Title

Benefits and drawbacks of communication visibility: from vicarious learning and supplemental work to knowledge reuse and overload

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ABSTRACT

Purpose – This study examines some of the benefits and drawbacks of communication visibility. Specifically, building on communication visibility theory, we study how and why message transparency and network translucence may increase knowledge reuse and perceived overload through behavioral responses of vicarious learning and technology-assisted supplemental work.

Design/Methodology/Approach – Drawing on survey data obtained from 1,127 employees of a global company operating in the industrial machinery sector, we used structural equation modelling to test our hypothesized model.

Findings – The results demonstrate that the two aspects of communication visibility yield somewhat differential benefits and drawbacks in terms of knowledge reuse and communication overload, through vicarious learning and supplemental work practices.

Implications – The results demonstrate the relationship between different aspects of communication visibility and knowledge reuse, specifically through vicarious learning. Furthermore, the findings highlight a potential drawback of visibility – communication overload – specifically through technology-assisted supplemental work. Overall, network translucence seems more beneficial compared to message transparency in terms of knowledge reuse and communication overload.

Originality/Value – The study connects with recent work on communication visibility by distinguishing differential direct and indirect effects of message transparency and network translucence. It also extends this work by testing relationships between communication visibility and a potential drawback of visibility – communication overload – specifically through technology-assisted supplemental work.

Keywords: *communication overload, knowledge reuse, message transparency, network translucence, technology-assisted supplemental work, vicarious learning*

Benefits and Drawbacks of Communication Visibility: From Vicarious Learning and Supplemental Work to Knowledge Reuse and Overload

Knowledge is perhaps one of the most important competitive advantages organizations seek to cultivate in our information society (Arend *et al*., 2014; Nag and Gioia, 2012). However, knowledge is increasingly distributed across organizational members often operating in different teams, departments, locations, time zones, cultures, and nations (Kim *et al*., 2019; Tsoukas, 1996). Hence, leveraging knowledge to obtain better employee performance and organizational competitive advantage is not an easy task.

Leonardi (2014, 2015) and Treem *et al*. (2020) have developed a theory of communication visibility to help understand these processes. Broadly, communication visibility can be defined extent to which users can make their behavior, knowledge, and network connections visible to others in the organizations (Treem and Leonardi, 2013). The nascent theory of communication visibility suggests that once invisible communication between others in the organization can become visible to third parties, who can benefit from this visibility (Leonardi, 2014). The theory articulates how communication visibility in an organization may improve understanding of who knows what (through *message transparency*) and who knows whom (through *network translucence*) (Leonardi, 2015), which may result in "more innovative products and services and less knowledge duplication if staff learn to work in new ways" (Leonardi, 2014, p. 811).

Increased visibility of organizational communication thus can provide substantial benefits. Communication visibility is a crucial requirement for the effective coordination and transfer of distributed knowledge, as this may improve organizational members' awareness of others' knowledge and even existence (Evans and Foster, 2011; Leonardi, 2015) and afford more efficient and effective ways of learning and working (Leonardi, 2014). Such metaknowledge and vicarious learning makes it easier for employees to make use of their coworkers' expertise because they become aware of what others know, who those others are, and how others are connected (Engelbrecht *et al*., 2019; Lewis and Herndon, 2011; Leonardi, 2014). Indeed, research demonstrates the beneficial implications of communication visibility for the availability and accuracy of meta-knowledge (Engelbrecht *et al*., 2019), knowledge brokering activities (van Zoonen and Sivunen, 2020), or individual or organizational level innovation (Leonardi, 2014; Liang *et al.*, 2021). Furthermore, in the context of gamification of enterprise systems, the visibility of individual achievements can increase the quality and quantity of knowledge contributions (Suh and Wagner, 2017).

Organizational information and communication technologies (ICTs) in general and enterprise social media (ESM) in particular may be associated with various levels of communication visibility (Leonardi, 2014; Liang *et al.*, 2021; Rice *et al*., 2017; Treem *et al*., 2020). For example, research has investigated the ways in which social media technologies may create resources for improved team and employee performance (Song *et al*., 2019) and how (enterprise) social media use can facilitate knowledge sharing, vicarious learning, knowledge reuse, and work improvements through improved visibility – i.e., message transparency and network translucence (Yang *et al*., 2021). However, this study does not focus on any specific organizational ICTs (e.g., knowledge management platforms, enterprise social media, or email); rather we are interested in the implications of the communication visibility afforded by organizational ICTs more generally (Rice *et al*., 2017).

However, as with organizational knowledge sharing in general (Rice *et al.*, 2019), communication visibility may also be associated with or generate drawbacks. The increased availability and visibility of information and communication exert pressure to respond to and act upon that information (Mazmanian *et al.*, 2013; Stephens *et al*., 2017), such as engaging in additional work through ICTs, possibly leading to communication overload. Overload

seems to become a growing concern in society (and organizations) as we operate "under a more-faster-better philosophy" (Levy, 2009, p. 512).

This study informs theorizing on communication visibility via ICTs in organizational contexts in several ways. First, generally we foster a greater understanding of how the increasingly visible nature of communication through ICTs may influence ways in which people work, and implications of that work. Second, this study heeds the call to refine the theory of communication visibility (Leonardi, 2014) by examining the two dimensions of communication visibility. Third, we assess their distinct direct influence on two mediators, vicarious learning, and technology-assisted supplemental work (TASW), and test their differential influences directly and indirectly on two outcomes, knowledge reuse and communication overload. Fourth, considering recent calls to further explore the dark sides of communication visibility (Chen *et al*., 2020), we also seek to examine how the two dimensions of communication visibility in organizations may generate both direct and indirect benefits *and* drawbacks. Thus, we include both vicarious learning and knowledge reuse as potential benefits, and communication overload as a potential drawback (as mediated by TASW).

Theoretical Framework

This study builds on communication visibility theory to investigate several implications of message transparency and network translucence. Communication visibility theory proposes that when organizational ICTs make content and networks become more visible, observers can increase the amount and accuracy of their knowledge of who knows what (*message transparency*), and who knows whom (*network translucence*), respectively (e.g., Chen *et al*., 2020; Engelbrecht *et al*., 2019; Leonardi, 2014, 2015; Leonardi and Meyer, 2015). This improved individual knowledge represents a set of communication processes used to coordinate learning, retrieval, and application of knowledge (Mell *et al*., 2014; Wenger, 1986). Specifically, message transparency may help organizational members learn from their coworkers' expertise and experience, while network translucence can help to promptly identify relevant contacts when solutions are required (Leonardi, 2015). In other words, communication visibility allows organizational members to use others' information and expertise by being able to be exposed to and become aware of it, and to locate and solicit it (Faraj and Sproull, 2000). However, communication visibility may have benefits and drawbacks, and operate both directly and indirectly through behavioral responses.

Communication Visibility and Knowledge Reuse

Leonardi (2014) argued that communication visibility may have benefits for organizational learning and performance. For instance visibility may allow employees to avoid delays in work processes or prevent inaccurate decisions due to access to and reuse of existing knowledge, including knowledge generated in other contexts. Overall, the visibility of messages and connections creates access to an informal repository of existing knowledge and solutions that can be applied to prevent and solve both existing and new problems (Durcikova *et al*., 2011). The ways in which existing knowledge or solutions are reused and brought to bear to the problem at hand is known as *knowledge reuse* (Choi *et al*. 2010; Durcikova *et al*., 2011; Markus, 2001). Importantly, Chhim et al. (2017) differentiate knowledge resuse from similar terms like knowledge sharing and knowledge transfer by suggesting that knowledge reuse is about the application of existing knowledge, while 'knowledge transfer and knowledge sharing emphasize the movement of knowledge' (p. 742). Hence, knowledge reuse is about the process by which an entity can locate and use shared knowledge (Chhim et al., 2017).

