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MEDIA AFFORDANCE AND EMOTION REGULATION IN ORGANIZATIONAL COMMUNICATION

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This dissertation is dedicated to my family, Changling Shao, Huaijiang Wang, and Ligeng Yang. Their support, encouragement, and unconditional love have sustained me throughout my life.

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ABSTRACT

Emotion regulation and the use of emotion regulation strategies to manage one's emotional experiences or expressions have received extensive attention in the management, communication and psychology literatures. Despite the extensive attention being paid to emotion regulation in organizational communication research, the role of media in facilitating successful utilizations of emotion regulation strategies is under-investigated. Utilizing the emerging technology affordance perspective as a lens to understand the role of communication media, this dissertation is devoted to understanding the role of communication media in facilitating emotion regulation in organizational communication. The dissertation is divided into three essays. The first essay utilizes a deductive approach and develops a set of propositions regarding media affordances that exist at the intersection of media features (as discussed in media synchronicity theory) and emotion regulation strategies in organizational dyadic communication. The second essay utilizes a qualitative and inductive approach. An original concept, hostility decontaminating, is proposed. Moreover, the original concept of hostility decontaminating includes several aspects (i.e., hostility filtering, hostility isolating, hostility barriering and hostility containing) that can be used individually or jointly to counteract the contagion of negative emotions at the workplace. The third essay seeks to examine the construct measurement issue for the relational concept of technology affordance. Specifically, the third essay compares the predictive capability of two measurement approaches in the context of media asynchronicity (i.e., a technology characteristic) affordance for display regulation (i.e., the most frequently used and studied emotion regulation strategy in organizational communication).

CHAPTER 1: INTRODUCTION

Emotion regulation refers to the attempt to influence which emotions we have, when we have them, and how these emotions are experienced or expressed (Gross, 1998). The methods individuals may employ to manage their emotional experience or expression are referred to as emotion regulation strategies (ERSs). The use of ERSs has been studied in many contexts, such as the interaction between employees and customers (or emotional labor, Hochschild, 1983), the interaction between supervisors and subordinates (e.g., Fisk & Friesen, 2012), and the interaction between coworkers (e.g., Kramer & Hess, 2002).

Using ERSs to manage one's emotional experience or expression is often explicitly or implicitly required at the workplace. However, successful utilizations of ERSs on a frequent basis can be demanding and may lead to various negative consequences (e.g., burnout) on individuals who have to obey the organizational requirements on emotion regulation (e.g., Tracy, 2000). In the attempt to facilitate successful utilizations of ERSs, researchers have focused on various knowledge, skills and abilities (KSAs) as well as trainings aimed at improving those KSAs that may lead to successful utilizations of ERSs (e.g.,Grandey, 2003; Grant, 2013; Kilduff, Chiaburu, & Menges, 2010; Mayer & Salovey, 1995; Sutton, 1991).

At a time when organizational communications are increasingly taking place via communication media, another potential way to facilitate successful utilizations of ERSs is to leverage the facilitating role of communication media. For example, when asked about managing emotional displays, a 911 call-taker exclaimed, "I can only do it because it's over the phone. I could never be so pleasant face to face" (Tracy & Tracy,

1998, p.402). That is, the call-taker perceived managing emotion expressions to be easier when the communication was via the phone. The potential facilitating role of communication media, somewhat surprisingly, has received inadequate attention in both the emotion regulation and the information systems (IS) literatures.

This dissertation seeks to understand the facilitating role of communication media for emotion regulation in organizational communication. The theoretical lens being utilized to understand the phenomenon of interest is the technology affordance perspective, which originates from Gibson's affordance perspective (e.g., Gibson, 1977). Technology affordances are defined as "possibilities for goal oriented action afforded to specific user groups by technical objects" (Markus & Silver, 2008, p.622). Affordances may also include the ease of undertaking certain actions because of a technology for goal-oriented individuals (Leonardi, 2011; Treem & Leonardi, 2012). Despite the existence of different affordance perspectives, researchers in the field of technology use and consequence agree that affordance is a relational concept that depends on the interaction between technology features and individuals' goals (Markus & Silver, 2008; Treem & Leonardi, 2012). By shedding light on the action potentials provided by technology, the technology affordance perspective may explain how (Volkoff & Strong, 2013) media facilitate the use of ERSs.

The dissertation includes three essays related to communication media affordances for emotion regulation, each of which comprises one of the following three chapters. The first essay (i.e., chapter 2) adopts a deductive approach and focuses on regulating undesired emotions—either emotions inherently undesired by individuals (e.g., embarrassment) or emotions undesired by organizational norms or rules to which

individuals need to stick—in organizational dyadic communication. Specifically, I rely on media synchronicity theory (e.g., Dennis, Fuller, & Valacich, 2008) to understand features of communication media and develop a set of propositions regarding media feature affordances that exist at the intersection of media features and ERSs.

The second essay (i.e., chapter 3) utilizes a qualitative and inductive approach to understand what are the communication media affordances for emotion regulation and which media feature(s) provide each affordance. Semi-structured interview was conducted with twenty IT help desk employees. Drawing on the analysis, I propose that communication partners' emotionally-charged messaging (i.e., hostility) at work are like viruses, that regulating emotions when interacting with hostile partners is akin to resisting contamination with viruses, and that communication media may facilitate emotion regulation via its potential of hostility decontaminating. Also, the hostility decontaminating potential has several aspects existing at the system (i.e., team) level (i.e., hostility filtering) and the individual level (i.e., hostility isolating, hostility barriering, and hostility containing).

The first and second essays are conceptual and qualitative research respectively, the two dominant research methods in the extant technology affordance literature. To establish the status of the technology affordance perspective, empirical testing of arguments developed via the technology affordance perspective is necessary. An important issue that needs to be addressed before proceeding to empirical testing is how to measure the relational concept of technology affordance.

The third essay (i.e., chapter 4) seeks to address the construct measurement issue by comparing the predictive capability of two potential measurement approaches in the

context of media asynchronicity affordance for display regulation. The two measurement approaches being compared are the indirect measurement approach, which computes objective technology affordances from other constructs, and the direct measurement approach, which measures individuals' perceptions of technology affordances (e.g., Kristof 1996). Data was collected using a survey with policy-capturing scenarios and 84 help desk employees completed the survey. The results are insignificant and the question of how to measure the relational concept of technology affordance remains. Implications of research findings and limitations are discussed.

CHAPTER 2: COMMUNICATION MEDIA FEATURE AFFORDANCES FOR THE USE OF EMOTION REGULATION STRATEGIES TO REGULATE UNDESIRED EMOTIONS: A DEDUCTIVE INVESTIGATION

ABSTRACT

Abundant research exists regarding emotion regulation strategies, i.e., methods individuals employ to regulate their emotional experiences or expressions. Despite the extensive attention paid to emotion regulation in organizational communication research, the role of media in facilitating successful utilizations of emotion regulation strategies is under-investigated, especially within the information systems discipline. Running parallel to the increasing attention to emotion regulation is an emerging interest among information systems researchers in utilizing the technology affordance perspective to understand technology uses and consequences. This study, employing the technology affordance perspective as the principle theoretical lens to understand the facilitating role of communication media, deductively develops a set of propositions regarding media feature affordances for the use of emotion regulation strategies to regulate undesired emotions (i.e., either emotions inherently undesired by individuals or emotions undesired by organizational rules or norms to which individuals need to stick) in organizational dyadic communication.

INTRODUCTION

Emotion regulation refers to "the attempt to influence which emotions we have, when we have them, and how these emotions are experienced or expressed" (Gross, 1998, p.275). Individuals are more likely to spend effort regulating undesired emotions (e.g.,Festinger, 1954; Robinson & Smith-Lovin, 1992; Sutton, 1991), i.e., either emotions inherently undesired by individuals (e.g., embarrassment) or emotions undesired by organizational rules or norms to which individuals need to stick (e.g., bill collectors should have no sympathy for debtors), because undesired emotions are more likely to lead to negative impacts on individuals and on the organization (e.g.,Barsade & Gibson, 2007; Maitlis & Ozcelik, 2004).

Emotion regulation strategies (ERSs) are the methods individuals may employ to manage their emotional experience or expression. Using ERSs to manage one's undesired emotional experience or expression is often explicitly or implicitly required at the workplace. However, successful utilization of ERSs on a frequent basis can be demanding and may lead to various negative consequences (e.g., burnout) for individuals who have to obey the organizational requirements about emotion regulation (e.g.,Tracy, 2000). The extant emotion regulation literature has examined various knowledge, skills and abilities (KSAs) as well as trainings aimed at improving those KSAs that may lead to successful utilizations of ERSs (e.g.,Grandey, 2003; Grant, 2013; Kilduff, Chiaburu, & Menges, 2010; Mayer & Salovey, 1995; Sutton, 1991).

While ample research has focused on identifying and potentially improving individuals' intrinsic capabilities of utilizing ERSs, far less effort has focused on identifying ways to leverage potential extrinsic capabilities. At a time when

organizational communications are increasingly taking place via communication media, a potential extrinsic capability that individuals may leverage is the facilitating role of communication media. For example, in a study on emotion regulation by 911 call-takers (e.g. Tracy and Tracy, 1998) who interacted with their "customers" via the phone, a 911 call-taker exclaimed "I can only do it because it's over the phone. I could never be so pleasant face to face" (Tracy & Tracy, 1998,p.402).

Understanding the role of media in facilitating the use of ERSs to regulate undesired emotions may provide practical implications regarding how media may be leveraged to reduce negative consequences and/or to increase positive consequences associated with emotion regulation. In the above example of 911 call-takers, the phone made emotion regulation easier because individuals needed to "fake" only their tone of voices (but not their facial expressions) (Tracy & Tracy, 1998). The phone, by reducing the amount of expressive cues to be regulated, reduced the emotion regulation workload and consequently negative consequences associated with emotion regulation such as burnout. In addition to reducing negative consequences, individuals may leverage media in pursuit of desired outcomes associated with emotion regulation. For example, despite employees' efforts to try to hide their frustrations from customers, their facial expressions may give them away, negatively affecting, for example, sales performance (Elfenbein, 2007). Media may prevent employees' frustrations from being known to customers resulting in better sales. In summary, media may be leveraged by individuals to engage in emotion regulation behaviors more easily or to engage in emotion regulation behaviors they could not accomplish without the help of media.

The facilitating role of communication media for emotion regulation has not received much attention in the IS literature. A search for "emotion regulation", "emotional labor", and related terms (e.g., deep acting, surface acting, emotion management, display rules, feeling rules) in *MIS Quarterly, Information Systems Research, Journal of MIS, Journal of AIS, Human-Computer Interaction, and Journal of Computer-Mediated Communication* revealed only one paper. Rutner, Hardgrave and McKnight (2008) argued that IT professionals may be required to engage in emotion regulation when interacting with customers and are subjected to consequences of mandatory emotion regulation (e.g., exhaustion).

IS research streams related to emotion regulation are the literatures on uninhibited communication (e.g., flaming) and on hyperpersonal communication, i.e., computer-mediated communication "that is more socially desirable than we tend to experience in parallel F2F communication" (Walther, 1996, p.17). However, extant research on uninhibited communication focuses on how the computer-mediated environment affects individuals' *awareness or motivation* of emotion regulation (e.g.,Kiesler, Siegel, & McGuire, 1984; Spears & Lea, 1994), while extant research on hyperpersonal communication examines interpersonal relationship developments in computer-mediated environment *in general* without paying specific attention to the emotional aspect of the interpersonal communication (e.g., Walther, 2011). How media may play a facilitating role (i.e., enhancing individuals' capabilities of emotion regulation) when individuals seek to utilize certain ERSs remains largely unexamined. I apply a new lens to understand computer-mediated ERSs, the technology affordance lens. Technology affordances are a relational concept emerging from the intersection of

technology features and the user's goal. In this paper, affordances emerge from the intersection of collaborative technology features and ERS utilizations.

This paper seeks to understand this theoretically and practically important phenomenon by developing, via a deductive approach, an understanding of the role of communication media in contributing to successful utilization of ERSs in organizational dyadic communication. Further, I articulate the role of communication media in leveraging ERSs. I foresee two major contributions. First, this paper contributes to the emotion regulation literature by illustrating the facilitating role of communication media for the use of ERSs. Second, I apply the emerging technology affordance perspective to develop some testable propositions, the empirical test of which may help establish the status of the technology affordance perspective.

THEORETICAL PERSPECTIVE AND CONSTRUCTS

In order to understand the facilitating role of media for the use of ERSs, I must first elaborate ERSs that individuals may employ. Next, I introduce the principle theoretical lens to understand the facilitating role of media, the technology affordance perspective. As will be elaborated later, technology affordance depends on both individuals' goals (i.e., to use ERSs) and technology characteristics. Hence, to apply the technology affordance perspective, I must also discuss the other element giving rise to media affordances, i.e., media features. Media synchronicity theory will be used to understand media features.

