

Effects of Communication-Oriented Overload in Mobile Instant Messaging on Role Stressors, Burnout, and Turnover Intention in the Workplace

JAEHEE CHO¹

Sogang University, Korea

H. ERIN LEE

Hankuk University of Foreign Studies, Korea

HAEYEON KIM

Chung-Ang University, Korea

This study aimed at developing and testing a model that can explain how overload perceived in relation to organizational use of mobile instant messaging services (MIMs) leads to burnout and turnover intention in employees through the mediating effect of role-oriented stressors such as role ambiguity and role conflict. To empirically test the model, an online survey was conducted with 434 office workers in South Korea who used KakaoTalk for organizational purposes. Overload in KakaoTalk use was measured in three dimensions: information, communication, and system feature overload. Path analysis results showed that information overload and system feature overload significantly increased role ambiguity and role conflict, which ultimately led to significant increases in burnout (in the form of emotional exhaustion and reduced personal achievement) and turnover intention.

Keywords: mobile instant messaging (MIM), KakaoTalk, overload, role ambiguity, role conflict, burnout, turnover intention

Employees of present-day organizations are exposed to many types of overload related to communicative activities (e.g., information overload; Edmunds & Morris, 2000; Eppler & Mengis, 2004; Klausegger, Sinkovics, & Zou, 2007; Kock, 2000; Levitin, 2016). This is mainly due to their increasingly heavy dependence on various information communication technologies (ICTs) at their workplaces. In today's highly

Jaehee Cho: jcho76@sogang.ac.kr

H. Erin Lee: helee@hufs.ac.kr

Haeyeon Kim: may7577@daum.net

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connected social environment, organizations have invested significant amounts of money in building internal ICT infrastructures (e.g., intranet, cybersecurity systems) that support efficient processing of information and communication among employees. Moreover, organizations have also become largely reliant on ICTs that are open to the public, including social network sites (SNSs), blogs, and instant messaging services, in order to maximize communication efficiency (Culnan, McHugh, & Zubillaga, 2010; D. Kim, Kim, & Nam, 2014; Michaelidou, Siamagka, & Christodoulides, 2011). In particular, because smartphones support many useful functions for organizations, employees have come to use mobile instant messaging services (MIMs) extensively for work-related issues (Darics, 2014; Iversen, Melby, & Toussaint, 2013; Oghuma, Chang, Libaque-Saenz, Park, & Rho, 2015; Sheer & Rice, 2017). For example, employees hold online meetings, share organizational documents, make decisions through mobile voting services, manage schedules, and engage in informal communications with colleagues (Sheer & Rice, 2017). As such, MIMs now play crucial roles in facilitating organizational communication and increasing organizational performance (J. M. Lee, 2012).

In spite of the many merits of instant messaging services in the workplace (Luor, Wu, Lu, & Tao, 2010; Quan-Haase, Cothrel, & Wellman, 2005), overdependence on such technology can bring about many types of problems. For instance, because of the acceleration of information being processed through advanced tools, employees often encounter information overload, which is known to be a key factor in predicting role-related problems, especially role ambiguity and role conflict (Sparrow, 1999). In addition, with communication occurring through multiple communication channels, employees become involved in more communicative interactions than they desire or expect. This leads to the experience of communication overload, which is associated with employee burnout (Barber & Iwai, 2008; Hung, Chen, & Lin, 2015; Tunc & Kutanis, 2009).

Regarding this overdependence on ICTs in organizational contexts, more attention needs to be given to employees' involuntary overdependence on MIMs for work. Particularly because of the maximized mobility of smartphones, it has become extremely difficult for employees to separate themselves from their work. Therefore, many experience limited balance between work and personal life, and occasionally suffer from psychological burnout from being "always on." Accordingly, previous studies have investigated the potential problems that arise from employees' heavy use of ICTs (Fuglseth & Sørensen, 2014; Y. Lee, Chang, Lin, & Cheng, 2014; Sarker, Xiao, Sarker, & Ahuja, 2012; Srivastava, Chandra, & Shirish, 2015; Yun, Kettinger, & Lee, 2012). Nevertheless, it is difficult to find research proposing theoretical models that thoroughly explain how overload in regard to ICTs, especially MIMs, can potentially influence employees' psychological conditions such as burnout and even their turnover intentions. Therefore, this present study aimed to develop a model that can elaborate how MIM overdependence, characterized by three types of overload—information overload, communication overload, and system feature overload—can impact burnout and, ultimately, employees' turnover intentions through role-oriented stressors.

For this investigation, we focused on KakaoTalk, the most dominant mobile instant messaging service in Korea. According to Y. Lee (2016), KakaoTalk use accounted for 95% of the total time spent across nine mobile messengers in Korea during 2016. Moreover, this app is actively used within Korean companies for diverse organizational purposes (Song, 2017). Further, as Song (2017) reported, about 48% of the participants surveyed received task-related orders through KakaoTalk after working hours. Because of the constant and excessive use of KakaoTalk, Korean employees have been observed to experience extreme stress and psychological pain (Jeon, 2016; C. Kim, 2016). Considering the dominance of KakaoTalk as a tool for

organizational communication, the present study examined the potential outcomes of overload in KakaoTalk use.

