Reconceptualizing Communication Overload and Building a Theoretical Foundation

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This study reconceptualizes communication overload and builds a theoretical foundation to understand how this phenomenon applies in contemporary life. We build theory by relying on past research and using a Q-method to capture the subjective perspectives of people who experience communication overload. In our refinement of this abstract concept, we identified seven dimensions composing communication overload. The dimensions included: compromising message quality, having many distractions, using many information and communication technologies, pressuring for decisions, feeling responsible to respond, overwhelming with information, and piling up of messages. Our reconceptualization integrates disparate research, links the availability–expectation–pressure pattern to overload, and elaborates on communication quality, quantity, and generalized perceptions of feeling overwhelmed. The resulting formative theoretical model sets the stage for additional theorizing and empirical studies.

Keywords: Communication Overload, ICTs, Multiple Media, Mobile Communication, Q-Sort Method, Information Overload, Communication Technology Theory Development.

doi:10.1111/comt.12116

Overload appears to be a common word now that our information society operates “under a more-faster-better philosophy of life” (Levy, 2009, p. 512). When people are overloaded they feel frustrated, their decision-making ability degrades, they feel burned-out, and they feel a lack of control over their own environment (Burchell, 2015; Eppler & Mengis, 2004; Speier, Valacich, & Vessey, 1999; Sutcliff & Weick, 2008). A flurry of new terms is developing around the concept of overload including connection overload (LaRose, Connolly, Lee, Li, & Hales, 2014), techno overload (Dhir & Midha, 2014), stress overload (Amirkhan, 2012), and technology overload (Karr-Wisniewski & Lu, 2010). Yet people’s frustrations with being overloaded illustrate a distinctive communicative concern; one that introduces issues that are highly
relevant in a contemporary society that uses a variety of information and communication technologies (ICTs) to be in constant communication (Bayer, Campbell, & Ling, 2016; Burchell, 2015; LaRose et al., 2014; Van Dijck, 2013; Wajcman, 2015).

In this study, we focus on conceptualization as a path toward theory development (see Jensen, 2013 as another communication example). Conceptualization and reconceptualization occur when researchers identify and refine indicators that reflect what a concept means (Babbie, 2013). In addition, conceptualization “opens the field for empirical inquiry and sustained argument” (Jensen, 2013, p. 205). Reconceptualization is especially relevant when conditions surrounding the communication phenomenon have changed. Digitalization in the contemporary media environment (Jensen, 2013), the ubiquity of personal mobile devices (Burchell, 2015), and norms of connectedness (Bayer et al., 2016; Licoppe 2004; Wajcman, 2015), all represent recent changes. These changes likely influence people’s perceptions of a construct like communication overload.

While there is considerable value in operationalizing communication overload — specifying “the exact procedures that will be used to measure the attributes of variables” (Babbie, 2013, p. 159) — the first step in understanding this new overload environment is to carefully reconceptualize the construct. Reconceptualizing communication overload needs to consider changes like the proliferation of ICTs and mobile devices that allow people to be accessible anytime and anywhere (Bayer et al., 2016; Licoppe, 2004; Van Dijck, 2013; Wajcman, 2015). Certainly, many people feel empowered by the increased access to new communication technologies (e.g., Bayer et al., 2016; Hargittai, Newman, & Curry, 2012), but there are times that some of the affordances surrounding new media, like accessibility, are perceived negatively. Past research indicates that problems associated with feeling overloaded can have negative consequences (Eppler & Mengis, 2004). Using this contemporary, media-rich view of overload highlights the multidirectional nature of communication (how people carry on multiple conversations with multiple others) and the societal expectations people experience through norms dictating quick communicative responses (Bayer et al., 2016).

In the section that follows, we provide a brief historical grounding of how the concept of overload developed. Next, we demonstrate that while there are many current uses of terms related to communication overload, we lack a clear understanding and conceptualization of this concept. Finally, we develop a research question that focuses on identifying and carefully defining the construct of interest (Jensen, 2013; Miller et al., 2011). This grounding helps develop a comprehensive understanding of the communicative processes that ultimately contribute to the development of theory (Kelly & Keaten, 2007).

**Understanding the history of overload as a base for reconceptualization**

The study of overload has a rich history grounded in information theory (Shannon & Weaver, 1949), and is well developed in the context of individual and organizational decision-making. Much of the past research on overload has been approached from
the perspective of information overload found in the information sciences field (Edmunds & Morris, 2000; Eppler & Mengis, 2004, Hiltz & Turoff, 1985; Jones, Ravid, & Rafaeli, 2004) or organizational and decision-making research (O’Reilly, 1980; Speier et al., 1999; Sutcliffe, & Weick, 2008; Weick, 1970). Information overload has been defined in several ways, but many researchers refer to this construct as a state of receiving too much information (Eppler & Mengis, 2004; Jacoby, 1977). The most common understanding of this construct is that people reach a point where they have too much information to process, which typically causes a decrease in performance (Eppler & Mengis, 2004).