Research has considered positive consequences of visibility, such as greater interpersonal trust (Cramton *et al*., 2007), improved knowledge sharing (van Zoonen and Sivunen, 2020), and recombinant innovation (Leonardi, 2014), with sometimes inconsistent

results. For instance, Zhao *et al*. (2020) studied ambient awareness, demonstrating that awareness of content (i.e., message transparency) was positively associated with improved knowledge sharing, while awareness of connections (i.e., network translucence) was not. However, Chen *et al*. (2020) demonstrated that both message transparency and network translucence were positively related to knowledge sharing. Furthermore, they found that network translucence may have adverse effects indicated by a positive relationship with knowledge hiding, while this negative impact was not found for message transparency. Yang *et al*. (2021) investigated how dimensions of communication visibility underlie work efficiency. In line with Zhao *et al*. (2020), they found differing effects of message transparency and network translucence, such that message transparency was a significant predictor of work efficiency, while network translucence was not. These studies have highlighted the ways in which communication visibility can be influenced by the transparency of messages sent, exchanged, retrieved, or observed within social systems (Jensen *et al*., 2016), and provided insights into the implications of different dimensions of communication visibility.

However, evidence for a differential impact of transparency and translucence on knowledge reuse is more limited. In particular, studies have recognized the importance of communication visibility (without using that term) in fostering knowledge reuse (Choi *et al*; 2010; Majchrzak *et al*., 2004). Knowledge reuse can lead to recombinant innovation, the combining of past knowledge in new ways (Hargadon, 2002; Leonardi, 2014). While Markus (2001) focuses primarily on knowledge producers and intermediaries making organizational knowledge available through knowledge repositories, her explication of the concept does explain how it involves both recall (source or access), and recognition (potential value of the information and how to apply it). However, typically few knowledge producers or intermediaries have sufficient incentives or resources to store or repurpose knowledge, and intermediaries and secondary users may have problems in contextualizing and knowing how to adapt prior knowledge. While typically knowledge brokers (both formal and informal, whether individuals, groups, or organizations) are needed to help foster knowledge reuse for learning and innovation, communication visibility through ICTs can provide more opportunities for awareness of, access to, bridging domains of, learning how to apply, linking current problems to, and building new organizational networks benefitting from, such knowledge (Hargadon, 2002). Communication visibility provides one powerful way to overcome traditional impediments to innovation of interpersonal communication and knowledge of who knows what in large organizations.

Hence, we propose that knowledge reuse – i.e., adapting existing ideas and solutions to solve existing problems as well as new problems in a different context (e.g., Durcikova *et al*., 2011; Hargadon, 2005; Markus, 2001) – is an important potential benefit of both transparency and translucence visibility. Thus,

H1*: a) Message transparency and b) network translucence are positively associated with knowledge reuse.*

Communication Visibility and Communication Overload

Some researchers have started to explore dark sides of communication visibility, such as knowledge hiding (Chen *et al*., 2020; Wei *et al*., 2020), or strategic invisibility and ambiguity – for instance by setting your status to busy or offline, while you are actually not, or selectively sharing information (Gibbs *et al*., 2013; Leonardi and Treem, 2012). Wei *et al*. (2020) suggested that communication visibility plays a "double edge role," as it may both foster innovation and performance, as well as create overload and stifle performance. As the visibility of communication increases, more content and participant relationships (transparency and translucence) become available. Hence, organizational members may not only be exposed to much more information, but they also have more, and more immediate,

obligations to respond to others, and process and provide information to others. In addition, the transparency of others' communication and a more thorough understanding of organizational networks may provide employees greater opportunities to both observe and engage in such behavior. Thus, both message transparency and network translucence may lead to communication overload in part because it creates a pressure to both process and act upon that knowledge and engage in more connections (implications of new organizational ICTs in general; Mazmanian *et al.*, 2013). Communication overload is defined by the rate and complexity of communication inputs to an individual (Farace et al., 1977). More specifically, communication overload refers to the extent to which an employee perceives more quantity, complexity, and/or equivocality in communication than the individual desires, needs, or can handle at a given time (Cho *et al.*, 2011).

Stephens *et al*.'s communication overload model labels this the availability-expectation-pressure pattern (2017, p. 269). In the context of hospital workers, Barrett *et al*. (2021) found that awareness of others' communication increased perceptions of communication overload. The authors suggested that the availability of knowledge and information also comes with the expectations and pressure to reciprocate on that availability by keeping one's knowledge of what others know up to date and maintaining their organizational communication networks.

For instance, research suggests that access to others' knowledge and connections may become so complex and diverse that it presents barriers to collaborate, and even generate unproductive organizational behavior (Chen and Wei, 2019). From an information theory perspective (Shannon and Weaver, 1949), information overload is seen as "a state induced by a level of information exceeding the ability of an individual to assimilate or process during a given unit of time" (Hunter, 2005, p. 91; Barrett *et al*., 2021). The complexity and amount of information may further lead employees to feel overloaded as those may exceed employees' capacity to process and keep up with mounting information and communication streams (Zhang *et al*., 2016). Indeed, Leonardi (2014) also reported that "the sustained attention necessary to cull information from coworkers' communications required effort and control" (p. 810). Based on an affordance perspective, others have offered similar conclusions about the potential for information and communication overload (Islam et al., 2020; Sun *et al*., 2019).

Simply put, as much more content and connections become visible over time, organizational members become exposed to more information (Chen and Wei, 2019), often accompanied by stronger expectations and obligations to process and provide information (Perlow, 2012). Accessibility creates a pressure to respond (Mazmanian *et al*., 2013), and increases a fear of missing out (Przybylski *et al*., 2013), thus presenting more potential for feeling overloaded.

H2: *a) Message transparency and b) network translucence are positively related to communication overload.*

Behavioral Responses to Communication Visibility

Vicarious Learning and Knowledge Reuse

The relationship between communication visibility and the reuse of knowledge might not be straightforward for all organizational members, however. For instance, Leonardi (2014) argued that communication visibility was particularly helpful to organizational members who shifted their approach to learning from experiential learning to vicarious learning. Vicarious learning entails learning from others' experiences, as opposed to learning through one's own experiences. Vicarious learning allows employees to learn from the successes and failures of others (Kc *et al*., 2013), contributes to a faster learning curve, reduces inefficiency, improves quality (Bledow *et al*., 2017; Sun *et al*., 2020), and facilitates recombinant innovation (Leonardi, 2014). Sun *et al*. (2020) explain that metaknowledge (cf.

communication visibility) affects the relevant subprocesses of vicarious learning – i.e., attention, retention, production, and motivation. Through being more able to observe information by third parties (for example, written messages and shared media) and communicate with experts in the organization (for example, through a better understanding of communication networks in the organization), employees can learn, which may allow them to avoid the costs of prior mistakes, and reuse valuable knowledge and solutions (Markus, 2001).

Indeed, vicarious learning has long been considered a valuable process for innovation and performance (Manz and Sims, 1981; Myers, 2020). Following similar reasoning, we suggest that organizational members could learn vicariously from others by observing their knowledge and networks (Leonardi, 2014), consequentially enabling knowledge and solutions to be reused across problems and contexts. Hence:

H3: *The positive relationships between a) message transparency and b) network translucence with knowledge reuse are positively mediated by vicarious learning.*

Technology-Assisted Supplemental Work and Communication Overload

The extent to which communication visibility may increase overload is also likely to depend on how employees use ICTs to act upon increasingly visible messages and networks. Research has repeatedly demonstrated that organizational ICTs may strengthen expectations for accessibility and response time (Mazmanian *et al*., 2013), pressures to process and act upon the communication that is made visible (Stephens *et al*., 2017), technostress (Khan and Mahapatra, 2017), telepressure (Barber *et al*., 2015), and communication overload (Chen and Wei, 2019; Sun *et al*., 2020). Stich *et al*. (2015) analysed four categories of demands associated with ICTs: expectations for rapid response, ongoing availability, greater workload, and less effective communication. They showed how each of the four demands was associated with various outcomes, both positive and negative; for example, greater response expectations may increase pressure but also improve performance outcomes.