Emotion Regulation Strategies (ERSs)

The extant emotion regulation literature distinguished ERSs "by the point in the emotion generative process at which they have their primary impact" (Gross &

Thompson, 2007,p.14). There are different perspectives to understand ERSs. An integration (Elfenbein, 2007) of the emotion process literature (e.g.,Frijda, 1986; Weiss & Cropanzano, 1996) suggests that there are five chronological emotion processes, i.e., emotional stimuli, attention, interpretation, experience and expression. That is, individuals need to be exposed to undesired emotional stimuli, attend to and interpret the undesired emotional stimuli before experiencing emotional feeling, which has downstream impacts on emotion expression (Elfenbein, 2007). Each of the five processes is a point to distinguish ERSs. Accordingly, there are five ERSs (Elfenbein, 2007; Gross, 1998) that individuals may employ to regulate undesired emotions, i.e., situation selection and modification, attention deployment, reappraisal, experience regulation and display regulation (see Table 1 for definitions and examples).

Each of the ERSs refers to a *group* of methods individuals may employ at a certain emotion process. The word "group" captures the fact that there may be multiple specific methods under a certain ERS. For example, experience regulation may include venting (e.g., punching a desk) to release the undesired emotions (e.g., frustrations) and talking the frustration out with a friend, etc. Both are specific methods to change one's emotional state and hence are under the strategy of experience regulation.

Table 1 Emotion Regulation Strategies (ERSs)

ERS	Definition	Communication Media Related Example	Corresponding Emotion Process
Situation selection and modification	Selecting (i.e. approaching or avoiding) or modifying the situation to change one's exposure to emotional stimuli.	Individuals decide to use emails to deliver a bad news rather than do it face-to-face to avoid seeing the receiver's reactions which individuals suspect will also induce undesired emotional reactions from themselves	Emotional Stimuli
Attention deployment	Altering one's attention to a situation by moving attention away from or concentrating on emotional stimuli.	Individuals decide to read an email later when perceiving-- because of who it is from--that this email may make them emotional.	Attention
Reappraisal	Altering one's feeling rules (i.e. rules regarding how one should feel in a certain situation) and emotion schema (i.e. the lens to interpret emotional stimuli) to achieve the desired feeling states prior to the occurrence of undesired feeling states.	Individuals perceive the sender of an angry email to be just having a bad day and that what the sender intended to say is not as bold as the email sounded.	Interpretation
Experience regulation	Changing one's emotional state via a host of psychodynamic defense mechanisms such as suppression, denial, venting (e.g. punching a desk), and social sharing (e.g. talking to family about frustration at work)	Individuals share the objectionable email with peers to release their frustrations	Experience
Display regulation	Changing one's emotional expressions without altering the underlying emotional state.	Individuals reply to the objectionable email without inclusion of any indication of their emotional response to it.	Expression

There is no ERS that is universally superior to others; which ERS to use in a certain situation depends on where in the emotion process individuals are (Gross, 1998). For example, if individuals have not been exposed to emotional stimuli, they may utilize the ERS of situation selection and modification to control their exposure to emotional stimuli; if they are already exposed to emotional stimuli, they can use other "downstream" strategies such as attention deployment if they have not attend to those stimuli, or reappraisal if they have attended to but have not interpreted stimuli for meaning. In the following, I will discuss each of the ERSs.

Situation Selection and Modification

The chronologically earliest ERS is situation selection and modification, in which individuals select or modify the situation to regulate their exposures to undesired emotional stimuli. Situation selection refers to avoiding the situation with undesired emotional stimuli. An example of situation selection for regulating undesired emotions can be individuals deleting an email without reading when perceiving—because of who it is from—that this email may make them emotional. Situation modification refers to modifying situation features to reduce the amount of undesired emotional stimuli to which individuals are exposed. An example of situation modification can be individuals deciding to use emails (rather than face-to-face communications) to deliver bad news to avoid seeing the receivers' reactions to the bad news which are undesired emotional stimuli that may make the message sender feel stressed (e.g.,Sussman & Sproull, 1999).

Attention Deployment

After individuals are exposed to undesired emotional stimuli, attention deployment can be used to regulate emotion as attending to emotional stimuli is a

necessary condition for an emotional feeling to arise (Elfenbein, 2007). In organizational contexts, attention deployment often takes the form of internal redirection of attention (i.e., turning attention away from undesired emotion stimuli) and may be temporary as reflected in the emphasis on *when* individuals have an emotion in the definition of emotion regulation (Gross, 1998; Gross & Thompson, 2007). For example, an individual decides to read an email *later* when perceiving-- because of who it is from--that this email may make him/her experience negative emotions and instead concentrates on writing a report for a successful event that he/she is in charge of and that makes him/her feel a sense of achievement.

Reappraisal

After individuals attend to emotional stimuli, what kinds of emotions arise depend on how individuals interpret attended stimuli. Reappraisal can be utilized during the interpretation process in which individuals register attended emotional stimuli for meaning. A different emotional feeling may arise when individuals interpret the same emotional stimuli in a new way. Reappraisal can be done by altering emotional feeling rules or emotional schema (e.g., Elfenbein, 2007). For example, individuals may perceive that emotion in email communication is likely to be misunderstood (Byron, 2008) and hence decide not to put too much weight on it, i.e., what the sender intended to say is not as bold as the email sounded.

Experience Regulation

Experience regulation requires deliberate changes in emotional states outside of the registration process via "a host of psychodynamic defense mechanisms" (Elfenbein, 2007, p.336). Specifically, experience regulation can be done via psychological and

physical activities such as suppression, denial, social sharing with others (i.e., talking about emotion with others in order to change how one feels about it, Rimé, Philippot, Boca, & Mesquita, 1992), and venting (e.g., punching a desk) (Sloan, 2004; Sutton, 1991). For example, 911 call takers may make faces when on the phone with crazy callers to release frustrations caused by callers (Tracy & Tracy, 1998). Alternatively, one could share with a co-worker an email from a third party potentially neutralizing the negative emotion evoked when the message was initially read.

Display Regulation

The display regulation strategy concerns managing external emotion expression without changing the internal emotional state. Display regulation often involves two subtasks, hiding undesired emotion expressions that one is not supposed to display and alternatively displaying desired emotion expressions (that may or may not be genuinely felt). For example, bill collectors are required to show irritations to friendly debtors on the phone despite feeling sympathetic for friendly debtors (Sutton, 1991). Alternatively, this strategy is evident when responding to an email that provoked a negative emotional state with a positive tone.

In summary, the existing emotion regulation literature provides insight into ERSs that can be used to regulate undesired emotions. Those ERSs can be employed during face-to-face communication or communication conducted through media (e.g., Tracy & Tracy, 1998). While the IS literature has not directly examined the use of ERSs in communication conducted via media, there is some literature suggesting that media

may facilitate[1] individuals' use of ERSs. For example, media that transmit only text-based messages may facilitate the use of situation selection and modification to reduce exposures to undesired emotional stimuli such as facial expressions (e.g.,Sussman & Sproull, 1999). To more fully understand the role of media in facilitating the use of ERSs, I turn to the technology affordance perspective.

Technology Affordance Perspective

The technology affordance perspective originated from Gibson (1977)'s affordance perspective. Technology affordances are defined as "possibilities for goal oriented action afforded to specific user groups by technical objects" (Markus & Silver, 2008,p.622). Affordances may also include the ease of undertaking certain actions because of a technology for goal-oriented individuals (Leonardi, 2011; Treem & Leonardi, 2012). By shedding light on the action potential provided by technology, the technology affordance perspective may explain how (Volkoff & Strong, 2013) media facilitate the use of ERSs in organizational communication.

Despite the existence of different affordance perspectives[2] , researchers in the area of technology use and consequence generally agree that a technology affordance is a relational concept that exists between a technology (or its features) and a goal-driven user(s) (e.g.,Leonardi, 2013; Strong, Johnson, Tulu, Trudel, Volkoff, Pelletier, Bar-On, & Garber, 2014; Volkoff & Strong, 2013; Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007). The relational nature of technology affordances suggests that affordances

[1] I recognize that media may also play an inhibiting role. This study focuses on the facilitating role of media exclusively because discussions for the inhibiting role of media may be redundant.

[2] Another affordance perspective in the IS literature (e.g., human-computer interaction) is that by Norman (1988), in which affordances refer to "designed-in" properties of technical artifacts (p.9).

need to be understood from the interactions between technology characteristics and individual goals (Markus & Silver, 2008; Treem & Leonardi, 2012). On one hand, the same technology feature may have various affordances for individuals with different goals. For example, the document-exchanging feature in email, to individuals who want to speed up project progress, may afford rotating the responsibility for work-in-progress documents among distributed team members located in different time zones; the same feature, to individuals who want efficient discussions, may afford sharing individually collected referent information with coworkers sitting next to each other. On the other hand, different features may provide different affordances to individuals who have the same goal. For example, to people who need to collaborate virtually with others, a virtual platform transmitting greater symbol sets (e.g., video, audio) will afford different actions (e.g., expressing concerns via facial expressions) compared to one transmitting text only.

Some additional clarifications are needed. First, researchers recently have come to the agreement that affordances exist independent of perception (see Michaels, 2003 for a review). That is, affordances exist whether they are (immediately) perceived or not. For example, Leonardi (2011)'s study of CrashLab found that engineers did not discover some affordances until one year after the implementation of CrashLab. Second, even if technology affordances are perceived, they may not be exercised or actualized in the absence of related capability (Stoffregen, 2003; Volkoff & Strong, 2013). For example, Microsoft Visio affords drawing swim lanes for people who want to visually indicate assigned roles in a process. However, this affordance will not be exercised or actualized if people do not know how to use that feature in Visio. Third, affordances

should not be confused with effectivity, which is the "actual means of seizing affordances" (Michaels, 2003,p.140), or effectiveness (see Michaels, 2003 for a review). That is, technology may make it possible or easier for goal-oriented individuals to undertake certain actions, but there is no guarantee that individuals who utilize the focal technology will effectively undertake that action or better undertake it than those who do not utilize the technology.

In summary, technology affordances are the possibilities or ease of undertaking an action provided by a technology for goal-oriented individuals. Affordances depend on the interactions between technology features and individuals' goals. In this paper, I am interested in identifying clear opportunities to use technology to engage in ERSs. To that end, propositions developed in this essay identify specific technology features that facilitate the use of specific ERSs via providing certain technology affordances; I offer these with the acknowledgement of the following boundary conditions: technology affordances may or may not be perceived, exercised, and do not guarantee a successfully (or better) executed action. In other words, technology can provide affordances to goal-oriented individuals but it cannot make individuals take advantage of those affordances successfully. I now turn to a discussion of available media features, their capabilities, and how these might be leveraged to support ERSs.

Media Features

Media synchronicity theory (MST) (Dennis et al., 2008) is the chosen perspective to understand media features. The major reason for choosing MST is that features discussed in MST are objective physical features, which are more appropriate to be viewed as an element giving rise to media affordances (e.g., Majchrzak & Markus,

2012). Features discussed in alternative theories (e.g., media richness theory) are "socially derived characteristics (e.g., immediacy of feedback, personalization, social presence), whose salience is influenced by prior experiences and context of use" (Dennis et al., 2008, p.576). For example, channel expansion theory suggests that media richness may be influenced by factors such as familiarity with communication partners (Carlson & Zmud, 1999). According to MST, there are five fundamental features, i.e., symbol sets, transmission velocity, parallelism, rehearsability and reprocessability. For each feature, I provide examples of affordances in general communication to prepare readers for the subsequent proposition development.

Symbol sets is the number of ways via which a medium allows information to be encoded for communication (Dennis et al., 2008). Symbol sets may include facial expressions, gestures, tone of voice, emoticons and formatting features (e.g., capitalization, highlighting) (e.g., Byron, 2008; Walther, 1992; Walther & D'Addario, 2001). Greater symbol sets may afford, for example, communicating a sense of compassion (e.g., sympathetic facial expressions) that may be lost in text-based communication (e.g., Byron, 2008). Transmission velocity is the speed at which a medium delivers a message to intended recipients (Dennis et al., 2008). When the transmission velocity is low, the need for individuals to give immediate responses is reduced (Derks, Fischer, & Bos, 2008) which may afford delaying responses without offending communication partners (e.g., Reinsch, Turner, & Tinsley, 2008). Parallelism is the number of simultaneous transmissions that can effectively take place (Dennis et al., 2008). Parallelism may afford, for example, simultaneously expressing ones' opinions without being influenced by earlier speakers' opinions (Dennis, Valacich,

Carte, Garfield, Haley, & Aronson, 1997) and having multiple topics under active discussions at the same time (e.g.,Valacich, Paranka, George, & Nunamaker, 1993).