Theoretical Background

The main goal of this study was to develop and examine a theoretical model that can explain the roles of communication-oriented overload involving MIM use in the workplace in determining the relationships among a number of negative outcomes in employees. To develop this model, we relied on the theoretical assumptions of two different models. The first is Miller, Ellis, Zook, and Lyles' (1990) model, which examined the potential effects of communication on employees' experiences of stress and burnout in the workplace. This model is helpful for explaining the logic regarding the impact of communicative activities on role-oriented stressors. The second is A. R. Lee, Son, and Kim's (2016) model, which presented how different types of overload in new media use influence psychological stress. We referred to this latter model with the purpose of understanding the roles played by excessive use of MIMs in creating stress among employees. These two models will be discussed in more detail in the following sections, along with the proposed research hypotheses based on the models.

Communication Overload, Stressors, and Burnout

Miller and colleagues' (1990) model, which integrates communication and burnout in the workplace, well elaborates the roles of communication in reducing burnout and, ultimately, strengthening job satisfaction and organizational commitment. To explain the logic of communication's effects on burnout, the authors cite two theories—social information processing (SIP) theory and uncertainty reduction theory (URT). First, according to SIP theory, the more information about organizational and environmental changes an employee receives, the better he or she is able to comprehend the given situation, to identify appropriate strategies for handling the situation and, ultimately, to experience fewer stressors. Next, according to URT, when people are placed in uncertain situations, they tend to be driven to actively communicate in order to reduce those uncertainties. As such, communication is a critical factor in increasing comprehension and clarity—in other words, reducing uncertainties, which are known to be critical stressors in the workplace. Both SIP theory and URT emphasize the positive roles of communication in reducing stress.

Miller et al. (1990) highlighted two role-oriented stressors: role ambiguity and role conflict. Role ambiguities occur when an employee is not able to adequately or clearly figure out the roles that he or she has been assigned (Schulz, 2013). Role conflicts indicate that an employee is assigned to multiple tasks that tend to contradict one another (Rizzo, House, & Lirtzman, 1970; Schulz, 2013). Relying on the theories of social information processing and uncertainty reduction, Miller et al. argue that communication can reduce these two role-oriented stressors. In other words, by making sense of the roles given to them through active communication of adequate and necessary information, employees can more clearly comprehend their roles or clarify any ambiguous attributions of those roles. These arguments in regard to the relationship between communication and role-oriented stressors have been further supported by a number of studies (Hung et al., 2015; Johnson, France, Meyer, Speyer, & Cox, 1998; Starnaman & Miller, 1992).

As the literature has shown, it is understandable that adequate and positive forms of communication (e.g., participation in decision making) significantly reduce the ambiguities and conflicts regarding roles in the workplace (i.e., stressors at work). Nevertheless, communication in organizational settings can occur in unpredicted and negative ways. In particular, in today's organizations, overload of communication has become a considerable problem (Ellwart, Happ, Gurtner, & Rack, 2015; Memmi, 2014). Because organizational communication is largely facilitated through the implementation of various ICTs, employees now face information processing of an unprecedented pace and tight connections with one another that can feel overwhelming at times—all of which can ultimately lead to an experience of communication overload. Therefore, this study placed attention on the roles of communication-oriented overload in exacerbating organizational members' experiences of burnout caused by role-oriented stressors.

Finally, considering the dependence of today's organizations on MIMs for various organizational purposes (Sheer & Rice, 2017), this study also examined the potential influences that overload in the use of MIMs may have on the relationships among the two role-oriented stressors, burnout, and turnover intention. Indeed, as recent research (Darics, 2014; Iversen et al., 2013; Oghuma et al., 2015; Sheer & Rice, 2017) has shown, MIMs have become an important communication channel in today's workplace. Particularly in Korean organizations, employees have been found to suffer from a range of psychological problems that are due to their constant use of KakaoTalk for organizational purposes (C. Kim, 2016; M. Kim, 2017). This strongly supports the timeliness of examining the potential impacts of MIM use overload on employee burnout.

Research Model and Hypotheses Building

Overload in MIM Use

Overload in the use of MIMs has become a critical issue in today's organizations (C. Kim, 2016; Park, 2016). According to the existing literature, ICT in organizations creates work-related stress (or "technostress") among those who use it (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007), and overload in ICT use is experienced by individuals when ICT use exceeds their information processing and communicative capabilities (Karr-Wisniewski & Lu, 2010). This kind of excessive use of ICTs within the workplace has been found to bring about negative work-related consequences, such as decreased work productivity and increased work-life conflict (Harris, Harris, Carlson, & Carlson, 2015; Karr-Wisniewski & Lu, 2010; McMurtry, 2014). Expanding on this literature, the intent of this study is to understand the potential consequences of communication-oriented overload in ICT use in terms of role-oriented stressors, burnout, and turnover intention.