Several studies have demonstrated that (enterprise) social media could lead to various types of overload including system feature overload, information overload, and social overload (Guo *et al*., 2020; Karr-Wisniewski and Lu, 2010; Zhang *et al*., 2016). Similar to information overload research in general, in the context of social media use and information overload, Fu *et al*. (2020) demonstrated that user performance first seems to increase, but then decreases as the amount of available information increases. In addition, Sun *et al*. (2020) note that communication visibility may lead to excessive uses of enterprise social software. The authors argue that communication visibility increases the social, information, and hedonic value of the platform, leading users to excessively engage with the platform at work. Building on these findings, we suggest that the availability of knowledge may lead to communication overload, through the intervening need by workers to increase their efforts of keeping up with the complexity and volume of information through ICTs.

More specifically, the availability of information and ICTs increases the likelihood of technology-assisted supplemental work (TASW) (Rice, 2017; Venkatesh and Vitalari, 1992). TASW refers to distributed work conducted outside regular work times and locations through organizational ICTs (Fenner and Renn, 2010). Specifically, TASW involves performing "role prescribed tasks at home after regular work hours with the aid of technological tools" (Fenner and Renn, 2010, p. 63). Research on TASW has suggested that the number of employees engaging in TASW is steadily increasing as technologies increase the temporal and spatial flexibilities of work (e.g., Eisenberger *et al.*, 2021; 2022)

There are several reasons for this assumption. First, there is a need to proactively engage with the visible information as the complexity and volume of knowledge and information requires workers to expand more resources (e.g., time and effort [possibly through supplemental work]) to make sense of, and act on, this knowledge. Leonardi (2014)

argued that communication visibility may trigger behavioral changes including proactive behaviors. Organizational members may feel a responsibility to keep up with the communication that is made visible to an extent that it may incentivize employees to extend their work practices after hours. Second, communication visibility creates opportunity. More communication visibility may make it easier to determine how to interact with other knowledge seekers and providers in the organization (Chen *et al*., 2020). This could enable organizational members to engage in supplemental work practices outside regular work times and spaces.

Finally, the availability of information and communication may create pressure from an internal role modeling and competition standpoint. Duranova and Ohly (2015) suggested that organizational ICTs may also contribute to TASW because organizational members may *see* similar behaviors by important social referents. Seeing the knowledge and networks of others may incentivize an organizational member to increase their knowledge and network base as well. Al-Madi *et al*. (2017) described this motivational factor using a sport analogy: "where people running together will run faster than when running alone or running without the awareness of the pace of other runners." Hence, we suggest that the assumed relationship between communication visibility and communication overload is partly obtained by the extent to which dimensions of communication visibility lead to TASW. Hence,

H4: *The positive relationships between a) message transparency and b) network translucence with communication overload are positively mediated by technology-assisted supplemental work.*

Figure I portrays the hypothesized model.

--Figure I--

Methods

Sample and Procedure

Data were collected at a global company operating in the industrial machinery sector. The company operates in over one hundred countries worldwide and supports their clients in optimizing cargo flows. They do so specifically by integrating intelligence and supporting digital transformations to better collaborate in daily operations and remotely support various cargo flows at sea, in ports, and on roads. Employees rely on various ICTs to communicate and coordinate work across spatial and temporal boundaries. The company was approached by the researchers because the global nature of their operations and their recent investments in information and communication technologies to support work process were particularly interesting to our investigation into issues related communication visibility.

By the end of 2019 the company, headquartered in one of the Nordic countries, employed approximately 12,500 employees of which 8834 were office (white collar) workers, this includes, software developers, project managers, finance experts, information management, (sales) consultants. Since their work might be especially affected by varying degrees of communication visibility, these workers were approached to participate. The study was announced through internal communication channels, but respondents were invited through individual emails send by the authors of the study. No compensation was offered for participating in the study. A total of 1456 employees participated in the study, but after removing incomplete surveys and respondents that failed at least one of the attention checks the final sample size was 1127. This gives a response rate of 12.8%.

The average age of the respondents was 43.9 years old (SD = 10.22) and the majority of the respondents were male 71.7% (n = 808) against 28.3% female respondents (n = 319). The respondents worked 39.35 hours on average per week (SD = 11.05) divided over 4.48 workdays. The average organizational tenure was 7.58 (*SD* = 8.57). Subsequently, potential differences between the employees in our sample (N=1127) and those who were not (N=7708) were investigated using the company's human resource data. Employees in the

sample were slightly older compared to the non-respondents (M = 43.94 SD = 10.22 vs. M = 41.35, SD = 10.90; t = -7.881, p < .001). Respondents did not differ from the sample in terms of organizational tenure ($M_{respondent}$ = 7.58 SD = 8.57; $M_{\text{non-respondents}}$ = 7.55, SD = 8.17; t = -0.088, p = .930) and average work hours per week ($M_{respondent}$ = 39.35 SD = 11.05; $M_{\text{non-respondents}}$ = 39.51, SD = 9.50; t = 0.531, p = .595). Gender distributions (Male 71.7% and Female 28.3% vs. Male 77.5% and Female 22.5%; χ^2 = 18.69, p < .001) indicate some difference.

Measures

Table I provides an overview of all measurement items and the corresponding means, standard deviations, factor loadings, explained variances, and standard errors.

--Table I--

Explanatory

Communication visibility refers to perceived message transparency and network translucence facilitated by organizational ICTs (Leonardi, 2014, 2015). *Message transparency* was measured using three items adopted from van Zoonen and Sivunen (2020). A sample item is "I see what others are working on based on the information they exchange."

Network translucence was also measured using three items derived from van Zoonen and Sivunen (2020). Sample items include, "I can see who my colleagues are connected with based on the information they share." Response options were anchored with (1) strongly disagree to (7) strongly agree.

Behavioral Mediators

Vicarious learning is broadly defined as learning from the experience of others, as distinct from learning through one's own experience (experiential learning). Hence, vicarious learning refers to a process of individual belief and behavior change that occurs through being exposed (via observing or hearing) to, and making meaning of, another's experience (Myers, 2018). We adopted five items from Bresman (2010, 2013) to measure vicarious learning activities. Sample items include "I observe the work of others to extract lessons to be applied to the task." Responses were anchored with (1) strongly disagree to (7) strongly agree.

Technology-assisted supplemental work (TASW) was measured adopting the TASW measure from Fenner and Renn (2010). TASW refers to the extent to which employees engage in the completion of substantial work tasks through ICTs outside their regular work hours, such as on evenings or weekends, or locations, such as at home. Sample items include: "I feel organizational ICTs are helpful in enabling me to work at home at nights or on weekends." Respondents were asked to indicate the frequency with which they engaged in these work practices, ranging from (1) never to (5) always.

Work Outcomes

Knowledge reuse refers to the ways in "which existing knowledge is brought to bear on the problem at hand" (Choi *et al*., 2010, p. 858; Durcikova *et al*., 2011). Knowledge application requires knowledge to be adapted and previously developed solutions to be applied (Durcikova *et al*. 2011). We measured knowledge reuse using five items adopted from Choi *et al*. (2010) (representing what they called "knowledge application") and Durcikova *et al*. (2011) (representing what they called "solution reuse"). Sample items include "I apply knowledge I previously acquired through observation of others' online messages to solve new problems" and "When I solve problems I often rely on existing solutions." Responses were anchored with (1) strongly disagree to (7) strongly agree.

Communication overload refers to the extent to which the amount of communication becomes overwhelming. We adopted the four-item scale from Karr-Wisniewski and Lu (2010). Sample items include: "I often find myself overwhelmed because technology has

allowed too many others to have access to my time." Responses were anchored with (1) strongly disagree to (5) strongly agree.

Analysis

Structural equation modelling (SEM) was used to test the hypothesized model. To gauge model fit, several fit indices were assessed. Two incremental fit indices are used: The Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI). Model fit indices of > .95 indicate good model fit. Two absolute fit indices are examined: a standardized version of the root mean squared residual (SRMR) and the root mean square of approximation (RMSEA), with cut-off values of ≤ 0.08 and ≤ 0.05, respectively, which indicate a close model fit (Hu and Bentler, 2009). In addition, the χ^2 statistic is reported. To estimate model parameters and corresponding confidence intervals 5,000 bootstrap samples were extracted from the data.