In the middle part of the 20th century, organizational scholars became especially interested in how people and organizations made decisions. Simon’s (1957) seminal works on the concepts of satisficing and bounded rationality were highly relevant to notions of overload because they defined conditions where people were limited by existing resources and made decisions that were sufficient, rather than optimal. When people receive too much information, they resolve this dilemma by reducing the information indiscriminately to restore balance and reduce their overload (Weick, 1970). Weick explained, “Both the creation and reduction of overload, as parallel processes, can occur at the same time” (p. 85). Yet Weick claimed that when people address the information-relevance dimension of quality, they use criteria that are more selective. People keep the most instrumental information and filter out irrelevant information. People also change their priorities when they are overloaded with information (Weick, 1970), and this affects their decision-making ability (Lee & Lee, 2004).

In their multidisciplinary summary of information overload research, Eppler and Mengis (2004) showed that people need information to make accurate decisions. However, there is a point where people cannot integrate additional information and that is defined as information overload. Their review also showed that definitions of overload vary and often include notions of volume, quality, time demands, situational factors, and personal factors. Researchers who study how overload predicts behavior often find it is related to burnout. The exhaustion component of burnout is what appears to result in perceptions of overload for individuals (Maslach, Schaufeli, & Leiter, 2001).

In addition to the research focused on information overload, there is also a body of literature that distinguishes this construct as communication overload. When Meier (1963) reported his research on communication in a library, he titled the paper “Communications Overload.” He defined the term communication overload as “best measured as the rate of receipt of requests for service. It represents the initiation rate for social transactions effected by the institution” (p. 540). He explained that organizations are evaluated by their output, so if communication exceeds the channel capacities, output will suffer. Meier identified the negative outcomes that result when librarians receive too many requests for information and they cannot address all the requests. His research focused on organizational studies, so his findings also explained the types of organizational stresses that overload created. Organizations had to develop new policies and hire more personnel because of the increased overload.
Contemporary attempts to operationalize communication overload

One of the most common scales used in communication studies to measure overload is Chung and Goldhaber’s (1991) instrument that measures communication load. Their original instrument contained 18 items that asked people how things are and how people wished things would be. Ballard and Seibold (2006) used nine items referring to how things actually are for their instrument and determined that these items loaded on a single factor. Their scale measured the following concepts: too many communication channels, concepts like decision-making, sending and receiving information, and confusing or ambiguous information. Versions of Ballard and Seibold’s measure have been used in several studies (Stephens, 2008; Stephens & Davis, 2009; Stephens, Goins, & Dailey, 2014) to understand how factors of overload influence workplace and communicative practices.

More recently, studies have examined overload through multiple lenses. For instance, Jensen, Patel, and Messersmith (2013) explored overload in the context of high performance work systems. Specifically, Jensen et al. (2013) explored role overload in terms of work pressures and demands from others, unrealistic deadlines, and having too much work to complete. Similarly, Dhir and Midha (2014) operationalized overload through online social network technostressors, comprised of information overload, social overload, and techno overload, and linked them to burnout. In another approach to measuring communication overload, Cho, Ramgolam, Schaefer, and Sandlin (2011) utilized six items from Chung and Goldhaber’s (1991) scale to measure the effect of communication overload on organizational processes like job satisfaction and identification. Cho and colleagues’ (2011) operationalization of communication overload focused primarily on the perception of communicative practices that occurred based on the receipt of information in the workplace. These scholars used a media synchronicity perspective to show that high synchronous channels had lower impact on communication overload than did low synchronous channels. They further explain that because human beings are naturally inclined to communicate simultaneously, low synchronous channels may increase communication overload. All of these studies aim to unpack the nuances of how overload is measured and some of them include ICTs in their measurement. Yet this body of scholarship is scattered and conceptualization is only briefly mentioned given that the focus of this research has been on creating and using measures.

There also has been an increase in developing and understanding overload in a variety of contexts, including health communication. Amirkhan’s (2012) development of the Stress Overload Scale (SOS) provides empirical support to link stress and health outcomes. The SOS was a scale derived from 150 items that reflected overload within the literature on stress. Two factors emerged after exploratory and confirmatory analyses that included event load and personal vulnerabilities related to stress. A component of the SOS was defining items that described overload as “event loads” (p. 61), or perceptions of external demands, pressures, or responsibilities.

There are also specific scale development efforts emerging in the information technology literature that expand specifically into technology and communication
Communication Overload

overload. Karr-Wisniewski and Lu (2010) defined a new construct, technology overload, which they separated into information overload, communication overload, and system feature overload. Their scale development work was executed well, yet their operationalization of communication overload is limited and grounded exclusively in the technologies of the environment they examined. They focused on the interruptions caused by others when trying to get the attention of their communication partners, something also linked to decreased decision-making (Speier et al., 1999). Karr-Wisniewski and Lu (2010) claimed that “communication overload occurs when a third party solicits the attention of the knowledge worker through such means as e-mail, instant messaging, or mobile devices that causes excessive interruptions in his or her job to the point the knowledge worker becomes less productive” (p. 1063). They also claimed that communication overload is the receiving of messages, while information overload is the seeking of information. Their four-item scale used to measure communication overload included: (a) I feel that in a less connected environment, my attention would be less divided allowing me to be more productive, (b) I often find myself overwhelmed because technology has allowed too many other people to have access to my time, (c) I waste a lot of my time responding to e-mails and voicemails that are business-related but not directly related to what I need to get done, and (d) The availability of electronic communication has created more of an interruption than it has improved communications.

