a colleague at work is (or will be) negatively impacted (especially if you do not respond)	.113	.593

message from a client” (did not load with either factor), “Involves correcting an incorrect message that was sent out previously (i.e., wrong information was sent to someone)” (did not load with either factor), “Involves a request made by a senior manager” (did not load with the expected factor), “A message that contains information you have been waiting for/provides information that others have been waiting for” (did not load with the expected factor), and “A message from my immediate manager” (was below our cut-off of .5). Further examination of the factor structure of the remaining items was conducted using a CFA run on SmartPLS (v. 3.2.7 - Ringle, Wende, & Becker, 2015). The decision to switch methods is supported by Hinkin (1998) and Brown (2014) who point out that CFA (but not EFA) requires researchers to specify the indicators and factors of constructs before undertaking any analysis. They note that this requirement tends to provide a closer fit of the items to the factor/construct. Results from this analysis are shown in Table 5-4 (see next page). It should be noted that no additional items were removed from our measures as all loadings were .6 or above.

Reliability. “Internal consistency [or reliability] refers to the homogeneity of the items in the measure or the extent to which item responses correlate with the total test score” (Hinkin, 1995, p. 968). To test the reliability of our measures, we used Cronbach’s alpha and Fornell and Larcker’s (1981) Composite Reliability (CR). Hair, Hult, Ringle, and Sarstedt (2016) state that for exploratory research, such as that done for this study, a Cronbach’s alpha between .6 and .7 is acceptable, values between .7 and .9 are satisfactory, values above .9 (especially .95) are not desired as this high of a Cronbach’s alpha means all the items are essentially measuring the same thing, and values below .6

Table 5- 4: CFA of Important Email and Urgent Email Measures

Items	Important Email	Urgent Email
A message that includes information/is a request for information that is critical to your ability to do your job	.724	.411
A message that explicitly states, in the subject line that a reply or a deliverable is required by a certain date	.740	.405
A message that relates to client services	.684	.461
A message that comes from the organization and provides information on something which will impact my work (i.e., internet will be down, new policy)	.742	.413
A message that contains job-related instructions from me to those who report to me/ to me from management	.776	.463
A time-sensitive message (i.e., one that requires you or someone else to take action immediately)	.797	.552
Is a follow up on a complaint from a client	.394	.669
Is a follow up on a complaint from an employee	.455	.749
Is a follow up on a complaint from my manager	.415	.675
Involves someone who is in distress	.432	.787
Involves sensitive issues (i.e., colleague is fired; client, colleague, student is emotional)	.435	.783
Involves trying to track down someone that you need to talk to urgently	.509	.728
A message which relates to an issue where a client is (or will be) negatively impacted (especially if you do not respond)	.462	.732
A message which relates to an issue where a colleague at work is (or will be) negatively impacted (especially if you do not respond)	.480	.769

demonstrate a lack of internal consistency. Fornell and Larcker's (1981) CR is recommended to be greater than .7.

The Cronbach's alpha for our important email construct was .839 while the Cronbach's alpha for our urgent email construct was .881. These values demonstrate a satisfactory internal consistency as they fit between Hair et al.'s (2016) range of .7 to .9. The CR for the important email construct was .882 demonstrating good internal consistency. CR for the urgent email construct was .905, which is below Hair et al.'s (2016) absolute cut-off of .95.

Validity. To evaluate our measures validity, we followed Hinkin's (1995) suggestions on the "best practices" of scale development and demonstrate: "content validity, criterion-related validity, construct validity" (p. 968).

"Construct validity is concerned with the relationship of the measure to the underlying attributes it is attempting to assess" (Hinkin, 1995, p. 968). A construct's validity is established by conducting validity and reliability tests of the construct.

"Content validity refers to the adequacy with which a measure assesses the domain of interest" (Hinkin, 1995, p. 968). Cooper et al. (1990) point out that the first two stages of the AFA do an excellent job providing content validity as the method selects only the most prototypical items for inclusion in the measure. Both our scales can, therefore, be considered valid in terms of their content.

"Criterion-related validity pertains to the relationship between a measure and another independent measure" (Hinkin, 1995, p. 968). In this paper we use convergent, discriminant, and predictive validity (a sub-type of criterion-related validity Trochim, 2002) to establish this form of validity.

Predictive validity involves theorizing that a construct (i.e., email importance, email urgency) should be able to predict another construct (email overload) and then checking to see if this hypothesis holds true (Trochim, 2002). Predictive validity is established in this study by theorizing that an employee's scores on our measures of important email and urgent email are positively associated with feelings of email overload. Email overload is "defined as a condition in which the volume of information exceeds a person's capacity to process it" (Thomas, King, Baroni, Cook, Keitelman, ... & Wardle, 2006, p. 255). These hypotheses are based on Dabbish and Kraut's (2006) finding that email volume (i.e., the number of emails sent and received each day) increased feelings of email overload due to information overload and their inability to process all the messages that they sent/received. It is our expectation that the more important and/or urgent emails an employee sends/receives each day (a measure of email demand) the more challenging they will find it to process all these requests in a satisfactory and timely manner and the higher their levels of email overload. The predictive validity of our measures was tested by adding paths from important email and urgent email to the construct of email overload using PLS-SEM path analysis in SmartPLS (v. 3.2.7 - Ringle, Wende, & Becker, 2015) (see Figure 5-2 on next page). The important and urgent email constructs together explained 15.6% of the variance in email overload. The path coefficient for important email to email overload was .242 at $p < .001$ and the path coefficient for urgent email to email overload was .198 at $p < .001$. These findings lend weight to the predictive (i.e., criterion-related) validity of both our measures.

Figure 5- 2: Important Email and Urgent Email as Predictors of Email Overload

*Note: *** $p < .001$*

Convergent and discriminant validity refers to whether the scales correlate with other measures of the same or similar theoretical concepts (House & Rizzo, 1972). Convergent validity was assessed using Fornell and Larcker's (1981) Average Variance Extracted (AVE) measure with the suggested value of greater than .5 to establish convergent validity. The AVE of our important email construct was .554 at $p < .001$. The AVE for the urgent email construct was .544 at $p < .001$. These results lend support to the convergent validity of both the measures developed in this study.

Henseler, Ringle, and Sarstedt (2015) demonstrate that the Fornell-Larcker criterion (having the square root of AVE greater than any of the correlations between constructs) for discriminant validity does not reliably find discriminant validity in PLS-SEM. They recommended that researchers who wish to use PLS-SEM to evaluate discriminant validity use the heterotrait-monotrait ratio of correlations (HTMT). Henseler et al. (2015) offered three different cut-off criteria for finding problems with discriminant

validity reliably, less than .9, less than .85, and less than inference. In this study we tested the discriminant validity of our measures against the Fornell-Larcker criterion, the loadings and cross loadings of our measures, and the HTMT.

The square root of the AVE was above the correlation of our urgent email construct to our important email construct, meeting the Fornell-Lacker Criterion. Examination of the pattern of loadings and cross loadings for our measures (see Table 5-4) shows that there is enough separation to support the idea that these are two separate measures. It is also expected as these are conceptually related concepts. The HTMT between our constructs was less than the strictest cut-off of .85 suggested by Henseler et al. (2015) with a value of .704. Taken together these results show that both of our measures have acceptable discriminant validity.

Discussion

This study set out to fill a gap in our understanding of how employees evaluate the type of emails they deal with during their day by developing and empirically validating a measure that will allow the classification of email employees send/receive into important and urgent constructs. To achieve this goal, we used Buss and Craik's (1980, 1981, 1983a) AFA with Cooper et al.'s (1990) approach to validate our measures. This study differs from previous approaches in that it took an emic approach to define the important and urgent email constructs. The resulting measures allow researchers and practitioners to evaluate employees' email use on either an individual or group basis and provide insights into why they are spending so much time communicating using this media.

One of the things which stands out in our important email scale is that two of the items (“A time-sensitive message” and “A message that explicitly states, in the subject line that a reply or deliverable is required by a certain date”) refer to time (implying urgency) without any caveat or clarification on how the content of the email could be important. Also noteworthy are the data showing that our urgent email scale has only one item that explicitly refers to urgency (i.e., “Involves trying to track down someone you need to talk to urgently”). This item also has information on the content of the message, perhaps implying it is important.

Examination of the items included in the two measures support the following observations. First, it would appear that a message does not have to be time-sensitive to be considered important. Second, three of the six items included in our important email measure explicitly refer to the email user’s (i.e., our respondents) work using words like: your work, my work, and job-related instructions from me/to me. None of the items included in the urgent email measure, on the other hand explicitly refer to work (though they certainly seem to be work related). This finding suggests that while employees’ may evaluate a work-related email to be important to them, having an email that relates to work does not on its own make that email urgent.

Third, only three of our items (“A message that relates to client services” which is considered important and “Is a follow up on a complaint from a client” and “A message which relates to an issue where a client is (or will be) negatively impacted” which are considered urgent), refer to the client. Examination of these three items reveals that in all cases a message from a client is not enough on its own to make an email urgent or important. Instead our results suggest that unless the email provides some content that

implies urgency or importance, an email from a client does not stand out as important or urgent. This interpretation of the data is consistent with the fact that the item “A message from a client” did not factor with either our important email or our urgent email scales.

Fourth, we noted that all the items in the urgent email scale refer to issues which need to be addressed before something negative befalls one of the employee’s key stakeholders. Three of the items refer to complaints from the client, an employee, or their manager. Two of the items explicitly state that key stakeholders (i.e., client or colleague) will be negatively impacted if the employee does not respond. Three of the items involve someone with an implied or explicit issue attached to them (i.e., someone: in distress, involved in sensitive issues, that you need to talk to). Our results, therefore, support the following two important ideas: (1) an email that relates to a key stakeholder being at risk, or suffering negative consequence seems to be a requirement to be considered urgent, and (2) an email which has elements of being urgent is considered important when it triggers the need for immediate action on the part of the email recipient (e.g., “A time-sensitive message”). Interestingly, these ideas support, and are additionally supported by, the way in which the project management literature assesses risk. They do so by multiplying the probability of occurrence times the expected impact (Ward, 1999). Risks which are both highly probable and have a high impact are considered highly important.

Fifth, our study lends support to the notion that email importance and email urgency are related concepts. Further research into this relationship between these two constructs needs to be undertaken to determine if one of these concepts causes the other. This relationship is under explored in the literature and needs further examination.

Sixth, our study provides some validation for the important email measure developed by Dabbish et al. (2005). Their first and third items “How important is this message for YOUR work?” and “How urgent are any deadlines associated with this message?” were both reflected in our important email scale. We found no evidence, however, to support the idea that their second and fourth items “How important is this message for THE SENDER’s work?” and “How much work does this message require of you?” represent what employees perceive to be important emails.

Finally, our scales represent the cues employees are paying attention to in their email use (at least in terms of what they consider important and/or urgent in the moment emails arrive or are sent). This aspect of the scales is a real strength in that it allows them to be generalized to other work settings or context.

Conclusion

In this study we developed valid and reliable measures of email importance and email urgency. These measures can be used to explore the relationship between email use and outcomes at both the employee (well-being, work-life conflict) and employer (commitment, job stress) levels. These measures also make it possible for researchers to identify moderators and mediators of the paths between both of these constructs and the above outcomes.

The following observations are supported by the data. First, while an urgent email may, in some context, be considered important, urgency itself is not required for an email to be considered important. From this observation we infer that urgency increases an email’s level of importance above and beyond the content on its own.

Second, examination of the items in our urgent email scale reveals that they all come from or involve someone of importance to the email recipient (usually a key stakeholder) and contain information conveying that by acting on the information in a timely fashion the email recipient will be able to avoid or prevent some negative consequence (or risk). This revelation supports the idea that importance is required for something to be considered urgent.

Three, the items in our important email scale demonstrate that while an employee's work may be important to them, it is not necessarily urgent. This observation implies that to make an email important to someone while they are at work, the sender needs to demonstrate the relevance of the email to the receiver's job.

Four, both of the scales developed in this study represent what employees use as cues to judge what is an important and/or urgent email "in the moment". An assessment of how this assessment aligns with what the organization would consider important and urgent still needs to be made. Researchers could use the scales developed in this study to compare how employees evaluate the importance and urgency of the emails they received to the organization's goals to see if they are all in congruence. This sort of assessment could be conducted along with the aid of time management techniques such as those proposed by Covey (1990).

The study has a number of limitations. First, the AFA focuses on the prototypical acts in the construct. Although this prototypicality allows us to create and validate measures more easily, it perhaps means that some more peripheral items which affect email users' behaviour in terms of email use did not make the cut.

Second, our focus on important and urgent emails employees send/receive meant that we failed to ask what important and urgent emails employees think they should be sending/receiving but do not. Even if it is something they had not previously considered, it may have been interesting to see what employees could come up with when asked the question.

There are a number of ways that researchers can use the measures developed in our study. First, we note the need to further examine the relationship between email importance and email urgency. Work on these two constructs may inform motivational theory literature, the organizational behaviour literature (particularly in the areas of perception and attribution), and artificial intelligence development. Second, by embedding our measures in a theoretically driven nomological network researchers should be able to get a better understanding of the predictors, moderators, and outcomes associated with the receipt of a varying number of important and urgent emails in a specified time period. This understanding could help both service providers and employers regulate email use in their organization such that they maximize the benefits and minimize the drawbacks of email use.

In summary, this study fills a gap in the literature by providing researchers and practitioners with valid and reliable measures of email importance and urgency. There are a myriad of ways in which researchers and practitioners can use these measures to better understand why many employees use email the way they do as well as the relationship between different levels of use and the consequences of such use on key stakeholders including the employee, the employee's family, and the organization. These measures also provide practitioners and researchers with a meaningful way to classify email. We

also envision our measures being used to help individuals and organizations with email management as well as relevant applications in the email/well-being research domain.

Chapter 6: Paper 3

The third paper's main objective is *to use the measure developed in the second paper to investigate the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being (e.g., perceived stress and email overload)*. Paper 3 fits into the omnibus objective of this thesis as linking important and urgent email constructs to indicators of well-being should provide the incentive needed to encourage some organizations and employees to address issues associated with email use. The survey used in this paper can be found in Appendix C.

6.1 Abstract

Informed by Karasek's buffer hypothesis from the well-being literature, this paper investigates the relationship between email demands (i.e., objective: email volume and hours spent in email; social/psychological: important email and urgent email) and email strain (i.e., email overload). It is hypothesized that work control moderates the relationship between email demands and email overload. This paper also investigates the relationship between email overload and perceived stress. Partial Least Squares Structural Equation Modelling was used to test the paths in the model. Our analysis confirmed that all four conceptualizations of email demands predicted email overload and that email overload was a significant predictor of perceived stress. Control over work moderated the path between urgent email and email overload, providing partial support for Karasek's buffer hypothesis. This study contributes to the email and well-being literature by demonstrating that: email overload is a distinct type of role overload, social/psychological demands imposed by email should be investigated in the email and

well-being literature, and negative email outcomes can be mitigated by increased control over urgent email.

6.2 What To Do When Everything Is Urgent?: Email Use and Employee Well-Being

For the last several decades, The Radicati Group has published yearly reports which provide current use statistics and forecasts for various forms of electronic communication including email. According to this group, over half of the world's population are currently using email (2017). Email is also the most ubiquitous form of business communication, beating out other forms of communication such as phone, instant messaging, social media sites, and text messaging (The Radicati Group, 2018). Not only is email ubiquitous, recent research published by PEW (Purcell & Rainie, 2014) found that most Americans believe email to be a “very important” work tool – something that is vital to their work performance. What exactly makes email so important is, however, unclear. Maybe its importance can be linked to the asynchronous nature of this form of communication since, as Barley, Meyerson, & Grodal (2011) point out, email can be sent at anytime from anywhere regardless of whether or not the receiver is available to receive it. Possibly its importance is rooted in the fact that email is versatile and is being used to support work in ways that the original designer never envisioned (e.g., storage, task manager, time management) (Whittaker & Sidner, 1996). Perhaps emails importance can be attributed to the widespread adoption of mobile devices which allow people to access their personal and work emails 24/7 from anywhere (The Radicati Group, 2012). Maybe emails importance can be attributed to some combination of the above.

While researchers do not agree on why email has become the most common and important form of work-related communication, they have arrived at a consensus with

respect to one significant issue - a high reliance on email comes at a cost to the sender/receiver of the message. More specifically, the extant research in the area shows that email use is positively associated with the likelihood that an individual will report high levels of email overload (defined by Thomas et al., 2006, p. 255, as “a condition in which the volume of information exceeds a person’s capacity to process it) and stress (Barley et al., 2011; Dabbish & Kraut, 2006). Research exploring the link between the use of email and stress tends to take the view that “the more people depend on and use email and other electronic media, the longer they work, and the longer they work, the more likely they are to feel overloaded and overwhelmed” (Barley et al., 2011, p. 889). Research by Barley et al. (2011), which found email volume to be positively associated with stress regardless of the number of hours an individual spent in paid employment, refutes this assumption. Instead, Barley and colleagues attributed the link between email use and stress to “the specific anxieties that e-mail evoked, the norms that governed its use, and the temporal distribution of communicative acts over the course of a day” (p. 898).

In their influential 2011 paper on the topic, Barley et al. point out several methodological concerns (studies of email overload do not directly measure stress) and theoretical problems (most studies of email use and stress do not consider the possibility that people use email to gain control over their work) that have limited our ability to draw conclusions on the relationship between email use and stress. Of relevance to this study is the third methodological shortcoming identified by Barley et al (2011) - that researchers have paid little attention to the social dynamics of email use and how people interpret the volume of email they receive.