We note the potential threat of common method variance due to the single sourced data, however, Harman's Single Factor test indicated that one factor explained only 24.5% of the total variance. Furthermore, we examined the shared variance among observed variables using a common latent factor analysis. This test indicated that the squared unstandardized factor loading (.256) of the common latent factor is .066. Hence, common method variance is not a major issue in our data.

Results

Measurement Model

A confirmatory factor analysis was conducted to assess validity and reliability of the measurement model. The model fitted the data well: $\chi 2$ (234) = 731.78; CFI = .98; TLI = .97; SRMR = .04, PClose = .999, and RMSEA = .043 (CI: .040, .047). The composite reliabilities (CR: ranging between .85 and .93) and the maximum reliability (MaxR[H]: ranging between .86 and .97) are all above the suggested threshold of .70 (Hair *et al*., 2010). Validity was assessed by examining the average variance extracted (AVE) and the maximum shared variance (MSV) between constructs. The AVE's ranged between .59 and .74, all above the suggested .50 threshold. Discriminant validity is indicated when the square root of the AVE is greater than the inter-construct correlations (MSV); here the MSV ranged between .03 and .36 (see Table II). Hence, the measurement model demonstrates adequate reliability and validity, thus justifying further inspection of the structural model.

--Table II--

Structural Model

In the analysis we controlled for age, gender, work hours and organizational tenure. Including these variables demonstrated that age was significantly and positively related to TASW (B = .010, SE = .003 p = .002). In addition, gender demonstrated a negative relationship with knowledge reuse (B = -.261, SE = .071 p < .001) suggesting female respondents were more likely to engage in knowledge reuse. Finally, organizational tenure was positively related to communication overload (B = .012, SE = .003 p < .001). Work hours was not significantly related to any of the variables in the model. Notably, the inclusion of these variables did not affect the relationships in the model. The results below are drawn from the model without the control variables as a) there is no strong theoretical basis for the inclusion of these variables (Spector and Brannick, 2011) and b) the model without these variables is a more parsimonious model.

The retained structural model fitted well to the data: $\chi 2$ (235) = 757.95; CFI = .97; TLI = .97; SRMR = .04, PClose, .995, and RMSEA = .044 (CI: .041, .048). Table III provides standardized and unstandardized coefficients of hypothesis testing; the text below reports unstandardized coefficients. Figure II provides the standardized solutions for the hypothesized model.

--Table III--

--Figure II--

Direct Effects (H1, H2). H1 proposed that improved communication visibility (H1a transparency and H2b translucence) is positively related to knowledge reuse. While message transparency is not directly related to knowledge reuse (B = .070 CI95% [-.035; .183], p = .194), network translucence is significantly and positively related to knowledge reuse (B = .422 CI95% [.312; .529], p = .001).

H2 proposed that improved communication visibility is positively related to communication overload. While message transparency is directly related to overload (B = .077 CI95% [.002; .159], p = .042) (H2a), network translucence is also significantly related to communication overload (B = -.127 CI95% [-.204; -.049], p = .001) but in the opposite direction as hypothesized (H2b).

Indirect Effects (H3, H4). Message transparency is significantly and positively related to vicarious learning (B = .134 CI95% [.016; .258], p = .023); however, network translucence is not (B = .023 CI95% [-.096; .143], p = .667). Furthermore, vicarious learning is positively related to knowledge reuse (B = .134 CI95% [.072; .196], p < .001). Hence, there is a significant positive indirect relationship between message transparency and knowledge reuse through vicarious learning (B = .018 CI95% [.003; .040], p = .015). However, the indirect effect of network translucence on knowledge reuse through vicarious learning is not significant (B = .003 CI95% [-.002; .021], p = .639). These findings support the reasoning reflected in H3a, but not H3b.

H4 suggests that improved communication visibility may be related to communication overload through TASW. Message transparency is significantly and positively related to TASW (B = .142 CI95% [.047; .237], p = .006), but network translucence is not (B = .025 CI95% [-.074; .126], p = .650). TASW, in turn, is positively related to communication overload (B = .174 CI95% [.121; .228], p < .001). This implies a significant positive indirect effect for message transparency on communication overload through TASW (B = .025 CI95% [.008; .045], p = .005), but not for network translucence (B = .004 CI95% [-.013; .023], p = .633). These results provide support for hypothesis 4a but not for hypothesis 4b.

Discussion

The results demonstrate that different aspects of communication visibility (transparency and translucence) yield benefits and drawbacks in terms of knowledge reuse and communication overload, through vicarious learning and supplemental work practices. These findings are important because they further inform and refine emergent theorizing on communication visibility. The findings demonstrate that message transparency is primarily indirectly related to knowledge reuse and overload to the extent that message transparency facilitates, or promotes, vicarious learning and TASW. Network translucence directly impacts knowledge reuse and communication overload, but does not trigger vicarious learning or TASW. Though much research on communication visibility chronicles the potential benefits of such visibility (Liang *et al*., 2020; van Zoonen and Sivunen, 2020), these findings remind us that message transparency and network translucence are not uniformly beneficial as they may promote supplemental work processes and could contribute to communication overload (Chen and Wei, 2019).

Theoretical Implications

We seek to make several contributions to the burgeoning research on communication visibility in organizations by examining the benefits and drawbacks of communication visibility (message transparency and network translucence). By quantitatively confirming some of the tenets of the emerging theory of communication visibility (Leonardi, 2014, 2015), this study demonstrates that the relationship between message transparency and knowledge reuse is partially mediated through vicarious learning. These findings are in line with the notion that improved metaknowledge may lead to knowledge reuse at an

organizational level. Our findings demonstrate that individual level manifestations of knowledge and solution reuse can be ascribed directly to network translucence and both directly and indirectly to message transparency through vicarious learning. These findings provide a refined understanding of the implications of communication visibility for potential knowledge application and (re)use in organizations.

Interestingly, knowledge of organizational communication networks – i.e., network translucence – is directly related to knowledge reuse, without mediation by vicarious learning. Knowing how organizational members are interlinked (network translucence) could help one understand through whom (including cross-boundary relationships) diverse and even peripheral knowledge is available. Thus, one might become more aware of the potential for re-using and adapting ideas and solutions from contexts outside one's own. Further, network translucence could facilitate following up on those interrelated paths, by means of providing initial "social lubrication" (Leonardi and Meyer 2015), which makes it easier for one to contact otherwise unknown others for suggestions and resources. These findings highlight the importance of distinguishing between different aspects of communication visibility.

We also contribute to recent efforts by scholars to develop a greater understanding of the potential drawbacks of communication visibility (Chen *et al*., 2020), such as increased supplemental work through technology, and communication overload (Chen *et al*., 2020; Sun *et al*., 2020). Our study generates a greater understanding of the mechanisms through which message transparency and network translucence may increase overload. We demonstrated that message transparency triggers overload in part to the extent that it first triggers TASW. Although supplemental work is not inherently good or bad, these work practices triggered especially by message transparency may in turn contribute to communication overload. Hence, we suggest that being able to see others' communication creates both a need and an opportunity to extend work practices after hours and outside the office as the visibility of this communication may facilitate competitive motivations, but also increases the criteria for satisfactory performance and responsiveness, both to co-workers and to clients (Mazmanian *et al*., 2013). Seeing the expertise and knowledge of others, as well as the activities other organizational members are engaging in, may motivate one to do the same, in particular through TASW. Thus, the findings confirm the availability-pressure hypothesis proposed by Stephens *et al*. (2017) for message transparency, albeit not for network translucence.

Interestingly, the translucence of networks seems to *reduce* communication overload. Arguably, knowing how organizational communication networks are organized may help employees to exchange information more efficiently, thereby reducing perceptions of overload rather than increasing them. It may also be the case that knowing who else may have necessary resources could reduce the pressure on one to seek out those resources themselves, a central argument in transactive memory systems theory (Ren and Argote, 2011). This suggests that a better understanding of organizational communication networks may counteract the direct and indirect impact of message transparency on perceived communication overload.