While the Karr-Wisniewski and Lu (2010) scale has face validity in capturing parts of communication overload, it only taps the surface of what is involved in a communicative understanding of overload. Furthermore, multiple concepts are embedded in each of their four items. For example, when answering their item number two, a person could be overwhelmed for many reasons and technology might not be the only way that other people can overwhelm that individual.

Taken together, this past research suggests two key things: (a) there are few if any recent attempts to fully conceptualize communication overload, and (b) the rise in ICT use has not been captured comprehensively in conceptual or operational definitions of communication overload. Given that past research has shown that overload has serious consequences for decision-making and burnout, focusing on the definitional aspect of this construct is an important first step in understanding communication overload. These realizations lead to the following research question:

RQ1: What are the dimensions of communication overload?

Method

While many studies have linked overload to important outcomes, there are few that capture the subjective perspectives of subjects who experience communication overload. Thus, our theory-building effort relied on a Q-methodology (Brown, 1980; Stephenson, 1936; Watts & Stenner, 2005) to create a more comprehensive understanding of communication overload. This conceptual development work was informed by the literature, influenced by expert opinions, and sorted by people whose
cumulative, subjective perspectives allowed us to better conceptualize a perceptual construct like communication overload. Because Q-methodology is only occasionally used in communication technology research (see Stephen, 1985), we will briefly explain this approach and how our analysis here deviated from the original method.

**Understanding Q-methodology**
The original Q-methodology was created to measure subjective perspectives using statistical analyses like correlation and factor analysis (Stephenson, 1936). This approach was designed as a middle ground between qualitative and quantitative approaches because while qualitative methods can certainly capture subjective experiences, the researcher is also clearly involved in the interpretation of the data (Cordingley, Webb, & Hillier, 1997). In the Q-method, people serve part of the sorting function that statistics often accomplish. Specifically, research subjects are given a group of cards that contain words and phrases, and they are asked to place them on a grid that can follow a normal distribution (as in the original method), or can be a more flexible distribution. The card placement is assigned a numerical value and then the sorting results are pooled for all subjects. Because these are subjective viewpoints and each person is responsible for placing a fairly large number of different concepts on a grid, scholars suggest using around 40 participants (Brown, 1993) or between 40 and 60 participants (Watts & Stenner, 2005) in a Q-method.

**Participants and procedures**

**Q-Set**
We recruited participants from a multimajor subject recruitment pool in a large U.S. university located in the South. Participants either met the researchers in a physical laboratory or accessed an online sorting tool, and they received extra credit for their participation. The resulting sample \( N = 96 \) was 25% \( N = 24 \) male and 71.9% \( N = 69 \) female with 3.1% \( N = 3 \) missing. The sample had an average age of \( M = 20.68, SD = 1.37 \). Furthermore, the sample consisted of 6.3% \( N = 6 \) freshmen, 15.6% \( N = 15 \) sophomores, 37.5% \( N = 36 \) juniors, and 20.8% \( N = 20 \) seniors, with the remaining 19.8% \( N = 19 \) missing data. The sample had ethnic diversity that reflected the young, college-educated students in the part of the United States where the sample was collected with 47.9% being Caucasian \( N = 46 \), 27.1% being Hispanic \( N = 26 \), 12.5% being Asian \( N = 12 \), 7.3% being African American \( N = 7 \), and 2.1% being other \( N = 2 \).

**Specific steps in our Q-method**

**Definition of the concourse**
Our concourse contained the collection of statements our team generated that represented communication overload (Van Exel & de Graaf, 2005). We began the conceptual development effort with a literature review that included studies discussing multiple types of overload. We collected 55 articles and after careful review, we derived 98 concepts that could comprise communication overload. At this point, we invited...
four different experts who have published in the areas of information, communication, and health overload to engage in refining our number of items into a manageable amount. We purposively chose the experts, referred to as the P-set, for their theoretical expertise (Brown, 1980). Each expert spent 40 minutes with our team sorting the 98 cards into categories relevant to communication overload. Our goal was not to get the experts to agree on the specific items to include in the final concourse, but rather, to analyze their perspectives and use their collective knowledge to help us choose the best items for our Q-set (Brown, 1980). We narrowed the list of 98 cards to 38 based on these expert discussions by using the following reduction process: (a) collapsed redundant concepts (removed 21 concepts and kept the most general statements), and (b) removed context-specific concepts ($N = 13$, only relevant for one expert), and (c) removed outcomes of overload ($N = 26$ outcomes, e.g., burnout).