The study reported on in this paper builds on the recommendations put forward by Barley et al. (2011) and uses a sociomaterial approach to explore the relationship between how people use email and employee well-being. Sociomaterial analysis encourages researchers to pay attention to three sets of pressures: “the technology’s material attributes that constrain or afford particular behaviours, the social norms and cultural interpretations that shape how people use a technology and [...] ‘quasi-material’ parameters [...] aspects of a context that are separate from a technology’s features and that may ultimately be social, but which users do not see as social and which they treat as objective constraints” (Barley et al., 2011, p. 890). More specifically we consider the relationship between two quasi-material parameters (the number of important and urgent emails employees’ process in a typical work week) and employee well-being (e.g., perceived stress and email overload). By explicitly including measures of perceived stress and control over work in the theoretical framework tested in this study we also address two of the other main shortcomings of research in this area identified by Barley et al. (2011).

We begin by providing a brief review of the literature used in this research. This review is followed by a section describing the theoretical framework guiding this study. We then explain the methodology used to test our model. The results will then be presented followed by a discussion of our findings. The paper will conclude with the key implications of the study, and possible future research and the limitations of the study.

Literature Review

This study explores the relationship between the number of important and urgent emails employees process in a typical work week and employee well-being, operationalized in this study to include both perceived stress and email overload. We begin our review with a brief overview of the email and well-being literature that framed this study. We then provide a short description of the framework that was used to theoretically ground our research: Karasek's (1979) demand-control (JDC) model. The model to be tested in this study is then introduced and justified along with the hypotheses to be tested in this paper.

Email Use and Employee Well-Being

The email and well-being literature is broken up into two main streams (Barley et al., 2011). Stream one is situated within the work-life balance literature. Researchers within this domain of research argue that email contributes to stress by making it easier for work to encroach on employees' personal time and perform work in places previously reserved for self and/or family. Researchers working in the work-life area claim that email produces stress by tethering employees to their work through their mobile devices (Murray & Rostis, 2007). Under this scenario, email use contributes to a blurring of work-life boundaries and, by making it more difficult for people to disengage from work, enabling work to spill into other domains of life (Barley et al., 2011; Chesley, 2005).

The idea that a high reliance on email will negatively impact work-life balance is not, however, universally held with some researchers theorizing that email has the potential to decrease work-life conflict by giving employees more control over when and where they work, (e.g., Hill, Ferris, & Mårtinson, 2003; Duxbury, Higgins, Smart, &

Stevenson, 2014). A recent study by Duxbury et al. (2014) determined that the relationship between the amount of time one spends using their mobile device for email communications and perceived control over the work-life interface depended very much of the user's levels of self-efficacy and self-control with some (albeit a minority) of the knowledge workers in their sample reporting that they were more able to effectively integrate or segment their work and family roles after they got a mobile device than before.

Research linking the use of email to stress can also be found in the email overload literature. Academics within this stream theorize that email creates feelings of stress by increasing the total amount of work people have to handle as well as the amount of time they spend in work per week. Barley et al. (2011) identify four interrelated ways that email can create extra work. First, the fact that email is easier to send than written letters has meant that responsibility for such communications now typically resides with the professional who is sending the message, instead of it going through administrative aids. This fact has increased work in two ways: by giving professionals responsibility for what was traditionally considered clerical work and by increasing the number of communications sent and hence the amount of time people spend processing email. Second, as noted by Dabbish et al. (2005) as email makes it easier for people to make requests of others. The constant barrage of new requests requires people to be continually shifting gears and adding new tasks to their existing accumulation. Third, email disturbs concentration and creates "distractions that extend considerably the amount of time it takes to complete a given task" (Barley et al., 2011, p. 888). Finally, many people use email to perform tasks that are outside the scope of what the application was designed for

(e.g., scheduling a meeting, finding archived documents). As Whittaker and Sidner (1996) point out, such use is not efficient and results in an increase in workload overall.

Since Whittaker and Sidner's (1996) seminal article on email overload changes have been made to email technology so that it could effectively handle a broader range of tasks. Despite these changes the positive association between email use and email overload and stress persists (Fisher, Brush, Gleave, & Smith, 2006; Grevet, Choi, Kumar, & Gilbert, 2014). Moreover, strategies that in theory should help address email-related stress such as decreasing the frequency with which one checks email, have been shown to have no impact on perceived stress (Bradley, Brumby, Cox, & Bird, 2013) while increasing perceptions of email overload (Dabbish & Kraut, 2006). These findings provide additional support for the idea that the link between email use and employee well-being has more to do with self-control (Duxbury et al., 2014) or anxiety (i.e., people are anxious that if they are not continually checking their email they will miss something that is important or urgent to their work) (Barley et al., 2011) than hours spent using email.

The purpose of this paper is to shed light on this issue by examining the relationship between email use, email overload, and stress in a study designed to address many of the concerns noted by Barley et al. (2011). We use a large heterogeneous sample of knowledge workers, a broad operationalization of email use (volume of email in a typical workday, hours in email in a typical work week, and the number of important and urgent emails employees process in a typical workday), reliable measures of our constructs (perceived stress, email overload, work control), and control for variables that

might confound our findings (e.g., total hours spent in work per week). Details on the theoretical model guiding our study are presented below.

Theoretical Framework

Karasek's (1979) demand-control model of job strain (i.e., the JDC model), which theorizes that workplace stress is a function of how demanding a person's job is and how much control the person has over the accomplishment of these demands, is used to theoretically ground our examination into the relationship between email use and stress. There is a large body of empirical research which is supportive of Karasek's JDC model (e.g., Karasek & Theorell, 1990; Van der Doff & Maes, 1998; 1999; De Jonge, Dollard, Dormann, Le Blanc, & Houtman, 2000; Duxbury & Halinski, 2014). While support for the buffer hypothesis (which theorizes that control can moderate the negative effects of high demands on well-being) is mixed. Work by Kain and Jex (2010) suggests these mixed results have more to do with how the three main constructs in the model, (demand, control, and strain) have been measured rather than weaknesses in the model itself. Finally, we note that our decision to use this model to frame our research is supported by the substantive body of research in the psychological well-being domain that has used the JDC model (Van der Doff & Maes, 1999).

While the framework for the model to be tested in this study includes the same basic constructs as those used by Karasek (demands, strain, and control). We followed the lead of researchers such as, Higgins, Duxbury, and Julien (2014) and Duxbury and Halinski (2014) and changed how these constructs are conceptualized and operationalized to make them more relevant to our study into the relationship between the use of email and stress. Details are provided below.

Demands. Karasek (1979) focused on the relationship between work demands - defined by Guerts & Demerouti (2003) as the set of prescribed tasks that an individual performs while occupying a position in an organization - and job strain. He operationalized work demands to include a wide variety of psychological stressors occurring within the work environment such as interruptions, time pressures, and conflicting demands as well as the amount of time spent in work. Karasek (1979) theorized that energy and time resources will be depleted as job demands increase and strain will occur. Research in the area, which has consistently identified time in work as a major workplace stressor, supports this assertion (Danna & Griffins, 1999).

In this study we conceptualize email demands more broadly than most email scholars and include two different sets of demands associated with the use of email in our model: (1) traditional objective indicators of demand, and (2) social/psychological demands. Most of the research linking the use of email to employee well-being has used objective indicators such as the volume of email sent/received per week or hours spent managing email per week to quantify the demands association with this form of communication (e.g., Dabbish & Kraut, 2006; Barley et al., 2011; Jerejian, Reid, & Rees, 2013). Accordingly, we included both email volume (defined as the average number of emails sent and received each workday) and email hours (defined as the average amount of time employees spent processing email per week at work) as predictors of email overload in our theoretical framework.

As noted by Barley et al. (2011) very few researchers consider the social/psychological pressures related to email use in their analysis. Notable exceptions include Sumecki, Chipulu, and Ojiako (2011) who investigated the relationship between

email overload and business critical/non-business critical emails and Dabbish, Kraut, Fussell and Kiesler (2005) who considered an email's importance in terms of reply behaviour. Extending the research in the area we include two social/psychological predictors of email overload in our model: the perceived importance of the email and the perceived urgency of the email. We define an important email as a message with great significance, consequence, or value. We define an urgent email as a message requiring swift action.

Strain. Email was not in popular use in the 1970s when Karasek (1979) developed his JDC model. This fact requires us to update Karasek's concepts of job strain for use in our study which focuses on the relationship between email use and employee well-being. Accordingly, we consider two forms of strain in our analysis: email overload and perceived stress.

Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) undertook a major study on organizational stress which resulted in their 'theory of role dynamics'. Role overload was one of the five types of role strain identified by these authors. Role overload occurs when an individual experiences excessive time and/or psychological demands either at work, at home, or overall (Duxbury et al., 2008). Work-role overload has been defined as the pressure experienced by an individual as a result of not having enough time and/or other resources to satisfy organizational and job-specific demands (Kahn et al., 1964). Individuals who experience high levels of work-role overload feel overwhelmed by duties and role requirements arising from the work domain. Perceived stress has been identified as a common outcome of higher levels of work-role overload (Duxbury et al., 2008).

In this study we conceptualize one specific type of role overload as a key outcome of email use and a predictor of perceived stress: email overload. Email overload is the phenomenon whereby office workers do not have enough time or other resources to manage all their incoming email messages in addition to their regular work (i.e., they are overwhelmed by email) (Vacek, 2014). Thomas et al. (2006) define email overload as occurring when the volume of information exceeds a person's capacity to process it (Thomas et al., 2006). This study adds to our understanding of the email overload construct by including four predictors of email overload in our model – two objective predictors (volume of email per workday and hours spent in email instead typical work week) and two social/psychological predictors (the perceived importance of the email and the perceived urgency of the email).

Perceived stress is defined as the extent to which an individual perceives that their demands exceed their ability to cope (Cohen, Kamarck, & Mermelstein, 1983). This definition implies that an individual will not necessarily experience higher levels of perceived stress when demands are high and is consistent with the underlying tenants of the JDC model put forward by Karasek (1979). Unfortunately, as pointed out by Barley et al. (2011), most researchers in the area seem to assume that email overload is analogous to perceived stress and do not actually include a direct measure of stress in their study. This issue is addressed in our study that tests a model which predicts that higher levels of email overload will result in elevated levels of perceived stress. This path in our model is consistent with Kahn et al.'s (1964) theory of role dynamics as well as empirical work in the area (Higgins, Duxbury, & Lyons, 2010; Duxbury et al., 2008).

The above review of the literature supports the following hypotheses:

- H1: The total number of emails sent/received on a typical workday (i.e., “Email Volume”) is positively related to email overload.
- H2: The total number of hours devoted to email in a typical work week (i.e., “Email Hours”) is positively related to email overload.
- H3: The number of important email messages sent/received on a typical workday (i.e., “Important Email”) is positively related to email overload.
- H4: The number of urgent email messages sent/received on a typical workday (i.e., “Urgent Email”) is positively related to email overload.
- H5: Email overload is positively related to perceived stress.

Control. Karasek (1979, p. 289) defined the final construct in his JDC model as “the working individual’s potential control over his tasks and his conduct during the working day”. He theorized, in what has been referred to as the buffer hypothesis, that employees who experience high demands at work with little control are more likely than those with high demands and higher levels of control to experience strain. As noted earlier, there is a large body of empirical work which is supportive of the buffer hypothesis - the idea that higher levels of control are associated with lower levels of strain (Van der Doff & Maes, 1998; 1999; De Jonge, Dollard, Dormann, Le Blanc, & Houtman, 2000; Karasek & Theorell, 1990).

In this study we investigate the ability of work control (i.e., the extent to which individuals perceive they can directly influence their environments) to moderate the relationship between the objective and social/psychological demands imposed by email

and our indicator of strain - email overload. By doing so we address another gap in the email overload literature identified by Barley et al. (2011).

Our review of the extant literature provides both theoretical and empirical justification for hypothesizing work control as a moderator of the relationship between email demands and email overload. In terms of theory, Karasek's buffer hypothesis (Karasek, 1979; Karasek & Theorell, 1990) leads us to expect that higher work control will make it less likely that employees will be overwhelmed by the objective and social/psychological demands they face because of email.

Theory coming from the work and family area also supports the idea that work control will moderate the relationship between demands and strain. As noted by Lapierre and Allen (2012, p. 1501),

[e]mployees experiencing a high degree of control at work have the opportunity to self-manage in that they have the freedom to exercise their personal initiative and judgment by deciding what their work goals and responsibilities should be (i.e., which tasks or projects they should work on), how their work should be performed (i.e., which methods should be used), and which schedule they will use to carry out various work tasks.

Such control should, we believe, help employees more easily avoid situations in which the demands inherent in the use of email result in perceptions of email overload. We envision several mechanisms by which this moderation might occur including: (1) uncoupling the tether that exists between an individual and their mobile device/email, (2) making it easier for people to disengage from their email both during work hours and outside of work hours, (3) decreasing the number of distractions associated with

continual checking of email while concomitantly increasing work efficiency. Such speculation is consistent with empirical work done by Duxbury et al. (2014) which found that individuals with higher levels of perceived control were more able to control their out of office use of email.

Accordingly, we hypothesize the following:

H6: Work control will moderate the relationship between:

- a. “Email Volume” and email overload.
- b. “Email Hours” and email overload.
- c. “Important Email” and email overload.
- d. “Urgent Email” and email overload.

Methodology

Sample

Respondents were knowledge workers working for six different organizations (two private sector, four public sector) who had volunteered to participate in a multi-method research initiative being conducted by the authors of this paper which sought to identify strategies to help employees and organizations better management their email use. All six companies were motivated to participate in our research program because they were worried about how their employees were using email.

We used theoretical sampling (Eisenhardt, 1989) to identify individuals within these six organizations who use email regularly at work. We followed the lead of Dabbish and Kraut (2006) and elected to focus our study on knowledge workers (operationalized as white-collar managers and professionals) under the assumption that such individuals regularly use email during their workday. Contacts within five of our

sample organizations recruited volunteers by sending out an email to all their knowledge workers. The final firm used the company's listserv to send our survey to possible participants.

The survey included five sections: demographics, the employee's job, work demands, employee well-being, and electronic communication. Participants were informed that completion of the survey was voluntary, that they could choose not to answer any of the questions being asked, and that their employer would not know who participated in the study. Contact information for the researchers and ethics boards was provided in case participants had any questions or concerns.

Measures

Our objective measures of email demands were operationalized as follows. We began by asking participants to think about a typical workday/work week. To quantify Email Volume, we then asked them to estimate how many emails (work and non-work related) they receive/send on a typical workday. To quantify Email Hours, we asked participants to estimate approximately how many hours per week they devote to email-related activities while at work (both work and non-work-related emails). The wording of these questions is consistent with how other email researchers have conceptualized the email demands construct (e.g., Dabbish, & Kraut, 2006).

The remaining constructs were all quantified using validated multi-item measures from the academic literature. A full list of the items included in each of these measures along with the factor loadings, Cronbach's alpha, composite reliability (CR), and average variance explained (AVE) for each measure are provided in Table 6-1 (below).

Table 6- 1: Construct Items and Loadings⁺

Construct and Indicators	Loadings
Important Email Items ($\alpha = .84$, CR = .88, AVE = .56)	
A message that includes information/is a request for information that is critical to your ability to do your job	.72
A message that explicitly states, in the subject line that a reply or a deliverable is required by a certain date	.74
A message that relates to client services	.68
A message that comes from the organization and provides information on something which will impact my work (i.e., internet will be down, new policy)	.74
A message that contains job-related instructions	.78
A time-sensitive message (i.e., one that requires you or someone else to take action immediately)	.80
Urgent Email Items ($\alpha = .88$, CR = .91, AVE = .54)	
Is a follow up on a complaint from a client	.67
Is a follow up on a complaint from an employee	.75
Is a follow up on a complaint from my manager	.68
Involves someone who is in distress	.79
Involves sensitive issues (i.e., colleague is fired; client or colleague is emotional)	.78
Involves trying to track down someone that you need to talk to urgently	.73
A message which relates to an issue where a client is (or will be) negatively impacted (especially if you do not respond)	.73
A message which relates to an issue where a colleague at work is (or will be) negatively impacted (especially if you do not respond)	.77

⁺Note: Table 6-1 continues on the next page

Table 6-1 Continued: Construct Items and Loadings*

Construct and Indicators	Loadings
Email Overload ($\alpha = .90$, CR = .93, AVE = .73)	
I feel I spend too much time keeping up with my mail	.91
Email cuts into the time I wanted to spend on other tasks	.91
I have trouble keeping up with email on days I am away from my desk	.87
I spend too much time getting rid of unimportant messages	.85
When I return from vacation / time off, I feel overwhelmed when triaging my mail	.71
I am satisfied with the strategy I use to keep up with my mail*	Removed
Sometimes my emails may get lost or missed	Removed
Work Control ($\alpha = .84$, CR = .88, AVE = .61)	
How able are you to predict the amount of work you will have to do on any given day?	.75
How much control do you have over how quickly or slowly you have to work?	.84
How much control do you have over how much work you get done?	.84
How much are things that affect you at work predictable, even if you can't directly control them?	.65
In general, how much overall control do you have over work and work-related matters?	.80
Perceived Stress ($\alpha = .90$, CR = .92, AVE = .58)	
Been upset because something happened unexpectedly	.77
Felt that you were unable to control important things in your life	.86
Felt nervous or stressed	.81
Felt that things were going your way*	.65
Found that you could not cope	.75
Felt you were on top of things*	.71
Been angered because of things that happened outside of your control	.70
Felt difficulties were piling up so high that you could not overcome them	.82
Felt confident about your ability to hand your personal/family problems*	Removed
Been able to control irritations in your life*	Removed

* Indicates that the item was reverse coded before the summed average was calculated

The Important Email (six items) and Urgent Email (eight items) constructs were operationalized using measures developed and validated by Authors (in press). Respondents were asked to “Please think about a typical workday” and indicate “How often do you deal with (i.e., send, receive) the following types of email messages?” A list

of the items in these two measures can be found in Table 6-1. Respondents were provided with a 5-point Likert scale (1 = Never; 2 = 1 to 3; 3 = 4 to 6; 4 = 7 to 9; and 5 = 10 or more) on which to record their responses. Important Email and Urgent Email were then calculated as the summed average of the items included in the scales. In both cases, higher scores represent greater social/psychological email demands.