The above three features are relevant to both message senders and message receivers. A feature relevant to only senders is rehearsability, i.e., the extent to which the medium enables senders to rehearse or fine tune a message during encoding before sending (Dennis et al., 2008). Generally, rehearsability affords crafting the message in advance to get it just right (Riordan & Kreuz, 2010). A feature relevant to only receivers is reprocessability, i.e., the extent to which the medium enables a message to be reexamined during decoding, either within the context of the communication event or after the event has passed (Dennis et al., 2008).Reprocessability may afford, for example, reminding individuals about details of past communication and providing a reference to follow up on requests (Treem & Leonardi, 2012).

PROPOSITION DEVELOPMENT

In this section, I discuss media feature affordances for the use of ERSs in organizational communication. Some clarifications are needed prior to proposition development. First, I assume that individuals work in organizations with the same emotion regulation norms or rules across media features. The possibility that organizational norms or rules for emotion regulation may vary across media features (e.g., individuals are required by organizational display rules to appear friendly when they are on the phone but are free from such requirement in email communications) is excluded from considerations.

Second, goal-oriented individuals who seek to use ERSs may be message senders or receivers depending on the ERS used. Specifically, individuals are message

senders who need to ensure that emotional stimuli they send out to communication partners are appropriate when the focal ERS is display regulation and are message receivers who need to deal with incoming emotional stimuli from communication partners when the other ERSs are used. When individuals are receivers, their communication partners decide the media used for the interactions. As a result, individuals as receivers passively (rather than actively) benefit from affordances provided by media features.

Moreover, I assume that there is constant amount of incoming emotional stimuli sent from communication partners to individuals (who seek to employ ERSs). Here I focus on how media features facilitate the use of ERSs when individuals interact with the same amount of incoming emotional stimuli from partners; I do not consider the possibility that the amount of incoming emotional stimuli sent out by partners may vary across media features, e.g., if individuals contact communication partners via media with high reprocessability (e.g., email), then partners are likely to send out fewer undesired emotional stimuli than if the communication were in face-to-face (Orlikowski, 1996).

Last, the reappraisal strategy is excluded from proposition development because the use of reappraisal is unlikely to be affected by media. Reappraisal refers to regulating the emotional *interpretation* process via altering emotion feeling rules or schema so that individuals change how they interpret emotional stimuli prior to the arising of undesired emotional states (Elfenbein, 2007; Gross, 1998), e.g., bill collectors who adopt the emotional feeling rule that debtors do not deserve sympathy are less

likely to feel stressed when pressing debtors for payments. Reappraisal during the *interpretation* process is purely cognitive and is unlikely to be affected by media.

I present propositions organized around the ERSs.

Situation Selection and Modification

When undesired emotional stimuli are expected from communication partners, the situation selection and modification strategy suggests that individuals (as message receivers) should try to manage whether and how to interact with communication partners in order to limit their exposure to undesired emotional stimuli. Hence, media features that limit individuals' exposure to undesired emotional stimuli from partners, either by enabling individuals to avoid interacting with partners or by affecting how individuals interact with partners, may facilitate the use of situation selection and modification.

Among all the features discussed in MST, the features of rehearsability, transmission velocity and parallelism are less relevant for the use of situation selection and modification. When employing the situation selection and modification strategy, individuals are message receivers who seek to limit their exposures to undesired emotional stimuli. Hence, rehearsability, a feature relevant to message senders only, will not affect the use of situation selection and modification. The other two features (i.e., transmission velocity and parallelism) will not affect individuals' exposures to emotional stimuli. Specifically, transmission velocity merely affects how long emotional stimuli stay in the transmission but not the amount and type of emotional stimuli to which individuals are exposed; parallelism may increase the amount of stimuli transmitted per time period but not the total amount of stimuli transmitted.

The feature of fewer symbol sets may affect how individuals interact with communication partners, potentially limiting their exposure to undesired emotional stimuli during their interaction with communication partners. Both natural symbol sets (e.g., facial expressions) and non-natural symbol sets (e.g., emoticons, capital letters, and punctuation marks) may express emotions (e.g., Byron, 2008; Walther, 1992; Walther & D'Addario, 2001). The amount and type of symbol sets transmitted by media directly affect the amount and type of emotional stimuli to which individuals are exposed (e.g.,Côté, 2005). For example, research on bad news communication suggests that bad news senders may prefer to use media transmitting fewer symbol sets so as to reduce their exposure to recipients' reactions (e.g., facial expressions) to the bad news which are undesired emotional stimuli for themselves (e.g.,Sussman & Sproull, 1999; Weiss & Cropanzano, 1996). Hence,

> *Proposition 1: Fewer symbol sets may facilitate the use of situation selection and modification via the affordance of reducing emotional stimuli transmitted to individuals.*

The feature of lower reprocessability may also facilitate the use of situation selection and modification. The opportunity to revisit messages has been suggested to be beneficial in many contexts. For example, reprocessability affords sustaining knowledge over time in knowledge management (Treem & Leonardi, 2012), and providing a complete record of the communication to individuals who were not present when the communication occurred (Orlikowski & Yates, 1994). However, the sustaining undesired emotional stimuli are likely to be undesirable to individuals who seek to limit exposures to undesired emotional stimuli. Without reprocessability, communication is bounded in time (Hancock, Toma, & Ellison, 2007; Treem & Leonardi, 2012): if individuals are not exposed to emotional stimuli when the

communication occurs, they are unlikely to be exposed to those stimuli later. With higher reprocessability, however, individuals may be exposed to enduring emotional stimuli that they could have avoided otherwise (e.g., Berry, 2006; Leonardi, 2011). For example, individuals may decide not to pick up a call when anticipating that this call might make them negatively emotional. However, with the voice mail feature recording the message, individuals can be exposed to the emotional stimuli later, voiding individuals' attempt to avoid the phone call. Hence,

> *Proposition 2: Lower reprocessability may facilitate the use of situation selection and modification via the affordance of avoiding interactions with enduring emotional stimuli.*

Attention Deployment

Attention deployment often takes the form of (temporary) internal redirection of attention (i.e., turning attention away from undesired stimuli) in organizational contexts (e.g.,Elfenbein, 2007). Although attention deployment itself does not require much capability and can be executed by almost everyone, its actual use in organizational communication is often constrained by external factors. First, turning attention away from the communication is often deemed inappropriate by communication partners (Reinsch et al., 2008; Rimé et al., 1992; Turner & Reinsch, 2010). For example, Markus (1994) showed that an assistant was frustrated when her boss responded to emails during conversation with her, as "he's supposed to be talking to me" (p.141). Second, responses to communication partners may be delayed when individuals turn attention away. Delayed responses in situations where immediate responses are expected may lead to unpleasant feelings such as awkwardness and embarrassment and may lead to misattributions regarding the reasons for delayed responses such as disinterest and disengagement (e.g.,Cramton, 2001; Kalman & Rafaeli, 2011; Kalman, Ravid, Raban,

& Rafaeli, 2006; Lane, Koetting, & Bishop, 2002; Panteli & Fineman, 2005). Moreover, another potential negative consequence associated with not paying immediate attention is that details of the communication may face the risk of vanishing from individuals' memory (e.g.,Treem & Leonardi, 2012).

When attention deployment is used at the attention process, individuals are still message receivers. Hence, rehearsability (a feature relevant to senders) does not apply. Similarly, the opportunity for simultaneous transmission (i.e., parallelism) is not important for attention deployment when individuals are just attending to emotional stimuli from but have not responded back to communication partners. The other media features may help eliminate those external constraints discussed above, hence facilitating the use of attention deployment.

Fewer symbol sets may eliminate the concerns about potential negative reactions from partners (e.g.,Markus, 1994) by affording hiding individuals' use of attention deployment from partners. When the emotional communication is conducted via media transmitting fewer symbol sets, cues indicating individuals' attention deployment may not be transmitted to partners, hence eliminating the possibility of negative reactions from partners upon finding out individuals' attention deployment. An interviewee of a case study mentioned "I had a client who was very fond of talking. She called me and began talking about non-work, non-high priority items, and so I proceeded to write business emails while lightly listening to the client. I would occasionally respond to her making her feel like I was fully attentive, and I managed to get some work done at the same time" (Turner & Reinsch, 2010,p.283). In this example, cues indicating the interviewee's attention deployment (e.g., eyes looking at the computer screen) were not

transmitted through the phone, facilitating the use of attention deployment. Although this case study did not examine emotional communication, the same logic applies. Hence,

> *Proposition 3: Fewer symbol sets may facilitate the use of attention deployment via the affordance of hiding individuals' use of attention deployment from partners.*

Lower transmission velocity may eliminate the constraint on the enactment of attention deployment due to potential negative consequences associated with delayed response by providing the affordance of removing the necessity of paying immediate attention. When emotional stimuli are transmitted via media low in transmission velocity, the expectation for an immediate response is reduced. As a result, individuals are not forced to attend to emotional stimuli right away. Instead, they may focus on other tasks and attend to those emotional stimuli later without worrying about, for example, offending partners by not paying immediate attention (Riordan & Kreuz, 2010). As one individual explained it, "If someone…[sends a chat message to] you, you can put them on hold for a minute, two minutes, not be considered rude, whereas on the phone you can't" (Reinsch et al., 2008,p.396). Hence,

> *Proposition 4: Lower transmission velocity may facilitate the use of attention deployment via the affordance of reducing the necessity of paying immediate attention.*

Higher reprocessability may potentially eliminate the risk of forgetting when immediate attention is not paid to emotional stimuli and hence facilitate the use of attention deployment by providing the affordance of removing the necessity of paying immediate attention. Without reprocessability, the conversation is "bounded in time" (Treem & Leonardi, 2012,p.155), so is attention to the conversation. Although individuals can still turn attention away from the communication in the absence of

reprocessability, the presence of reprocessability, which reduces the dangers of stimuli vanishing, may increase the tendency for individuals to turn attention away. Research found that when there were multiple important communications competing for attention, individuals were likely to postpone attending to communications via media high in reprocessability because, for example, an email sitting in one's inbox can always be read later (e.g., Leonardi, Neeley, & Gerber, 2012). The higher tendency for individuals to postpone attending to communication via media with high reprocessability suggests that reprocessability makes it more feasible for individuals to turn attention away from emotional stimuli. Hence,

> *Proposition 5: Higher reprocessability may facilitate the use of attention deployment via the affordance of removing the necessity of paying immediate attention.*

Experience Regulation

In experience regulation, individuals seek to purposively change emotional states before responding to partners (e.g.,Elfenbein, 2007). Just like attention deployment, experience regulation often faces external constraints discouraging its use. A necessary condition to use experience regulation to change emotional states *before* responding to partners is providing the time needed to engage in experience regulation behaviors. Apart from the time constraint, what may also constrain the use of experience regulation is the potential negative reactions from partners upon finding out individuals' experience regulation behaviors (e.g.,Côté, 2005; Martin, Knopoff, & Beckman, 1998; Sutton, 1991; Tracy, 2000; Tracy & Tracy, 1998).

Just like what has been argued for attention deployment, the features of rehearsability (a feature relevant to message senders only) and parallelism (a feature comes into play during bi-directional communication between individuals and

communication partners) do not apply because individuals are not engaging in a response to communication partners when experience regulation is being used. Reprocessability (i.e., the ability to re-interpret the message) is less relevant either because experience regulation occurs *outside of the interpretation process*[3] (Elfenbein, 2007; Gross, 1998). The remaining features may remove the two constraints described above, hence facilitating the use of experience regulation.

Fewer symbol sets may eliminate individuals' concerns about potential negative reactions from partners by providing the affordance of hiding individuals' experience regulation behaviors from partners, hence facilitating the use of experience regulation. When the communication is conducted via media with fewer symbol sets, cues indicating individuals' experience regulation behaviors may not be transmitted to partners. For example, Tracy and Tracy (1998) found that 911 call-takers often utilize physical behaviors (e.g., making faces) to release their frustrations when interacting with callers via the phone. In this example, individuals' experience regulation behaviors (e.g., making faces) are hidden from callers because only call takers' tone of voice is transmitted by the phone but not their facial expressions or body languages. Should the interaction occurs via video calls where call takers' facial expressions and body languages are also transmitted, call takers would be restricted from engaging in those experience regulation behaviors when interacting with callers.