For this examination, we relied on A. R. Lee and colleagues' (2016) model, which presented the associations between different types of overload related to communication technology use and psychological stress. In their study, A. R. Lee and colleagues incorporated a sophisticated, communication-oriented conceptualization of overload presented by Karr-Wisniewski and Lu (2010). According to this conceptualization, three specific dimensions of overload relating to communication technologies can be identified. The first dimension of overload is *information overload*, which is directly associated with the transfer of overwhelming amounts of content that exceeds the receivers' processing abilities. With MIMs, it is highly plausible that organizational members are receiving too much task-related information to adequately process. Next, there is *communication overload*, which is closely related to communication behaviors. More specifically, people feel

overloaded and become less productive when they become involved in excessive communicative interactions. In today's organizations, employees are often expected to be "always on" through MIMs, which suggests that they may be asked to engage in a number of interactions that are beyond their communication capacities. The third dimension is *system feature overload*, which occurs with the complexity and difficulty of using a technology. In other words, when individuals are exposed to a technology equipped with complicated features that do not fit a task, they tend to feel overwhelmed. Thus, we can expect that individuals who are not familiar with the advanced functions of MIMs will experience system feature overload.

While Karr-Wisniewski and Lu (2010) examined the associations among these three overload types with work productivity, A. R. Lee et al. (2016) applied Karr-Wisniewski and Lu's classification of overload to understand the outcomes of SNS use, also finding that all three dimensions of overload acted as stressors leading to SNS fatigue. Similarly, Yu, Cao, Liu, and Wang (2018) and Zhang, Zhao, Lu, and Yang (2016) found that certain types of communication-oriented overload in social media use—mostly represented by instant messaging use and SNS use, respectively—led to exhaustion with social media. As such, communication-oriented overload in social media use can also lead to negative psychological consequences.

Based on this previous research, it is reasonable to also characterize communication-oriented overload in MIM use in terms of three dimensions: overwhelmingly high levels of information transferred, communicative behaviors, and technological complexity. Further, it can be reasonably expected that the three dimensions of MIM use overload will be associated with negative outcomes at work—in particular, with the two role-oriented stressors of role ambiguity and conflict.

First, according to Eppler and Mengis's (2004) extensive review of the literature regarding information overload, studies have consistently observed that information overload leads to notable increases in uncertainties and ambiguities. This is mainly because individuals will receive inconsistent and contradictory information about a specific issue from multiple sources, and this interferes with efficient decision making. Therefore, it is comprehensible to hypothesize that there will be significant positive effects of information overload on role ambiguity and conflict that are due to KakaoTalk use. Accordingly, the following two hypotheses were established:

H1: Information overload in KakaoTalk use will positively predict role ambiguity.

H2: Information overload in KakaoTalk use will positively predict role conflict.

Second, we can consider the relationship between communication overload and stressors in the workplace. Previous studies have found that the volume of email one receives and time spent with email during the workday significantly predict stress and fatigue (Barley, Meyerson, & Grodal, 2011; Jerejian, Reid, & Rees, 2013). Further, according to Hung et al. (2015), communication overload in mobile phone use for work-related purposes was negatively associated with productivity, suggesting that excessive demands for communication through mobile technology can also induce work-related stress. Applying Karr-Wisniewski and Lu's (2010) conceptualization, communication overload in the context of MIMs refers to being excessively involved in communicative interactions occurring within MIMs. Heavy use of MIMs in organizational settings increases the likelihood that one will be exposed to a greater number of unwanted interactions and that one will have to

interact with coworkers who are not directly involved in the same task or with those who hold contradictory views. Group chat functions, such as KakaoTalk's "DanTalk Bang," play a central role in this process. Traditional offline meetings are mostly conducted with the particular members directly required for a task or among those who share similar approaches to a task. Unlike these meetings, group chat meetings tend to expose individuals to interactions and tasks they are not invested in. According to expectancy violation theory (Burgoon, 1993), unexpected increases in negative communicative interactions are directly associated with increases in negative cognitive states, including psychological stress. Consequently, we established the following hypotheses:

H3: Communication overload in KakaoTalk use will positively predict role ambiguity.

H4: Communication overload in KakaoTalk use will positively predict role conflict.