Email overload was operationalized using Hogan and Fisher's (2006) email overload scale. This measure of the construct was selected over other measures as the authors clearly explain how they generated and validated their measure and as it has been used successfully in other email research (e.g., Grevet et al., 2014). Respondents were asked to indicate the extent to which they agreed with each of the five items included in the measure. They were given a 5-point Likert scale (1 = Strongly Disagree, 3 = Neutral, 5 = Strongly Agree) to record their responses. Email overload was calculated as the summed average of the five items included in the measure. Higher scores represented greater levels of email overload.

Perceived stress was operationalized using the Perceived Stress Scale (PSS) developed by Cohen, Kamarck, and Mermelstein (1983). Respondents were asked to indicate the extent to which they agreed with each of the eight items included in the measure. They were given a 5-point Likert scale (1 = Very Rarely, 3 = Sometimes, 5 = Very Often) to record their responses. Perceived Stress was calculated as the summed average of the items included in the measure. Higher scores represented greater levels of Perceived Stress and population norms (see Cohen et al., 1983) were used to interpret the findings.

Work control was operationalized using the short version of Dwyer and Ganster's (1991) Work Control Scale. Respondents were asked to consider their current position at work when responding to each of the five items in the measure. They were given a 5-point Likert Scale (1 = Very Little, 3 = Moderate, 5 = Very Much) to record their responses. Work Control was calculated as the summed average of the items included in the measure. Higher scores represented greater levels of Work Control.

Control Variable. Based on studies from the well-being literature which show a strong link between total hours spent in paid employment and both role overload and perceived stress (e.g., Higgins et al., 2010) we elected to control for total hours worked in our analysis. Total hours in work per week was calculated as the sum of two questions: At present approximately how many hours per week do you spend in work-related activities during regular office hours and in work-related activities at home performed outside regular office hours (i.e., evenings or weekends)?

Description of Sample

Our final sample consisted of 1491 knowledge workers. Demographic information on the sample are presented in Table 6-2 (see next page). Means and standard deviations (SD) for all the constructs included in the model are shown in Table 6-3 (see next page). The sample is 60.2% female. Respondents report an average age of 46.8 years old. The majority of respondents (82.5%) hold management positions (the rest are professionals or work in professional sales). Respondents reported a lot of years of experience (mean of 16.3 years) in their current organization and in their current job (mean of 5.3 years). The sample was highly educated: 87% with a university degree and

57.3% holding at least one post graduate degree. The education and job tenure profiles are consistent with how we selected our sample.

Table 6- 2: Demographic Information on the Sample

	Total (n = 1491)
Gender:	
Male	39.6%
Female	60.2%
Other	.2%
Age Mean (SD*) in years	46.8, 8.4
Education:	
High School or less	5.2%
College	7.7%
University	29.7%
Post Graduate	57.3%
Job Type:	
Manager	82.5%
Professional/Sales	17.6%
Years with current organization: Mean (SD)	16.3 (9.3)
Years in current job: Mean (SD)	5.3 (4.7)
Total hours worked: Mean (SD)	57.8 (15.6)
*Standard Deviation (SD)	

Table 6- 3: Means, Standard Deviations, and Correlations for the Email Use Sample

Variables	Total Mean (SD)	1	2	3	4	5	6	7	8
1. Email Hours	11.60(8.36)	<i>1</i>							
2. Email Overload	3.80 (.91)	.28	.85						
3. Email Volume	88.53(64.91)	.28	.27	<i>1</i>					
4. Important Email	3.02 (.75)	.22	.36	.30	.75				
5. Perceived Stress	2.73 (.78)	.15	.41	.08	.21	.76			
6. Hours Worked	57.81(15.65)	.19	.36	.19	.20	.21	<i>1</i>		
7. Urgent Email	2.11 (.66)	.20	.34	.26	.61	.28	.22	.74	
8. Work Control	2.89 (.77)	-.16	-.40	-.07	-.21	-.45	-.24	-.28	.78

Note: The diagonal of this matrix is the square root of the AVE.

Respondents spent a substantive (mean of 57.8, SD 15.65) number of hours in employment-related activities per week – a finding that is again consistent with the fact that our respondents all worked as managers/professionals. Email demands in the sample

were high, supporting how we recruited our sample. Respondents spent on average 11.6 (SD 8.36) hours in email per week (i.e., 20% of their work week). They sent/received an average of 88.53 (SD 64.91) emails each day. They evaluated more of the emails that they sent/received to be important (mean of 3.02, SD .75) than urgent (mean of 2.11, SD .66). Given these data it is not surprising to note that the perception of email overload for our sample was relatively high (i.e., mean of 3.8, SD .91) while the perceived stress scores were moderate to high (mean of 2.73, SD .78) while work control was moderate to low (mean of 2.89, SD .77).

Data Analysis

In order to test our hypotheses, we used partial least squares structural equation modeling (PLS-SEM) with SmartPLS v. 3.2.7 (Ringle, Wende, & Becker, 2015) to evaluate our model. PLS-SEM was selected over its covariant based structural equation modeling counterpart (CB-SEM) because we are using our constructs to predict outcomes informed by Karasek's (1979) theory, which is what PLS-SEM is designed for and is something which CB-SEM struggles with (Hair, Sarstedt, Ringle, & Mena, 2012). PLS-SEM also does not hold any assumptions of normality. This study follows Hair et al.'s (2012) guidelines on how to conduct PLS-SEM. Hair et al.'s (2012) suggested settings for PLS-SEM were used using SmartPLS (v. 3.2.7) (Ringle, Wende, & Becker, 2015) software to conduct our analysis. Hair et al.'s (2012) suggested parameter settings were used to evaluate results.

Results

We begin by reporting on the measurement model and describe tests for measurement invariance. We then evaluate of the structural model.

Assessment of Measure Model

Hair et al. (2012) recommend that measurement models can be evaluated by examining the following criteria: indicator reliability, internal consistency, convergent validity, and discriminant validity.

Adequate individual item reliability was assessed by reviewing the loadings of items (see Table 6-1). Indicator reliability is generally perceived to be adequate when indicator loadings are at least .7 (Hair et al., 2011). Loadings of .4 are, however, considered acceptable for exploratory studies (Hair et al., 2012) and indicator loadings between .4 and .7 should only be removed if the composite reliability (CR) is below the recommended range (Hair et al., 2011). Cronbach's alpha and CR (Fornell & Larcker, 1981) are used to judge internal consistency. For adequate internal consistency, each factor's Cronbach's alpha and CR should be .7 or greater. Convergent validity is evaluated by examining the Average Variance Explained (AVE). The AVE measures the level of variance captured by a construct versus the level of variance due to measurement error. Scales with AVE greater than .5 are deemed to have adequate levels of convergent validity (Fornell & Larcker, 1981). Discriminant validity was assessed in two ways. We began by comparing the correlations among constructs to the square root of the AVE. Adequate discriminate validity is established when these correlations are smaller than the square root of AVE, as this scenario indicates that the construct shares more variance with its associated measure than it does with other constructs in the model (Fornell &

Larcker, 1981; Hair et al., 2012). Cross-loadings were then examined to ensure that multicollinearity was not an issue. Hair et al. (2011) notes that cross-loadings of .4 or greater may be problematic. If multicollinearity is present in our data, we will calculate the Variance Inflation Factor (VIF). As a rule of thumb, VIF should be less than 5 for the predictive constructs (Hair et al., 2016).

Table 6-1 shows factor loadings, Cronbach's alpha, Fornell and Larcker's measures of CR, and AVE for each of our well-being outcomes. All scales achieved a Cronbach's alpha above .7, Fornell and Larcker's CR above .7, and passed the test for convergent validity with AVE values greater than .5.

Table 6-3 shows the means (calculated as the average of all items in the measure), standard deviations, and correlations between constructs in the model. The diagonal element of the correlation matrix (bolded and italicized) is the square root of the AVE. The fact that for all constructs the square root of AVE is greater than the corresponding row and column correlations indicates adequate discriminant validity. We also examined the pattern of correlations between the measures of the different constructs in our model. Three correlations were above .4 (i.e., between email overload and perceived stress; between urgent email and important email; and between work control and perceived stress). Analysis determined that all our predictive constructs have a VIF between 1.18 and 1.73. The measurement model was, therefore, deemed to be acceptable.

Structural Model Evaluation

Figure 6-1 shows the path coefficients between the different constructs in our framework as well as R^2 values on the endogenous constructs in our model.

Figure 6- 1: Structural Model with Summary of Findings

Note: $*p < .05$. $**p < .01$. $***p < .001$. Total hours worked was included as a control variable

Our first two hypotheses relate to the relationships between our objective email demands and email overload. H1 posited that email volume would be positively related to email overload and was supported by the data ($\beta = .104$; $p < .001$). H2 was also supported as the relationship between email hours and email overload was positive and significant ($\beta = .111$; $p < .001$).

Our second set of hypotheses relate to the relationships between social/psychological email demands and email overload. H3 posited, that the number of

important emails sent/received would be positively related to email overload was supported by the data ($\beta = .151$; $p < .001$). H4 was also supported as the number of urgent emails sent/received was found to be positively related to email overload ($\beta = .098$; $p < .001$).

H5 posited that email overload would be positively related to perceived stress. This hypothesis was also supported by the data ($\beta = .414$; $p < .001$).

The final set of hypotheses posited that the relationship between email demands and email overload would be moderated by work control. The data did not significantly support H6a ($\beta = .003$; *n.s.*), H6b ($\beta = .000$; *n.s.*), and H6c ($\beta = .050$; *n.s.*): higher levels of control over one's work does not significantly impact the strong positive association between three indicators of email demand (volume, hours, and important emails sent and received) and email overload. H6d was, however, supported ($\beta = .130$; $p < .001$) as work control significantly moderated the relationship between urgent email and email overload.

The moderation by work control of the relationship between urgent email and email overload is plotted in Figure 6-2 (see next page). Two observations are important. First, email overload is higher for knowledge workers reporting lower levels of work control than their counterparts with greater levels of work control, at both low and high levels of urgent email. Second, we note that for respondents with lower levels of control over work, email overload seems to be more a function of email urgency per se than the number of urgent messages (i.e., a low volume of urgent emails triggers almost as much email overload as a higher volume of urgent email).

Figure 6- 2: Impact of Work Control on the Relationship between Urgent Email and Email Overload

As noted earlier, Total Hours Worked was included as a control variable in our analysis. Total Hours Worked was a significant control variable for email overload ($\beta = .189$; $p < .001$).

Discussion

In this paper we present the key findings from a research initiative in which JDC theory (Karasek, 1979) was used to develop and test a model to help us understand the relationship between email use and employee well-being. The model included four different indicators of email demands (i.e., email volume, email hours, important email, urgent email) as antecedents of two different wellness outcomes – email overload and stress. We also examined whether control at work moderated the relationship between email demands and email overload. Analysis controlled for total hours in work per week.

Antecedents of Email Overload

The first half of our model examines the relationship between four different indicators of the demands imposed on today's knowledge workers by email use and their perception that they are overwhelmed by the email that they send/receive in a given day (i.e., email overload). Our analysis makes several unique contributions to theory and practice with respect to the antecedents of email overload. First, we note the strong positive relationship between email demands and email overload, regardless of how email demands are conceptualized. This finding supports our theorizing and illustrates the importance of these four aspects of email use as key predictors of email overload. Second, this study reaffirms previous research in the area showing that email overload can be linked to objective indicators of demand such as the number of hours spent in email and the volume of email sent and received per week (Dabbish & Kraut, 2006; Barley et al., 2011; Jerejian, Reid, & Rees, 2013). It also supports the use of such measures to model email demands in studies of employee well-being.

Third, our study makes a unique contribution in that it examines the relationship between two social/psychological indicators of the demands associated with email communication (the volume of email sent/received each week that is perceived to be important and/or urgent) and email overload. By taking a more sociomaterial approach in our study we not only address a gap in the literature identified by Barley et al. (2011) but illustrate the importance of including social/psychological indicators of email demand in research studies on employee well-being.

Finally, our study demonstrates that both objective and social/psychological (i.e., subjective) indicators of email demand individually contribute to email overload. This

finding supports the need to include both types of measures in research exploring the relationship between email use and employee well-being (Barley et al., 2011).

The Prediction of Stress

Following the advice of Barley et al. (2011) we included a validated measure of perceived stress in the theoretical framework tested in our study. The inclusion of this construct in our model supports the following observations. First, our analysis determined that the relationship between email overload and perceived stress is positive and significant. Second, the fact that email overload explains just over 17% of the variation in perceived stress lends support to the idea that while email overload contributes to perceptions of perceived stress it is a separate construct. Researchers should not, therefore, measure email overload and talk about employee stress. Third, these findings establish a link between research on email use and email overload to the quite substantive body of employee well-being literature. Not only could this third observation lead to theories more typically associated with the well-being literature being used as a lens to tackle issues with email but it could also lead to more of a technology lens being used to investigate, and gain control of, well-being issues (Barley et al., 2011).

The Role of Control at Work

The framework grounding in this study uses Karasek's (1979) JDC theory, modified so that it better represents the goal of our study: to explore the relationship between email demands and employee well-being. As such, our study informs both the JDC and email and employee well-being literatures. A number of important observations can be made with respect to the results associated with this phase of our analysis.

First, we note that higher levels of control over one's work does not significantly impact the strong positive association between three measures of email demand (volume, hours, important emails sent and received) and email overload. Our analysis did, however, demonstrate that control over work is a significant moderator of the positive relationship between the volume of urgent emails sent and received on a daily basis and the perception of email overload. These findings offer partial support for Karasek's (1979) buffer hypothesis and are important for researchers and practitioners alike as they establish that the relationship between urgent email demands and strain outcomes can be mitigated by work control. These findings also offer support to Kain and Jex's (2010) suggestion that the inconsistencies in support from the literature for the buffer hypothesis have more to do with how demand and control constructs are measured rather than weaknesses in the theory.

Second, as noted earlier, email volume and email hours are the most common measures of email demand used by researchers working in the email well-being field. While our study aligns with the extant body of work in this area in that these two conceptualizations of email demand were found to be significant predictors of email overload, it also offers one possible explanation as to why studies using these constructs have not been effective in reducing email use – employees cannot easily control either email volume or email hours as these two demands are more a function of the content of the message (i.e., how much work it generated) and the social norms in the area in which they work (Bailey et al., 2011). These same arguments may also explain why the positive relationship between the demands inherent in sending and receiving important email was not moderated by work control. We speculate that the frequency with which employees

deal with important emails is a more a function of the work they are doing than the amount of control they have over their work and argue that knowledge workers are not going to be able to ignore or necessarily offload and forget about an important email that is critical to their ability to do their job. There is no workaround.

Third, a major contribution of this study is our observation that control over work does moderate the positive relationship between urgent email and email overload. We speculate that these results might be attributed to the fact that knowledge workers with higher levels of control over their work are: (1) more able take pre-emptive action to ensure that issues are resolved before they become urgent, (2) more able to delegate some of the content from an urgent email to their staff, and/or (3) more able to change the urgency of some of the emails received and break the “throwing fuel on the fire” send/reply/send/reply email cycle that we have personally observed often accompanies receiving an email that is perceived to be urgent. Future research in this area is needed to help us better understand this relationship and how to use the findings from this study to offer meaningful suggestions to employees and employers with respect to email management. Along these lines we note that three of the items included in our urgent email measure involve following up on a complaint! This observation would imply that holding oneself, subordinate employees, and colleagues accountable by employing strategies to ensure that work is done efficiently and effectively could have a huge impact on email overload and employee well-being.

Fourth, we note that the ability of work control to moderate the relationship between urgent email and email overload seems to decrease concomitantly with an increase in email urgency. This decrease implies that work control can only moderate the

negative impact of email urgency to a point and reinforces the need to find ways to reduce the likelihood that knowledge workers are required to send/receive an urgent email. We expect that this recommendation is easier said than done, however, as it may require people reduce the tendency to procrastinate. Future research in the area is definitely required.

Finally, Barley et al.'s (2011) finding that employees perceive email to be a symbol of stress above and beyond the stress due to the emails they receive may also shed some light on our findings. Our result may have more to do with the fact that it is the lack of control over their email (or work in general) that is anxiety inducing and causing stress not the demands inherent in email itself (i.e., volume, hours, importance). This interpretation of the data is consistent with follow-up post hoc analysis undertaken by the researchers which determined that control over work did not significantly moderate the relationship between email overload and perceived stress. This interpretation of the data does not, however, explain why control over work was found to moderate the relationship between urgent email and email overload but not the other relationships in the model. It does, however, reinforce the need for researchers interested in employee well-being to include measures of control over work and control over email as moderators of the various relationships in their models.

Conclusion

The findings from this study support the following conclusions. First, email overload is a distinct construct which can be predicted by email demands and predicts perceived stress. This conclusion lends weight to its use in the email and well-being research.

Second, measures tapping into the social/psychological demands imposed by email (i.e., important email and urgent email) are significant predictors of email overload. They also provide insight into what some possible solutions for mitigating email overload may be beyond simply trying to tackle email volume or hours spent in email. More specifically, findings from this study support the need to reduce the need for employees to deal with urgent emails. Such strategies would have the additional benefit of giving employees more time to deal with important matters. Both approaches should help reduce perceptions of email overload.

Three, work control moderates the relationship between the amount of urgent emails sent/received and email overload. This moderation is an important finding as it provides researchers and organizations with information that they can use to reduce email overload. Expertise and positional power are not necessarily things which an organization can bestow on all their employees, however, other forms of work control are more easily given. Ensuring that employees work is more predictable by simply keeping employees more in the loop on the goings on of the organization, for example, could help reduce the number of unexpected urgent emails as it gives employees the opportunity to work proactively rather than reactively. Providing clarity at the work group level with respect to expectations regarding email use (e.g., response time, who should be copied, after hours use of email) – what we call email etiquette (Duxbury et al., 2014) - could also increase an employee's sense of autonomy and control over their work and the perceived need to reply right away to all email messages. This increase in control should, in turn, reduce email overload and enhance employee well-being.