[3] Some might argue that reprocessability enables individuals to revisit an emotional communication after they are calmed down and that individuals are often less emotional during the revisit. However, the weaker emotional experience during the revisit occurs automatically (Fiske & Taylor, 1991) and is not due to "deliberate direct changes in emotional states" (Elfenbein, 2007, p.336), i.e., experience regulation.

Proposition 6: Fewer symbol sets may facilitate the use of experience regulation via the affordance of hiding individuals' use of experience regulation from partners.

The time constraint on the use of experience regulation may be eliminated by the affordance of providing the time needed to engage in experience regulation behaviors provided by the feature of lower transmission velocity. Partners' expectation for an immediate response is reduced when the communication is via media with lower transmission velocity (Derks et al., 2008; Reinsch et al., 2008), which allows individuals to take a moment off the emotional communication to engage in experience regulation behaviors. This affordance may be seen from a contrasting example in which the higher transmission velocity of face-to-face communication deprives individuals the time needed to engage in experience regulation -- A study of cruise staff found that staff received many suggestions regarding how to manage emotions at work such as "The best way to deal with stress is to never show it to the passengers or to the rest of the cruise staff. Instead, come back to the room and talk it out with me" (Tracy, 2000, p.108). The above advice suggests that it is hard for cruise staff to engage in experience regulation when they do not have a moment off ongoing interactions with customers.

Proposition 7: Lower transmission velocity may facilitate the use of experience regulation via the affordance of providing the time needed to engage in experience regulation.

Display Regulation

Display regulation has two subtasks, hiding undesired emotions (e.g.,Elfenbein, 2007) and projecting desired emotions (that may not be genuinely felt) in ways that appear authentic to communication partners (e.g., Derks et al., 2008; Gratz & Roemer, 2004; Kilduff et al., 2010). For example, sale associates need to hide frustrations from and express friendliness to difficult customers (e.g.,Elfenbein, 2007). Unlike attention

deployment and experience regulation whose utilizations face external constraints, display regulation is often (implicitly or explicitly) encouraged or required to be used in organizations (e.g.,VanMaanen & Kunda, 1989). What is challenging is whether individuals are able to successfully carry out the two subtasks of display regulation (on a frequent basis at work) (e.g.,Grant, 2013). Some features may enhance individuals' capability to carry out the two subtasks, hence facilitating the use of display regulation.

Greater symbol sets may both facilitate and inhibit the use of display regulation. On one hand, greater symbol sets may be leveraged to enhance individuals' capability of executing the subtask of projecting desired emotions via the affordance of providing symbol sets needed to project desired emotions. Emotional communication via media with fewer symbol sets is challenging and often leads to misinterpretations (see Byron, 2008 for a review), e.g., a joking message may appear sarcastic to partners. Consequently, individuals often choose media with greater symbol sets to express intended emotions. The use of emoticons shows an attempt to enrich symbol sets in order to communicate intended emotions (Barsade & Gibson, 2007; Walther & D'Addario, 2001), including insincere emotions that are desired to be displayed--"The use of emoticons, therefore, does not necessarily tell us that individuals experience an emotion, as it only conveys the conscious intentions and motives of the person using the emoticon" (Derks et al., 2008, p.13).

On the other hand, fewer symbol sets may be leveraged to enhance individuals' capability of executing the subtask of hiding undesired emotions via the affordance of preventing undesired emotional stimuli from being transmitted to partners. Research has long recognized benefits of selective self-presentation due to fewer symbol sets (e.g.,

(Walther & Burgoon, 1992), which can be applied to the selective expression of emotions. When the communication is conducted via media with fewer symbol sets, limited expressive cues will be transmitted to communication partners and hence need to be regulated. For example, individuals do not need to regulate facial expressions when the communication is via text-based media (e.g., email) because facial expressions will not be transmitted. In contrast, when the communication is via media with greater symbol sets, individuals need to make sure that all stimuli transmitted (e.g., tone of voice, facial expressions) are appropriate. However, maintaining emotion displays to be all-around appropriate is demanding (e.g.,Carlson, George, Burgoon, Adkins, & White, 2004; Derks et al., 2008; Ekman & Friesen, 1969; Walther & Boyd, 2002). Tracy's study on display regulation by cruise staffs found that a major difficulty was that when staffs were interacting with customers face-to-face, everything about them (e.g., tone of voice, smile) was subject to supervision. Display regulation might be less challenging if staff members were able to be partially on-stage (e.g., answering phone calls from customers).

In summary, the feature of symbol sets has contrasting impacts for the two subtasks of display regulation depending on the focus of display regulation (i.e., hiding undesired emotions or projecting desired emotions). Empirical support for the mixed impacts exists. For example, when asked about managing emotion displays, a 911 call-taker, who was often frustrated when interacting with callers and was required by organizational display rules to appear friendly, exclaimed "I can only do it because it's over the phone. I could never be so pleasant face-to-face" (Tracy & Tracy, 1998, p.402). In this example, symbol sets transmitted via the phone are "lean" enough to hide

undesired emotions (e.g., frustrated facial expressions) but rich enough to express desired emotions (e.g., pleasant tone of voice). Altogether,

> *Proposition 8a: When display regulation focus on expressing desired emotions, greater symbol sets may facilitate the use of display regulation via the affordance of providing symbol sets needed to project desired emotions.*
>
> *Proposition 8b: When display regulation focus on hiding undesired emotions, fewer symbol sets may facilitate the use of display regulation via the affordance of preventing undesired emotional stimuli from being transmitted to partners.*

Lower transmission velocity may contribute to successful utilizations of display regulation via the affordance of providing the time needed to engage in display regulation. Research on deception suggests that high feedback immediacy puts deceivers in an unfavorable position because they are not given time "to plan, edit, or rehearse message content and style and must instead respond 'on the fly' to receiver skepticism or queries" (Carlson et al., 2004, p.21). The argument applies to emotion expressions: when the communication is via media with higher transmission velocity, individuals, who may be expected to provide immediate responses, do not have the time to carefully hide undesired emotions or to paint on desired (although in-genuine) emotions. As a result, their emotion expressions are more reactive rather than reflective (i.e., carefully crafted) (Berry, 2006; Derks et al., 2008). Empirical research on social support in computer-mediated environment suggests that lower transmission velocity provides individuals the time needed to provide thoughtful emotional supports to others (Braithwaite, Waldron, & Finn, 1999).

> *Proposition 9: Lower transmission velocity may facilitate the use of display regulation via the affordance of providing the time needed to engage in display regulation.*

Higher rehearsability may contribute to successful utilizations of display regulation via the affordance of providing individuals the opportunity to craft emotion

expressions in advance. Rehearsability, in general, enables individuals to "compose the message and get it just right" (Riordan & Kreuz, 2010, p.1669). In display regulation, rehearsability enables individuals to craft their emotion expressions to hide undesired emotions and to paint on desired emotions. Tracy (2000) found that cruise staffs use mirrors in the elevator to check their smiles before going to the work zone to interact with customers. Rehearsability works just like the mirror, enabling individuals to carefully craft emotion expressions prior to responding (Dennis et al., 2008; Treem & Leonardi, 2012). Hence,

> *Proposition 10: Higher rehearsability may facilitate the use of display regulation via the affordance of providing the opportunity to craft emotion displays in advance.*

Reprocessability (a feature relevant to receivers only) does not apply to display regulation because individuals are senders when display regulation is employed. Parallelism is not expected to be important neither: some might argue that with low parallelism, the turn-taking during the communication gives individuals a moment off to, for example, hide undesired emotions. It's more accurate to argue that what enables "a moment off" is lower transmission velocity rather than parallelism.

DISCUSSION

The research objective was to develop an understanding of the facilitating role of communication media for the use of ERSs in organizational dyadic communication. I rely on the emerging technology affordance perspective as the principle theoretical lens to understand the role of communication media and deductively develop a set of propositions regarding media affordances that exist at the intersection of ERSs and media features (as discussed in MST). In achieving this objective, I contribute to the literature in two major ways.

The understanding developed regarding the facilitating role of media for the use of ERSs is a major contribution to the emotion regulation literature. Organizational communication is increasingly conducted via media. Knowledge accumulated from the existing IS literature suggests that media is not just the context where the interpersonal interaction occurs; media, instead, may be leveraged to facilitate interpersonal communication. Here I examine how media may contribute to successful utilizations of ERSs, an under-examined phenomenon in the existing emotion regulation and IS literatures. I summarize and reorganize propositions regarding affordances that exist at the intersection of media features and individuals' desires of utilizing ERSs in Table 2. Essentially, media may facilitate the use of ERSs via reducing the emotion regulation workload (i.e., the amount of incoming emotional stimuli that individuals have to deal with, or the amount of ones' expressive cues that individuals have to regulate to be appropriate) (P1, P2 and P8b), hiding the use of ERSs from communication partners (who often react negatively towards individuals' use of ERSs) (P3 and P6), and providing the prerequisites (e.g., time, crafting opportunity, symbol sets) needed to use ERSs (P4, P5, P7, P8a, P9 and P10). These affordances provided by media make it possible or easier to fulfill the organizational requirement on emotion regulation, reducing potential negative consequences on individuals who have to engage in emotion regulation on a frequent basis at work.

Apart from bringing in a theoretical contribution to the emotion regulation literature, propositions developed in this paper may offer practical implications regarding which media feature(s) may be leveraged to facilitate the use of a certain ERS. I briefly summarize the role of each of the media features discussed in MST.

Table 2 ERSs, Features and Affordances

Categories of Affordances	**Affordance as in the Propositions**	**Elements Giving Rise to an Affordance**	
		Goal: to use the ERS of	**Media Feature**
Reducing emotion regulation workload	Reducing emotional stimuli transmitted to individuals (P1)	Situation selection and modification	Fewer symbol sets
	Avoiding interactions with enduring emotional stimuli(P2)		Lower reprocessability
	Preventing undesired emotional stimuli from being transmitted to partners (P8b)	Display regulation	Fewer symbol sets
Hiding individuals' use of ERSs from partners	Hiding individuals' use of attention deployment from partners (P3)	Attention deployment	Fewer symbol sets
	Hiding individuals' use of experience regulation from partners (P6)	Experience regulation	
Providing prerequisites needed to use ERSs	Reducing the necessity of paying immediate attention(P4 & P5)	Attention deployment	Higher reprocessability
			Lower transmission velocity
	Providing the time needed to use ERSs (P7& P9)	Experience regulation	
		Display regulation	
	Providing the opportunity to craft emotion displays in advance (P10)		Higher Rehearsability
	Providing symbol sets needed to project desired emotions (P8a)		Greater symbol sets

Symbol sets may affect the use of all of the ERSs examined in this paper. A key point to this is an understanding of when in the emotional process one needs greater versus fewer symbol sets. For the use of situation selection and modification, fewer symbol sets reduces exposure to undesired emotional stimuli, preventing undesired emotional feelings from arising. Fewer symbol sets may facilitate the use of attention deployment and experience regulation via affording hiding individuals' use of ERSs from communication partners who often respond negatively when finding out individuals' attention deployment or experience regulation behaviors. Finally, symbol sets has mixed impacts for the use of display regulation which includes two subtasks, hiding undesired emotions and projecting desired emotions that may not be genuinely felt. Specifically, fewer symbol sets facilitates the use of display regulation (to be exact, the subtask of hiding undesired emotions) via the affordance of preventing undesired emotional stimuli from being transmitted to partners, while greater symbol sets facilitates the use of display regulation (to be exact, the subtask of projecting desired emotions) via the affordance of providing the symbol sets needed to express desired emotions.

Lower transmission velocity may facilitate the use of three of the four ERSs (i.e., attention deployment, experience regulation, and display regulation) for the same reason (i.e., providing the time needed to use a certain ERS). Higher transmission velocity increases the need for individuals to provide immediate responses. As a result, individuals are deprived of opportunities to deploy attention away from undesired emotional stimuli, to engage in experience regulation behaviors to change their emotional states, or to craft emotion displays to hide undesired emotions and to paint on

desired emotions that are often not genuinely felt. Transmission velocity, however, does not affect the use of situation selection and modification because it merely affects how long stimuli stay during transmission but not the amount and type of stimuli transmitted. In summary, after individuals are exposed to undesired emotional stimuli, lower transmission velocity is likely to be facilitating across subsequent processes.

Rehearsability and reprocessability, because they are specific to whether individuals are message senders or message receivers, are less broadly applicable but provide key support for emotion regulation. Higher rehearsability in general allows individuals to craft messages in advance and to communicate in a reflective (rather than reactive) way. In emotional communication, higher rehearsability facilitates the use of display regulation by providing individuals opportunities to craft emotion expressions in advance (to make sure that undesired emotions are masked and that desired emotions are painted on prior to responding). Reprocessability has contrasting impacts for the use of two of the four ERSs examined. Higher reprocessability may inhibit the use of situation selection and modification by exposing individuals to enduring emotional stimuli that could have been avoided; higher reprocessability, however, may facilitate the use of attention deployment by freeing individuals from paying immediate attention to emotional stimuli. As such, higher reprocessability may or may not be preferred for emotion regulation depending on where in the emotional process individuals are, i.e., before (after) individuals are exposed to emotional stimuli, lower (higher) reprocessability may be preferred.