Q-Sorting
The traditional Q-sorting process occurs in-person and our team conducted five of these in-person Q-sorts to best understand how this procedure could be transferred to an online process. At least three of our team members were present at each of these in-person Q-sorts and the team debriefed after each session. One team member transferred the Q-sorting process into Qualtrics and after beta testing the reliability of this system, we launched the main study. Each respondent logged onto the system and received instructions concerning how to drag the concepts into one of five boxes that were identified as ranging from highly relevant to not relevant to communication overload. Once respondents completed the initial sort, they were given a series of open-ended questions (to mimic the think-aloud procedure used for the in-person sort).

Over time this method has evolved and there are different ways to approach a Q-sort. We relied heavily on the original method (Stephenson, 1936), but we adopted Nunnally’s (1967) perspective by allowing our subjects to sort the concepts into the distribution of their choice. Even though we had five columns where subjects could place their cards, we did not force them to distribute the cards normally. Nunnally (1967) claimed that this procedure “would make little difference in the results of statistical analysis” (p. 547). Furthermore, by allowing this distribution freedom, or card placement independence, we adhered to the independence assumption needed for most statistical models (Peterson, 2002).

Qualitative analyses
Considering our goal was to conceptualize communication overload, having qualitative data helped elaborate on the Q-sort findings (Van Exel & de Graaf, 2005). To further address our research question, we asked participants one question: How does technology influence your perception of communication overload? We documented all these responses and decided to code based on whether the perception of technology fell into one of three categories: increases, decreases, or both increases and decrease communication overload. This was not a traditional content analysis because
the coders were not using theoretical categories. Two researchers examined all the responses and coded each statement to achieve 100% agreement. Then, a third, independent coder examined all the statements and marked four codes where he disagreed with the primary coders. All three of the coders discussed these differences and we arrived at a consensus for how to code the remaining four items.

**Results**

Before conducting the analyses, we examined the data for outliers. As these data were collected online, we examined the start and end times for each participant and calculated the average time spent on completing the Q-sort survey ($M = 14.44$ minutes, $SD = 6.29$ minutes). We removed 20 participants whose time spent participating in the study placed them at one and a half standard deviations below the mean, less than 5 minutes. Respondents spending very little time in a study have been defined as careless by Meade and Craig (2012). We removed the careless responses because these inattentive nonrandom responses can have unpredictable effects on correlations among items (Johnson, 2005; Meade & Craig, 2012). We conducted a factor analysis on the data obtained from the remaining 96 respondents.

**Q-Sort findings**

We used all 38 concepts that constituted the Q-set to conduct a principal components factor analysis with varimax rotation. The first iteration resulted in 11 factors and explained 71.4% of the variance in communication overload. However, several items failed to load cleanly. We conducted four rounds of removing items that did not load cleanly. In an effort to both create parsimony and also retain factors that contributed considerable variance, our final explanatory factor analysis (EFA) yielded seven factors. These factors explained 70.7% of the variance in communication overload and contained 20 of the original 38 items. The full EFA is available from the first author.

Next, we created composite measures for each of the factors. We called the first factor, *compromising message quality* and it consisted of four items that had a $M = 2.58$, $SD = 1.06$, $N = 88$, accounted for 14.65% of the variance and had a Cronbach’s $\alpha = .86$. We called the second factor, *using many ICTs* and it consisted of five items, had a $M = 4.03$, $SD = .80$, $N = 88$, accounted for 13.84% of the variance and had a Cronbach’s $\alpha = .75$. The third factor, *pressuring for decisions* consisted of five items and had a $M = 3.30$, $SD = 0.85$, $N = 88$, accounted for 13.84% of the variance, and had a Cronbach’s $\alpha = .77$. The fourth factor, *overwhelming with information* consisted of three items and had a $M = 4.43$, $SD = 0.72$, $N = 92$, accounted for 9.9% of the variance, and had a Cronbach’s $\alpha = .69$. The fifth factor was a single item, *receiving many messages*, had a $M = 4.37$, $SD = .87$, $N = 91$, and accounted for 6.67% of the variance. The sixth factor consisted of a single item, *having many distractions*, had a $M = 4.34$, $SD = 0.88$, $N = 92$, and accounted for 5.82% of the variance. The final factor was also a single item, *feeling responsible to respond*, had a $M = 3.70$, $SD = 1.04$, $N = 92$, and accounted for 5.79% of the variance in communication overload.
We examined the correlations for the composite measures as well as the individual items in the seven factors/dimensions describing communication overload. There were limited correlations between these factors but compromising message quality was significantly related to having many distractions ($r = .23, p < .05$), using many ICTs ($r = .24, p < .05$), and pressuring for decisions ($r = .21, p < .05$). Feeling responsible to respond to messages was significantly related to using many ICTs ($r = .29, p < .01$) and to pressuring for decisions ($r = .26, p < .01$).