Four, we note that control at work does not moderate the positive relationship between the demands associated with email importance and email overload. This conclusion highlights the necessity to convey any information included in an email to others in an efficient manner (clear writing, avoiding duplication, unnecessary reply all's, etc.) and introduces the need to determine how to reduce the quantity of important emails sent and received within the organization over the long run (more face to face discussions, greater use of the telephone).

Finally, this study confirms what we intuitively already know - email is a great tool for both work and personal communications but its use comes at a potential cost – an increased sense of being overwhelmed by email and higher levels of stress. The direct link between email overload and stress not only supports the continued use of email overload as a measure in the email and well-being literature, it also supports need for more research that considers the impact of email on employees in the well-being literature. Our study also offers some support for Barley et al.'s (2011) suggestion that technologies, such as email, not only be investigated as a source of stress, but also as a potential way to reduce stress.

Limitations and Future Research

As is the case with most research, our study is not without limitations. A few of the issues which stood out to us are listed below along with suggestions for possible future research.

First, one of the major issues with this study is that it is cross-sectional. While cross-sectional research is convenient, its major downside is that it does not provide a good basis for establishing causality. Future research in the area should employ a

longitudinal design to help us elucidate the directionality of the relationships tested in this study.

A second limitation is that we limited our study to knowledge workers. While our decision to focus on this group was supported by the fact that our respondents made extensive use of email communication in their work, it limits the generalizability of our findings to managers and professionals. This limitation is unfortunate as other job levels may be negatively impacted by email use. Future research into email and well-being could actively recruit email users that do not see email communication as critical to their work, but that still use email. The groups to target would be up to the researchers and the groups available to them, but a few suggestions are: front line workers, technical employees, and sales representatives. Another suggestion is to find groups that do not typically see email communication as critical to their work but are currently going through a period where we would expect them to be receiving more important and/or urgent email than normal. For example, employees going through an organizational change, employees assigned to a temporary task force, and employees involved in a large project (e.g., setting up a conference, organizing construction/a move/technical upgrades).

A third limitation of this study is that our data is all self-reported by our participants. This limitation means that there could be bias in our results with employees under or over reporting their email demands. Future researchers could benefit from the inclusion of non-self-reported data by investigating employees' emails directly. This research could be accomplished by gaining access to a group of employees' emails over a period of time, say a month. Then the researchers could attempt to objectively rank

employees' emails against the indicators in the important email and urgent email measures. This suggestion would also give researchers a more accurate measure of email volume. Time spent in email would be more difficult to accurately assess as to measure this variable would require some form of observation of employees.

A fourth limitation is that we limited our study to email communications. We made this choice to simplify our research and because email is so omnipresent in the workplace (The Radicati Group, 2018). By not investigating a wider range of social media use, especially for non-business use, we are missing a large portion of users online networking activities and their affect on people's well-being. To address this issue, future research could investigate social media use with a focus on the importance and urgency of the time spent on these sites to the users. This line of research could compare the productivity and well-being outcomes of those who make inappropriate use of social media to those who make effective use of social media.

Finally, we note that despite our best efforts, many of us are spending more and more time engaging in online communications at work and during our personal time. This study provides some suggestions on how disciplined users and organizations can mitigate the negative impact of email on employee well-being. It also endorses the need for researchers to develop and examine more complex models that include a wider variety of indicators of email use and well-being outcomes as well as mediators and moderators of the relationships between demands and well-being. Such models are critical for theory development in this area and for bridging the research-practice gap.

Chapter 7: Conclusion

The omnibus objective of this thesis is to develop and validate a research instrument which can be used by researchers and practitioners to quantify the number of important and urgent emails processed by employees at all levels. We also seek to demonstrate the utility of this measure by exploring the relationship between email use and employee well-being. To achieve this goal we: (1) developed a framework that describes how employees classify emails they receive into important and urgent constructs, (2) developed and empirically validated a measure that allows the classification of email into important and urgent constructs, and (3) investigated the relationships between the number of important and urgent emails employees process in a typical work week and employee well-being. Three papers were written summarizing the methodologies we used to meet these goals along with key results and conclusions.

This final chapter highlights how the research undertaken and described in this thesis contributes to our understanding of how knowledge workers use email and how this use impacts their well-being by developing and testing measures describing what employees perceive makes an email important and/or urgent. In this section we also outline the limitations associated with the methodology we used and describe how our research contributes to the academic and practitioner literatures. This section is divided into four main sections. First, the key findings from the literature review are presented in Section 7.1. The focus here is to help the reader understand how the literature informed both our research objectives as well as informed the methodological approach taken. The key contributions to practitioners and scholars to be found in each of the three studies undertaken for this thesis are summarized in Section 7.2. The limitations are highlighted

and discussed in Section 7.3 of the chapter along with suggestions for future research in this area. The chapter concludes in Section 7.4 by outlining the implications of this research for academics as well as practitioners.

7.1 Key Findings from the Literature

7.1.1 Email and email/well-being literature. In our initial review of the email literature we set out to identify gaps in our understanding of the relationship between the use of email and employee well-being that could, if addressed, perhaps help individuals and organizations tackle the challenges reported in both the popular and academic press associated with its use. There were two issues which stood out to us. First, the literature highlights that regardless of the reasons for its use, high reliance on email comes at a cost in terms of employee well-being (e.g., Dabbish & Kraut, 2006; Barley et al., 2011). Second, although we identified a number of studies which took an etic approach and used objective measures to quantify email use (e.g., email volume, email hours) and categorized email (e.g., tasks, personal information, meetings, etc.), there were very few studies which used an emic perspective and examined how email users themselves evaluated the different emails they sent/received. We know employees think that email is important to their work (Purcell & Rainie, 2014), but are all emails equally important? Our review supports the idea that without a better understanding of how users classify the emails that they use in terms of their importance and their urgency, suggestions on how to improve email usage will be limited. We, therefore, set out to fill this critical gap in the research literature.

The underlying theoretical framework selected for all three papers of this thesis is Covey's (1990) time management matrix (see Figure 2-1 in Section 2.1.3). This matrix

helped us structure our thinking around important and urgent email as concepts and facilitated the development of practical suggestions on how email management could be improved in terms of using email effectively (focus on important tasks) and efficiently (reduce time spent in unimportant tasks and tackle important tasks before urgent issues arise).

7.1.2 Classifying email with respect to their importance/urgency. The academic literature on the concept of importance is quite limited. Based on Emmet's (1946) discussion we know that there are essentially two types of importance: relativist and absolutist. The relativist sense of importance determines the importance of something in relation to something else (i.e., a means/end relationship). The project management literature, for example, assesses importance of something relative to its probability of occurring and the impact it will have on the project (Ward, 1999). The absolutist sense of importance, on the other hand, focuses on whether the goal itself is important (Emmet, 1946). Copper (1968) referred to theories which tried to cram decision criteria under one umbrella of what is "truly" important as "monolithic" theories.

Our review of the importance literature has several implications for this thesis. First, we note that the absolutist sense of importance is based on the perspective of the individual decision maker in the moment the decision is being made (i.e., it changes depending on context). This implication suggests that to truly understand what makes an email important one has to ask the sender/receiver of the communication – an idea that is supportive of the emic approach used in the first study undertaken for this thesis as well as the "imposed etic—emic—derived etic" approach (Berry, 1969, 1989) used to develop the measures presented in Paper 2. Second, the importance literature implies that we

define our email importance construct with enough flexibility to allow for individual differences in what was considered important by the employee in the moment. With this implication in mind, in our research we defined an important email as *one that conveys information of great significance, consequence, or value to the recipient*. This definition also increased the likelihood that the measure we developed to quantify the important email construct contained enough flexibility for changing contexts.

While the idea of urgency is a more widely covered in the academic literature, the definition of what constitutes something which is urgent is hardly touched upon. Landy et al. (1991) suggest that the level of urgency someone feels is based on the individual's personality. Those high in time urgency are often referred to as "Type A" personalities and those low on time urgency are referred to as "Type B" personalities. Ancona et al. (2001) have suggested that these different perceptions between employees in the workplace should perhaps be managed to increase the effectiveness of the organization and suggest "temporal zones" (with Type A personalities working in a high-pressure areas, Type B personalities working in a low-pressure areas, and those in between working in a medium-pressure areas). This type of thinking gave rise to the idea that time urgency could be explicitly managed and that teams which are well managed based on their time urgency personality traits could be more effective than those that are not (Mohammed & Nadkarni, 2011).

Another perspective the literature takes on urgency is that of applying pressure or "creating a sense of urgency". "Creating a sense of urgency" involves changing someone's perceived time pressure which is based on an individual's assessment of the amount of effort and difficulty required to achieve a specified goal in the time remaining

(Maruping et al., 2015). This type of urgency is the way that the construct is typically defined in the change literature (e.g., Huy, 2001), the R&D literature (e.g., Pinto and Slevin, 1989), and in research on environmental issues (e.g., Anderson and Bateman, 2000).

Our review of the urgency literature supports the idea that what makes an email urgent may be affected by individual personality traits and the environmental time pressure placed on these individuals. These factors can, and perhaps should, be managed to improve email performance of employees and the organization through leadership focused on managing urgency at all levels.

Our review also determined that, with one key exception, researchers who are studying email use and its link to employee well-being have not explored the idea of an email's importance and urgency. Dabbish et al.'s (2005) article which hypothesized concepts like the sender of the email and the content of the message will be related to the importance of the email based on their review of the email literature was, in fact, the only research article we could find on this topic. Dabbish and colleagues take an etic approach to the study of an email's importance and made a number of assumptions that are at odds with the absolutist definition of importance (e.g., they assumed that if the message was sent from someone that the receiver worked with it would be considered important). Our review supports the idea that we do not fully understand how the email sender/receiver conceptualizes importance.

The absence of empirical research on this topic (particularly research that employed an emic approach) motivated our exploration of the topic. It also encouraged our use of an emic approach and Eisenhardt's (1989) building theory from case

methodology as a first step towards understanding what makes an email important and/or urgent (see Section 3.2.3 of this thesis). An emic/inductive approach is considered appropriate when researchers seek to tackle “grand challenges” that currently have no obvious solution (Eisenhardt et al., 2016) and is consistent with the fact that more recent research in the domain also takes more of an emic approach (e.g., Barley et al., 2011; Mazmanian, Orlikowski, & Yates, 2013; Mazmanian, 2013; Duxbury et al., 2014).

The first research study completed as part of this thesis contributes to the overall objective by providing an examination of how employees evaluate the emails they receive as important and/or urgent. More specifically, the paper examined what cues employees used to determine the importance and/or urgency of the emails they receive. Our findings were that employees find emails salient in a similar manner to how Mitchell et al.’s (1997) stakeholder salience model was describe. We found evidence that salience in terms of Mitchell et al.’s operationalization was based on relative importance and followed Ocasio’s (1997, p. 189) three principles to explain how organizations “distribute and regulate the [salience and] attention of their decision makers” (i.e., in context). These findings inform the measures in our second paper and provide further understanding of what the items in these measures represent (i.e., they are expressed in terms of power, legitimacy, and urgency from a relative perspective in context).

7.1.3 Measures of important email and urgent email. Ducheneaut and Watts (2005) categorize the email literature into three categories based on three metaphors: “email as a file cabinet”, “email as a production facility”, and “email as a communication genre” (see Section 2.2.1). These authors argue that despite the plethora of important insights research in the domain has provided us with respect to email use, work-related

email use continues to grow. Ducheneaut and Watts (2005) claim that researchers who study email use are taking too narrow of an approach to resolving issues with email which has meant that when researchers offer solutions from one perspective, they fail to see issues that may arise from the other perspectives. They suggest that more effective solutions to the email challenge might be obtained if researchers studied email from multiple perspectives.

Important and/or urgent email as constructs are just barely touched upon in the email literature. Dabbish et al.'s (2005) study on what characteristics make an important email is one of the few exceptions. Based on the literature these authors hypothesized that things like who sent the email and the content of the message would be related to email importance. To test their hypotheses, they compared their hypothesized concepts against a four-item measure of importance. Unfortunately, their four-item measure was based on assumptions which are not aligned with how importance is defined in the literature. Nor do the researchers present any tests of reliability or validity of their measure of importance in their paper. The lack of a measure of these two constructs motivated the second research objective addressed in this thesis.

Paper 2 uses a mixed-methods “imposed etic—emic—derived etic” approach to develop our measures of the email importance/urgency constructs (Berry, 1969, 1989). The methodology used was Buss and Craik's (1980; 1981; 1983a) AFA with Cooper et al.'s (1990) validation of the measure stage added. We followed the steps laid out by Cinite et al. (2009) described in Section 3.3.3 Table 3-4 and ensured that Hinkin's (1995) “best practices” in scale development were followed.

Cooper et al. (1990) suggest the AFA as a “useful technique” for creating constructs in the field of organizational behaviour in cases where you have hit a wall in your research due to a lack of measures for your domain of interest or when the current measures lack validity. Since we found ourselves without any good measures for important and urgent email, and as we are dealing with subjective constructs, the AFA was considered a good approach for developing our measures.

The second paper in this thesis contributes to the overall objective by developing and empirically validating measures quantifying the important email and urgent email employees send/receive. An analysis of the items in the important email measure indicate that while an email that is considered urgent is also considered important, the evaluation that an email is important does not always make it urgent. For example, we found that while employees typically evaluated emails that related to work issues to be important, they did not always consider them urgent.

An analysis of the items in the urgent email measure indicate they all come from or involve someone of importance to the email recipient (a key stakeholder) and contain information conveying that by acting on the information in a timely fashion the email recipient will be able to avoid or prevent some negative consequence. This observation supports the idea that importance is required for something to be considered urgent. The measures developed in the second paper were used in the third paper to test the relationship between important email/urgent email and employee well-being, further establishing their validity and reliability.

7.1.4 Email and well-being. The email and well-being literature is essentially broken up into two parts: the email and work-life balance literature and the email overload literature (Barley et al., 2011). The email and work-life balance literature views email as encroaching on employees' personal time, whereas, the email overload literature views email as "overloading" employees with variety and volume of tasks for the time available.

The email and work-life balance literature views technology as tethering employees to work no matter where or when they are (Murray & Rostis, 2007). Technology is blurring the boundaries between roles and the different domains are spilling over onto one another. Although some researchers have found that the use of mobile technology outside of work hours positively impacts work-life balance (Duxbury et al., 1998; Hill et al., 2003; Duxbury et al., 2014) others (e.g., Chesley, 2005) report that the persistent use of communication devices (not computers) was significantly linked to work-life conflict. Duxbury et al. (2014) noted that those mobile users who lack self-efficacy, lack self-control, and have an external locus of control were more likely to experience higher levels of work-life conflict.

The email overload literature initially saw the problem with email resulting from email being used for tasks it was not designed for (Whittaker & Sidner, 1996). This observation resulted in changes in the design of email to better handle these tasks. It seems that while these solutions were reasonably successful, the problems with email remain (Fisher et al., 2006; Grevet et al., 2014). The definition of email overload has been expanded since Whittaker and Sidner's (1996) seminal article and now email overload more generally refers to a specific type of information overload, where the

information exceeds people's ability to cope with it (Thomas et al., 2006). Interestingly, Dabbish and Kraut (2006) found that restricting email checking increased feelings of email overload and Bradley et al. (2013) found no difference in terms of stress when they reduced email checking to a once a day strategy. Bradley et al. (2013) speculate that their findings may be due to the increased stress of not keeping up with email.

Karasek's (1979) demand—control—strain model was used as the theoretical framework for Paper 3. More specifically, the buffer hypothesis which states that control can moderate the relationship between demands and strain, such that increasing control is a means of lowering strain (Van der Doef & Maes, 1998; 1999). We followed in the footsteps of other researchers such as, Higgins, Duxbury, and Julien (2014) and Duxbury and Halinski (2014) and changed how these constructs are conceptualized and operationalized to make them more relevant to our investigation for this thesis (see Section 2.3.2 for a complete description of our reconceptualization).

Demands were conceptualized more broadly than most previous email research and included two different sets of demands associated with the use of email in our model: (1) the traditional objective indicators of demands used by most researchers in this domain (i.e., email volume and email hours), and (2) social/psychological demands (our subjective measures of important email and urgent email) as recommended by Barley et al. (2011).

We conceptualized email overload as a key outcome of email use and as a predictor of perceived stress. By doing so we addressed another of Barley et al.'s (2011) critiques of research in this area—that researchers studying how email use impacts employee well-being do not include measures of stress in their study but rather

extrapolate that stress occurs when email overload is high. It also adds to our understanding of email overload by including four predictors of the construct.

The ability of work control to moderate the relationship between our email demands and our indicator of strain (i.e., email overload) was also investigated. The use of this construct is supported by the buffer hypothesis (Karasek, 1979) and addresses Barley et al.'s (2011) issue that researchers investigating the relationship between email use and well-being fail to consider the moderating effect of control.

The research reported on in the third paper in the thesis takes an etic approach and uses PLS-SEM as the methodology to test our model. Hair et al.'s (2012) guidelines were used as the basis for applying PLS-SEM. PLS-SEM is an appropriate choice given that we are using constructs to predict outcomes informed by theory rather than testing/confirming the structure of a theory (Hair et al., 2012).

Paper 3 contributes to our omnibus research objective by investigating the relationship between social/psychological email demands (i.e., our important email and urgent email measures) and outcomes of email strain (i.e., email overload) and employee well-being (i.e., perceived stress). Our third paper found that email overload is a distinct construct which can be predicted by email demands and can predict perceived stress and supports the use of the email overload construct in the email and well-being research.

Paper 3 also found that our important email and urgent email measures significantly predict email overload, lending weight to the use of more social/psychological demands in the email and well-being research. Finally, work control was found to significantly moderate the relationship between urgent email and email overload. This finding, teamed with the fact that work control did not moderate any of the

other demand-email overload paths in our model, provide us with information on how employers can perhaps improve employee well-being – by increasing an employee’s sense of control over their work. This finding is also partially supportive of Karasek’s (1979) buffer hypothesis.