Finally, system feature overload is significantly associated with one's capacities for using a given technology. In other words, when the complexity of a technology exceeds one's level of comprehension, he or she will tend to experience system feature overload. Further, system feature overload is associated with negative outcomes both within and outside work contexts, such as decreased productivity, increased work-family conflict, and increased fatigue with technology and networks (Harris et al., 2015; Karr-Wisniewski & Lu, 2010; A. R. Lee et al., 2016; Zhang et al., 2016). In regard to MIM use in organizational settings, it should not be assumed that every member will have the same level of capacity to use MIM features for organizational purposes. For instance, older employees will be less familiar with text-based, digital communication when compared with younger employees who are identified as being part of the digital native generation. As such, the fast-paced and synchronous communication occurring through MIMs will act as a considerable stressor for certain employees, negatively impacting their professional lives. Furthermore, higher levels of system feature overload will imply that one is not adequately keeping up with the pace of information transfer and processing. This implies ambiguity and uncertainties surrounding the information exchanged through MIMs. Therefore, this ultimately suggests that there will be an association between system feature overload and the two role-oriented stressors. Consequently, this study developed the following two hypotheses:

H5: System feature overload in KakaoTalk use will positively predict role ambiguity.

H6: System feature overload in KakaoTalk use will positively predict role conflict.

Role-Oriented Stressors, Burnout, and Turnover Intention

Models that explain the mechanisms of job stress have identified a number of stressors that are closely related to employee burnout (Boyas & Wind, 2010; Halbesleben & Buckley, 2004; Zapf, Seifert, Schmutte, Mertini, & Holz, 2001). In particular, Parker and Cotiis (1983) identified role-related stressors as one of six categories of stressors in organizational settings. Regarding role-related stressors, employees feel stress and burnout under the following conditions: (1) role-related demand and/or responsibility is high, (2) multiple roles are assigned, (3) contradictory roles are simultaneously assigned, (4) assigned roles are unclear, and (5) perceived fit between assigned roles and employee is low. Further, studies have often found that among these role-related stressors, role ambiguity and conflict are closely associated with employee burnout (Jawahar, Stone, & Kisamore, 2007; Schwab & Iwanicki, 1982).

Previous studies have also identified multiple subdimensions of burnout (Maslach & Leiter, 2016; Seidler et al., 2014; Wright & Bonett, 1997; Wright & Cropanzano, 1998). The first dimension is emotional exhaustion, which refers to "feelings of being emotionally overextended and exhausted by one's work" (Wright & Bonett, 1997, p. 492); that is, when a person puts excessive emotional effort and energy into handling stressors, he or she is likely to become emotionally exhausted. The daily organizational lives of employees also deeply involve intensive emotion-driven relationships (Briner, 1999; Jia, Chen, & Hale, 2017; Mann, 1999). Regarding this aspect, previous research has found evidence supporting positive associations between role stress and burnout (H. Kim & Stoner, 2008). Therefore, role ambiguity and conflict will play influential roles as major stressors of emotional exhaustion. First, role ambiguity will significantly influence emotional exhaustion because an increase in workplace equivocality is directly associated with an increase in employees' emotional, cognitive, and psychological efforts in handling an uncontrolled situation. Next, in terms of role conflict, when an employee receives inconsistent orders from his or her supervisor(s), he or she will put much emotional effort into simultaneously managing such orders and handling potential conflicts with or among the supervisor(s). In this way, role conflicts are inherently associated with intense emotional conflicts (Piko, 2006). Based on this logic, the following hypotheses were established:

H7: Role ambiguity will positively predict emotional exhaustion.

H8: Role conflict will positively predict emotional exhaustion.

Second, another dimension of burnout is the reduction of personal accomplishment, which refers to employees becoming pessimistic about their own organizational lives and evaluating their work as worthless (Maslach & Leiter, 2016; Wright & Bonett, 1997). Diverse stressors drive employees to perceive lower levels of task accomplishment and to devalue themselves. For example, task overload will force employees to face the limits of their working capacity, leaving them disappointed for having inadequately handled the tasks handed to them. This implies that stressors will lead to negative self-evaluation and create emotional futility, ultimately increasing experiences of burnout. Likewise, role ambiguity and role conflict will also negatively influence employees' sense of personal accomplishment. In many cases, role ambiguity and conflict originate from external factors (e.g., provision of incoherent information) that employees themselves do not have a handle on. Therefore, when they are faced with high levels of role ambiguity and conflict, employees may sink into a state of torpor because of their lack of capacity to adequately control the situation on their own, resulting in a devalued sense of self. Accordingly, this study established the following hypotheses:

H9: Role ambiguity will positively predict reduced personal accomplishment.

H10: Role conflict will positively predict reduced personal accomplishment.

Furthermore, in studies of organizational behavior, scholars have placed much emphasis on the main effect of burnout on turnover intention (Weinert, Maier, Laumer, & Weitzel, 2015). As employees experience higher levels of burnout, it is quite natural for employees to escape such psychological problems by leaving the current organization. Indeed, numerous studies have shown clear evidence supporting the positive association between burnout and turnover intention (Ducharme, Knudsen, & Roman, 2007; H. Kim & Stoner, 2008). Therefore, in this study, the following hypotheses were tested:

H11: Emotional exhaustion will positively predict turnover intention.

H12: Reduced personal accomplishment will positively predict turnover intention.