**Qualitative comments**

*Technology and communication overload*

As one of the factors that explained the most variance in communication overload was using many ICTs, we coded responses relative to peoples' perceptions of increases or decreases in overload level as a result of using ICTs. The vast majority of the respondents said technology had increased their overload ($N = 71, 76\%$). Examples of these comments include: “With a constant stream of information, I feel unpleasant pressure to constantly check my networks for fear that I’ll miss something if I ignore the information.” “If I didn’t have technology, when I went home I could sit in peace instead of always being available.” Eight (7\%) respondents said technology decreased their overload with an example being, “technology both hurts and helps overload. It can allow one to be easily distracted, but it also helps me find information quickly.” Finally, eight people (17\%) said technology had both increased and decreased their communication overload. For example, one participant said, “With the advent of technology, I believe the perception of being overloaded has decreased since it allows us to multitask and respond faster.”

**Discussion**

This study contributes to the theorization and reconceptualization of communication overload by refining and specifying the dimensions of this construct. The seven conceptual dimensions are formative dimensions, meaning that they are “viewed as causing rather than being caused by the latent variable” (Diamantopoulos & Winklhofer, 2001, p. 269). See Figure 1 for the visual representation of the formative model developed in this research. Furthermore, the seven dimensions of communication overload have face-validity and explain over 70\% of the variance in conceptualizing communication overload. Our reconceptualization suggests this is timely research due in large part to the proliferation of ICTs and mobile devices that have heightened awareness of a connection norm and expectation of accessibility (Bayer et al., 2016; Licoppe, 2004). While using technology to be available and connected has many advantages (Bayer et al., 2016; Burchell, 2015; Wajcman, 2015), our findings showed that being available, others’ expectations, and a growing sense of pressure are integral parts of communication overload. We call this the availability-expectation-pressure pattern. While other scholars have discussed similar concepts associated with new communication technologies, this is the first study to show that this pattern, along with message
Using many ICTs

Having many distractions

Compromising message quality

Feeling responsible to respond

Pressuring for decisions

Overwhelming with information

Piling up of messages

Figure 1 Formative model of communication overload.

quantity, quality, and general perceptions of feeling overwhelmed, together compose communication overload.

To better understand the contribution of this work, we first justify why we chose to develop a formative instead of a reflective theoretical model of communication overload. Next, we further substantiate this decision by situating our findings in the context of prior operationalizations of the concept more generally called overload. This comparison revealed that prior research often included several of the conceptual dimensions uncovered in our study, but they never included all of our dimensions (See Table 1). Thus, our conceptual work serves to integrate the dispersed literature on overload by creating a formative model. Another contribution of our work is that we elaborate on the role that technology plays in the perception of communication overload. We end this discussion by elaborating our theoretical formative model and suggesting key directions for future research where communication scholars can approach communication overload in a more comprehensive manner.

Developing a formative model of communication overload

The data generated helped us reconceptualize communication overload, which can be represented in a formative theoretical model (see Figure 1). Note that researchers can choose to develop either a formative or a reflective model and that decision should be based on the causal logic between the indicators and the latent variable, and whether indicators/dimensions are defining characteristics of the construct — communication overload in our case (Diamantopoulos & Winklhofer, 2001; Jarvis, Mackenzie, & Podsakoff, 2003). Previous studies have considered a reflective representation of communication overload (e.g., Cho et al., 2011; Jensen et al., 2013; Karr-Wisniewski & Lu,
<table>
<thead>
<tr>
<th>Dimensions in our Conceptualization</th>
<th>Existing Scale or Concept Citation</th>
<th>Existing Measurement Item or Concept from Cited Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compromising message quality</strong></td>
<td>Ballard and Seibold (2006)</td>
<td>Sometimes you may have more discussion than you wish to about the confusing or ambiguous information. How often does this occur?</td>
</tr>
<tr>
<td><strong>Having many ICTs</strong></td>
<td>Ballard and Seibold (2006); Cho et al. (2011); Karr-Wisniewski and Lu (2010); Cho et al. (2011); Weinert et al. (2012)</td>
<td>How often do you feel you generally have too many phone calls, meetings, memos, letters, face-to-face conversations, etc. in your department? I often find myself overwhelmed because technology has allowed too many other people to have access to my time I receive too many e-mails Too much Facebook</td>
</tr>
<tr>
<td><strong>Pressuring for decisions</strong></td>
<td>Ballard and Seibold (2006)</td>
<td>How often does your communicating with others involve too many decisions?</td>
</tr>
<tr>
<td><strong>Overwhelming with information</strong></td>
<td>Ballard and Seibold (2006); Cho et al. (2011)</td>
<td>How often do you receive information that require you to make too many decisions? I have unrealistic time pressure I have unachievable deadlines</td>
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Table 1 Comparing Prior Measurements and Conceptualizations to our Communication Overload Dimensions
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Piling up of messages</td>
<td>Ballard and Seibold (2006)</td>
<td>How often do you receive more information than you need in order to do your job effectively?</td>
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<td></td>
<td>Ballard and Seibold (2006)</td>
<td>How often do you receive more information than you can process?</td>
</tr>
<tr>
<td>Having many distractions</td>
<td>Karr-Wisniewski and Lu (2010)</td>
<td>I feel that in a less connected environment, my attention would be less divided allowing me to be more productive</td>
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<td></td>
<td>Karr-Wisniewski and Lu (2010)</td>
<td>The availability of electronic communication has created more of an interruption than it has improved communications</td>
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<td></td>
<td>Speier et al. (1999)</td>
<td>Interruptions decrease decision accuracy</td>
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<tr>
<td>Feeling responsible to respond</td>
<td>Ballard and Seibold (2006); Cho et al. (2011)</td>
<td>How often do you feel you have to send more information than you wish to?</td>
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<tr>
<td></td>
<td>Karr-Wisniewski and Lu (2010)</td>
<td>I feel like I have to send many more messages than I want to send</td>
</tr>
<tr>
<td></td>
<td>Amirkhan (2012)</td>
<td>I waste a lot of time responding to e-mails and voicemails that are business-related but not directly related to what I need to get done</td>
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<td></td>
<td>Jensen et al. (2013)</td>
<td>One component of this scale was perceptions of external demands, pressures, and responsibilities. Multiple items measure these concepts</td>
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<td></td>
<td></td>
<td>Different groups at work demand things from me that are hard to combine</td>
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2010); a perspective common in the psychological and management sciences (Diamantopoulos & Winklhofer, 2001; Edwards & Bagozzi, 2000). However, we argue that our reconceptualization suggests the need to develop a formative representation of communication overload, a way of theorizing more common in sociology and economics (Diamantopoulos & Winklhofer, 2001; Edwards & Bagozzi, 2000).