7.2 Contributions of Thesis

This thesis makes a number of contributions. First, this thesis contributes to our understanding of the important and urgent constructs (at least in terms of email). Important and urgent were expressed in terms analogous to those used by Mitchell et al. (1997) in their typology of stakeholder salience (i.e., power, legitimacy, and urgency) relative to the context in the moment and, is also connected to Ocasio’s (1997) three principles of attention. An important email was expressed as coming from a powerful and/or legitimate stakeholder and/or having legitimate content. Urgency was expressed in a similar way as importance except with a higher level of immediacy due to risk or consequences. Findings from this study also contribute to the refinement of Mitchell et al.’s (1997) Stakeholder Salience Model, at least in terms of the evaluation of email as we were not able to find any examples of salient emails which were urgent but did not contain some level of power or legitimacy. They also show a link between Mitchell et al.’s Stakeholder Salience Model and Ocasio’s (1997) three principles of attention by demonstrating the importance of the idea of context to both salience and attention.

Second, this thesis contributes to the email literature by developing and validating two social/psychological predictors of email use, specifically, our measures of important email and urgent email. These measures can be used to explore relationships between email use and outcomes of interest at both the employee and employer levels. Our

important email and urgent email constructs were found to be significant predictors of email overload. This finding provides a new avenue for researchers to make suggestions on how to mitigate the negative effects of email use by focusing on reducing the number of urgent emails employees deal with and spending more time on managing important emails. These measures begin to close the gap in the email literature noted by Barley et al. (2011) – a lack of meaningful measures of social/psychological factors driving the use of email.

Third, this thesis contributes to our understanding of email overload as a construct. By predicting it with email demands and linking it directly to perceived stress we provide evidence that email overload can be considered a distinct construct that measures something other than stress. Our research also supports the use of this construct in the email and well-being literature.

Finally, this thesis provides further support for Karasek's (1979) buffer hypothesis (Van der Doef & Maes, 1998; 1999) and emphasizes the important role control at work can offer to those interested in reducing the negative outcomes associated with an increase in email demands. Our finding that work control can moderate the relationship between urgent email and email overload is important information that can be used by organizations, researchers, and practitioners who are interested in reducing email overload.

7.3 Limitations and Directions for Future Research

This section discusses the main limitations of this thesis and identifies a number of avenues for future research based on these limitations. It should be noted that in this section of the thesis we focus on limitations which spanned all three papers. A more

detailed list of limitations specific to the different streams of research can be found in the papers themselves.

The first limitation of this thesis is that the focus of the interviews and measures was on what was the most prototypical examples of important email or urgent email and not on what constitutes unimportant or not urgent email or anything in between. The absence of the constructs of interest might have been as enlightening as their presence and certainly would have yielded more interesting results had we thought to pursue it at the time. Likewise, a wider spectrum of levels of email importance or urgency might have provided more insights into email use.

To address these issues future research in the area could focus on creating constructs of varying degrees of importance and/or urgency in order to capture a more comprehensive picture of email demands. It would also provide researchers and practitioners with more information on how organizations and/or individuals could improve their email usage.

The second limitation of this thesis is that the interviews and surveys were conducted at the respondents' place of work. As such, respondents' answers were very much work focused. Some of the participants in our interviews, for example, had a great deal of difficulty assigning importance to personal emails. Future researchers could recruit respondents from other settings. Researchers could, for example, recruit and interview people visiting their parents in an elder care facility or attending sporting events at their children's school. They could also use social media sites, such as facebook, to recruit participants for surveys. Ocasio's (1997) first two principles (i.e., focus of attention and situated attention), would suggest that if we caught our informants

at a time when they were focused on aspects of their lives outside of their workplace their responses in terms of what makes an email important or urgent might be quite different. This assumption needs, however, to be tested.

The third limitation was that we asked employees about the emails they do receive and failed to ask them about the kind of emails they should be receiving. This oversight limits our analysis of our interviews and may have resulted in items missing from the measures of our constructs. It is possible that employees possess valuable insights on the kind of emails they should be receiving to facilitate their work that they would be willing to share if asked. Future email research should not only focus on the important and/or urgent emails employees are sending and receiving, but also what important and/or urgent emails they should be sending and receiving. This research could lead to insights on how to mitigate organizations email issues (e.g., perhaps missing pieces of information in the goings on in other parts of the organization are resulting in more clarification emails than there should be). It could also reveal areas where organizations are dropping the ball as email communications provide an insight into what organizations are paying attention to (e.g., employers may not be holding some employees accountable for doing their work because no one is seeing if it is done, this lack of accountability could, in turn, be generating more issues and email in other parts of the organization to compensate).

The fourth limitation is that we limited our study to knowledge workers. While our decision to focus on this group was supported by the fact that our respondents made extensive use of email communication in their work, it limits the generalizability of our findings to managers and professionals. This limitation is unfortunate as other job levels

may be negatively impacted by email use. Future research into email use could actively recruit email users that do not see email communication as critical to their work, but that still use email. The groups to target would be up to the researchers and the groups available to them, but a few suggestions are: front line workers, technical employees, and sales representatives. Another suggestion is to find groups that do not typically see email communication as critical to their work but are currently going through a period where we would expect them to be receiving more important and/or urgent email than normal. For example, employees going through an organizational change, employees assigned to a temporary task force, or employees involved in a large project (e.g., setting up a conference, organizing construction/a move/technical upgrades).

The fifth possible limitation is the homogeneity of our knowledge-worker sample (i.e. our sample was largely made up of older managers). Future research could address this issue by testing the findings on a more diverse sample with respect to both age and job type.

The sixth possible limitation in this thesis is that we made the supposition that employees classify emails they receive in terms of their importance and urgency, and that this classification impacts how they treat the messages received. To the extent that this is not the case, this assumption may also limit the generalizability of our findings. Future researchers could address this issue by taking a more social-constructivist approach when examining how employees evaluate their email. That being said, the fact that none of the 30 employees in the interview stage of this thesis had any difficulty in discussing what made an email important or urgent reinforces our assumptions with respect to these two construct.

The seventh issue which limits this thesis is that our study did not ask people to specify the device(s) they used to receive and reply to important and urgent emails (i.e., tablets, phones, etc.). Future researchers could investigate the relationship between the type of device(s) used to read and reply to emails, important and urgent emails, and employee wellbeing. More specifically, they could examine the differences in stress level between those that only use a desktop computer (both at work and at home), those that use a laptop computer, those that use a more convenient and perhaps interruptive device such as a cell phone or a tablet, and those that use some combination of the above.

The eighth issue is that we focused on the amount of important and urgent email sent and received within a typical-work week in this thesis and ignored the fact that the amount of important and urgent email sent and received likely changes in different periods of employees' work cycles. Exploring these changes and the differences in email type within these different periods could have been enlightening. Future researchers could address this issue by exploring the ebb and flow of email over the course of employees' work cycles, and examining the possible differences in stress levels, changes in email type (e.g., changes in the number of important and urgent email received in each period), and what issues might be causing these changes (e.g., mismanagement, lack of accountability, procrastination, etc.).

A final limitation is that we limited our study to email communications. We made this choice to simplify our research and because email is so omnipresent in the workplace (The Radicati Group, 2018). By not investigating a wider range of social media use, especially for non-business use, we are missing a large portion of users online networking activities. Future research could investigate social media use with a focus on the

importance and urgency of the time spent on these sites to the users. This line of research could, for example, compare the productivity and well-being outcomes of those who make effective use of social media sites (those focusing on facilitating issues of importance) to those who make ineffective use of social media sites.

To summarize, email management is a complex issue. This complexity makes it difficult to incorporate all potentially relevant constructs in any one study. The work done in this thesis provides a useful start by developing and testing measures of email importance and urgency. Future research in the area could and should use these measures in different context to help both organizations and employees better understand the nuances in email use.

7.4 Implications for Practitioners

This section provides some of the key implications for practitioners from this thesis. Other implications can be found at the end of each of the papers that are included in this document.

First, individuals, organizations, and perhaps societies should use Ocasio's (1997) principle of structural distribution of attention (the third principle) to help clarify priorities, goals, and expectation so that behaviour which leads to desired goals will be more salient and given more attention (Latham & Locke, 2007). This suggestion is based on the first paper's finding that important email and urgent email are determined by salience in context as described by Ocasio's (1997) three principles of attention. This implication takes into account Ocasio's observation that the third principle is the only one which can be consistently controlled. This principle should also be used to increase the urgency of important emails, as without some level of urgency important emails will

likely be left until they become urgent, an outcome that is likely to lead to increased levels of employee stress.

Second, those in positions of power need to be very mindful about the emails they send out. Our results show that employees evaluate emails sent by those in positions of power to be highly salient and give them priority over other emails (and work in general) which convey information that is legitimate and may also be urgent. Those in power need to take care not to send abusive and careless emails as described in Paper 1 of this thesis and take the following recommendation to heart – the more power you have over others the more you need to think before you send.

Third, individuals and organizations should try to identify ways to reduce the number emails sent/received that are evaluated by employees as being both important and urgent (modified from a suggestion by Covey, 1990 based on our findings in Paper 1). This suggestion could be accomplished by determining how best to encourage employees to (1) not leave work/projects to the last minute, especially when help is needed from co-workers (I need X done by Monday morning is not a welcome email on Friday evening), (2) take more care when crafting the emails sent out to ensure that they are clearly written and unambiguous, and (3) having people in positions of power putting thought into the requests they make of subordinates.

Fourth, by embedding our measures from the second paper in a theoretically driven nomological network researchers should be able to get a better understanding of the predictors, moderators, and outcomes associated with the receipt of varying number of important and urgent emails in a specified time period. This understanding could help

both service providers and employers regulate email use in their organization such that they maximize the benefits and minimize the drawbacks of email use.

Fifth, where possible organizations should try to give employees more work control. Although work control through means such as expertise and positional power cannot be given to all employees, other forms of work control can be. For example, employers could try to enhance the extent to which employees have some predictability at work and enhance their ability to plan the work to be done by keeping them in the loop on what is going on in the organization. Providing more clarity at the work group level in terms of expectations/policies regarding email use could also help increase employees sense of autonomy. This suggestion is supported by the finding in the third paper that the relationship between urgent email and email overload is moderated by work control.

Sixth, our findings on email overload being linked to stress imply that organizations that wish to reduce their employees' stress levels should view the reduction of email overload as one possible avenue to achieve this goal. The findings imply that this reduction of email overload can be accomplished by trying to reduce any or all of our antecedents, and/or by increasing the levels of work control employees have over their urgent email.

Finally, practitioners (and researchers) should use both objective and subjective measures when quantifying the demands associated with email usage. While objective scales such as email volume and email hours are useful as predictors of email overload, they do not provide much help when it comes to making recommendations on how to manage this form of communication (i.e., a recommendation to just send fewer emails is unlikely to have much of an impact). The information contained in our more subjective

measures of email demands did, however, enable us to give more specific suggestions on how to reduce email overload.

Chapter 8: References

- Aberdeen, D., Pacovsky, O., & Slater, A. (2010, December). The learning behind gmail priority inbox. In *LCCC: NIPS 2010 Workshop on Learning on Cores, Clusters and Clouds*.
- Ackerman, M. S. (2000). The intellectual challenge of CSCW: the gap between social requirements and technical feasibility. *Human-Computer Interaction*, 15, 179-203.
- Agle, B. R., Mitchell, R. K., & Sonnenfeld, J. A. (1999). Who matters to Ceos? An investigation of stakeholder attributes and salience, corporate performance, and CEO values. *Academy of Management Journal*, 42, 507-525.
- Allen, G. (1993). An application of the act frequency approach in the study of person-job fit. *Library & Information Science Research*, 15, 249-255.
- Ancona, D. G., Okhuysen, G. A., & Perlow, L. A. 2001. Taking time to integrate temporal research. *Academy of Management Review*, 26, 512-529.
- Anderson, L. M., & Bateman, T. S. (2000). Individual environmental initiative: Championing natural environmental issues in US business organizations. *Academy of Management Journal*, 43, 548-570.
- Baer, M., & Oldham, G. R. (2006). The curvilinear relation between experienced creative time pressure and creativity: moderating effects of openness to experience and support for creativity. *Journal of Applied Psychology*, 91, 963-970.
- Bälter, O., & Sidner, C. L. (2002, October). Bifrost Inbox Organizer: Giving users control over the inbox. In *Proceedings of the second Nordic conference on Human-Computer Interaction* (pp. 111-118). ACM.

- Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to causal modeling: Personal computer adoption and use as an illustration. *Technology Studies*, 2, 285-309.
- Barley, S. R., Meyerson, D. E., & Grodal, S. (2011). E-mail as a source and symbol of stress. *Organization Science*, 22, 887-906.
- Berridge, K. C. (2007). The debate over dopamine's role in reward: the case for incentive salience. *Psychopharmacology*, 191, 391-431.
- Berry, J. W. (1969). On cross-cultural comparability. *International Journal of Psychology*, 4, 119-128.
- Berry, J. W. (1989). Imposed etics-emics-derived etics: The operationalization of a compelling idea. *International Journal of Psychology*, 24, 721-735.
- Block, J. (1989). Critique of the act frequency approach to personality. *Journal of Personality and Social Psychology*, 56, 234-245.
- Blount, S., & Janicik, G. A. (2001). When plans change: Examining how people evaluate timing changes in work organizations. *Academy of Management Review*, 26, 566-585.
- Bommer, W. H., Johnson, J. L., Rich, G. A., Podsakoff, P. M., & MacKenzie, S. B. (1995). On the interchangeability of objective and subjective measures of employee performance: A meta-analysis. *Personnel Psychology*, 48, 587-605.
- Boswell, W. R., & Olson-Buchanan, J. B. (2007). The use of communication technologies after hours: The role of work attitudes and work-life conflict. *Journal of Management*, 33, 592-610.

- Bradley, A., Brumby, D. P., Cox, A. L., & Bird, J. (2013, September). How to manage your inbox: is a once a day strategy best? In *Proceedings of the 27th International BCS Human Computer Interaction Conference* (p. 20). British Computer Society.
- Brown, T. A. (2014). *Confirmatory factor analysis for applied research*. Guilford Publications.
- Brunnicardi, F. C., & Hobson, F. L. (1996). Time management: a review for physicians. *Journal of the National Medical Association*, 88, 581-587.
- Buss, D. M., & Craik, K. H. (1980). The frequency concept of disposition: Dominance and prototypically dominant acts. *Journal of Personality*, 48, 379-392.
- Buss, D. M., & Craik, K. H. (1981). The act frequency analysis of interpersonal dispositions: Aloofness, gregariousness, dominance and submissiveness. *Journal of Personality*, 49, 175-192.
- Buss, D. M., & Craik, K. H. (1983a). The act frequency approach to personality. *Psychological Review*, 90, 105.
- Buss, D. M., & Craik, K. H. (1983b). Act prediction and the conceptual analysis of personality scales: Indices of act density, bipolarity, and extensity. *Journal of Personality and Social Psychology*, 45, 1081.
- Carasik, R. P., & Grantham, C. E. (1988, May). A case study of CSCW in a dispersed organization. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 61-66). ACM.
- Cardozo, L. (1986). Urinary frequency and urgency. *British Medical Journal (Clinical research ed.)*, 293, 1419-1423.

- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*, 245-276.
- Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among US managers. *Journal of Applied Psychology, 85*, 65.
- Charmaz, K. (2003). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies for qualitative inquiry* (2nd ed.): 249-291. Thousand Oaks, CA: Sage.
- Charmaz, K. (2014). *Constructing grounded theory*. Thousand Oaks, CA: Sage.
- Charmaz, K., Thornberg, R., & Keane, E. (2017). Evolving grounded theory and social justice inquiry. In *The SAGE handbook of qualitative research* (5th ed.). Thousand Oaks, CA.
- Chesley, N. (2005). Blurring boundaries? Linking technology use, spillover, individual distress, and family satisfaction. *Journal of Marriage and Family, 67*, 1237-1248.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research, 295*, 295-336.
- Chin, W. W., & Newsted, P. R. (1999). Structural equation modeling analysis with small samples using partial least squares. *Statistical Strategies for Small Sample Research, 1*, 307-341.
- Cinite, I., & Duxbury, L. E. (2018). Measuring the Behavioral Properties of Commitment and Resistance to Organizational Change. *The Journal of Applied Behavioral Science, 54*, 113-139.

- Cinite, I., Duxbury, L. E., & Higgins, C. (2009). Measurement of perceived organizational readiness for change in the public sector. *British Journal of Management*, 20, 265-277.
- Claessens, B. J., Van Eerde, W., Rutte, C. G., & Roe, R. A. (2007). A review of the time management literature. *Personnel Review*, 36, 255-276.
- Clarke, C. L., & Wilcockson, J. (2001). Professional and organizational learning: analysing the relationship with the development of practice. *Journal of Advanced Nursing*, 34, 264-272.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396.
- Conte, J. M., Landy, F. J., & Mathieu, J. E. (1995). Time urgency: Conceptual and construct development. *Journal of Applied Psychology*, 80, 178-185.
- Cooper, N. (1968). Morality and importance. *Mind*, 77, 118-121.
- Cooper, W. H., Dyke, L., & Kay, P. (1990, August). Developing act frequency measures of organizational behaviors. In *Academy of Management Proceedings* (Vol. 1990, No. 1, pp. 396-399). Academy of Management.
- Corley, K. G. (2015). A Commentary on “What Grounded Theory Is...” Engaging a Phenomenon from the Perspective of Those Living it. *Organizational Research Methods*, 18, 600-605.
- Covey, S. (1990) *Seven habits of effective people*. New York: Simon & Schuster, Inc.
- Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Dabbish, L. A., & Kraut, R. E. (2006, November). Email overload at work: an analysis of factors associated with email strain. In *Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work* (pp. 431-440). ACM.
- Dabbish, L. A., Kraut, R. E., Fussell, S., & Kiesler, S. 2005. *Understanding email use: Predicting action on a message*. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 691-700). ACM.
- Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, 32, 554-571.
- Danna, K. & Griffin, R. (1999). Health and Well-Being in the Workplace: A Review and Synthesis of the Literature, *Journal of Management*, 25, 357-384.
- De Jonge, J., Dollard, M. F., Dormann, C., Le Blanc, P. M., & Houtman, I. L. (2000). The demand-control model: Specific demands, specific control, and well-defined groups. *International Journal of Stress Management*, 7, 269-287.
- Driscoll, C., & Starik, M. (2004). The primordial stakeholder: Advancing the conceptual consideration of stakeholder status for the natural environment. *Journal of Business Ethics*, 49, 55-73.
- Drucker, P. F. (1959). Long-range planning—challenge to management science. *Management Science*, 5, 238-249.
- Dubrovsky, V. J., Kiesler, S., & Sethna, B. N. (1991). The equalization phenomenon: Status effects in computer-mediated and face-to-face decision-making groups. *Human-Computer Interaction*, 6, 119-146.