In this way, based on two different theoretical models that explain relationships among overload, role-oriented stressors, and burnout, this present research proposed 12 hypotheses. Figure 1 presents the research model composed of paths corresponding to each hypothesis.

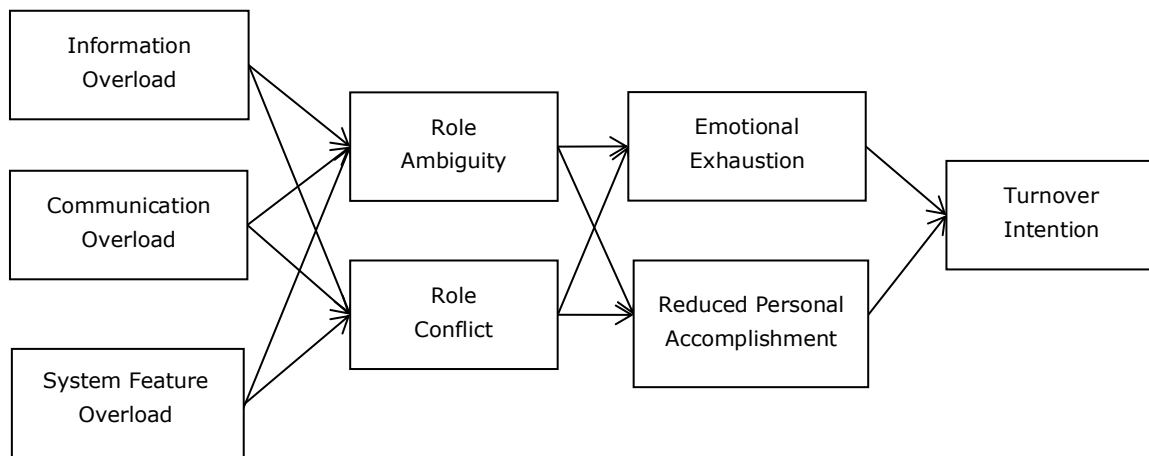


Figure 1. Research model.

Methods

Participants

Data were collected from office workers in South Korea. We used a purposive sampling method, in which only employees currently using KakaoTalk for organizational purposes were invited to complete an online survey. The online survey was distributed to potential research participants through one of the largest research companies in Korea. Moreover, to maximize the sample size, we also distributed the online survey through personal networks. To ensure that only those individuals who used KakaoTalk for work completed the survey, the research company collecting the data screened participants, and it was clearly stated at the beginning of the questionnaire that the survey was intended for this particular population. A total of 434 surveys were collected and used for the main statistical analyses. Among the 434 participants, about half (53.5%) were male. In terms of age, 14.3%, 28.6%, 35.3%, and 21.9% were in their 20s, 30s, 40s, and 50s, respectively. The majority were involved in office/technical work (61.1%). Other participants were in professional (15.7%), managerial (9.9%), service (6.7%), and business/sales (6.0%) work, while 0.5% were self-employed. The specific areas of industry in which participants worked were

planning/marketing/advertisement (9.2%), IT (14.1%), manufacturing (22.6%), finance (9.9%), government (10.1%), and other (34.1%).

Instruments

The main study variables were assessed with composite measures, and all items were measured on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). All composite measures showed high levels of internal consistency, with Cronbach's alpha scores ranging between .70 and .90.

Information overload. To measure this variable, we revised the original items for information overload proposed by Chung and Goldhaber (1991). Examples from our modified version ($M = 3.07$, $SD = 0.82$, $N = 434$, $\alpha = .82$) are: (a) I am often distracted by information related to my work pouring in from KakaoTalk; and (b) I sometimes feel pressured by work-related information coming in from KakaoTalk every day.

Communication overload. This variable was measured through a scale composed of four items from A. R. Lee and colleagues' (2016) study. Items were reworded to reflect KakaoTalk use ($M = 2.64$, $SD = 0.90$, $N = 434$, $\alpha = .84$). The following are examples: (a) I communicate with my superior through KakaoTalk about work too much; and (b) I experience having unwanted conversations about work through KakaoTalk with a superior or coworker.

System feature overload. To measure system overload in KakaoTalk, we reworded four items originally proposed by A. R. Lee et al. (2016). One item was excluded from further analysis to obtain an acceptable reliability score ($M = 2.73$, $SD = 0.75$, $N = 434$, $\alpha = .78$). Examples are: (a) The inefficient design of the KakaoTalk interface often interferes with my work performance; and (b) The KakaoTalk system itself is suitable for small tasks, but not so much for a large project.

Role ambiguity. To measure this variable, we used a scale composed of four items used by Ray and Miller (1991). Examples of our modified version ($M = 2.92$, $SD = 0.76$, $N = 434$, $\alpha = .77$) are: (a) I am not so sure about the scope of my work and responsibility; and (b) I think the evaluation standards used to measure my performance in the organization are unclear.