Parallelism is not expected to be important for the use of any ERSs. Higher parallelism may increase the volume of stimuli transmitted per time period (e.g.,

Burgoon, Bonito, Bengtsson, Ramirez, Dunbar, & Miczo, 1999) because simultaneous transmissions may occur "at any moment, without having to wait for the channel to clear or open" (Dennis et al., 2008, p.585). However, parallelism does not affect the total volume of emotional stimuli transmitted, and hence, does not affect the use of situation selection and modification. When individuals are seeking to use the other ERSs (i.e., attention deployment, experience regulation, and display regulation), there is not much bi-directional transmission between individuals and their communication partners. As a result, the opportunity for simultaneous transmission provided by higher parallelism is unlikely to affect the use of those ERSs.

The second major theoretical contribution of this paper is that I apply the emerging technology affordance perspective to a specific context and generate some testable propositions. Technology affordance is a new perspective being applied to understanding technology use and consequence. Majchrzak and Markus (2012) argued that for the technology affordance perspective "to generate testable predictions about human and organizational behavior and outcomes, the concepts of "affordance"…should be concretely examined for particular categories of technologies and use settings" (p.4). This paper is an answer to Majchrzak and Markus's call for future research. Specifically, I apply the technology affordance perspective to examine emotion regulation in computer-mediated communication in organizations, a context receiving much less attention from IS researchers than its opposites (e.g., flaming). Identified media affordances suggest that media may make it possible or easier for individuals to regulate emotions by providing the prerequisites (e.g., the time needed) for or removing the constraints (e.g., potential negative consequences associated with

using ERSs) on utilizing ERSs as well as by reducing emotion regulation workload. Future empirical tests of propositions developed in this paper may help establish the status of the technology affordance perspective as a lens to understand technology use and consequence.

CONCLUSION

Applying the emerging technology affordance perspective, I examine affordances provided by media features to individuals who seek to utilize emotion regulation strategies to regulate undesired emotional experiences or expressions in organizational dyadic communication. This paper may contribute to both the emotion regulation and the technology affordance literatures; it may also offer practical implications regarding which media features may be leveraged to facilitate emotion regulations at the workplace.

CHAPTER 3: COMMUNICATION MEDIA FEATURE AFFORDANCES FOR THE USE OF EMOTION REGULATION STRATEGIES: A THEORY OF HOSTILITY DECONTAMINATING

ABSTRACT

Utilizing a case-based and inductive approach, I identify communication media affordances that support systemic and individual emotion regulation within a Fortune 500 Energy company's information technology (IT) help desk. Results revealed communication media can facilitate emotion regulation by affording a *hostility decontaminating* function (an original concept) such that individuals used media strategically to resist "contamination" by their communication partners' emotionally-charged messaging (i.e., hostility). These hostility-decontaminating affordances exist at two levels: a system (i.e., team) level affordance (i.e., *hostility filtering*) and individual level affordances (i.e., *hostility isolating, hostility barriering, and hostility containing*). At the system level, *hostility filtering* may be leveraged by leaders on behalf of the system to prevent contaminating members who belong to the system. At the individual level, *hostility isolating* may be leveraged by individuals to avoid contaminating oneself, while *hostility barriering* may be leveraged to weaken or delay contamination; *hostility containing* may be leveraged to avoid contaminating outsiders, who are not involved in the hostile communication exchange. I also examine media features giving rise to identified affordances. Contributions and implications are discussed.

INTRODUCTION

Emotion regulation refers to the attempt to influence which emotions we have, when we have them, and how these emotions are experienced or expressed (Gross, 1998). Emotion regulation has been examined in many contexts, such as the interaction between employees and customers (or emotional labor; Hochschild, 1983), between supervisors and subordinates (e.g., Fisk & Friesen, 2012), and between coworkers (e.g., Kramer & Hess, 2002).

Emotion regulation is important for managing emotion contagion, or the tendency for individuals to converge emotionally (Hatfield & Cacioppo, 1994). Emotion contagion was initially examined at the dyadic level and then extended to the group level (Barsade & Gibson, 2007). When it comes to negative emotions, individuals are more likely to resist contagion with negative emotions (e.g., Festinger, 1954; Robinson & Smith-Lovin, 1992; Sutton, 1991; Wharton & Erickson, 1993). Research at the intersection of emotion regulation and emotion contagion (e.g., Hennig-Thurau, Groth, Paul, & Gremler, 2006; Humphrey, Pollack, & Hawver, 2008) suggests that individuals may engage in emotion regulation to prevent being contaminated by communication partners' negative emotions (e.g., Tracy & Tracy, 1998), to weaken the contamination (e.g., Sutton ,1991), and to diminish negative consequences should the contamination occur (e.g., individuals fulfill job requirements of being upbeat despite being contaminated by customers' negative emotions; e.g., Tracy, 2000).

Emotion regulation strategy (ERS) is the specific method individuals employ to regulate their emotion (Gross, 1998). Existing research on what contributes to successful utilizations of ERSs focused on individuals' internal capabilities such as self-

efficacy (e.g., Brotheridge & Grandey, 2002) and improvement efforts focused on individuals' internal capabilities such as training (e.g., Grant, 2013). However, what remains largely unexamined is whether and how individuals capitalize on tools external to them to regulate emotion in communication exchanges, such as the facilitating role provided by some communication media. The facilitating role of communication media can be inferred from existing case studies where communication media were used in the emotion regulation process. For example, when asked about managing emotional displays, a 911 call-taker exclaimed, "I can only do it because it's over the phone. I could never be so pleasant face to face" (Tracy & Tracy, 1998, p.402). That is, the call-taker perceived managing emotion expressions to be easier when communication was via the phone.

The facilitating role of communication media for the use of ERSs has also been ignored in the information system (IS) literature. Existing IS research focuses instead on how computer-mediated communication affects individuals' *awareness of and motivation* to regulate emotion in messaging. For example, research on flaming suggests that the computer-mediated communication (CMC) environment (e.g., anonymity) may reduce individuals' motivations to engage in emotion regulation (e.g., Kiesler et al., 1984; Spears & Lea, 1994). How communication media may facilitate the use of ERSs *once individuals are motivated to regulate emotion* has not been explicitly investigated by IS researchers.

In order to investigate this phenomenon I conducted semi-structured interviews with 20 help desk employees at a large company. Drawing on my analysis, I propose that communication partners' emotionally-charged messaging (i.e., hostility) at work

are like viruses, that regulating emotion when interacting with hostile partners is akin to resisting contamination with viruses, and that communication media may facilitate emotion regulation via its potential for *hostility decontaminating*. Also, the hostility decontaminating potential has several aspects existing at the system (i.e., team) level (i.e., hostility filtering) and the individual level (i.e., hostility isolating, hostility barriering, and hostility containing).

In the following paragraphs, a review of the literature on ERSs is offered, followed by an explanation of a new theoretical lens for understanding the facilitating role of media, technology affordance and constraint theory (e.g., Markus & Silver, 2008).

BACKGROUND LITERATURE

Emotion Regulation Strategies (ERS)

ERS refers to the group of methods individuals employ to manage what emotion they have, when they have the emotion and how the emotion is experienced or expressed (Gross, 1998). The reference to "group of methods" captures the fact that there may be multiple specific methods employed under any given ERS. Syntheses of the emotion regulation literature (see Elfenbein, 2007; Gross, 1998 for reviews) suggest that there are five major ERSs that are distinguishable by the point in the emotional process when they have their primary influence (Gross & Thompson, 2007, p.14). Note that individuals do not have to use all ERSs sequentially to regulate their emotions.

The earliest ERS to be identified by researchers is situation selection and modification, in which individuals may select or modify the situation to regulate their exposures to emotional stimuli. Situation selection may include avoiding a situation

with undesired emotional stimuli or approaching a situation with desired emotional stimuli; for example, an individual may delete an email without reading it when perceiving—because of whom it is from—that this email may make him/her negatively emotional. Situation modification refers to modifying situation features to reduce (increase) the amount of undesired (desired) emotional stimuli to which individuals are exposed; for example, an individual may prefer emails (over face-to-face communications) to deliver bad news to avoid seeing the receiver's reactions to the bad news, which may consequently induce stress (e.g., Sussman & Sproull, 1999).

After individuals are exposed to emotional stimuli, attention deployment can be used to regulate emotion as attending to emotional stimuli is a necessary condition for an emotional feeling to arise (Elfenbein, 2007). In organizational contexts, attention deployment often takes the form of temporary internal redirection of attention (Gross & Thompson, 2007). For example, an individual may decide to read an email later when perceiving—because of whom it is from—that this email may make him or her experience negative emotions.

After individuals attend to emotional stimuli, the kinds of emotions that arise depend on how individuals interpret stimuli. Reappraisal (i.e., altering emotional feeling rules or emotional schema) can be utilized during the interpretation process in which individuals interpret the emotional stimuli in a new way, resulting in a different emotional feeling (e.g., Elfenbein, 2007; Gross, 1998). For example, an individual may decide to believe that, because emotion in email is often subject to misinterpretation (Byron, 2008), what the sender intended to convey was not as aggressive as the message seemed.

Experience regulation requires deliberate changes in emotional states outside of the registration process via "a host of psychodynamic defense mechanisms" (Elfenbein, 2007, p.336) such as suppression, denial, venting (e.g., punching a desk, Sutton, 1991), and social sharing, which refers to talking about emotions with others in order to change one's emotional state (Rimé et al., 1992). For example, an individual may talk with a colleague about the content of an email as a means of coping with the negative emotions triggered by the message.

Display regulation concerns the managing of external emotion expressions without changing internal emotional states. Display regulation often involves two sub-tasks, hiding undesired emotion expressions (that one is not supposed to display) and displaying desired emotion expressions (that may or may not be genuinely felt). Continuing the examples using email, display regulation might take the form of sending an email response that is upbeat even though the sender is irritated.

In summary, the emotion regulation literature provides insight into ERSs that can be used to regulate emotion. Also, these ERSs can be employed during communication conducted via media (e.g., Tracy & Tracy, 1998). Importantly, the IS literature suggests that media may be a double-edged sword—empowering and impeding individuals' use of ERSs (e.g., Sussman & Sproull, 1999; Walther, 2007). In the following section, technology affordance and constraint theory is offered as a theoretical perspective for explaining the role of media in facilitating or inhibiting the use of ERSs (e.g., Markus & Silver, 2008).

Technology Affordance and Constraint Theory

Technology affordances refer to possibilities for (Markus & Silver, 2008) or the ease of (Leonardi, 2011; Strong et al., 2014; Treem & Leonardi, 2012) taking certain actions provided by a technology for goal-oriented individuals. Technology constraints, in contrast, refer to the lack of possibilities for or the difficulty of taking certain actions in the achievement of goal-oriented behavior. Researchers suggested technology (i.e., media) affordances should be examined at the feature level, which may increase the transferability of research findings to like contexts (e.g., Dennis et al., 2008). That is, instead of identifying, for example, the affording role of email for emotion regulation, researchers should examine the affordance provided by the feature of fewer symbol sets, because such understanding may apply to other media (e.g., chat) with the feature of fewer symbol sets. Also, if a feature affords certain action potential, then the lack of this feature constrains such action potential (Leonardi, 2011). Combining a media feature-affordance perspective with an understanding of ERSs draws our attention to how ERS theorizing could be extended to include the ways teams and individuals activate technological affordances for emotion regulation purposes in workplace settings.

Despite the existence of different affordance perspectives (e.g., Norman, 1988), researchers in the area of technology use and consequence agree generally that technology affordance is a relational concept that depends on interactions among technology features and individuals' goals (e.g., Strong et al., 2014; Volkoff & Strong, 2013). Importantly, affordances are distinct from technology capabilities. Technology capabilities are what a technology feature allows individuals to do, and are the same across all individuals' usage (or goals). Technology affordances, in contrast, are how

individuals use technology capabilities in pursuit of their goals. The same feature may offer different affordances for individuals with different goals. For example, the feature of document attaching in email offers the capability of sending files to others. This feature may afford rotating the responsibility of working on a project among distributed team members with different working schedules for individuals who want to speed up the project progress, and may afford sharing files with team members sitting next to each other for individuals who want efficient discussion.