In summary, the results indicate that the transparency of messages may have less unequivocal consequences depending on the extent to which it triggers vicarious learning and TASW. Interestingly, again in contrast to earlier findings by Zhao *et al*. (2020) and Yang *et al*. (2021), the direct influence of message transparency on both knowledge reuse and overload is less than the direct influence of network translucence. Furthermore, the results demonstrate that network translucence has primarily direct consequences (irrespective of vicarious learning and TASW) by way of the above direct negative impact on overload as well as a direct positive impact on knowledge reuse. These findings are especially interesting

considering that recent studies were unable to confirm a positive impact of network translucence on knowledge sharing (Zhao *et al*., 2020) or work efficiency (Yang *et al*., 2021).

Practical Implications

From a pragmatic perspective the findings have several implications. Our results partially challenge organizational efforts to push for improved communication visibility in anticipation of uniformly beneficial outcomes.

First, we provide a more nuanced understanding of the implications of the two dimensions of communication visibility for outcomes. Organizations seeking to enhance communication visibility to contribute to organizational learning and performance objectives should be wary of potential drawbacks of improved communication visibility, due partially to escalating pressure for continual and rapid engagement (Chen and Wei, 2019; Mazmanian *et al*., 2013). Our study adds that these drawbacks are mostly associated with message transparency. It may not, in the long run, be completely beneficial to expose everyone to everyone else's work content and progress.

In contrast, network translucence seems to have mostly positive consequences, increasing knowledge reuse while reducing overload. As such, organizations adopting strategies to facilitate communication visibility should focus on enhancing organizational members' understanding of the relevant communication networks in the organizations and expand efforts to mitigate the potentially negative impact of increased message transparency. Acknowledging the potential pitfalls of increased visibility may prove to be a valuable intervention to reduce the drawbacks of visibility as it may help in developing a norm to break availability-expectation-pressure patterns (Mazmanian *et al*., 2013; Stephens *et al*., 2017). Many of the organizational ICTs that facilitate communication visibility, including enterprise social media, also afford ways to manage and limit different aspects of visibility while emphasizing others. For instance, notifications could be set to focus on communicating who interacted with whom, rather than what was communicated between users. Online communities can provide quick overviews of active members without a need to make all communication within the community visible. Content moderation on knowledge sharing platforms or social media can contribute to mitigating the potential for information to become overwhelming by pinning certain contributions or solution, archiving and organizing content.

Second, this study has demonstrated two important behavioral responses to communication visibility that partly or fully explain the implications for knowledge reuse and overload: vicarious learning and TASW. Interestingly, these changes are triggered by transparency, but not by translucence (as translucence directly impacts knowledge reuse and while directly reducing overload). Hence, facilitating an understanding of others' knowledge in organizations might trigger both benefits and drawbacks. Of increasing importance in organizations is to help employees manage their connectivity behaviors. With increased flexibility over work times, global work contexts, remote work, and social distancing, employees may find themselves in a difficult position of trying to maintain sufficient and expected connection with their coworkers and organizations while trying to avoid supplemental work and overload. The visibility of others' knowledge may further exacerbate employees' efforts in an attempt to make their work and knowledge visible to others potentially at the cost of increased supplemental work and consequentially increased communication overload. In turn, improved translucence contributes to a better understanding of where and how to solicit help from coworkers, contributing to a better organizational support system.

Limitations and Future Research

Several limitations of the study need to be acknowledged. First, the cross-sectional and single sourced data limits our opportunities to draw stronger causal conclusions. Future research may address this limitation by drawing on longitudinal research designs and using

behavioral trace data to explore what communication has become visible in which ways. Additionally, such a research design might provide greater insights into the conditions under which communication visibility and organizational ICT use might lead to TASW and communication overload.

Second, we measured the extent to which others' knowledge and connections were visible to our respondents. Future research could also include measures to evaluate the accuracy or usefulness of the knowledge employees may perceive through or obtain from visible communication. Arguably, the value of knowledge is more important to organizational learning outcomes than is its visibility per se. However, knowledge must be visible before it can be evaluated. Further, visibility, availability, and the pace of information might more strongly affect perceptions of overload than would accuracy of that information. The value of that shared knowledge can also be affected by recipient's perceived novelty of and confidence in the shared knowledge (Nair *et al*., 2021).

Third, of course, the extent and implications of knowledge sharing are affected by a wide variety of other factors (Rice *et al.*, 2019). Two examples include the social context (e.g., support or conflict) with one's co-workers (Kim, 2020), or the sphere of visibility; Sedighi *et al.* (2018) reported that group-level sharing facilitated greater quality and quantity of knowledge sharing than at private or public organizational levels.

Finally, although this study contributes to communication visibility theory, "a good deal of work is needed to refine this theory" (Leonardi, 2014, p. 814). The findings confirm some of the positive implications of communication visibility for organizational learning and knowledge reuse but also point to drawbacks of visibility such as communication overload. Such drawbacks warrant further attention. For instance, several studies on organizational innovation have pointed to the importance of secrecy and 'bootlegging' for the generation and development of creativity and innovation (Criscuolo, et al., 2014; Donada, et al., 2021; Globocnik and Salomo, 2014). Individuals exploring uncharted terroritories in their attempt to come up with creative ideas or innovative solutions benefit from keeping their initial efforts under the radar as this could delay scrutiny and assessment of embryonic ideas and allow them to develop in 'secrecy' (Criscuolo, et al., 2014). This would suggest that in the context of innovation future work could further explore the dark sides of communication visibility for creative performance and innovation in organizations.

Conclusion

The findings of this study provide novel and important insights in the ways in which communication visibility may have consequences for the ways in which work is conducted, and outcomes associated with that work in highly visible work environments. Hence, the study provides important refinements of the proposed theory of communication visibility (Leonardi, 2014) and generates actionable insights for organizations that seek to streamline the application of organizational ICTs aimed at improving communication visibility. This study underscores both benefits and drawbacks of message transparency and network translucence.

References

Al-Madi, F. N., Assal, H., Shrafat, F., and Zeglat, D. (2017), "The impact of employee motivation on organizational commitment", *European Journal of Business and Management*, Vol. 9 No. 15, pp. 134-145.

Arend, R. J., Patel, P. C. and Park, H. D. (2014), "Explaining post-IPO venture performance through a knowledge-based view typology" , *Strategic Management Journal*, Vol. 35 No. 3, pp. 376-397.

Barber, L.K. and Santuzzi, A.M. (2015), "Please respond ASAP: Workplace telepressure and employee recovery", *Journal of Occupational Health Psychology*, Vol. 20 No. 2, pp. 172-189.

Barrett, A.K., Ford, J. and Zhu, Y. (2021), "Sending and receiving safety and risk messages in hospitals: an exploration into organizational communication channels and providers' communication overload", *Health Communication*, Vol. 36 No. 13, pp. 1697-1708.

Bledow, R., Carette, B., Kühnel, J. and Bister, D. (2017), "Learning from others' failures: the effectiveness of failure stories for managerial learning", *Academy of Management Learning & Education*, Vol. 16 No. 1, pp. 39-53.

Bresman, H. (2010), "External learning activities and team performance: a multimethod field study", *Organization Science*, Vol. 21 No. 1, pp. 81-96.

Bresman, H. (2013), "Changing routines: a process model of vicarious group learning in pharmaceutical R&D", *Academy of Management Journal*, Vol. 56 No. 1, pp. 35-61.

Büchler, N., ter Hoeven, C.L. and van Zoonen, W. (2020), "Understanding constant connectivity to work: how and for whom is constant connectivity related to employee well-being?", *Information and Organization*, Vol. 30 No. 3, Article 100302.

Chen, X. and Wei, S. (2019), "Enterprise social media use and overload: a curvilinear relationship", *Journal of Information Technology*, Vol. 34 No. 1, pp. 22-38.

Chen, X., Wei, S. and Rice, R.E. (2020), "Integrating the bright and dark sides of communication visibility for knowledge management and creativity: the moderating role of regulatory focus", *Computers in Human Behavior*, Vol. 111, Article 106421.