- Ducheneaut, N., & Watts, L. A. (2005). In search of coherence: a review of e-mail research. *Human-Computer Interaction*, 20, 11-48.
- Dunne, C. (2011). The place of the literature review in grounded theory research. *International Journal of Social Research Methodology*, 14, 111-124.
- Duxbury, L., & Halinski, M. (2014). When more is less: An examination of the relationship between hours in telework and role overload. *Work*, 48, 91-103.
- Duxbury, L., & Higgins, C. (2012). *Revisiting Work-life Issues in Canada: The 2012 National Study on Balancing Work and Caregiving in Canada [report One]*. Sprott School of Business, Carleton University.
- Duxbury, L., Lyons, S., & Higgins, C. (2008). Too much to do, and not enough time: An examination of role overload. In *Handbook of Work-Family Integration* (pp. 125-140).
- Duxbury, L., Higgins, C., & Neufeld, D. (1998, February). Telework and the balance between work and family: Is telework part of the problem or part of the solution? In *The Virtual Workplace* (pp. 218-255). IGI Publishing.
- Duxbury, L., Higgins, C., Smart, R., & Stevenson, M. (2014). Mobile technology and boundary permeability. *British Journal of Management*, 25, 570-588.
- Duxbury, L. E., Higgins, C. A., & Thomas, D. R. (1996). Work and family environments and the adoption of computer-supported supplemental work-at-home. *Journal of Vocational Behavior*, 49, 1-23.
- Duxbury, L., & Smart, R. (2011). The “myth of separate worlds”: An exploration of how mobile technology has redefined work-life balance. In *Creating Balance?* (pp. 269-284). Springer, Berlin, Heidelberg.

- Duxbury, L., Towers, I., Higgins, C., & Thomas, J. A. (2007). From 9 to 5 to 24/7: How technology has redefined the workday. In *Information Resources Management: Global Challenges* (pp. 305-332). IGI Global.
- Dwyer, D. J., & Ganster, D. C. (1991). The effects of job demands and control on employee attendance and satisfaction. *Journal of Organizational Behavior*, 12, 595-608.
- Edwards, J. R. (1992). A cybernetic theory of stress, coping, and well-being in organizations. *Academy of Management Review*, 17, 238-274.
- Eesley, C., & Lenox, M. J. (2006). Firm responses to secondary stakeholder action. *Strategic Management Journal*, 27, 765-781.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14, 532-550.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50, 25-32.
- Eisenhardt, K. M., Graebner, M. E., & Sonenshein, S. (2016). Grand challenges and inductive methods: Rigor without rigor mortis. *Academy of Management Journal*, 59, 1113-1123.
- El-Shinnawy, M., & Markus, M. L. (1998). Acceptance of communication media in organizations: Richness or features?. *IEEE transactions on professional communication*, 41, 242-253.
- Emmet, D. M. (1946). Importance. *Synthese*, 5, 316-320.
- Fassin, Y. (2009). The stakeholder model refined. *Journal of Business Ethics*, 84, 113-135.

- Fisher, D., Brush, A. J., Gleave, E., & Smith, M. A. (2006, November). Revisiting Whittaker & Sidner's email overload ten years later. In *Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work* (pp. 309-312). ACM.
- Flores, F., Graves, M., Hartfield, B., & Winograd, T. (1988). Computer systems and the design of organizational interaction. *ACM Transactions on Information Systems (TOIS)*, 6, 153-172.
- Fogarty, J., Hudson, S. E., & Lai, J. (2004, April). Examining the robustness of sensor-based statistical models of human interruptibility. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 207-214). ACM.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18, 39-50.
- Friedman, M., Rosenman, R. H., Carroll, V., & Tat, R. J. (1958). Changes in the serum cholesterol and blood clotting time in men subjected to cyclic variation of occupational stress. *Circulation*, 17, 852-861.
- Friedman, M., & Rosenman, R. H. (1959). Association of specific overt behavior pattern with blood and cardiovascular findings: Blood cholesterol level, blood clotting time, incidence of arcus senilis, and clinical coronary artery disease. *Journal of the American Medical Association*, 169, 1286-1296.

- George, D., Dixon, S., Stansal, E., Gelb, S. L., & Pheri, T. (2008). Time diary and questionnaire assessment of factors associated with academic and personal success among university undergraduates. *Journal of American College Health*, 56, 706-715.
- Glaser, B. G. (2002a). Conceptualization: On theory and theorizing using grounded theory. *International Journal of Qualitative Methods*, 1, 23-38.
- Glaser, B. G. (2002b, September). Constructivist grounded theory?. In *Forum qualitative sozialforschung/forum: Qualitative Social Research* (Vol. 3, No. 3).
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago: Aldine Publishing Company.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16, 15-31.
- Gioia, D. A., & Pitre, E. (1990). Multiparadigm perspectives on theory building. *Academy of Management Review*, 15, 584-602.
- Goodman, P. S., Lawrence, B. S., Ancona, D. G., & Tushman, M. L. (2001). Time: A new research lens. *Academy of Management Review*, 26, 507-511.
- Grevet, C., Choi, D., Kumar, D., & Gilbert, E. (2014, April). Overload is overloaded: email in the age of Gmail. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 793-802). ACM.
- Guerts, S. & Demerouti, E. (2003). Work/non-work interface: A review of theories and findings. In M. Schabracq, J. Winnubst & C. Copper (eds), *The Handbook of Work and Health Psychology* (pp. 279–312). Chichester, England: Wiley.

- Haenlein, M., & Kaplan, A. M. (2004). A beginner's guide to partial least squares analysis. *Understanding Statistics*, 3, 283-297.
- Haimes, Y. Y. (2001). Risk analysis, systems analysis, and Covey's seven habits. *Risk Analysis*, 21, 217-224.
- Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks, CA: Sage.
- Hair, M., Renaud, K. V., & Ramsay, J. (2007). The influence of self-esteem and locus of control on perceived email-related stress. *Computers in Human Behavior*, 23, 2791-2803.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19, 139-152.
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, 40, 414-433.
- Hassard, J., Teoh, K., Cox, T., Dewe, P., Cosmar, M., Gründler, R., ... & Van den Broek, K. (2014). Calculating the cost of work-related stress and psychosocial risks.
- Higgins, C., Duxbury, L., & Julien, M. (2014). The relationship between work arrangements and work-family conflict. *Work*, 48, 69-81.
- Higgins, C. A., Duxbury, L. E., & Lyons, S. T. (2010). Coping with Overload and Stress: Men and Women in Dual-Earner Families. *Journal of Marriage and Family*, 72, 847-859.

- Hill, E. J., Ferris, M., & Martinson, V. (2003). Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office) influence aspects of work and personal/family life. *Journal of Vocational Behavior, 63*, 220-241.
- Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management, 21*, 967-988.
- Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods, 1*, 104-121.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.
- Hogan, B., & Fisher, D. (2006). A scale for measuring email overload. *Microsoft Research, 7*(9). Retrieved on December 12, 2018 from: <https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/tr-2006-65.pdf>.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179-185.
- House, R. J., & Rizzo, J. R. (1972). Toward the measurement of organizational practices: Scale development and validation. *Journal of Applied Psychology, 56*, 388-396.
- Howell, J. M., Shea, C. M., & Higgins, C. A. (2005). Champions of product innovations: defining, developing, and validating a measure of champion behavior. *Journal of Business Venturing, 20*, 641-661.
- Hoyle, R. H. (Ed.). (1995). *Structural equation modeling: Concepts, issues, and applications*. Sage Publications.

- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20, 195-204.
- Huy, Q. N. (2001). Time, temporal capability, and planned change. *Academy of management Review*, 26, 601-623.
- Jacobson, B. H., Aldana, S. G., Goetzl, R. Z., Vardell, K. D., Adams, T. B., & Pietras, R. J. (1996). The relationship between perceived stress and self-reported illness-related absenteeism. *American Journal of Health Promotion*, 11, 54-61.
- Jansen, K. J., & Kristof-Brown, A. L. (2005). Marching to the beat of a different drummer: Examining the impact of pacing congruence. *Organizational Behavior and Human Decision Processes*, 97, 93-105.
- Jensen, A., Malcolm, L., Phelps, F., & Stoker, R. (2002). Changing patterns of thinking: Individuals and organisations. *Educational Psychology in Practice*, 18, 35-45.
- Jerejian, A. C., Reid, C., & Rees, C. S. (2013). The contribution of email volume, email management strategies and propensity to worry in predicting email stress among academics. *Computers in Human Behavior*, 29, 991-996.
- Johnson, J. V., & Hall, E. M. (1988). Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population. *American Journal of Public Health*, 78, 1336-1342.
- Jöreskog, K. G. (1967). Some contributions to maximum likelihood factor analysis. *Psychometrika*, 32, 443-482.
- Jöreskog, K. G. (1973). A general method for estimating a linear structural equation system. In A. S. Goldberger & O. D. Duncan (Eds.), *Structural equation models in the social sciences*. New York: Seminar Press.

- Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). *Organizational stress: Studies in role conflict and ambiguity*. Oxford, England: John Wiley.
- Kain, J., & Jex, S. (2010). Karasek's (1979) job demands-control model: A summary of current issues and recommendations for future research. In *New developments in theoretical and conceptual approaches to job stress* (pp. 237-268). Emerald Group Publishing Limited.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141-151.
- Kaplan, D. (2008). *Structural equation modeling: Foundations and extensions* (Vol. 10). Sage Publications.
- Kaplan, S. M., Tolone, W. J., Carroll, A. M., Bogia, D. P., & Bignoli, C. (1992, November). Supporting collaborative software development with ConversationBuilder. In *ACM SIGSOFT Software Engineering Notes* (Vol. 17, No. 5, pp. 11-20). ACM.
- Karasek Jr, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24, 285-308.
- Karasek, R., & Theorell, T. (1990). *Healthy work. Stress, productivity and the reconstruction of work life*. New York: Basic Books.
- Kelly, J. R., & McGrath, J. E. (1985). Effects of time limits and task types on task performance and interaction of four-person groups. *Journal of Personality and Social Psychology*, 49, 395.

- Kooti, F., Aiello, L. M., Grbovic, M., Lerman, K., & Mantrach, A. (2015, May). Evolution of conversations in the age of email overload. In *Proceedings of the 24th International Conference on World Wide Web* (pp. 603-613). ACM.
- Kuhn, T. S. (1970). Book and Films Reviews: Revolutionary View of the History of Science: The Structure of Scientific Revolutions. *The Physics Teacher*, 8, 96-98.
- Kuss, D. and Griffiths, M. (2012). Internet and Gaming Addiction: A Systematic Literature Review of Neuroimaging Studies, *Brain Sciences*, 2, 347-374
- Landy, F. J., Rastegary, H., Thayer, J., & Colvin, C. (1991). Time urgency: The construct and its measurement. *Journal of Applied Psychology*, 76, 644-657.
- LaPierre, L., & Allen, T. (2012). Control at Work, Control at Home, and Planning Behaviour: Implications for Work-Family Conflict, *Journal of Management*, 38, 1500-1516
- Latham, G. P., & Locke, E. A. (2007). New developments in and directions for goal-setting research. *European Psychologist*, 12, 290-300.
- Lee, A. S. (1994). Electronic mail as a medium for rich communication: An empirical investigation using hermeneutic interpretation. *MIS Quarterly*, 143-157.
- LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor–hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *Academy of Management Journal*, 48, 764-775.
- Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2017). Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage Handbook of Qualitative Research*, 5, 108-150.

- Locke, K. (1996). Rewriting the discovery of grounded theory after 25 years? *Journal of Management Inquiry*, 5, 239-245.
- Lohmöller, J. B. (1989). Predictive vs. Structural Modeling: PLS vs. ML. In *Latent Variable Path Modeling with Partial Least Squares* (pp. 199-226). Physica-Verlag HD.
- Losee, R. M. (1989). Minimizing information overload: the ranking of electronic messages. *Journal of Information Science*, 15, 179-189.
- Malone, T. W. (1983). How do people organize their desks?: Implications for the design of office information systems. *ACM Transactions on Information Systems (TOIS)*, 1, 99-112.
- Malone, T. W., Grant, K. R., & Turbak, F. A. (1986). *The information lens: an intelligent system for information sharing in organizations* (Vol. 17, No. 4, pp. 1-8). ACM.
- Mann, M., (2007, March 13). 43 Folders Series: Inbox Zero. <http://www.43folders.com/izero>.
- Martin, P. Y., & Turner, B. A. (1986). Grounded theory and organizational research. *The Journal of Applied Behavioral Science*, 22, 141-157.
- Maruping, L. M., Venkatesh, V., Thatcher, S. M., & Patel, P. C. (2015). Folding under pressure or rising to the occasion? Perceived time pressure and the moderating role of team temporal leadership. *Academy of Management Journal*, 58, 1313-1333.
- Mazmanian, M. (2013). Avoiding the trap of constant connectivity: When congruent frames allow for heterogeneous practices. *Academy of Management Journal*, 56, 1225-1250.

- Mazmanian, M., Orlikowski, W. J., & Yates, J. (2013). The autonomy paradox: The implications of mobile email devices for knowledge professionals. *Organization Science*, 24, 1337-1357.
- Mazmanian, M., Yates, J., & Orlikowski, W. (2006, August). Ubiquitous Email: Individual Experiences and Organizational Consequences of Blackberry Use. In *Academy of Management Proceedings* (Vol. 2006, No. 1, pp. D1-D6). Briarcliff Manor, NY 10510: Academy of Management.
- McDaniel, L. S. (1990). The effects of time pressure and audit program structure on audit performance. *Journal of Accounting Research*, 28, 267-285.
- Miles, M., & Huberman, A. M. (1984). *Qualitative Data Analysis*. Beverly Hills, CA: Sage Publications.
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22, 853-886.
- Mitchell, R. K., Lee, J. H., & Agle, B. R. (2017). Stakeholder Prioritization Work: The Role of Stakeholder Salience in Stakeholder Research. In *Stakeholder Management* (pp. 123-157). Emerald Publishing Limited.
- Mohammed, S., & Angell, L. C. (2004). Surface-and deep-level diversity in workgroups: Examining the moderating effects of team orientation and team process on relationship conflict. *Journal of Organizational Behavior*, 25, 1015-1039.

- Mohamed, S. F. P., Ku-Mahamud, K. R., Ramli, R., & Abdullah, K. (2017). Perception and Use of E-mail: A Case Study in Universiti Utara Malaysia. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, 9(2-12), 29-35.
- Mohammed, S., & Nadkarni, S. (2011). Temporal diversity and team performance: The moderating role of team temporal leadership. *Academy of Management Journal*, 54, 489-508.
- Moser, K. (1989). The Act-Frequency Approach A Conceptual Critique. *Personality and Social Psychology Bulletin*, 15, 73-83.
- Murray, W. C., & Rostis, A. (2007). Who's running the machine? A theoretical exploration of work stress and burnout of technologically tethered workers. *Journal of Individual Employment Rights*, 12, 249-263.
- Myers, M. D. (2009). *Qualitative research in business and management*. Sage.
- Neustaedter, C., Brush, A. J., & Smith, M. A. (2005, April). Beyond from and received: Exploring the dynamics of email triage. In *CHI'05 extended abstracts on Human factors in computing systems* (pp. 1977-1980). ACM.
- Ocasio, W. (1997). Towards an attention-based view of the firm. *Strategic Management Journal*, 18, 187-206.
- Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, 2, 1-28.
- Parent, M. M., & Deephouse, D. L. (2007). A case study of stakeholder identification and prioritization by managers. *Journal of Business Ethics*, 75, 1-23.

- Phillips, R. (2003). Stakeholder legitimacy. *Business Ethics Quarterly*, 13, 25-41.
- Pike, K. L. (1967). *Language in relation to a unified theory of the structure of human behavior* (Vol. 24). Walter de Gruyter GmbH & Co KG.
- Pinto, J. K., & Slevin, D. P. (1989). Critical success factors in R&D projects. *Research-Technology Management*, 32, 31-35.
- Pituch, K. A., & Stevens, (2016). *Applied multivariate statistics for the social sciences: Analyses with SAS and IBM's SPSS* (Sixth ed.). London, New York: Routledge.
- Purcell, K., & Rainie, L. (2014). Technology's impact on workers. PEW Research Center: Internet Science & Technology. Retrieved on February 9, 2019 from: <http://www.pewinternet.org/2014/12/30/technologys-impact-on-workers/>.
- Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, 26, 332-344.
- Rice, R. E., & Shook, D. E. (1990). Relationships of Job Categories and Organizational Levels to Use of Communication Channels, Including Electronic Mail: A Meta-Analysis and Extension. *Journal of Management Studies*, 27, 195-229.
- Ringle, C. M., Wende, S., & Becker, J.-M. (2015). "SmartPLS 3." Boenningstedt: SmartPLS GmbH, <http://www.smartpls.com>.
- Schwandt, T. A. & Gates, E. F. (2017). Case study methodology. In *The SAGE handbook of qualitative research* (5th ed.). Thousand Oaks, CA.
- Schwartz, M. S. (2006). God as a managerial stakeholder?. *Journal of Business Ethics*, 66, 291-306.