Role conflict. This variable was measured with a revised version of Ray and Miller's (1991) scale for role conflict, composed of three items. Examples of our modified version ($M = 3.19$, $SD = 0.75$, $N = 434$, $\alpha = .71$) are: (a) I sometimes get orders that are contrary to each other from two different superiors or departments; and (b) I sometimes get task-related roles without proper resources or support.

Burnout. We measured two dimensions of burnout with a revision of Pines and Kafry's measure (1978). First, emotional exhaustion was measured through seven items ($M = 3.53$, $SD = 0.74$, $N = 434$, $\alpha = .89$). Examples of those items are: (a) I am physically exhausted; and (b) I feel devastated. Next, reduced personal accomplishment as another dimension of burnout was measured through five items ($M = 2.98$, $SD = 0.81$, $N = 434$, $\alpha = .84$) such as the following: (a) When I am working, I sometimes feel everything is worthless; and (b) When I am working, I sometimes feel anxious.

Turnover intention. Measurement of turnover intention was based on five items from previous studies (Alexander, Lichtenstein, Oh, & Ullman, 1998; Mobley, 1982). Examples of our modified items ($M = 2.96$, $SD = 0.90$, $N = 434$, $\alpha = .87$) are: (a) I often look for a job outside the organization I belong to; and (b) Choosing my current job was a definite mistake on my part.

To validate the measurements for this study, a confirmatory factor analysis (CFA) was conducted with all main study variables using AMOS: $\chi^2(df = 531) = 1,324.5$, CFI = .90, IFI = .90, CMIN/DF = 2.5, SRMR = .06. To assess the convergent and discriminant validities of the measurements, the averages of variance explained (AVE) and collective reliability scores (CR) were reviewed. As Table 1 shows, all AVE values (larger than 0.5) and CR scores (larger than 0.7) were at acceptable levels.

Table 1. Correlations Among Main Study Variables.

	1	2	3	4	5	6	7	AVE	CR
1 Information Overload (r^2)	1							.60	.83
2 Communication Overload (r^2)	.65 (.42)***	1						.61	.83
3 System Feature Overload (r^2)	.35 (.12)***	.32 (.10)***	1					.68	.82
4 Role Ambiguity (r^2)	.24 (.06)***	.20 (.04)***	.20 (.04)**	1				.57	.78
5 Role Conflict (r^2)	.37 (.14)***	.29 (.08)***	.14 (.02)**	.52 (.27)***	1			.59	.74
6 Burnout: Emotional Exhaustion (r^2)	.31 (.10)***	.26 (.07)***	.15 (.02)**	.39 (.15)***	.34 (.12)***	1		.65	.91
7 Burnout: Red. Personal Accomp. (r^2)	.28 (.08)***	.22 (.05)***	.16 (.03)**	.47 (.22)***	.47 (.22)***	.50 (.25)***	1	.60	.84
8 Turnover Intention (r^2)	.30 (.09)***	.24 (.06)***	.11 (.01)*	.41 (.17)***	.49 (.24)***	.51 (.26)***	.66 (.44)***	.60	.85

*** $p < .001$. ** $p < .01$. * $p < .05$.

Results

In this study, we proposed and empirically tested a theoretical model explaining the relationships among a number of variables through a structural equation modeling (SEM) analysis. To test the model, we conducted a path analysis with AMOS. Ahead of conducting the path analysis, we explored the potential effects of multiple demographic variables. The analysis showed that age was significantly associated with a number of the study variables, including system feature overload, role ambiguity, burnout, and turnover intention. Therefore, for the path analysis, effects of age on the main study variables were controlled for. Based on Kline's (2005) guidelines, we reviewed multiple model fit indices, including the standardized root mean residual (SRMR, smaller than .08), comparative fit index (CFI, larger than .90), and infinite fit index (IFI, larger than .90). Results from the path analysis presented an acceptable model fit— $\chi^2(df = 12) = 115.3$, CFI = .91, IFI = .91, CMIN/DF = 9.6, SRMR = .07—and are presented in Figure 2.

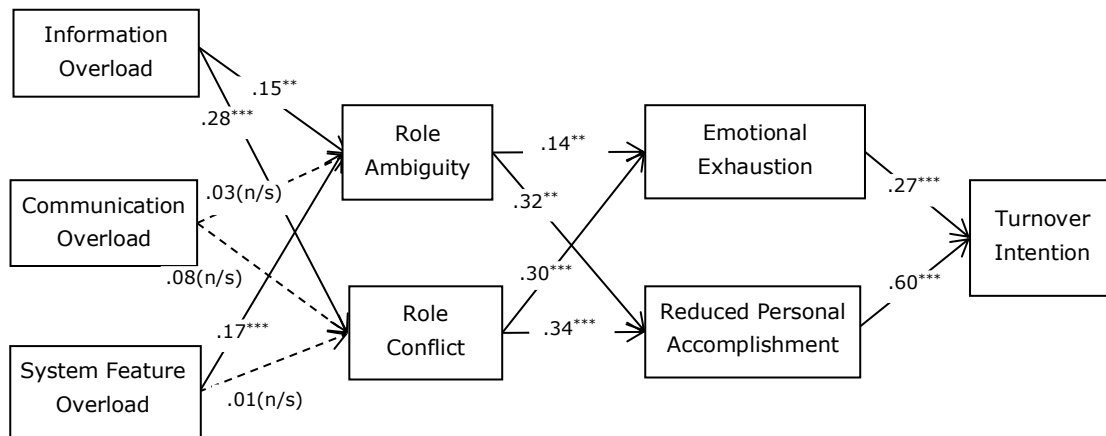


Figure 2. Results from path analysis.