As Figure 1 shows, the formative model demonstrates that the dimensions of communication overload do not share a common theme and the dimensions are not necessarily interchangeable, suggesting they may not be correlated to each other. Thus, in a formative model, removing one dimension is like removing a part of the construct. In our model, clearly, there are dimensions that reflect dissimilar themes. For example, on prima facie, pressuring for decisions is very different from receiving too many messages. This difference is further supported by the low statistical correlations between these dimensions (see significant values included on Figure 1). It is crucial, however, to point out that in order to be representative of a construct, the dimensions of a formative model do not need to be correlated with each other. As Nunnally and Bernstein (1994) suggested, “internal consistency is of minimal importance because two variables that might even be negatively related can both serve as meaningful indicators of a construct” (p. 489).

Developing this type of model further substantiates the value of our reconceptualization and differentiates it from prior overload scales and empirical research. All seven of these dimensions play an important role in conceptualizing communication overload. Prior studies that have only included a few of these dimensions have not captured the conceptual domain of the construct, a fundamental advantage of using a formative model for our reconceptualization (Jarvis et al., 2003). Next, we will use the data generated in this study to further substantiate our reconceptualization.

Comparing the seven-dimensional conceptualization to past research
When examining the variance explained by each of the dimensions that conceptualized communication overload, we found that the top three dimensions contributed almost equally. Compromising message quality, having many ICTs, and pressuring for decisions, together accounted for over 43% of the variance. The next four dimensions contributed to the remaining 37% of the variance; evidence that perceived communication overload is likely multidimensional. Communication overload involves message quality and message quantity information, like prior theorizing has suggested (e.g., Cho et al., 2011; Karr-Wisniewski & Lu, 2010), but it also involves specific components related to having many ICTs, pressuring for decisions, and feeling responsible to respond to other communicators. While much of the prior research in overload has focused on a workplace context, and has identified decision-making as an integral part of overload (e.g., Ballard & Seibold, 2006; Jensen et al., 2013), our study found that this concept extends beyond the workplace and we explored it in everyday life. The qualitative findings suggested that pressuring for decisions was related to time pressures.

Table 1 illustrates how the dimensions we identified map onto existing scale items and past conceptual developments. Of particular note is that the only published
scale that included the *compromising message quality* contributor to communication overload was Ballard and Seibold’s (2006) adaptation of the Chung and Goldhaber (1991) scale. Several prior scales have focused on using many ICTs, but they differed in whether they identified specific ICTs, like e-mail or Facebook, or combined several communication channels as a single item. *Pressuring for decisions* are reflected in Ballard and Seibold’s (2006) scale as well as Jensen and colleagues’ (2013) focus on the link between overload and stress. Many of the prior scales have included the component that we term, *overwhelming with information*. The dimension, *piling up of messages*, was captured in the Ballard and Seibold (2006) scale because their scale implied that there were simply too many messages to handle. Additionally, *having many distractions* closely mirrors several items on the Karr-Wisniewski and Lu’s (2010) scale. These scholars focused their scale on interruptions and divided attention. The final dimension, *feeling responsible to respond*, may contribute the least variance explained in our conceptualization of communication overload, but it appears to be uniquely communicative and the qualitative data demonstrate that this dimension causes people considerable stress.