- Shepherd, A., Mayer, N., & Kuchinsky, A. (1990, September). Strudel—an extensible electronic conversation toolkit. In *Proceedings of the 1990 ACM conference on Computer-supported cooperative work* (pp. 93-104). ACM.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20, 571-610.
- Suddaby, R. (2006). From the editors: What grounded theory is not. *Academy of Management Journal*, 49, 633-642.
- Sumecki, D., Chipulu, M., & Ojiako, U. (2011). Email overload: Exploring the moderating role of the perception of email as a ‘business critical’ tool. *International Journal of Information Management*, 31, 407-414.
- Sumner, M. (1988, April). The impact of electronic mail on managerial and organizational communications. In *ACM SIGOIS Bulletin* (Vol. 9, No. 2-3, pp. 96-109). ACM.
- Taylor, A. H., Daniel, J. V., Leith, L., & Burke, R. J. (1990). Perceived stress, psychological burnout and paths to turnover intentions among sport officials. *Journal of Applied Sport Psychology*, 2, 84-97.
- Taylor, H., Fieldman, G., & Altman, Y. (2008). E-mail at work: A cause for concern? The implications of the new communication technologies for health, wellbeing and productivity at work. *Journal of Organisational Transformation & Social Change*, 5, 159-173.
- Tetrick, L. E., & LaRocco, J. M. (1987). Understanding, prediction, and control as moderators of the relationships between perceived stress, satisfaction, and psychological well-being. *Journal of Applied Psychology*, 72, 538.

- Thomas, G. F., King, C. L., Baroni, B., Cook, L., Keitelman, M., ... & Wardle, A. (2006). Reconceptualizing e-mail overload. *Journal of Business and Technical Communication, 20*, 252-287.
- Thomée, S., Eklöf, M., Gustafsson, E., Nilsson, R., & Hagberg, M. (2007). Prevalence of perceived stress, symptoms of depression and sleep disturbances in relation to information and communication technology (ICT) use among young adults—an explorative prospective study. *Computers in Human Behavior, 23*, 1300-1321.
- Towers, I., Duxbury, L., Higgins, C., & Thomas, J. (2006). Time thieves and space invaders: Technology, work and the organization. *Journal of Organizational Change Management, 19*, 593-618.
- Trochim, W.M.K. (2002). Research methods knowledge base. Retrieved on November 12, 2018 from: <http://www.socialresearchmethods.net/kb>.
- Tyler, J. R., & Tang, J. C. (2003). When can I expect an email response? A study of rhythms in email usage. In *ECSCW 2003* (pp. 239-258). Springer Netherlands.
- Vacek, M. (2014). Email Overload: Causes, Consequences and the Future, *International Journal of Computer Theory and Engineering, 6*, 170-175.
- Van der Doef, M., & Maes, S. (1998). The job demand-control (-support) model and physical health outcomes: A review of the strain and buffer hypotheses. *Psychology and Health, 13*, 909-936.
- Van der Doef, M., & Maes, S. (1999). The job demand-control (-support) model and psychological well-being: a review of 20 years of empirical research. *Work & Stress, 13*, 87-114.

- Wainer, J., Dabbish, L., & Kraut, R. (2011). *Should I open this email?: Inbox-level cues, curiosity and attention to email*. In Proceedings of the SIGCHI conference on human factors in computing systems (pp. 3439-3448). ACM.
- Waller, M. J., Conte, J. M., Gibson, C. B., & Carpenter, M. A. (2001). The effect of individual perceptions of deadlines on team performance. *Academy of Management Review*, 26, 586-600.
- Ward, S. C. (1999). Assessing and managing important risks. *International Journal of Project Management*, 17, 331-336.
- Whittaker, S., & Sidner, C. (1996, April). Email overload: exploring personal information management of email. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 276-283). ACM.
- Wold, H. (1975). Path models with latent variables: The NIPALS approach. *Quantitative sociology: International perspectives on mathematical statistical model building*.
- Wright, S. (1921), "Correlation and Causation," *Journal of Agricultural Research*, 20, 557-585.
- Yates, J., & Orlikowski, W. J. (1992). Genres of organizational communication: A structurational approach to studying communication and media. *Academy of Management Review*, 17, 299-326.
- Yin, R. (1984) *Case study research*. Beverly Hills: Sage Publications.

Appendix A: Interview Script

Contact Script – Telephone Contact/Email

Hello, may I please speak to _____

Hi _____, my name is Andre Lanctot. I am a PhD student in the Sprott School of Business, Carleton University. I am working under the supervision of Dr. Linda Duxbury, a Professor of Business at Sprott. I am calling about the interview we scheduled about electronic communication. Is now still a good time for the interview?

Reschedule if necessary or proceed.

Thank you for volunteering to take part in this brief interview. Before we begin, I'd like to take a moment to tell you a bit about this research and your role in the study.

Research has shown that despite being a useful tool, electronic communication in general and email in particular can be problematic for employees as over use of email etc. has been shown to contribute to increased levels of role overload, workload, stress and work-life conflict. [...] and [...] have agreed to take part in a study on the use of electronic communication in their organizations. This study has two goals. First, we want to quantify the use of electronic communications within your organization and determine how use is related to a number of key employee and organizational outcomes. Second, the findings from this study should provide you and your employer with insights into how best to manage the use of these forms of communication both at work and at home.

The study will use a methodology called the act frequency approach (AFA) to increase our understanding of how employees determine the importance and urgency of the various electronic communications they send and receive. More specifically we are looking at how people evaluate and use two forms of electronic communication: emails and instant messages (IMs),

The AFA consists of three stages: act nomination (interviews with 30 to 50 people), identification of key acts (survey of 100 people) and determining the impact of these acts (survey a larger group of people). At this point in time we are asking you to participate in the act nomination phase of this research. The interview should take approximately 30 minutes of your time.

Any notes will be stored on a password protected computer and will be deleted once the data has been coded and analyzed. Names and other identifying information will not be recorded or shared. Are you happy to go ahead?

Do you have any questions before we begin (try to answer any questions)?

If they are unhappy, try to identify and calm their concerns.

Act Nomination Interview

This interview should take approximately 30 minutes and is divided into four parts. We will begin by asking you a few questions to help us quantify your use of email for work and non-work-related purposes. The second part of the interview will focus on electronic communication in terms importance while the third part of the interview will focus on urgency. The final stage of the interview will ask you for your thoughts on what your employer can do to reduce the challenges employees' today face with respect to electronic communication.

Before we start, I'll give some definitions of what we mean by electronic communication, importance, and urgent in this study:

In order to keep this study a manageable size, electronic communication will be limited in scope to emails and (private firm only) instant messages (IMs),

*For the purposes of this study we define an **important** email as one that conveys information of great significance, consequence or value. Similarly, we define an urgent email as one "requiring swift action." While urgency and importance can and do overlap, they are not necessarily the same thing*

SECTION 1

Use of emails

The first part of the interview asks a number of questions to help us understand your use of email and IM technology for work and non-work-related purposes. When answering these questions please think about a typical work week.

Approximately how many emails do you receive on a typical workday? _____

Approximately how many emails do you send on a typical workday? _____

What percent of the email that you send and receive on a workday is related to your job?

Approximately how many emails do you receive on a typical non-workday? _____

Approximately how many emails do you send on a typical non-workday? _____

What percent of the email that you send and receive on a non-workday is related to your job? _____

Use of IMs

Approximately how many IMs do you receive on a typical workday? _____

Approximately how many IMs do you send on a typical workday? _____

What percent of the IM that you send and receive on a workday is related to your job?

Approximately how many IMs do you receive on a typical non-workday? _____

Approximately how many IMs do you send on a typical non-workday? _____

What percent of the IM that you send and receive on a non-workday is related to your job? _____

SECTION Two: Judging the importance of incoming and outgoing emails and IMs

This section of the interview asks a number of questions to help us understand how you make the decision as to the importance of the various emails and IMs you send and receive in a given day.

For the purposes of this study we define importance as something of great significance, consequence or value

When answering the interview questions, I would like you to please think about the various emails and IMs you send and receive during a typical week. These messages can come during work hours or outside work hours. You can receive them at work, at home or elsewhere.

We are interested in how you personally would evaluate the importance of these various types of electronic communication. Do not feel that you need to limit yourself to issues related to work; we are looking for what makes these messages important to you.

You noted that you send approximately Y emails a day and receive another X emails a day.

1. Let's first consider the emails that you receive from other people. Not all of these emails will be important. What factors do you consider when deciding whether or not an email that you have received is an important email? In other words, what factors would cause you to think that an email is significant or of consequence? (Prompt: the company's future depends on the outcome; it involves the maintenance of a relationship with a friend, co-worker or family member)
2. How do you typically respond to an email that you consider important? (Prompt: as soon as you are able to, with great care to what is being said, with another form of communication)

You noted that you send approximately Y IMs a day and receive another X IMs a day.

3. Let's now consider the IMs that you receive from other people. Not all of these IMs will be important. What factors do you consider when deciding whether or not an IM that you have received is an important IM? In other words, what factors would cause

- you to think that an IM is significant or of consequence? (Prompt: the company's future depends on the outcome; it involves the maintenance of a relationship with a friend, co-worker or family member)
4. How do you typically respond to an IM that you consider important? (Prompt: as soon as you are able to, with great care to what is being said, with another form of communication)

We've looked at the receiving end of electronic communication; now we will look at the outgoing end - email messages and IMs that you send to other people.

Let's start with email again. You indicated that you send approximately Y messages a day. Not all of the emails that you send will be important.

5. What makes a message you are sending by email important? (Prompt: it affects the outcome of a project you are working on; it involves the maintenance of a relationship with a friend, co-worker or family member)
6. How would you convey to the recipient of this email that the message is an important one? (Prompt: explain why it's important in the message, in the subject line, use symbol indicating urgent message)
7. Let's now consider the IMs you send to other people. What makes a message you are sending by IM important? (Prompt: it affects the outcome of a project you are working on; it involves the maintenance of a relationship with a friend, co-worker or family member)
8. How would you convey to the recipient of this IM that the message is an important one? (Prompt: explain why it's important in the message, in the subject line, use symbol indicating urgent message)

Section Three: Judging the urgency of incoming and outgoing emails

We are also interested in how you personally evaluate the urgency of the various email messages you send and receive on a given day

By urgency we mean "requiring swift action" - while urgency and importance can and do overlap, they are not the same thing. (Prompt: For Urgent/Unimportant, it's urgent that you attend a meeting, but it may not have any relevance or importance to your life at all)

When answering these questions, I would like you to please think about the various emails you send and receive during a typical week. These messages can come during work hours or outside work hours. You can receive them at work, at home or elsewhere. Do not feel that you need to limit yourself to issues related to work; we are looking for what makes these messages urgent to you.

You noted that you send approximately Y emails a day and receive another X emails a day.

9. Let's first consider the emails that you receive from other people. Not all of these emails will require an urgent response from you. What factors do you consider when deciding whether or not an email that you have received is an urgent email? In other words, what factors would cause you to think that it is critical that you deal with a particular email immediately? (Prompt: there's a deadline attached, work is held up until this gets read and done)

How do you typically respond to an email that you consider urgent? (Prompt: immediately, with another form of communication)

You noted that you send approximately Y IMs a day and receive another X IMs a day.

10. Let's now consider the IMs that you receive from other people. Not all of these IM will require an urgent response from you. What factors do you consider when deciding whether or not an IM that you have received is an urgent IM? In other words, what factors would cause you to think that it is critical that you deal with a particular IM immediately? (Prompt: there's a deadline attached, work is held up until this gets read and done)

How do you typically respond to an IM that you consider urgent? (Prompt: immediately, with another form of communication)

We've looked at the receiving end of electronic communication; now we will look at the outgoing end - email messages and IMs that you send to other people.

You indicated that you send approximately Y email messages a day. Not all of the emails that you send will require an urgent response from others.

11. What makes a message you are sending by email urgent? (Prompt: there's a deadline; work cannot continue until you get a response)

12. How would you convey to the recipient of this email that the message is an urgent one? (Prompt: use symbol indicating urgent message)

You indicated that you send approximately Y IM messages a day. Not all of the IMs that you send will require an urgent response from others.

13. What makes a message you are sending by IM urgent? (Prompt: there's a deadline; work cannot continue until you get a response)

14. How would you convey to the recipient of this IM that the message is an urgent one? (Prompt: use symbol indicating urgent message)

Thank you for participating. Have you anything additional you want to add?

Appendix B: Survey 1

Research Study into Impact of Email on Employees*

Thank you for taking the time to fill out this survey. It is part of a three-phase study into the use of electronic communication in workplaces today. Your employer agreed to take part in this study because they want to better understand their employees' experiences with electronic communication. The study in which you are being asked to contribute has three goals: (1) quantify the amount of work-related electronic communications employees send and receive in a typical work week, (2) look at the relationship between the amount of work-related electronic communication sent and received by employees and a number of key work (job stress) and employee (well-being) outcomes, and (3) provide insights into how employees and employers can more effectively manage work-related electronic communications.

The first step of this study involved interviews with 29 employees in the two organizations participating in this study. In these interviews, we asked participants to help us identify the characteristics of an important electronic communication and an urgent electronic communication. The answers your colleagues gave us have been summarized into two lists: characteristics of an important electronic communication and characteristics of an urgent electronic communication.

The second step of the study involves the identification of the most significant of these characteristics. The survey that you are being asked to complete was designed to help us with this task.

The survey includes three sections and will take approximately 15 to 30 minutes to complete. Your responses are anonymous and will be kept in confidence by the researchers. Only summary results will be provided to [...] and [...]. You are not required to answer the survey. You may leave questions blank or leave the survey for whatever reason at any time. If you have any questions please don't hesitate to contact us. Our contact information is provided below:

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*This project was reviewed and given clearance to carry out this research by the Carleton University Research Ethics Board and by [...]. Should you have any questions or concerns related to your involvement in this research, please contact,

- Carleton University Research Ethics Board by phone (613-520-2517) or email (ethics@carleton.ca) OR [...]

Section 1: Demographic Information

The following section of the questionnaire asks you to provide some demographic information about yourself that will be used to help us to interpret this question. Please indicate the response that best describes you.

1. What is your age?
 - ☐ 18 to 24
 - ☐ 25 to 34
 - ☐ 35 to 44
 - ☐ 45 to 54
 - ☐ 55 to 64
 - ☐ 65 or older
2. What is your gender?
 - ☐ Female
 - ☐ Male
3. Which organization do you work for?
 - ☐ [...]
 - ☐ [...]
4. What is your job type?
 - ☐ Manager
 - ☐ Professional
 - ☐ Administrative staff
 - ☐ Sales
5. Please think about a typical workday and indicate in the space below approximately how many (work and non-work):
 - emails you receive _____ on a typical workday
 - emails you send? _____ on a typical workday
 - IMs you receive? _____ on a typical workday
 - IMs you send? _____ on a typical workday
6. Please think about a typical non-workday and indicate in the space below approximately how many (work and non-work):
 - emails you receive? _____ on a typical non-workday
 - emails you send? _____ on a typical non-workday
 - IMs you receive? _____ on a typical non-workday
 - IMs you send? _____ on a typical non-workday

Section 2: Importance

One of the key objectives of this research is to identify the factors that lead employees to perceive that an electronic communication they "handle" (send/receive) is "important"? *For the purposes of this study we define importance as something of great significance, consequence or value.* In our interviews with employees in your workplace we asked them the following question: *"What kinds of things typify an important email? In other words, what factors would cause you to think that an email is significant or of consequence?"* A summary of the responses your colleagues gave to this question are listed below. Please read through this list and indicate the extent to which you agree or disagree that each of these items typifies an important electronic communication

I Strongly Disagree	I Mostly Disagree	I Slightly Disagree	Neutral	I Slightly Agree	I Mostly Agree	I Strongly Agree
1	2	3	4	5	6	7

An important electronic communication is from or to:	Strongly Disagree	Neutral				Strongly Agree
Upper management	1	2	3	4	5	6 7
My immediate manager	1	2	3	4	5	6 7
The union	1	2	3	4	5	6 7
A contractor (someone who is being paid to do a task for you)	1	2	3	4	5	6 7
An immediate family member	1	2	3	4	5	6 7
A close friend	1	2	3	4	5	6 7
A direct report (person who reports to you)	1	2	3	4	5	6 7
A work team member	1	2	3	4	5	6 7
A client	1	2	3	4	5	6 7
Someone who works in another department in my organization	1	2	3	4	5	6 7

An important electronic communication is one that:	Strongly Disagree		Neutral			Strongly Agree	
Comes from the organization and provides information on something that will impact my work (i.e., internet will be down, new policy)	1	2	3	4	5	6	7
Is explicitly flagged as important in the subject line (i.e., includes an exclamation mark, the word "urgent", "important", or "action item" in the subject line)	1	2	3	4	5	6	7
Explicitly states, in the subject line, that a reply or a deliverable is required by a certain date	1	2	3	4	5	6	7
Explicitly states, in the subject line, that the contents of the message is important to your family	1	2	3	4	5	6	7
Includes information/is a request for information that is critical to your ability to do your job	1	2	3	4	5	6	7
Includes information/is a request for information that is critical to a colleague's ability to do their job	1	2	3	4	5	6	7
Is a follow up to a request for job-related information	1	2	3	4	5	6	7
Includes guidance/is a request for guidance on a work-related matter	1	2	3	4	5	6	7
Follows up on a work-related meeting/conversation	1	2	3	4	5	6	7
Includes a meeting request	1	2	3	4	5	6	7
Provides information to colleagues and/or subordinates on a work-related matter	1	2	3	4	5	6	7
Deals with a personal matter	1	2	3	4	5	6	7
Includes an emotional outburst or appeal	1	2	3	4	5	6	7
Relates to a complaint from a client	1	2	3	4	5	6	7
Relates to my work and the business I am in	1	2	3	4	5	6	7
Relates to client services	1	2	3	4	5	6	7
Involves scheduling my personal time	1	2	3	4	5	6	7
Is sent on behalf of senior management	1	2	3	4	5	6	7
Is a follow-up to a discussion (e.g., use email as a mechanism to record the "minutes" of a face to face or telephone conversation)	1	2	3	4	5	6	7
Is time-sensitive (i.e., I need to take action immediately; I need others to take action immediately)	1	2	3	4	5	6	7

An important electronic communication is one that:	Strongly Disagree		Neutral			Strongly Agree	
Contains job-related instructions from me to those who report to me/ to me from management	1	2	3	4	5	6	7
Does not require a response but is sent to keep me/keep other people in the loop (e.g., newsletter)	1	2	3	4	5	6	7
Contains information that cannot be sent over the phone or face to face (i.e., a document, a work-related video)	1	2	3	4	5	6	7
Sends the information to a large number of people at the same time (i.e., a mass emailing)	1	2	3	4	5	6	7
Involves a task that impacts many people	1	2	3	4	5	6	7

Failure to attend to an important electronic communication in a timely manner will result in:	Strongly Disagree		Neutral			Strongly Agree	
The client being negatively impacted	1	2	3	4	5	6	7
A colleague at work being negatively impacted	1	2	3	4	5	6	7
My career being negatively impacted	1	2	3	4	5	6	7
A co-worker missing a work-related deadline	1	2	3	4	5	6	7
The reputation of my employer will be negatively impacted	1	2	3	4	5	6	7
A crisis at work	1	2	3	4	5	6	7
A damaged relationship with the sender of the email	1	2	3	4	5	6	7
My team missing a work-related deadline	1	2	3	4	5	6	7

Section 3: Urgency

The second key objective of this research is to identify the factors that lead someone to perceive that an electronic communication they handle (send/receive) is "urgent"? *For the purposes of this study we define an urgent electronic communication as one "requiring swift action".* In our interviews with employees in your workplace we asked them the following question: *"What factors do you consider when deciding whether or not an e-mail that you have received is an urgent e-mail? In other words, what factors would cause you to think that it is critical that you deal with a particular e-mail immediately?"* A summary of the responses your colleagues gave to this question are listed below. Please read through this list and indicate the extent to which you agree or disagree that each of these items typifies an urgent electronic communication.