Chhim, P. P., Somers, T. M. and Chinnam, R. B. (2017), "Knowledge reuse through electronic knowledge repositories: a multi theoretical study", *Journal of Knowledge Management*, Vol. 21 No. 4, pp. 741-754.

Cho, J., Ramgolam, D. I., Schaefer, K. M. and Sandlin, A. N. (2011), "The rate and delay in overload: An investigation of communication overload and channel synchronicity on identification and job satisfaction", *Journal of Applied Communication Research*, Vol. 39 No. 1, pp. 38-54.

Choi, S.Y., Lee, H. and Yoo, Y. (2010), "The impact of information technology and transactive memory systems on knowledge sharing, application, and team performance: a field study", *MIS Quarterly*, Vol. 34 No. 4, pp. 855-870.

Criscuolo, P., Salter, A. and Ter Wal, A. L. (2014), "Going underground: Bootlegging and individual innovative performance", *Organization Science*, Vol. 25 No. 5, pp. 1287-1305.

Cramton, C.D., Orvis, K.L. and Wilson, J.M. (2007), "Situation invisibility and attribution in distributed collaborations", *Journal of Management*, Vol. 33 No. 4, pp. 525-546.

Donada, C., Mothe, C. and Alegre, J. (2021), "Managing skunkworks to achieve ambidexterity: The Robinson Crusoe effect", *European Management Journal*, Vol. 39 No. 2, pp. 214-225.

Ďuranová, L. and Ohly, S. (2015), "*Persistent work-related technology use, recovery and well-being processes: Focus on supplemental work after hours*", Springer.

Durcikova, A., Fadel, K.J., Butler, B.S. and Galletta, D.F. (2011), "Research note—knowledge exploration and exploitation: the impacts of psychological climate and knowledge management system access", *Information Systems Research*, Vol. 22 No. 4, pp. 855-866.

Engelbrecht, A., Gerlach, J.P., Benlian, A. and Buxmann, P. (2019), "How employees gain meta-knowledge using enterprise social networks: a validation and extension of communication visibility theory", *The Journal of Strategic Information Systems*, Vol. 28 No. 3, pp. 292-309.

Eichberger, C., Derks, D. and Zacher, H. (2021), "Technology-assisted supplemental work, psychological detachment, and employee well-being: A daily diary study", *German Journal of Human Resource Management*, Vol. 35 No. 2, pp. 199-223.

Eichberger, C., Derks, D. and Zacher, H. (2022), "A daily diary study on technology-assisted supplemental work, unfinished tasks, and sleep: The role of problem-solving pondering", *International Journal of Stress Management*. Ahead-of-Print. https://doi.org/10.1037/str0000237.

Evans, J.A. and Foster, J.G. (2011), "Metaknowledge", *Science*, Vol. 331 No. 6018, pp. 721-725.

Farace, R.V., Monge, P.R. and Russell, H.M. (1977), "*Communicating and organizing*", Reading, MA: Addison-Wesley Publishing.

Faraj, S. and Sproull, L. (2000), "Coordinating expertise in software development teams", *Management Science*, Vol. 46 No. 12, pp. 1554-1568.

Fenner, G.H. and Renn, R W. (2010), "Technology-assisted supplemental work and work-to-family conflict: the role of instrumentality beliefs, organizational expectations and time management", *Human Relations*, Vol. 63 No. 1, pp. 63-82.

Fu, S., Li, H., Liu, Y., Pirkkalainen, H. and Salo, M. (2020), "Social media overload, exhaustion, and use discontinuance: examining the effects of information overload, system feature overload, and social overload", *Information Processing & Management*, Vol. 57 No. 6, Article 102307.

Gibbs, J.L., Rozaidi, N.A. and Eisenberg, J. (2013), "Overcoming the "ideology of openness": probing the affordances of social media for organizational knowledge sharing", *Journal of Computer-Mediated Communication*, Vol. 19 No. 1, pp.102-120.

Globocnik, D. and Salomo, S. (2015), "Do formal management practices impact the emergence of bootlegging behavior?", *Journal of Product Innovation Management*, Vol. 32 No. 4, pp. 505-521.

Guo, Y., Lu, Z., Kuang, H. and Wang, C. (2020), "Information avoidance behavior on social network sites: information irrelevance, overload, and the moderating role of time pressure", *International Journal of Information Management*, Vol. 52, Article 102067.

Hargadon, A.B. (2005), "Technology brokering and innovation: linking strategy, practice, and people", *Strategy & Leadership*, Vol. 33 No. 1, pp.32-36.

Hargadon, A.B. (2002), "Brokering knowledge: linking learning and innovation", *Research in Organizational Behavior*, Vol. 24, pp. 41-85.

Hunter, G.I. (2005), "Information overload: guidance for identifying when information becomes detrimental to sales performance", *Journal of Personal Selling and Sales Management*, Vol. 24 No. 2, pp.91-100.

Islam, A.N., Whelan, E. and Brooks, S. (2020), "Does multitasking computer self-efficacy mitigate the impact of social media affordances on overload and fatigue among professionals?", *Information Technology & People*, Vol. 34 No. 5, pp. 1439-1461.

Jensen, B., Johnson, J. and Brunswicker, S. (2016), "Transparency and innovation: from Transparency of structure towards transparency of actions", *Available at SSRN 2778623*.

Karr-Wisniewski, P. and Lu, Y. (2010), "When more is too much: operationalizing technology overload and exploring its impact on knowledge worker productivity", *Computers in Human Behavior*, Vol. 26 No. 5, pp.1061-1072.

Kc, D., Staats, B. R. and Gino, F. (2013), "Learning from my success and from others' failure: Evidence from minimally invasive cardiac surgery", Management Science,Vol. 59 No. 11, pp. 2435-2449.

Khan, A. and Mahapatra, M. (2017, June), "The impact of social media as technostress inhibitor on employee productivity", In *Proceedings of the 2017 ACM SIGMIS Conference on Computers and People Research* (pp. 113-116).

Kim, H., Gibbs, J.L. and Scott, C.R. (2019), "Unpacking organizational awareness: scale development and empirical examinations in the context of distributed knowledge sharing", *Journal of Applied Communication Research*, Vol. 47 No. 1, pp. 47-68.

Kim, S.S. (2020), "Exploitation of shared knowledge and creative behavior: the role of social context", *Journal of Knowledge Management*, Vol. 24 No. 2, pp. 279-300.

Leonardi, P.M. (2014), "Social media, knowledge sharing, and innovation: toward a theory of communication visibility", *Information Systems Research*, Vol. 25 No. 4, pp. 796-816.

Leonardi, P.M. (2015), "Ambient awareness and knowledge acquisition", *MIS Quarterly*, Vol. 39 No. 4, pp.747-762.

Leonardi, P.M. and Meyer, S.R. (2015), "Social media as social lubricant: how ambient awareness eases knowledge transfer", *American Behavioral Scientist*, Vol. 59 No. 1, pp. 10-34.

Leonardi, P. M. and Treem, J. W. (2012), "Knowledge management technology as a stage for strategic self-presentation: implications for knowledge sharing in organizations", *Information and Organization*, Vol. 22 No. 1, pp. 37-59.

Levy, D. M. (2009), "Information overload", in K. D. Himma and H. T. Tavani (Eds.), *The handbook of information and communication ethics* (pp. 497–516). Hoboken, NJ: Wiley & Sons.

Lewis, K. and Herndon, B. (2011), "Transactive memory systems: Current issues and future research directions", *Organization science*, Vol. 22 No. 5, pp. 1254-1265.

Liang, L., Tian, G., Zhang, X. and Tian, Y. (2020), "Help comes from understanding: the positive effect of communication visibility on employee helping behavior", *International Journal of Environmental Research and Public Health*, Vol. 17 No. 14, Article 5022.

Liang, L., Zhang, X., Tian, G. and Tian, Y. (2021), "An empirical study of the effect of communication visibility on innovation behavior", *Management Communication Quarterly*, https://doi.org/10.1177/08933189211053875

Majchrzak, A., Cooper, L.P. and Neece, O.E. (2004), "Knowledge reuse for innovation", *Management Science, Vol.* 50 No. 2, pp. 174-188.