In sum, previous operationalizations of overload have not been able to capture all the different aspects of communication overload. By comparing the dimensions we developed in this study, with previous operationalizations, we illustrate the value that our conceptualizing work adds to existing research and theory development in communication overload. This study helps communication scholarship move closer to demystifying and developing a multidimensional conceptualization of communication overload. Furthermore, inclusion of dimensions such as *compromising message quality* and *feeling responsible to respond* may be crucial to explain variance in outcome variables including, but not limited to, stress, job satisfaction, and identification.

**Understanding technology’s role in communication overload perceptions**

The dimension, *feeling pressure to respond*, was highly related to the role technology plays in understanding communication overload. Identifying this dimension builds on past work claiming that people feel the need to be connected to others constantly and thus, mobile devices both allow and facilitate social pressure to respond (Bayer et al., 2016; Burchell, 2015). There appears to be a dialectical tension in terms of how the participants view and interact with technology. Participants’ descriptions of technology as both helpful and harmful, depending on the context, create a more nuanced understanding of the role that technology plays in feeling overloaded. This respondent explained the dual role well when she said, “technology both hurts and helps overload. It can allow one to be easily distracted but it also helps me find information quickly.” This finding is not unlike Jarvenpaa and Lang’s (2005) work on the paradoxes of mobile devices. Technology can both enable and constrain actions and decisions in our everyday life.

Some existing scales measuring overload appear to assume that technology is inherently overload-causing (e.g., Karr-Wisniewski & Lu, 2010); however, our findings suggested that rather than automatically viewing technology as a contributing
dimension to overload, we should give more attention to how users make appraisals of their involvement with technology. The qualitative responses indicated that views of whether technology is a buffer or an overload-enabler can change from day to day, even from hour to hour. For instance, one respondent explained: “Technology definitely gives you more outlets and mediums in which to become overloaded, but it also is an organizational tool for managing time and schedules.” Therefore, researchers should be careful not to treat the use of ICTs as inherently contributing to communication overload.

Several participants’ responses invite researchers to consider how different communication affordances manifest in how users interact and experience technologies (e.g., Treem & Leonardi, 2012). One respondent explained: “If I didn’t have technology, when I went home I could sit in peace instead of always being available.” This is an example of how her use of specific ICTs has made her feel like she can never escape from needing to be available. This is likely an affordance of mobile devices and the resulting patterns of her ICT use. Another respondent discussed drawing upon technology affordances to achieve positive outcomes. She said, “With the advent of technology, I believe the perception of being overloaded has decreased, since it allows for us to multitask and respond faster.” The very same features available in different technologies are being appropriated and interpreted as either facilitating communication overload, or reducing communication overload.

**Theorizing communication overload**

This work in understanding what communication overload comprises makes important theoretical strides. Considering that this construct is perceptual, having a comprehensive understanding of multiple subjective views is necessary if we want to capture this concept more fully. We can summarize our theoretical contribution by claiming that communication overload includes message quality considerations, quantity concerns, perceived response obligations, and general perceptions of feeling overwhelmed.

Our work supports prior research claiming that quantity and quality are key components of communication overload, and our dimensions provide elaboration on what quantity and quality mean today. Confusing or vague messages contributed the most to peoples’ perceptions of communication overload. This factor is directly related to the content of the message and implies that having to work at understanding the meaning of a message is overload-inducing. Most of the existing scales do not include this message-quality consideration—something that should be rectified in future scale development efforts. As expected when people believe they have too many messages from multiple ICTs, they also feel more communicatively overloaded.

Yet our research also highlights another central component that can be considered a type of perceived pressure from others. The data from this study suggest that people feel obligated to respond to those in their networks, and that others have an expectation that they will respond. Earlier research in the social implications of mobile devices suggested that if connected presence became an expectation, it could induce
a “dialectic of normative constraint and internalized discipline in which presence and absence, availability and unavailability, will be regulated in a game of expectations, obligations, and constraints” (Licoppe, 2004; p. 153). More recently, Bayer and colleagues (2016) claimed that people must be available for communication—often through mobile devices—at all times, which can create a connection overload. We call this phenomenon the availability–expectation–pressure pattern. Our data not only illustrate what past research has speculated to exist, but we connected this pattern to people’s perceptions of being communicatively overloaded.

Identifying this availability–expectation–pressure pattern raises new questions. These findings, combined with past research, suggest that at least part of communication overload perceptions might be self-induced. The open-ended comments from our respondents suggested that they felt the pressure to respond and they personally felt a lack of control with their communication encounters. It is quite possible that individuals create their own communication overload by being too available and too responsive. Yet navigating the balance between being available, but not too available, is tricky. With the expanding ubiquity of mobile devices around the world, there is a growing social norm that people can be reached all the time. In summarizing past research on constant connectedness, Bayer and colleagues (2016) suggest that people who are not available could be at a disadvantage or viewed as nonresponsive to others.