I Strongly Disagree	I Mostly Disagree	I Slightly Disagree	Neutral	I Slightly Agree	I Mostly Agree	I Strongly Agree
1	2	3	4	5	6	7

An urgent electronic communication is one that:	Strongly Disagree	Neutral					Strongly Agree
Comes from someone that rarely sends a message (e.g. Call now)	1	2	3	4	5	6	7
Comes from a peer who only contacts you when there is an emergency (e.g. a remote storm team)	1	2	3	4	5	6	7
Comes from someone that you are currently working with on a project	1	2	3	4	5	6	7
Is explicitly flagged as urgent in the subject line (i.e. includes a high priority exclamation mark, the word "urgent", "help", or "action required", etc.)	1	2	3	4	5	6	7
Explicitly states, in the subject line, that a reply or a deliverable is required by a certain date	1	2	3	4	5	6	7
Explicitly states, in the subject line, a client's name	1	2	3	4	5	6	7
Conveys urgency in the subject line (e.g. "my colleague talked about quitting this weekend")	1	2	3	4	5	6	7
Uses only CAPS in the subject line	1	2	3	4	5	6	7
Includes a read receipt	1	2	3	4	5	6	7
Conveys urgency in the body of the message (e.g. if they say, "urgent", "respond immediately", or "need help right away")	1	2	3	4	5	6	7
Conveys urgency in the message by clearly giving a summary of why the message is urgent	1	2	3	4	5	6	7

An urgent electronic communication is one that:	Strongly Disagree	Neutral					Strongly Agree
Uses CAPS in the message itself	1	2	3	4	5	6	7
Relates to an issue that a customer is having	1	2	3	4	5	6	7
Involves gathering information in order to respond to a request from a client	1	2	3	4	5	6	7
Is a request from a potential client	1	2	3	4	5	6	7
Is a follow up on a complaint from a client	1	2	3	4	5	6	7
Is a follow up on a complaint from an employee	1	2	3	4	5	6	7
Is a follow up on a complaint from my manager	1	2	3	4	5	6	7
Is a request from a close work colleague	1	2	3	4	5	6	7
Is time-sensitive (i.e. I need to take action immediately; I need others to take action immediately)	1	2	3	4	5	6	7
Involves resolving a situation where an employee has not shown up for work in a few days	1	2	3	4	5	6	7
Involves a notification of something fun	1	2	3	4	5	6	7
Involves an event which is related to your work that requires a quick response	1	2	3	4	5	6	7
Involves an event which is related to your personal life that requires a quick response	1	2	3	4	5	6	7
Involves correcting a message (i.e. wrong information was sent to someone)	1	2	3	4	5	6	7
Involves you or someone else looking for input on something you or they are working on	1	2	3	4	5	6	7
Deals with someone who is in distress	1	2	3	4	5	6	7
Reflects on you personally	1	2	3	4	5	6	7
Is something you have been waiting for, especially if there are follow-up questions	1	2	3	4	5	6	7
Any message that is sent through instant messaging	1	2	3	4	5	6	7
Involves someone asking you if you are available for a call	1	2	3	4	5	6	7
Is sent while you have indicated that you are busy and is related to what you are currently busy with	1	2	3	4	5	6	7
Involves sensitive issues (e.g., privacy such as firing an employee or emotional issues such as an employee dealing with a death in their family)	1	2	3	4	5	6	7
Involves changes in workflows that will affect your or other people's work	1	2	3	4	5	6	7
Is a request made by a senior manager	1	2	3	4	5	6	7
Involves trying to get a hold of someone to talk to them about something urgent over the phone (i.e. tracking someone down that you need to talk to)	1	2	3	4	5	6	7
Is sent multiple times in a short period	1	2	3	4	5	6	7
Is sent at a time that makes the message urgent (e.g., if a staff member sends a message at 7am it is usually because something has happened)	1	2	3	4	5	6	7

Failure to attend to an urgent electronic communication in a timely manner will result in:	Strongly Disagree	Neutral					Strongly Agree
The client being negatively impacted	1	2	3	4	5	6	7
A colleague at work being negatively impacted	1	2	3	4	5	6	7
My career being negatively impacted	1	2	3	4	5	6	7
A co-worker missing a work-related deadline	1	2	3	4	5	6	7
The reputation of my employer will be negatively impacted	1	2	3	4	5	6	7
A crisis at work	1	2	3	4	5	6	7
A damaged relationship with the sender of the e-mail	1	2	3	4	5	6	7
My team missing a work-related deadline	1	2	3	4	5	6	7

Thank you for completing this questionnaire. Your responses will be held in confidence by the researchers. Please e-mail us or call us if you have any concerns.

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Appendix C: Survey 2

Research Study into Impact of Email on Employees*

Thank you for taking the time to fill out this survey. It is the final part of a three-phase study into the use of electronic communication in workplaces today. The study in which you are being asked to contribute has three goals: (1) quantify the amount of work-related electronic communications employees send and receive in a typical work week, (2) look at the relationship between the amount of work-related electronic communication sent and received by employees and a number of key work (job stress) and employee (well-being) outcomes, and (3) provide insights into how employees and employers can more effectively manage work-related electronic communications.

The survey includes five sections and will take approximately 15 minutes to complete. Your responses are anonymous and will be kept in confidence by the researchers. Only summary results will be provided to the organizations which have agreed to take part in the study. You are not required to answer the survey. You may leave questions blank or leave the survey for whatever reason at any time. If you have any questions, please don't hesitate to contact us. Our contact information is provided below if you have any concerns or wish a copy of the study findings:

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*This project was reviewed and given clearance to carry out this research by the Carleton University Research Ethics Board, the [...], and by the [...]. Should you have any questions or concerns related to your involvement in this research, please contact,

· Carleton University Research Ethics Board by phone (613-520-2517) or email (ethics@carleton.ca) OR [...]

Section 1: Demographic Information

The following section of the questionnaire asks you to provide some demographic information about yourself that will be used to help us to interpret this question. Please indicate the response that best describes you.

1. What is your age? _____ years old
2. What is your gender?
 - ☐ Female
 - ☐ Male
3. Which organization do you work for?
 - ☐ [...]
 - ☐ [...]
4. What is your job type?
 - ☐ Manager
 - ☐ Professional
 - ☐ Administrative staff
 - ☐ Sales
5. How long have you worked for your organization (i.e., years of service)? _____ year(s)
6. How long have you had your present job? _____ year(s)
7. What is the highest education level you have completed?
 - ☐ Some high school
 - ☐ High school diploma
 - ☐ Some university/college
 - ☐ College diploma
 - ☐ University degree
 - ☐ Post graduate degree

Section 2: Information about your Job

The following questions ask about your experiences at your current place of work and with your current employer. For each of the following questions please select the response that most represents your situation at work.

8. Below is a list of statements that could be used to describe a job. Please indicate how strongly you agree with each statement.

	Strongly disagree	1	2	3	4	5
My job requires that I learn new things	1	2	3	4	5	
My job involves a lot of repetitive work	1	2	3	4	5	
My job requires me to be creative	1	2	3	4	5	
My job allows me to make a lot of decisions on my own	1	2	3	4	5	
My job requires a high level of skill	1	2	3	4	5	
On my job, I have very little freedom to decide how I work	1	2	3	4	5	
I get to do a variety of different things on my job	1	2	3	4	5	
I have a lot of say about what happens on my job	1	2	3	4	5	
I have an opportunity to develop my own special abilities	1	2	3	4	5	

9. In your current position at work:

	Very Little	1	2	3	4	5	Moderate	Very Much
How able are you to predict the amount of work you will have to do on any given day?	1	2	3	4	5			
How much control do you have over how quickly or slowly you have to work?	1	2	3	4	5			
How much control do you have over how much work you get done?	1	2	3	4	5			
How much are things that affect you at work predictable, even if you can't directly control them?	1	2	3	4	5			
In general, how much overall control do you have over work and work-related matters?	1	2	3	4	5			

10. In the past 6 months how often have you thought about leaving your organization to work elsewhere?

- ☐ Never
- ☐ Monthly
- ☐ Weekly
- ☐ Several days per week
- ☐ Daily

11. In the last six months, how many days have you:

- a) Been unable to work or carry out your usual activities because of health problems?
_____ DAYS
- b) Been unable to work or carry out your usual activities because of children-related problems? _____ DAYS
- c) Been unable to work or carry out your usual activities because of problems concerning elderly relatives? _____ DAYS
- d) Taken a day off because you were emotionally, physically or mentally fatigued?
_____ DAYS

Section 3: Demands at work

The following questions ask about the demands of your job.

12. At present approximately how many hours per week do you spend:

- a) in work-related activities? _____ hours per week
- b) in work-related activities at home outside regular office hours (i.e., evenings or weekends)? _____ hours per week

13. Please indicate how often each of the following situations applies to you at work:

	Rarely	Sometimes			Very Often
How often does your job require you to work very fast?	1	2	3	4	5
How often does your job require you to work very hard?	1	2	3	4	5
How often do expectations at work mean that you cannot get everything done?	1	2	3	4	5
How often do the number of tasks you have to do at work exceed the amount of time you have to do them in?	1	2	3	4	5
How often do you feel emotionally exhausted from all you have to do at work?	1	2	3	4	5
How often do you feel physically exhausted from all you have to do at work?	1	2	3	4	5
How often do your colleagues make too many demands on you?	1	2	3	4	5
How often does your supervisor make too many demands on you?	1	2	3	4	5
How often do your clients make too many demands on you? (please leave this blank if it does not apply)	1	2	3	4	5
How often do you have time to just sit and contemplate at work?	1	2	3	4	5
How often do you experience periods where the work slows down?	1	2	3	4	5

15. Please use the following scale to indicate how accurately each of the following statements describe your job?

	Very Inaccurate	Uncertain			Very Accurate
I have to do things that should be done differently	1	2	3	4	5
There are clear, planned goals and objectives for my job	1	2	3	4	5
I have to bend or break a rule or policy in order to carry out an assignment	1	2	3	4	5
I receive assignments without adequate resources and materials to execute them	1	2	3	4	5
I receive incompatible requests from two or more people	1	2	3	4	5
I know exactly what is expected of me	1	2	3	4	5
I work with two or more groups who operate quite differently	1	2	3	4	5
I work on unnecessary things	1	2	3	4	5
I feel certain about how much authority I have	1	2	3	4	5
I receive an assignment without the help I need to complete it	1	2	3	4	5
I know that I have divided my time properly	1	2	3	4	5
I know what my responsibilities are	1	2	3	4	5

Section 4: Mental Health

The following questions assess job stress and overall levels of stress.

15. How often in the last three months have you:

	Rarely	Sometimes			Very Often
Been upset because something happened unexpectedly	1	2	3	4	5
Felt that you were unable to control important things in your life	1	2	3	4	5
Felt nervous or stressed	1	2	3	4	5
Felt confident about your ability to handle your personal/family problems	1	2	3	4	5
Felt that things were going your way	1	2	3	4	5
Found that you could not cope	1	2	3	4	5
Been able to control irritations in your life	1	2	3	4	5
Felt you were on top of things	1	2	3	4	5
Been angered because of things that happened outside of your control	1	2	3	4	5
Felt difficulties were piling up so high that you could not overcome them	1	2	3	4	5

16. Please indicate the extent to which you agree or disagree with each of the following statements:

	Strongly Disagree		Neutral		Strongly Agree
I work under a great deal of tension	1	2	3	4	5
I have felt fidgety or nervous as a result of my job	1	2	3	4	5
If I had a different job, my health would probably improve	1	2	3	4	5
Problems associated with my job have kept me awake at night	1	2	3	4	5
I often ‘take my job home with me’ in the sense that I think about it when doing other things	1	2	3	4	5

Section 5: Electronic Communication

The following questions ask about your experiences with electronic communications. For each of the following questions please select the response that most represents your situation

17. Please think about a typical workday and indicate in the space below approximately how many (work and non-work):

- a) emails you receive _____ on a typical workday
- b) emails you send? _____ on a typical workday
- c) IMs you receive? _____ on a typical workday
- d) IMs you send? _____ on a typical workday

18. Please think about a typical non-workday and indicate in the space below approximately how many (work and non-work):

- a) emails you receive? _____ on a typical non-workday
- b) emails you send? _____ on a typical non-workday
- c) IMs you receive? _____ on a typical non-workday
- d) IMs you send? _____ on a typical non-workday

19. Approximately how many hours per week do you devote to email-related activities while _____ at work (please include both work and non-work-related emails)?
_____ hours per week

20. Approximately how many hours per week do you devote to email-related activities while _____ at home (please include both work and non-work-related emails)?
_____ hours per week

21. Please think about a typical workday. How often do you deal with (i.e., send, receive) the following types of electronic communication (i.e., email, IM) messages?

	Never	Sometimes (i.e., 4 – 6)			Very Often (i.e., 10 or more)
A message from a client	1	2	3	4	5
A message from my immediate manager	1	2	3	4	5
A message that includes information/is a request for information that is critical to your ability to do your job	1	2	3	4	5
A message that explicitly states, in the subject line that a reply or a deliverable is required by a certain data	1	2	3	4	5
A message that relates to client services	1	2	3	4	5
A message that comes from the organization and provides information on something which will impact my work (i.e., internet will be down, new policy)	1	2	3	4	5
A message that contains job-related instructions from me to those who report to me/ to me from management	1	2	3	4	5
A time-sensitive message (i.e., one that requires you or someone else to take action immediately)	1	2	3	4	5
Is a follow up on a complaint from a client	1	2	3	4	5
Is a follow up on a complaint from an employee	1	2	3	4	5
Is a follow up on a complaint from my manager	1	2	3	4	5
Involves someone who is in distress	1	2	3	4	5

	Never	Sometimes (i.e., 4 – 6)			Very Often (i.e., 10 or more)
Involves sensitive issues (i.e., colleague is fired; client, colleague, student is emotional)	1	2	3	4	5
Involves trying to track down someone that you need to talk to urgently	1	2	3	4	5
Involves a request made by a senior manager	1	2	3	4	5
Involves correcting an incorrect message that was sent out previously (i.e., wrong information was sent to someone)	1	2	3	4	5
A message which relates to an issue where a client is (or will be) negatively impacted (especially if you do not respond)	1	2	3	4	5
A message which relates to an issue where a colleague at work is (or will be) negatively impacted (especially if you do not respond)	1	2	3	4	5

22. Please indicate the extent to which you agree or disagree with each of the following statements.

	Strongly Disagree	2	Neutral 3	4	Strongly Agree 5
I feel I spend too much time keeping up with my mail	1	2	3	4	5
Email cuts into the time I wanted to spend on other tasks	1	2	3	4	5
I have trouble keeping up with email on days I am away from my desk	1	2	3	4	5
I spend too much time getting rid of unimportant messages	1	2	3	4	5
I am satisfied with the strategy I use to keep up with my mail	1	2	3	4	5
When I return from vacation / time off, I feel overwhelmed when triaging my mail	1	2	3	4	5
Sometimes my emails may get lost or missed	1	2	3	4	5

The following question asks you about the number of important and/or urgent electronic communications you process (send, receive) each week. For the purposes of this study we define an important electronic communication as one with something of great significance, consequence or value and we define an urgent electronic communication as one “requiring swift action”.

23. Please think about your typical work week. What percent of the electronic communications that you receive would you consider to be:

Important (but not urgent)	_____	%
Urgent (but not important)	_____	%
Urgent and important	_____	%
Neither important nor urgent	_____	%
		100%

Thank you for completing this questionnaire. Your responses will be held in confidence by the researchers. Please contact us if you have any concerns.

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