Manz, C. C. and Sims Jr, H. P. (1981), "Vicarious learning: The influence of modeling on organizational behavior", *Academy of Management Review*, Vol. 6 No. 1, pp. 105-113.

Markus, L.M. (2001), "Toward a theory of knowledge reuse: types of knowledge reuse situations and factors in reuse success", *Journal of Management Information Systems*, Vol. 18 No. 1, pp. 57-93.

Mazmanian, M., Orlikowski, W.J. and Yates, J. (2013), "The autonomy paradox: the implications of mobile email devices for knowledge professionals", *Organization Science*, Vol. 24 No. 5, pp. 1337-1357.

Mell, J.N., Van Knippenberg, D. and Van Ginkel, W.P. (2014), "The catalyst effect: the impact of transactive memory system structure on team performance", *Academy of Management Journal*, Vol. 57 No. 4, pp. 1154-1173.

Myers, C.G. (2018), "Coactive vicarious learning: toward a relational theory of vicarious learning in organizations", *Academy of Management Review*, Vol. 43 No. 4, pp. 610-634.

Myers, C.G. (2020), "Performance benefits of reciprocal vicarious learning in teams", *Academy of Management Journal*, Vol. 64 No. 3, pp. 901-925.

Nag, R. and Gioia, D. A. (2012), "From common to uncommon knowledge: Foundations of firm-specific use of knowledge as a resource", *Academy of Management journal*, Vol. 55 No. 2, pp. 421-457.

Nair, S.R., Pillai, K.G. and Demirbag, M. (2021), "Reaping benefits from knowledge transfer – the role of confidence in knowledge", *Journal of Knowledge Management*, Vol. 25 No. 5, pp. 1059-1080.

Perlow, L. . (2012), "*Sleeping with your smartphone: How to break the 24/7 habit and change the way you work*", Harvard Business Press.

Przybylski, A.K., Murayama, K., DeHaan, C. . and Gladwell, V. (2013), "Motivational, emotional, and behavioral correlates of fear of missing out", *Computers in Human Behavior*, Vol. *29* No. 4, pp. 1841-1848.

Ren, Y. and Argote, L. (2011), "Transactive memory systems 1985–2010: an integrative framework of key dimensions, antecedents, and consequences", *Academy of Management Annals*, Vol. 5 No. 1, pp. 189-229.

Rice, R.E. (2017), "Flexwork, boundaries, and work-family conflicts: how ICTs and work engagement influence their relationship", In G. Hertel, D. Stone, R.D. Johnson and J. Passmore (Eds.), *Handbook of the psychology of the Internet at work* (pp. 175-193). Wiley Blackwell Industrial & Organizational Psychology Series.

Rice, R.E., Evans, S.K., Pearce, K.E., Sivunen, A., Vitak, J. and Treem, J.W. (2017), "Organizational media affordances: operationalization and associations with media use", *Journal of Communication*, Vol. 67 No. 1, pp. 106-130.

Rice, R.E., Heinz, M. and van Zoonen, W. (2019). "A public goods model of outcomes from online knowledge sharing mediated by mental model processing", *Journal of Knowledge Management*, Vol. 23 No. 1, pp. 1-22.

Sedighi, M., Lukosch, S., Brazier, F., Hamedi, M. and van Beers, C. (2018), "Multi-level knowledge sharing: the role of perceived benefits in different visibility levels of knowledge exchange", *Journal of Knowledge Management*, Vol. 22 No. 6, pp. 1264-1287.

Shannon, C.E. and Weaver, W. (1949), "*The mathematical theory of information",* Urbana: University of Illinois Press.

Song, Q., Wang, Y., Chen, Y., Benitez, J. and Hu, J. (2019), "Impact of the usage of social media in the workplace on team and employee performance", *Information & Management*, Vol. 56 No. 8, Article 103160.

Spector, P. E. and Brannick, M. T. (2011), "Methodological urban legends: The misuse of statistical control variables", *Organizational Research Methods*, Vol. 14 No. 2, pp. 287-305.

Stephens, K.K., Mandhana, D.M., Kim, J.J., Li, X., Glowacki, E.M. and Cruz, I. (2017), "Reconceptualizing communication overload and building a theoretical foundation", *Communication Theory*, Vol. 27 No. 3, pp. 269-289.

Stich, J.-F., Farley, S., Cooper, C. and Tarafdar, M. (2015), "Information and communication technology demands: outcomes and interventions", *Journal of Organizational Effectiveness: People and Performance*, Vol. 2 No. 4, pp. 327-345.

Suh, A. and Wagner, C. (2017), "How gamification of an enterprise collaboration system increases knowledge contribution: an affordance approach", *Journal of Knowledge Management*, Vol. 21 No. 2, pp. 416-431.

Sun, Y., Ding, Z., Zhang, Z.J. and Gauthier, J. (2020), "The sustainable positive effects of enterprise social media on employees: the visibility and vicarious learning lens", *Sustainability*, Vol. 12 No. 7, Article 2855.

Sun, Y., Liu, Y. and Zhang, J. (2020), "Excessive enterprise social media use behavior at work: role of communication visibility and perspective of uses and gratifications theory", *IEEE Access*, Vol. 8, pp. 190989-191004.

Sun, Y., Zhou, X., Jeyaraj, A., Shang, R.A. and Hu, F. (2019), "The impact of enterprise social media platforms on knowledge sharing", *Journal of Enterprise Information Management*, Vol. 32 No. 2, pp. 233-250.

Treem, J. W., Leonardi, P. M. and van den Hooff, B. (2020), "Computer-mediated communication in the age of communication visibility", *Journal of Computer-Mediated Communication*, Vol. 25 No. 1, pp. 44-59.

Tsoukas, H. (1996), "The firm as a distributed knowledge system: a constructionist approach", *Strategic Management Journal*, Vol. 17 No. S2, pp. 11-25.

van Zoonen, W. and Sivunen, A. (2020), "Knowledge brokering in an era of communication visibility", *International Journal of Business Communication*, Advance online publication. https://doi.org/10.1177/2329488420937348.

van Zoonen, W., Sivunen, A. and Treem, J.W. (2021), "Why people engage in supplemental work: the role of technology, response expectations, and communication persistence", *Journal of Organizational Behavior*, Vol. 42 No. 7, pp. 867-884.

Venkatesh, A. and Vitalari, N.P. (1992), "An emerging distributed work arrangement: an investigation of computer-based supplemental work at home", *Management Science*, Vol. 38 No. 12, pp. 1687-1706.

Wei, C., Pitafi, A.H., Kanwal, S., Ali, A. and Ren, M. (2020), "Improving employee agility using enterprise social media and digital fluency: moderated mediation model", *IEEE Access*, Vol. 8, pp. 68799-68810.

Yang, X., Ye, H.J. and Wang, X. (2021), "Social media use and work efficiency: insights from the Theory of Communication Visibility", *Information & Management*, Vol. 58 No. 4, Article 103462.

Zhang, S., Zhao, L., Lu, Y. and Yang, J. (2016), "Do you get tired of socializing? an empirical explanation of discontinuous usage behaviour in social network services", *Information & Management*, Vol. 53 No. 7, pp. 904-914.

Zhao, Y., Zhang, X., Wang, J., Zhang, K. and de Pablos, P.O. (2020), "How do features of social media influence knowledge sharing? an ambient awareness perspective", *Journal of Knowledge Management*, Vol. 24 No. 2, pp. 439-462.