The final theoretical dimension of communication overload is a general perception of feeling overwhelmed in everyday life. This is likely an emotional or cognitive consideration that is different from message quality, quantity, or feeling pressure to respond. Unlike the other three theoretical considerations, this is not necessarily related to messages or even other people. While on the surface this could appear less communicative, it could play a key role in how individuals interpret the messages they receive when they are feeling communication overload.

The formative model suggests that there are a series of relationships that underlie latent variable of communication overload. Understanding the underlying structure of our conceptualization will be important as scholars operationalize each dimension and measure these formative dimensions. Note that it is not uncommon for formative dimensions of latent variables to not be highly correlated (Coltman, Devinney, Midgley, & Venaik, 2008). Yet, there are some dimensions in our model that were correlated at a moderate level. From our data, we found that overwhelmed with information and piling up messages were the only dimensions not correlated with other dimensions.

Limitations

Key limitations of a Q-sort concern the sample and the set of items used to create the concourse. As our study focused on everyday life and overload, we used college students from varying majors to conduct the Q-sort. While we likely captured young adults’ perceptions of communication overload, we cannot claim this will generalize beyond that population and into the workplace. Furthermore, while we combed the literature and involved experts as we constructed our set of 38 concepts, Q-sets are never complete (Watts & Stenner, 2005); thus, we could include new items in the
set and get different results. In addition to having a sample containing only young adults, the participants were college-educated, all owned mobile devices, and the race/ethnicity distribution underrepresented Hispanic and African Americans in the part of the country where the study was conducted. A final limitation involved a choice in how we analyzed the data. We did not fully analyze the similarities and differences between subjects’ perceptions of overload. Because our focus was on conceptualization, we assumed those similarities and differences were embedded in their subjective sorts and used the qualitative comments to explain similarities and differences. Despite these limitations, the findings have face validity, support much of the prior research, and extend this construct conceptualization into an ICT-rich reality. Furthermore, by identifying that there are seven dimensions composing communication overload, we clearly demonstrate that this is a multifaceted construct; one worthy of additional study.

**Advancing directions for future research**

The formative theoretical model sets the stage for several directions of future research. Our reconceptualization illustrates the importance of theorizing by carefully defining dimensions of a concept before developing a scale. Table 1 clearly illustrates the gaps in current scales measuring communication overload and the need to leverage our reconceptualization to fully operationalize and develop a comprehensive scale. Operationalization efforts will need to develop specific research procedures like creating a meaningful question stem and response scale to create empirical observations that clearly represent communication overload in the real world (Babbie, 2013). The developed scales should be tested in several different contexts and with diverse populations to assess the validity and reliability.

Future work could extend this theoretical development by examining the role that experience in a given context plays in managing overload. Newcomers in a job and people learning new technology tools probably experience more communication overload than communicators experienced in that context. For example, medical residents who have to learn how to handle multiple urgent requests likely are more overloaded than seasoned physicians who have developed routines to help them manage the pressure of communicating important health information to various people through multiple ICTs. This process also likely occurs when people are learning new ICTs. For example, people who rely on Twitter to be a primary tool to send and receive information, might find that particular medium less overloading than someone only starting to use Twitter. Comparison studies of people of different ages could also reveal nuances in whether communication overload becomes more manageable as people’s experiences increase and they learn strategies to cope with their communication overload perceptions.

Another area for research is in the role that specific ICTs play, and the particular affordances that people draw upon when they perceive an increased communication load. For example, some social media websites allow for vast network connections (LaRose et al., 2014) and it is possible that aspects of these networks are related to communication overload.
Two other affordances of mobiles that could relate to communication overload are locatability and multimediiality (Schrock, 2015). There could be added pressure on people who feel that others not only can reach them at all times, but they also know where they are physically located. The multimediiality affordance of mobiles could be directly related to the dimension of having too many ICTs that we identified in this reconceptualization.

A final suggestion is to use this reconceptualization of communication overload as a starting point for differentiating, reconceptualizing, and operationalizing similar overload concepts. It is important that we identify which overload-related concepts are meaningful and tease out these different understandings of overload as they appear in unique contexts. As we have illustrated here, there are nuances that distinguish conceptualizations of communication overload from conceptualizations of information overload. Another overload-related concept worthy of exploration is health overload. As patients (and even care providers) are bombarded with an abundance of information that influences decision-making, researchers are raising issues related to health information (Stephens et al., 2014). In addition, healthcare is no longer merely about health; there are financial, technological, and informational dimensions that need to be considered when evaluating facilitators and barriers to effective communication in health contexts.

Acknowledgments

This project was funded by an undergraduate mentorship grant by the Moody College of Communication. We would like to thank our undergraduate research assistants on this project: Bea Scott, Caitlin Harrington, & Kelly Dziersk. We would also like to thank Dawna Ballard, Yoram Kalman, Josh Barbour, and Erin Donovan.

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