To date, no research conceptualizes communication media as providing affordances for emotion regulation. I investigate affordances (or the action potentials) provided by media, which could explain how and why media facilitate the use of ERSs in achieving emotion regulation purposes (Volkoff & Strong, 2013). Further, I seek to understand the media features giving rise to media affordances to improve transferability of my findings resulting in practical guidance regarding which media feature(s) to use in order to leverage certain media affordances in support of emotion regulation. Thus, I asked:

> *RQ1: What are the media affordances for individuals who seek to engage in emotion regulation?*
>
> *RQ2: Which media feature(s) provide each affordance?*

RESEARCH SETTING

I employed a case-based, inductive, and qualitative study approach (Elliott & Lazenbatt, 2005), which allowed us to investigate media affordances in support of emotion regulation without needing to test preconceived notions. In the following, the case organization is explained; then, data collection and analysis processes are described in detail.

Interviews were conducted at a Fortune 500 Energy Company headquartered in a Midwestern US city. IT help desk employees within the service center (SC) and within two teams that work closely with the SC (i.e., the end user support team and the business partner team) participated. The SC is the first point of contact for employees (referred to as "customers"), who have problems with technology. When fielding a request for support, SC members (SCMs) can (a) solve the problem themselves, (b) assign tickets to initiate work by other IT teams based on the information provided by customers, or (c) attempt to solve the problems and then later assign it to other IT teams, if unable to resolve those problems. The end user support team—apart from helping customers solve hardware problems physically—interacts frequently with almost all IT teams, including the SC via communication media. The business partner team is viewed as the messenger between the IT side and the business side of the organization and also interacts frequently with the SC via communication media. These IT help desk employees are appropriate for this study as they rely extensively on communication media for interaction with others within the organization, and, according to the extant literature (Rutner et al., 2008), are emotional laborers who need to engage in emotion regulation at work.

A general understanding of the media ecosystem at the participating organization is integral to understanding how interviewees described the affordances of communication media in regulating emotions and media feature(s) providing each media affordance. I visited and observed the SC prior to the formal data collection. The SC manager, who was not one of the interviewees, was asked to describe the SC

structure, job duties, team goals, and individual performance matrices. The manager also demonstrated how communication media were used.

A description of media available at the participating organization as well as usages and specific features of those media is summarized in Table 3. Further, media, apart from being used at the individual level, may also be used at the system (i.e., team) level: Sometimes leadership at the SC utilize media on behalf of the SC to announce problems to users when problems are expected to have big impact (number of calls coming in, wait times, etc.). Problem announcements are posted on the front-end message of the phone system and the CASD (i.e., a help desk software provided by CA Technologies). In both ways, known outages or issues are announced along with assurances that problems are being addressed.

METHODOLOGY

Data Collection

Prior to the formal data collection, I conducted pilot interviews with four MBA students with varying levels of work experience. The purpose of pilot interviews was to expose unexpected issues created by the schedule and/or wording of questions and to assess how comprehensively research questions would be addressed prior to formal data collection. After pilot interviews, one ERS (reappraisal) was dropped from the schedule of questions because the pilot results suggested that media do not afford or constrain the use of reappraisal. It is necessary to point out that interviewees during the formal data collection voluntarily mentioned their use of reappraisal at work. Yet, similar to the pilot interviews, media did not facilitate or inhibit interviewees' use of reappraisal.

Table 3 Communication Media, Usage and Specific Features

Communication Media	Media Usage Specific Features
The Phone	◦ One major way for customers to contact the SC. Phone calls are made to the SC 800 number (rather than a certain SCM's direct extension), waiting in the call queue. ◦ Can be used by the SC to announce problems to customers (see below the feature of front-end message).
	◦ **Automatic assigning**. Calls made to the SC will be in the call queue and be automatically assigned to a certain SCM based on the SCMs' statuses in the call queue. ◦ **On-mute and on-hold**. On-hold terminates bidirectional transmission while on-mute terminates unidirectional transmission (i.e., it mutes whoever uses the on-mute button). ◦ **Camera on the phone**. Work phones have a camera that can be turned on/off by individuals on their side. ◦ **Documentation of the phone**. All phone calls are recorded. ◦ **Front-end message of the phone system**. Problem announcements on the front-end message of the phone system are played to incoming phone calls in the call queue.
The Self-service Ticketing System	◦ The other major way for customers to contact the SC. Customers can create their own tickets, which will be included in the ticket queue (with the ticket number and customer name displayed). ◦ Can be used for communication with peers (i.e., other IT personnel) by adding notes in the tickets.
	◦ **The lack of automatic assigning**. Tickets in the queue are not assigned; SCMs pick tickets to work on.
Instant Messaging (IM)	◦ IM (i.e., MS Lync, also referred to as chat) is sometimes used by customers to contact the SC. SCMs can create a ticket according to the chat with the customer. ◦ Generally, IM is used more often on the IT side than on the business side.
	◦ **IM status**. IM status reveals individuals' availability for interaction. ◦ **The lack of documentation**. IM messages are not documented
Email	◦ Email is widely used at the organization.
	◦ **Documentation of the email**. All email exchanges are documented.
Hot board	• Hot board is used to broadcast messages for all SCMs. Postings on hot board also generate automatic emails to all SCMs so that the same information is viewable in two places. Postings on hot board are threaded by subject and typically include information on the current status of an issue (e.g., impacted tools)
CASD	• CASD is the other way—the first being front-end message of the phone system—used by the SC to announce problems to customers. The CASD page is the default page when people open their browser and problem announcements will be displayed on the right hand side.

The formal interviews were conducted in two phases: Eleven SCMs were interviewed during the first phase. While the majority of information provided during the first phase focused on emotional interaction with customers, some was about emotional communication with peers. Interviewees seemed to hold a different attitude towards emotion regulation in peer-peer interactions (e.g., emotion is less regulated during interactions with peers). Hence, the second phase of the interviews focused on peer-peer interactions. The SC manager helped to identify appropriate interviewees—those who interact frequently with peers via media—for the second phase. Nine more help desk employees (three SCMs, four members of the end user support team, and two members of the business partner team) were interviewed during the second phase. Each interview lasted about one hour. The interviews rendered approximately 461 double-spaced pages of transcripts. Primary interview questions are listed in Appendix A.

The first interview questions asked interviewees to think about emotion broadly (i.e., negative and positive, weak and strong) and to discuss emotional experience due to interpersonal interactions with customers, peers, supervisors, or subordinates at work. Interviewees' answers to these questions focused overwhelmingly on negative emotions. Hence I phrased subsequent questions (i.e., recalling incidents of using a certain ERS during computer-mediated interactions) from the perspective of regulating negative emotions in each interview. For example, although situation selection and modification includes *avoiding undesired emotional stimuli* and *approaching desired emotional stimuli*, I asked interviewees to recall an instance in which they were trying to avoid a computer-mediated communication that might make them (negatively) emotional.

All interviews were semi-structured, which means researchers followed a schedule of questions but were also free to ask follow-up questions and probe for elaboration (Rubin & Rubin, 2011; Tracy, 2010). The semi-structured interview enables deep exploration of the research questions and researchers can test their understandings of interviewees' remarks throughout the interview itself (e.g., Furneaux & Wade, 2011). Data collection and analysis occurred iteratively according to the guidance for improving the quality of qualitative research (Eisenhardt, 1989; Tracy, 2010).

Data Analysis

The two research questions (i.e., identifying media affordances for emotion regulation and feature(s) providing each affordance) needed to be addressed in sequential order. Hence, the initial analysis efforts focused on identifying media affordances. After that, another round of coding was conducted to identify feature(s) providing each affordance.

To identify media affordances for emotion regulation, transcriptions were analyzed using a modified version of constant comparative analysis (Charmaz, 2006; Glaser & Strauss, 1967) in which data were sorted inductively without working from preconceived categories (cf. Kelley & Bisel, 2014; Kramer & Crespy, 2011). The analysis proceeded in the following steps: after data reduction (Lindlof & Taylor, 2011), I conducted line-by-line open coding for all twenty interview transcripts. Next, I engaged in a process of sorting all open codes into similar categories. This process, sometimes labeled, "focused coding," involves a constant comparison of codes to codes, codes to categories (i.e., a set of codes that are similar), and categories to categories in order to find the best-fitting category. In my case, categories were identified

corresponding to media affordances facilitating emotion regulation. Focused coding took several rounds and continued until no category was identified and existing categories remained stable, achieving theoretical saturation (Glaser & Strauss, 1967). A label was then created for each of the media affordance categories that emerged from the data. Finally, in a process similar to axial coding (i.e., analyzing data as a coherent whole in relation to emerged categories, e.g., Charmaz, 2006), the interrelationships among identified media affordances were determined.

To identify feature(s) providing each media affordance, I revisited transcripts. I first coded media features using the feature label as described by interviewees (so-called, "in-vivo" coding; e.g., camera on the phone, the mute button). Next, features described by interviewees (specific to the participating organization) were coded in terms of the features already identified in the CMC literature. Here, I started with preconceived categories of general media features—the set of media features discussed in media synchronicity theory (MST) (Dennis et al., 2008), namely, symbol sets, transmission velocity, parallelism, rehearsability, and reprocessability—but remained open to interview comments that did not necessarily fit with preconceived categories of general media features. During the process of comparison and re-categorization when trying to relate specific features back to general features, it became clear that there were some general features not accounted for by MST. A revisit to the CMC literature was made to label those general features unaccounted for by MST. A summary of general media features used in coding and corresponding specific features of the media available in the participating organization is listed in Table 4. Note that discussions of specific features in organizationally available media are limited to non-universal operationalizations of

general features. For universal operationalizations, please refer to the CMC literature (e.g., Dennis et al., 2008; Maruping & Agarwal, 2004; Reinsch et al., 2008).Also, specific feature is in *italic* to indicate a lack of the corresponding general feature.

Because MST is a frequently discussed theory in the CMC literature, I provide clarifications only for those general features identified during the coding but unaccounted for by MST. Receiving (Grohowski, McGoff, Vogel, Martz, & Nunamaker, 1990; Hiltz & Turoff, 1985) and recipient specification (Gruzd, 2013; Rice, 1987) allow individuals to control the upstream (i.e., specifying whether to receive messages when individuals are receivers) and the downstream (i.e., specifying who may receive messages when individuals are senders) of the communication respectively. Message blocking (i.e., the ability to terminate message transmission, Hiltz & Turoff, 1985) differs from receiving/recipient specification in that the focus of message blocking is *whether message transmission occurs* while the focus of receiving/recipient specification is *who (sender or receiver) is involved in message transmission*. Finally, compartmentalization is related to but not identical with fewer symbol sets—"While negatively correlated with social presence (Short, Williams, & Christie, 1976) and media richness (Daft & Lengel, 1986), compartmentalization concerns the cross-conversational availability of cues, rather than the number and types of cues available within a single interaction" (Reinsch et al., 2008, p.396). Hence, compartmentalization only comes into play when there are multiple simultaneous communications.

Table 4 General Media Features and Corresponding Specific Features in Organizationally Available Media

General Feature	Definition	Corresponding Specific Feature
Symbol Sets	The number of ways in which a medium allows information to be encoded for communication (Dennis et al 2008)	• Camera on the phone
Transmission Velocity	The speed at which a medium delivers a message to intended recipients (Dennis et al 2008)	
Parallelism	The number of simultaneous transmissions that can effectively take place (Dennis et al 2008)	
Rehearsability	The extent to which a medium enables the sender to rehearse or fine tune a message during encoding, before sending (Dennis et al 2008)	
Reprocessability	The extent to which a medium enables a message to be reexamined during decoding, within the context of the communication event or after the event has passed (Dennis et al 2008)	• Documentation of the phone call /email versus. *the lack of documentation of IM*
Synchronicity	The extent to which a medium enables individuals to achieve a state in which actions move at the same rate and exactly together (Dennis et al 2008)	
Message Broadcasting	The ability to transmit messages to (Katz &Te'eni, 2007)	• Problem announcement on CASD/ the front-end message of the phone system • IM status
Message Blocking	The ability to terminate message transmission (Hiltz& Turoff , 1985)	• On-mute and on-hold
Recipient Specification	The ability to specify potential recipients who may get the communication message (Gruzd, 2013; Rice, 1987)	• Individual (i.e., individual chat, direct phone extension) versus. *group* communication medium (i.e., group chat, call queue).
Receiving Specification	The ability to choose whether to receive messages (Grohowski et al 1990; Hiltz & Turoff,1985)	• *Automatic assigning of the call queue* versus. the lack of automatic assigning of the ticketing system/group chat.
Compartmentalization	The extent to which a medium restricts the concurrent availability of communicative cues from an interaction to only those participating in the interaction (Reinsch et al 2008)	

Finally, I conducted member checking of all findings to verify with three interviewees whether my results accurately characterized their experiences with media affordances in their own work practices (Lindlof & Taylor, 2011). Members supported findings strongly. I also asked interviewees to recall alternative experiences (so-called, negative cases) that challenge or are unaccounted for by my findings.