Table I

Measurement Model

Item	M (SE)	R^2	St. Factor loading	Unst. Factor loading[a]	Se
Message transparency					
I can see content that is shared among my colleagues even though I am not the designated recipient	2.79 (1.17)	.66	.815	1.000 [b]	--
I can see the content of messages that are shared amongst others	2.69 (1.19)	.78	.885	1.104	.04
I can see what others are working on based on the information they exchange on ESM	2.83 (1.13)	.50	.704	0.834	.03
Network translucence					
I can see who my colleagues are connected to on ESM	2.35 (1.15)	.66	.815	1.000[b]	--
I can see who my colleagues are connected to, based on who they mention in online interactions	2.49 (1.14)	.87	.933	1.135	.03
I can see who others know based on the information the share	2.63 (1.11)	.70	.839	0.962	.03
Vicarious Learning					
I go out to gather information regarding who to contact for advice about how to complete the task	5.03 (1.43)	.25	.499	1.000[b]	--
I observe the work of others to extract lessons to be applied to the task	5.15 (1.33)	.30	.547	1.016	.05
I invite people, beyond my direct colleagues, to discuss how to avoid repeating past mistakes	4.91 (1.51)	.77	.880	1.861	.11
I talk to people, beyond my direct colleagues, about past failures to determine ways of improving the work process	4.90 (1.55)	.87	.934	2.026	.11
I reflect on what has worked in the past together with other people, beyond my direct colleagues, who have experience from similar tasks	5.11 (1.40)	.75	.863	1.1683	.10
Technology-assisted supplemental work					
When I fall behind in my work during the day, I work hard at home at night or on weekends to catch up by using my smartphone or computer	2.47 (1.16)	.79	.890	1.000[b]	--
I perform job-related tasks at home at night or on weekends using my smartphone or computer	2.58 (1.23)	.85	.922	1.094	.03
I feel my smartphone or computer is helpful in enabling me to work at home at nights or on weekends	3.01 (1.42)	.62	.785	1.079	.03
When there is an urgent issue or deadline at work, I tend to perform work-related tasks at home during the night or on weekends using my smartphone or computer	2.68 (1.29)	.74	.859	1.065	.04
Knowledge reuse					
The majority of problems I deal with can be solved by applying previously developed solutions I read about on ESM [c]	3.74 (1.48)	.60	.777	1.000 [b]	--
I apply knowledge obtained from observations on ESM [d]	3.40 (1.67)	.68	.826	1.198	.04
I use knowledge I previously acquired through observation of others' conversations on ESM to solve new problems [d]	3.33 (1.60)	.90	.947	1.339	.04
I apply knowledge I previously acquired through observation of others' messages on ESM to solve new problems [d]	2.82 (1.49)	.94	.968	1.344	.04
When I solve problems, I often rely on existing solutions I read about on ESM [c]	3.49 (0.07)	.59	.767	0.994	.02
Communication overload					
I feel that in a less connected environment, my attention would be less divided allowing me to be more productive	3.15 (1.12)	.53	.729	1.000[b]	--
I often find myself overwhelmed because technology has allowed too many other people to have access to my time	3.03 (1.17)	.74	.858	1.221	.05
I waste a lot of my time responding to work-related messages that are not directly related to what I need to get done	3.03 (1.23)	.57	.757	1.136	.05
The availability of electronic communication has created more of an interruption than it has improved communications	2.65 (1.16)	.52	.721	1.022	.05

[a] All factor loadings are significant at $p < .05$ [b] Unit loading indicator constrained to 1 [c] Items adopted from Durcikova *et al*. (2011); original items are intended to measure "solution reuse." [d] Items adapted from Choi *et al*. (2010); original items are intended to measure knowledge application within teams.

Table II

Descriptive Statistics and Factor Correlation Matrix with Validity Statistics

Variable	M (SD)	CR	AVE	MSV	Max R(H)	1	2	3	4	5	6	7	8	9
1 Message transparency	2.77 (1.01)	.85	.65	.36	.87	**.81**								
2 Network translucence	2.49 (1.03)	.90	.75	.36	.92	.60	**.86**							
3 Vicarious learning	5.02 (1.18)	.87	.59	.03	.93	.11	.08	**.77**						
4 TASW	2.69 (1.15)	.92	.75	.05	.93	.14	.10	.18	**.87**					
5 Knowledge reuse	3.24 (1.41)	.93	.74	.15	.97	.28	.38	.18	.10	**.86**				
6 Communication overload	2.97 (0.97)	.85	.59	.05	.86	.04	-.07	.03	.22	-.12	**.77**			
7 Age	43.94 (10.22)	-	-	-	-	-.08	-.17	-.03	.07	-.10	.08	-		
8 Tenure	8.46 (8.81)	-	-	-	-	-.02	-.09	-.06	.03	-.08	.13	.49	-	
9 Gender [a]	0.72 (0.45)	-	-	-	-	.01	-.05	.02	.02	-.11	.07	.15	.18	-
10 Work hours	39.35 (11.05)	-	-	-	-	.02	.03	-.02	-.01	.01	-.04	-.06	-.01	.02

Notes: CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; MaxR(H) = Maximum Reliability. Square Root of the AVE is reported on the diagonal. [a] gender was coded (0) female (1) male.

Table III

Standardized and Unstandardized Coefficients for Regression Model

					BC 95% CI		
		Beta	**SE**	**B**	**Lower**	**Upper**	***p***
				Direct effects			
H1a	Message transparency → knowledge reuse	.058	.046	.070	-.035	.183	.194
H1b	Network translucence → knowledge reuse	.331	.040	.422	.312	.529	.001
H2a	Message transparency → communication overload	.090	.043	.077	.002	.159	.042
H2b	Network translucence → communication overload	-.140	.045	-.127	-.204	-.049	.001
				Indirect effects			
H3a	Message transparency → vicarious learning → knowledge reuse	.014	.007	.018	.003	.040	.015
H3b	Network translucence → vicarious learning → knowledge reuse	.002	.006	.003	-.002	.021	.639
H4a	Message transparency → TASW → communication overload	.023	.009	.025	.008	.045	.005
H4b	Network translucence → TASW → communication overload	.004	.008	.004	-.013	.023	.633

Figure I
Hypothesized Model

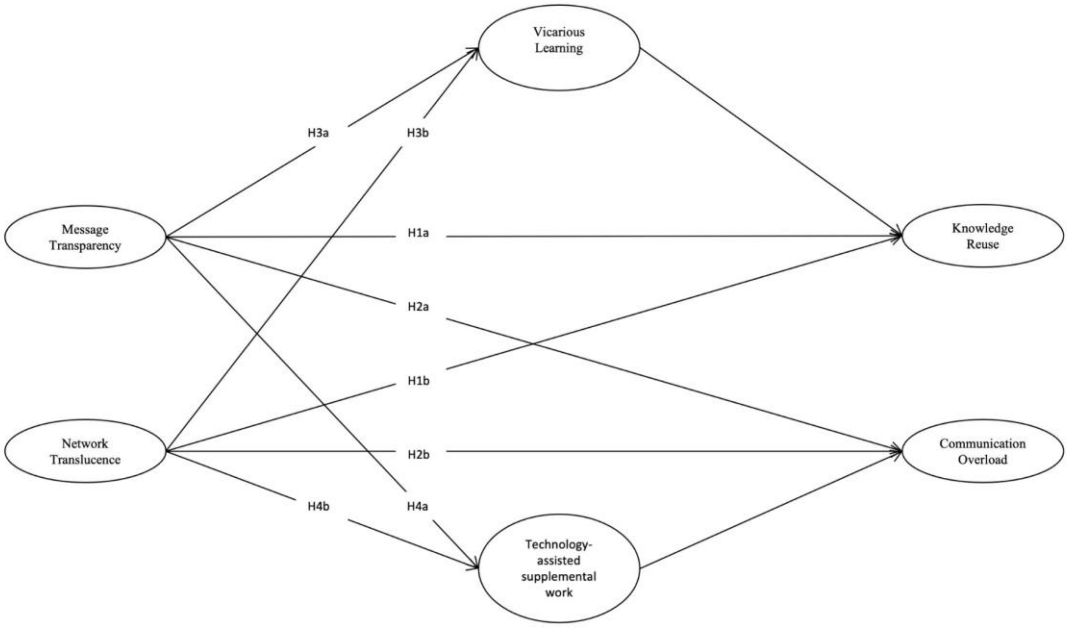

Figure II
Hypothesized Model with Standardized Solution