Reviewing the findings regarding the individual hypotheses, first, we found that information overload had a positive effect on both role ambiguity (H1) and role conflict (H2). In other words, information overload significantly increased role ambiguity ($\beta = .15$, $p = .007$) and role conflict ($\beta = .28$, $p < .001$). Therefore, H1 and H2 were supported.

Second, H3 and H4 predicted that that communication overload would significantly increase role ambiguity and role conflict, respectively. However, SEM results showed that communication overload predicted neither role ambiguity ($\beta = .03$, $p = .51$) nor role conflict ($\beta = .08$, $p = .12$). Thus, both H3 and H4 were rejected.

Next, we examined the role of system feature overload in predicting role ambiguity (H5) and role conflict (H6). According to the analysis, although system feature overload significantly affected role ambiguity in a positive direction ($\beta = .17, p < .001$), there was no significant association between system feature overload and role conflict ($\beta = .01, p = .83$). These results support H5, but reject H6.

By including these three predictors—information overload, communication overload, and system feature overload—into the model, the explained variance of role ambiguity increased by 12.4% ($R^2 = .124$). In addition, the inclusion of the three variables increased 14.6% of the explained variance for role conflict ($R^2 = .146$).

In the next set of hypotheses, we examined the effect of the role-oriented stressors on the two dimensions of burnout. First, analysis of H7 and H8 showed that role ambiguity ($\beta = .14, p = .005$) and role conflict ($\beta = .30, p < .001$) significantly increased emotional exhaustion, respectively. Both H7 and H8 were supported. Next, analysis of H9 and H10 also found that both role ambiguity ($\beta = .32, p = .005$) and role conflict ($\beta = .34, p < .001$) were significantly associated with reduced personal accomplishment, respectively, in a positive direction. H9 and H10 were supported as well. The inclusion of the two role-oriented stressors in the model increased the explained variance of emotional exhaustion by 22.8% ($R^2 = .228$) and that of reduced personal accomplishment by 29.6% ($R^2 = .296$).

Finally, H11 and H12 hypothesized positive associations between the two dimensions of burnout and turnover intention. Path analysis results presented significant positive associations between turnover intention and both emotional exhaustion ($\beta = .27, p < .001$) and reduced personal accomplishment ($\beta = .60, p < .001$). These results fully support both H11 and H12. The inclusion of the two burnout dimensions increased the explained variance of turnover intention by 44.5% ($R^2 = .445$).

Discussion

The present study aimed at developing and empirically testing a model that depicts how overload (in terms of information, communication, and system feature overload) in MIM use predicts the role-oriented stressors of role ambiguity and role conflict in employees, and how this, in turn, leads to burnout (in the form of emotional exhaustion and reduced personal accomplishment) and turnover intention. The study's main findings address a number of important points.

Above all, this present study contributes to the development of an empirical model that addresses the considerable negative impacts that overdependence on new ICTs can have on the lives of employees. Although scholars (e.g., Cho, Ramgolam, Schaefer, & Sandlin, 2011) have paid much attention to the various predictors and outcomes of role-oriented stressors, relatively few studies have thoroughly connected role-oriented stressors with communication-driven predictors. Particularly, in terms of communication-driven predictors, this study considers those of technology overload. Despite present-day organizations' overdependence on new ICTs, particularly mobile technologies, research conducted on the influence of such technology use on employees' role-related experiences has been sparse. Therefore, this study's examination of the effects of excessive MIM use on role-oriented stressors is a meaningful contribution to the literature regarding work-related stress and the effects of new technology use within the workplace.

More specifically, in regard to the communication-driven predictors, this study focused on three aspects of organizational overload in relation to the MIM, KakaoTalk: information overload, communication overload, and system feature overload. The findings from the path analysis returned a number of interesting observations regarding the associations between overload and the role-oriented stressors. First, compared with other aspects of KakaoTalk overuse, information overload had stronger effects on both role ambiguity and role conflict. Supported by the advancement in mobile technologies and telecommunication infrastructures, MIMs have become one of the most important communication tools for today's organizations (Sheer & Rice, 2017). They are now actively used for group discussion, file sharing, informal communication, and so forth. Thus, it is not uncommon for employees to be exposed to an excessive amount of information through MIMs—too much to adequately handle. Fully substantiating the findings of previous studies (Eppler & Mengis, 2004; Schneider, 1987), information overload in MIMs was observed to significantly predict role ambiguity and role conflict. This particular finding provides empirical support regarding the negative effects of MIM overuse on the organizational lives of employees.