RESULTS

Understandings obtained in this study are specific to emotion regulation when interacting with communication partners (e.g., customers, peers) expressing negative emotions at work. Frequently mentioned negative emotions expressed by communication partners include frustration (mentioned by 19 interviewees), and anger (mentioned by 10 interviewees). I use "hostility" to label the emotionally-charged behaviors encountered by my interviewees. The term "hostility" has been used in similar research (e.g.,Goldberg & Grandey, 2007) and seemed to make sense to interviewees--one interviewee mentioned "we all know that sarcasm is a hidden form of hostility." Further, results pointed to two types of hostility: one type of hostility, which could come from a customer, a peer /supervisor/subordinate working in one's own or another IT team, targeted a specific SCM; the other type of hostility, which mainly came from customers, targeted the service center team (SCT) as a whole.

During the analysis, it occurred to me that hostility (from partners) can be thought of as having "contagious" qualities, and that individuals' attempts to regulate emotion when interacting with hostile partners is akin to resisting contamination with contagious viruses in the medical context. Emotional contagion occurs frequently at the participating organization. For example, an interviewee commented, "In a lot of times

it's kind of a mirror effect where sometimes you feel that it affects you when they call in and they are upset and you let it upset you and it just makes them more upset." Identified media affordances for emotion regulation suggest that media may counteract emotional contagion, "reducing unwanted emotional experience and the downstream effects that this experience has on others" (Elfenbein, 2007, p.335). However, no existing theoretical framework is able to account for the dynamics interviewees described regarding the facilitating role of media sufficiently. Hence, I borrowed from the medical metaphor when labeling identified media affordances, and thereby developed a theory of *communication media affordances of hostility decontaminating*.

My analysis suggested that media's potential of hostility decontaminating includes four media affordances for emotion regulation, one at the system level and three at the individual level. I also identified a number of media features providing these affordances. In the following, I first discuss each of the identified media affordances (Table 5) and feature(s) providing each affordance (Table 6). I then discuss how identified media affordances together facilitate emotion regulation. Finally, I discuss alternative experiences provided by interviewees that did not seem to fit with my theory and how these alternative experiences reemphasize the boundary of my theory.

Table 5 Identified Media Affordances

Media Affordance	Definition	Sub-Category (if any)
Hostility Filtering	Media's potential to reduce the amount and the intensity of hostility arrived at the SCT	
Hostility Isolating	Media's potential to help individuals avoid interaction with hostility, either hostility targeting the SCT or hostility targeting oneself	Avoiding dealing with hostility targeting SCT
		Preventing hostility from targeting oneself
Hostility Barriering	Media's potential to act as a cushion between individuals and the unavoidable hostility	Reducing the duration of the interaction with hostility
		Reducing the extent of the interaction with hostility • reducing the regulation demand • hiding the use of ERSs from partners
		Delaying the interaction with hostility
Hostility Containing	Media's potential to prevent contaminating outsiders who are not involved in the hostile emotion-laden messaging	

Table 6 Media Affordances, Elements Giving Rise to Each Affordance, and Relevant Media Capability

Media Affordance	**Element Giving Rise to an Affordance**		**Relevant Media Capability**
	Goal: Use the ERS of	Feature	
Hostility Filtering	Situation selection and modification	Message broadcasting	Broadcasting problem announcements to massive audience
Hostility Isolating	**Subcategory 1: Avoiding dealing with hostility targeting SCT**		
	Situation selection and modification	Receiving specification	Providing the opportunity to choose whether to deal with the hostility
	Subcategory 2: Preventing hostility from targeting oneself		
	Situation selection and modification	Message broadcasting	Revealing ones' communication (un)availability to others
		Reprocessability	Discouraging partners from sending out hostile stimuli to oneself
Hostility Barriering	**Subcategory 1: Reducing the duration of the interaction with hostility**		
	Situation selection and modification	Asynchronicity	Reducing the interaction time due to the ability to communicate discretely without being co-present
		Message blocking	Terminating the interaction with hostility
		Reprocessability	Providing records to justify SCMs' termination of interaction
	Subcategory 2: Reducing the extent of the interaction with hostility		
	Sub-subcategory 1: reducing the regulation demand		
	Situation selection and modification	Fewer symbol sets	Reducing the amount of hostility transmitted to individuals
	Display regulation		Reducing the amount of expressive cues to hide and to paint on

Table 6 Media Affordances, Elements Giving Rise to Each Affordance, and Relevant Media Capabilities (Continued)

Media Affordance	**Element Giving Rise to an Affordance**		**Relevant Media Capability**
	Goal: Use the ERS of	Feature	
Hostility Barriering	**Subcategory 2: Reducing the extent of the interaction with hostility**		
	Sub-subcategory 2: hiding the use of ERSs from partners		
	Attention deployment /Experience regulation (venting)	Fewer symbol sets	Preventing cues suggesting individuals' use of ERSs from being transmitted to partners
	Experience regulation (social sharing)	Compartmentalization	
	Subcategory 3: Delaying the interaction with hostility		
	Attention deployment/ Experience regulation/ Display regulation	Low transmission velocity	Providing the time needed to engage in ERSs
	Attention deployment	Reprocessability	Delaying dealing with the hostility without the risk of forgetting
	Display regulation	Rehearsability	Providing the opportunity to craft messages *prior to* responding
Hostility Containing	Not contaminating outsiders who are not involved in the emotional communication	Compartmentalization	Preventing communicative cues belonging to the emotional interaction from being transmitted to outsiders
		Recipient specification	Targeting messages to intended recipients without involving outsiders
		The lack of reprocessability	Eliminating communication trail and the chance for outsiders to be involved later

System Level Media Affordance

System level affordances may be exercised by individuals who are seeking to support system-level goals (Volkoff & Strong, 2013). My analysis identified one system-level media affordance, *hostility filtering*. Hostility filtering is exercised by leadership on behalf of SCT to prevent all SCMs from being contaminated by customers' hostility targeting SCT.

Hostility Filtering

Hostility filtering refers to media' potential to reduce the amount and the intensity of hostility reaching the SCT. This affordance applies to hostility targeting the SCT prior to its arrival at SCT (e.g., frustrated customers who are about to contact the SCT but have not made the call or are waiting in the call queue) and facilitates the use of situation selection and modification in an effort to control the SCT's exposure to hostility.

Hostility filtering was provided by posting problem announcements on two media, the CASD where individuals can see the problem announcements on the default page when opening a browser and the front-end message of the phone system where individuals who are calling the SC can hear the problem announcements when waiting in the call queue. For example, when knowing employees from Canada could not access the Strata page (a system used in the participating organization), the SC's response was

> We put up an announcement on our service desk (CASD) which Canada people use a lot more than the U.S. people do, because they submit their own requests, and they're used to using it. So when they go in to submit a request, it says there, "Canada users cannot access the Strata page. Currently, it's being addressed."

Although workload has been recognized as a general work stressor (Leiter, 1991; Moore, 2000), workload (i.e., high call volume) is especially stressful for IT help desk

employees as they are more likely to encounter hostile customers when call volume is high. Apart from improving operational efficiency, problem announcements also help with emotion regulation by reducing the amount and intensity of hostility reaching the SCT.

Problem announcements may reduce the amount of hostility reaching the SCT. Although not all individuals who contact the SCT are hostile, the amount of hostility reaching the SCT increases with the amount of contacts that the SCT handles. Essentially, problem announcements may modify the situation so that the SCT can avoid exposure to hostility that users experiencing a systemic problem with technology may be feeling and likely willing to convey, if forced to contact the SCT regarding the problem. For example, an interviewee commented,

> the front-end message of the phone call, for example, "we are currently experiencing high call volumes due to a problem with iPhone," lots of people when they hear the front-end message may go "ok, they know it, they are working on it" and then just hang up the phone.

Further, problem announcements may reduce the intensity of hostility (i.e., how hostile individuals are) reaching the SCT. A lead mentioned,

> the other phone calls that we get are people that have problems that hopefully we can help with on a basis that we can help them and they are not waiting so long for the call to get through to us, so they are not as frustrated as well.

Individual Level Media Affordances

Individual level media affordances may be leveraged by individuals to avoid or dampen contamination on oneself. My analysis identified two individual level media affordances facilitating the use of ERSs: *hostility isolating and hostility barriering*.

Hostility Isolating

The affordance of hostility isolating refers to media's potential to help individuals avoid interaction with hostility, either hostility targeting the SCT (and then being assigned to oneself) or hostility targeting oneself. Hence, hostility isolating has two sub-categories, both of which may be leveraged by individuals *prior to the arrival of hostility at oneself*, facilitating the use of situation selection and modification to control one's exposure to hostility.

Avoiding dealing with hostility targeting the SCT. In the case of hostility targeting SCT, hostility isolating refers to *avoiding dealing with hostility targeting SCT*. This affordance helps prevent hostility targeting SCT from being assigned to oneself, passing the buck to others at the SCT.

The affordance of avoiding dealing with hostility targeting the SCT may be enacted through a feature I labelled *receiving specification*, corresponding to the recipient specification feature identified in previous literature (e.g., Galegher & Kraut, 1994). Receiving specification (i.e., the ability to specify whether to receive messages) is operationalized as the lack of automatic assigning of the ticketing system/ group chat: When partners submit a ticket to the ticketing system or send a message to the group chat, the lack of automatic assigning allows SCMs to choose whether to pick up that ticket/ message. Receiving specification affords hostility isolating behaviors in which "everyone will cherry pick all the way around it." An interviewee provided an example of hostility isolating behaviors in the ticketing systems,

> They pick them (tickets) up as they have time between phone calls. You'll see that maybe a certain ticket will stay there because of who it is. So we have certain people in the company that every one of us knows their name, and they are always a problem. There's a XX person, his name is XX, and every time

> there is a ticket for XX, nobody will pick that up because you know if you call XX, it will be an hour-long phone call, and he will be yelling and mad the whole time.

In contrast, the lack of receiving specification, operationalized as the automatic assigning of the phone call (to whoever is available on the phone status), constrains hostility isolating. For example an interviewee commented on the inability to pick phone calls to avoid dealing with certain customers,

> Phone calls, no. You just kind of get the luck of the draw on that.

Preventing hostility from targeting oneself. In the case of hostility targeting oneself, hostility isolating refers to *preventing hostility from targeting oneself*. There were two specific methods used by interviewees to prevent hostility from targeting oneself, taking advantaging of IM status and choosing media via which partners are unlikely to be hostile.

The feature of message broadcasting (operationalized as the IM status) may afford preventing hostility from targeting oneself. The IM status is supposed to indicate individuals' true availability. The availability-revealing aspect of IM status, however, may be strategically utilized to stop partners from sending hostile messages. An interviewee mentioned an incident in which his communication partner tried to utilize IM status to stop receiving emotional messages from him,

> there is one time where I was trying to communicate and trying to get something fixed and it was one of those bounce back and forth times and they went 'away' on their (IM) status...

The other way to prevent hostility from targeting oneself is to contact partners using media via which partners are unlikely to be hostile. The feature of *reprocessability* provides such an affordance. Employees at the participating organization are careful with what they write in email due to reprocessability. For

example, one interview mentioned “when I know it's going to be a problem, I usually try and avoid written communication…I don’t want to document something that they pull up on me later.” Hence, individuals may purposively contact partners via media high in reprocessability (e.g., email) to prevent hostility from targeting oneself. For example, an interviewee named Austin explained his preference for email to contact difficult customers,

> if you email someone, I think they might have an easier tendency just to say, "Oh, whatever. Austin is a hassle. I don’t want to type this.”

Hostility Barriering

When individuals must interact with unavoidable hostility (no matter whether the hostility initially targets oneself or the SCT), the media affordance that individuals may leverage is hostility barriering. Hostility barriering refers to media’s potential to act as a buffer or cushion between oneself and the unavoidable hostility; it works just like the personal protective equipment (e.g., gloves, masks) that healthcare workers use when interacting with infectious material. The barriering may be about the *duration*, the *extent*, or the *temporality* aspects of the interaction with the unavoidable hostility. Hence, hostility barriering has three subcategories, reducing the duration of the interaction with hostility, reducing the extent of the interaction with hostility, and delaying the interaction with hostility.

Reducing the duration of the interaction with hostility. The affordance of reducing the duration of the interaction with hostility refers to media’s potential to reduce the total amount of time individuals spent interacting with the unavoidable hostility. The reduced interaction time may reduce individuals’ exposures to hostility, hence facilitating the use of situation selection and modification.