Next, we found that communication overload in KakaoTalk had no significant effect on either role ambiguity or role conflict. We may begin to understand this finding in the increasing level of familiarity and competence people are developing with new ICTs. With the continuous influx of the millennial generation into the workplace, the proportion of employees familiar with synchronous communication occurring through MIMs continues to increase, while employees of older generations are also becoming more skilled at using mobile technologies. Moreover, today's workers have been found to place a certain amount of value on the immediacy of communication that ICTs afford. Therefore, such appreciation of the immediacy of communication may diminish the potential effect of communication overload on the increase of role-oriented stressors.

We further found that system feature overload was also significantly associated with role ambiguity. As elaborated earlier, high levels of system feature overload indicate that employees are perceiving high levels of complexity in using MIMs for organizational purposes and that they are investing more labor in order to fully integrate MIMs into their tasks. With the explosive increase in MIM use and the notable penetration of the technology into our daily lives, we tend to assume that use of MIMs always entails convenience. However, we must recognize that, for some individuals, communicating through MIMs for work is still an awkward and complicated experience. Therefore, although in general, MIMs are known as efficient tools for organizational communication, managers must identify the necessary and adequate uses of MIMs, which suit their employees' personal communication styles, rather than simply conform to the recent, dominant trends in communication.

Furthermore, as the path analysis results show, role ambiguity and role conflict were strongly associated with the two dimensions of burnout. Indeed, as previous studies have strongly argued (H. Kim & Stoner, 2008; Piko, 2006), when employees experience higher levels of role ambiguity and role conflict, they are likely to become emotionally exhausted and to devalue their personal accomplishments. As such, the findings of this study are in agreement with earlier studies on stress and burnout within organizations, while expanding understanding of the relationship by examining predictors of stress in terms of excessive technology use for organizational purposes.

In this way, this study's main theoretical contribution is providing scholars with an empirically supported model that can start to explain the effects of organizational overuse of MIMs on burnout and turnover intention mediated through role-oriented stressors. Nevertheless, further examination is called for, and thus we provide some suggestions for future research. First, a greater variety of personal and contextual factors must be explored and incorporated into the model proposed in this study. The influence of demographic characteristics, such as age, gender, and occupation, must be more closely scrutinized. In particular, it will be useful to examine how one's occupation influences MIM use. Different occupational cultures will involve different behaviors in communication and will employ ICTs in different ways. According to contingency theories (Donaldson, 2001; Weill & Olson, 1989), employees' behaviors are largely influenced by environmental and contextual factors, and organizational culture—defined as the basic assumptions and norms that determine the behaviors considered to be adequate for organizational life (Schein, 2010)—is an important context that influences employees' behaviors. Therefore, it will benefit future research to measure occupations more systematically based on a sample representative of broader ranges of occupations to examine how this model differs across occupations. It will also be informative to incorporate variables that measure different types and levels of organizational culture and incorporate them into the model. Additionally, examination of organizations of different national contexts that rely on different MIMs, most possibly in different manners and intensity, is recommended.

Second, the associations across the different types of overload can be examined more closely, while the role of other forms of overload can be identified and explored as well. While this study only tested for the direct effects of information, communication, and system feature overload on the multiple outcome variables, future research will benefit by including the potential associations across the three overload types and testing for indirect, mediating paths. Moreover, although this research focused on communication-oriented types of overload, it is also recommended that researchers scrutinize other types of overload that occur in organizational settings, which could significantly affect psychological stress. For example, as Tarafdar and colleagues (2007) presented, various components of technostress (i.e., techno-insecurity and techno-uncertainty) were significantly associated with role overload, which is one of two role stressors in their study. Therefore, future research will benefit by broadening definitions of overload in various organizational contexts.

Next, future research should consider studying the specific behaviors involved in MIM use. As elaborated earlier, employees use MIMs for various work-related purposes. It is reasonable to assume that each specific behavior is associated with the experience of role-related stressors in different ways. For example, the effect of MIM overuse in terms of file sharing on role ambiguity will be different from overuse in the form of online meetings. Therefore, for more thorough understanding of the effects of MIM overuse on employees' organizational lives, future research must focus on identifying the different uses and their unique physical and psychological impacts.

Conclusion

In today's organizations, employees largely rely on MIMs for diverse organizational purposes. Further facilitated by advancement in mobile technologies, we often observe an overdependence on MIMs. Focusing on this phenomenon, this study aimed at developing a model that allows for explanation of how

overload in MIM use influences employee burnout and turnover intention through role-oriented stressors. Path analysis results showed that information overload and system feature overload significantly increased role ambiguity and role conflict, which ultimately led to significant increases in burnout in the form of emotional exhaustion and reduced personal achievement, and to increases in turnover intention.

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