Asynchronicity may afford reducing the duration of the interaction with hostility. Asynchronicity allows individuals to communicate discretely (rather than continuously) without being co-present, consequently reducing the time individuals spend interacting with hostile partners. For example, one interviewee explained her preference for asynchronous media when contacting a hard customer,

> I just want to e-mail you, you know… I don't want to talk to you on the phone about this, I don't want to instant message you, because you're just going to keep bugging me if I instant message you, because it goes 'ding, ding, ding, ding.'

The second feature that affords reducing the duration of interaction is message blocking (i.e., the ability to terminate message transmission). An operationalization of the message blocking feature at the participating organization is the on-hold button of the phone, which terminates bidirectional exchange. When individuals put partners on-hold, communicative cues from hostile partners will not be received by individuals and hence may reduce the actual interaction time with hostility. In contrast, the on-mute button, which does not terminate transmitting stimuli from hostile partners, constrains reducing the duration of the interaction because individuals are still exposed to partners' hostility when the on-mute button is used. For example, an interviewee commented that when the on-mute button is used,

> I can hear if they're frustrated, I can hear they're saying something, cussing or whatever… (I feel) insecure, very uncomfortable, but I'm not going to show them that, but yeah I'm like 'oh MAN'

Another feature that may afford reducing the duration of the interaction with hostility, in extreme cases, is reprocessability. Although SCMs need to be courteous when interacting with customers, it is legitimate for them to terminate the interaction if customers are behaving inappropriately; should they receive a complaint or a bad

evaluation, the communication trail (e.g., recorded phone calls) left due to reprocessability will be evaluated by their supervisors. The example below shows how reprocessability may afford reducing the duration of interaction (i.e., hanging up on customers to end the interaction),

> if it were cussing or something like that I would say, "you know what, remember this is a recorded call, I'm going to have to drop off the call now"

Reducing the extent of the interaction with hostility. The affordance of reducing the extent of the interaction with hostility refers to media's potential to reduce the closeness or the intimacy of the interaction with unavoidable hostility. It has two sub-subcategories, facilitating the use of different ERSs.

The first sub-subcategory is reducing the regulation demand, which may facilitate the use of situation selection and modification and the use of display regulation. When the focal ERS is situation selection and modification, reducing the regulation demand means that media may potentially reduce the amount of hostility transmitted to individuals; when the focal ERS is display regulation, reducing the regulation demand means that media may potentially reduce the amount of expressive cues to hide and/or to paint on. In both cases, the feature of fewer symbol sets provides such an affordance. The examples below illustrate how the feature of fewer symbol sets reduces the amount of hostility transmitted to individuals and the amount of expressive cues to hide respectively,

> Sometimes when you have somebody that is having just kind of a little bit on the cranky side, going through written communication is sometimes easier because of the fact that you do not have to listen to their sarcasm that they have when you have that verbal and face-to-face communication.

> …that technology buffer between us, helps to control. By buffer I mean… sometimes it is harder when you are talking to someone face-to-face to hide the physical emotions, to hide those physical tells…I am upset, I do not like you,

> this is boring…That is tough to hide when you are right next to each other. But in an email, it is easy to hide that.

The feature of more symbol sets, in contrast, may increase the regulation demand. For example, an interviewee commented on interacting with customers with the camera (of the phone) turned on,

> And then you need to make sure that if somebody is upset and you're seeing them and they're seeing you. You don't want to look like you don't care. So you have to show emotion. You have to show that you care about their situation otherwise it could get worse. They would get made because you don't care.

The other sub-subcategory is hiding the use of ERSs from hostile partners, which may facilitate the use of attention deployment and the use of experience regulation. Interviewees reported two specific attention deployment methods (i.e., multitasking during on-going interaction with hostility and delaying attending to the hostility) and two specific experience regulation methods (i.e., venting and social sharing). A common obstacle inhibiting the use of these methods is the potential negative reactions from hostile partners upon finding out individuals' attention deployment or experience regulation behaviors (e.g.,Tracy & Tracy, 1998). Take multitasking behaviors as an example, an interviewee commented,

> my problem with the video camera on the phone is the multitasking and that someone would think that I'm not paying attention to them or not listening to them because I'm not looking at them straight in their eyes.

The affordance of hiding the use of ERSs from hostile partners may overcome the common obstacle. This affordance is provided by different media features when social sharing is used compared to when the other three behaviors are used, because the uniqueness of social sharing is that there is another conversation (i.e., the social sharing conversation) apart from the conversation with the hostile partner.

When social sharing is used to change one's emotional state, it is crucial that the social sharing conversation will not be heard by hostile partners (who caused the negative emotion that one seek to change) (Tracy & Tracy, 1998). Compartmentalization may afford hiding the use of social sharing from hostile partners by keeping communicative cues belonging to the social sharing communication from being transmitted to hostile partners. The example below shows that compartmentalization (of the chat) helps hide social sharing behaviors from the hostile partner (on the phone),

> we have a couple of users that I don't think anybody in the service center likes to take those calls. I mean and we will all go "Oh man" and we kind of joke around, you know amongst my peers you know we say like "Oh, we just got somebody on the phone," "Oh poor you, alright well deal with it."

When the other three behaviors are used, fewer symbol sets may afford hiding the use of ERSs from hostile partners. The affording role of fewer symbol sets may be seen from interviewees' preference to have the camera off. Take the venting behaviors as an example, an interviewee commented,

> over the phone I don't really control a lot of my facial expressions or my mannerisms. You know sometimes I throw my hands around or touch my head like that…but obviously the users can't see that.

In summary, the affordance of reducing the extent of the interaction with hostility facilitate the use of all ERSs examined, reducing the regulation workload at the chronologically earliest/ latest emotion processes and hiding individuals' use of ERSs from hostile partners at the two in-between processes.

Delaying the interaction with hostility. When interacting with hostility is unavoidable, media may help individuals avoid interacting with hostility *now* via

affording *delaying the interaction with hostility*, which facilitates the use of attention deployment, experience regulation, and display regulation.

A common obstacle inhibiting the use of attention deployment, experience regulation and display regulation is that individuals do not have the time to use these ERSs when interacting with hostile partners. The affordance of delaying the interaction with hostility comes to the rescue. An example illustrating how delaying the interaction may facilitate the use of experience regulation is below,

> I use these (delays during communication) as an escape. I release some of my negative energy in that way. I get back to the user and I try to keep myself calmed down, but at least I already released a little.

The feature of low transmission velocity may afford delaying the interaction with hostility. When the communication occurs via media with low transmission velocity, partners' expectation for immediate response is low, providing individuals the needed time to engage in attention deployment, experience regulation, or display regulation. Take display regulation as an example, an interviewee commented,

> IM is a lot more spur of the moment, and while you can reread what you're saying and consider carefully what you say, you don't want to sit there for five minutes without a response. It doesn't really work in an instant message. They're expecting you to respond with a continuous pace.

Some other features also afford delaying the interaction with hostility but for a certain specific ERS only. The feature of reprocessability may afford delaying the interaction with hostility for individuals who seek to use attention deployment because reprocessability enables individuals to turn their attention away from the communication without the risk of forgetting. An interviewee, when talking about putting aside dealing with an undesired emotional issue, commented

> the nice thing about written media is, if it comes in as an e-mail or an IM, is that I can have that. It is something that is in front of me and I can mark it to say

> "hey I got to go do this but I do not have to do it right now"… you can highlight those things and bring them back to your attention…

The feature of rehearsability, which enables individuals to craft their emotion expressions prior to responding, affords delaying the interaction with hostility for individuals who seek to use display regulation. The following contrast between face-to-face and email communications illustrates the affording role of rehearsability,

> you get that chance to rework it (in email), when if you were face-to-face with them, you don't get to rework it. You lose spontaneity because it's an email but you also get that chance to be introspective and think in your head as to 'do I really want to say that?'

A Special Media Affordance

In the above, I discussed the media affordances I identified that facilitate the use of ERSs and the feature(s) providing each affordance. The three identified media affordances help counteract hostility contagion, protecting individuals from being severely contaminated by partner's hostility messaging and reducing negative consequences should contagion still occur (e.g., responding to partners professionally despite being contaminated). During data analysis, I identified another individual level media affordance which, although not being related to the use of any ERSs, provides additional insight regarding the role of media in facilitating emotion regulation (and in counteracting emotional contagion). Before discussing this special media affordance, I want to first discuss a limitation of existing research on ERSs briefly, which helps explain the existence of this special media affordance.

Research on ERSs focused largely on intrapersonal and dyadic processes and paid inadequate attention to the broader context where the interaction occurs. However, emotion-laden displays in dyadic interactions in organizations do not occur in a vacuum where only individuals and their partners are present; emotion-laden displays, instead,

occur in contexts where there are *others* (e.g., peers who are not involved in the emotional communication) around. Those *others* may be called "outsiders" according to Goffman (1959).

Goffman (1959) used the imagery of a theater to discuss his dramaturgical model of social life, and described a distinction between front- and back- regions,

> The "front region" is where the performance takes place and where individuals strive to maintain and embody certain standards of politeness and decorum (Goffman 1959, p. 107), while the "back region" is where the impression managed by a performance is openly constructed, rehearsed, and contradicted (Goffman 1959, p. 112) (Orlikowski, 1996, p.77).

A third region discussed by Goffman is an outside region that is "neither front nor back with respect to a particular performance" (Goffman, 1959, p.135). Individuals on the outside region are called "outsiders." In emotion-laden messaging, outsiders can be supervisors, subordinates, peers, or customers who are not involved in the focal emotional interaction. If how the emotion-laden displays occur is not regulated well (i.e., there are inopportune presences of others), outsiders may be contaminated. My analysis suggests that media may help prevent contaminating outsiders via affording *hostility containing*.

Hostility Containing

Hostility containing refers to media's potential to prevent contaminating outsiders who are not involved in the hostile emotion-laden messaging. Several features may afford hostility containing.

Compartmentalization, by preventing communicative cues belonging to a hostile interaction from being transmitted to outsiders, affords hostility containing. The affording role of compartmentalization may be shown via a contrasting example: a lead, who as part of her job duty listens to recorded phone calls for quality insurance,

commented on the "overhearing problem" in which conversations between SCMs are overheard by outsiders (i.e., customers) talking to other SCMs on the phone, a medium with low compartmentalization. The overhearing problem is unlikely to exist if SCMs' conversations were in chat, a medium with higher compartmentalization (Reinsch et al., 2008).

> a person standing next to them that's on the phone, that customer can hear you. There's a lot of overhearing. And I have listened to phone calls that are recorded where I hear people talking bad about a customer sitting next to them. And I can hear that on the phone call, on the recorded call. So you know that that person had to have heard that.

Recipient specification may also afford hostility containing. The affording role of recipient specification is best illustrated via the following example provided by a female lead in which she and another lead took contrasting approaches to handle conflicts between them. The female lead preferred the phone call (a medium high in recipient specification) over the group chat as she believed that the conflict should be just between the two of them.

> In our team chat, he would put things like that. "Melissa, don't you know… didn't you know you do this and not that. I can't believe you said that"… And he always did that (posting negative messages in the team chat) and I think I was the only one that actually stood up to him and told him to stop. And I didn't put it in the team IM. I sent him an email and said, "I would like to talk to you. Do you have some time where we can make a phone call?" And then I copied the information from the team chat and the email, and I said, "This is what I want to talk about."

Finally, the lack of reprocessability may afford hostility containing. If messaging occurs in media with high reprocessability, then the communication record makes it possible for non-intended audiences to observe and be contaminated by the hostile communication later. In the following example, although the interviewee was

referring to the forwarding feature, what constrained hostility containing is the communication record due to reprocessability.

> I used really strong language in there too…it got forwarded on to a supervisor…That's the danger of email, the power of forwarding. You have no control over email. Once you send it, gone.

The Role of Communication Media in Decontaminating Hostility

Thus far, I discussed each of the identified media affordances. Those affordances are not isolated but may be exercised together. Take the incident of upgrading to Microsoft 2013 as an example: Microsoft outlook did not work for a while. Although the SC posted problem announcements at the front-end message of the phone system and the CASD, the SC still received thousands of voicemail and email inquiries. The SC did not respond to those inquiries immediately. Instead, a mass response via email was sent out later. In this incident, both hostility filtering (i.e., problem announcements) and hostility barriering (i.e., replying inquiries via a mass email after a delay) were exercised.

In summary, identified media affordances together suggest that communication media afford *hostility decontaminating*. The affordance of hostility decontaminating has several dimensions that may be used individually or jointly in buffering against the adverse emotional effects of being the target of hostile messaging (on themselves and/or on outsiders not involved in the emotional communication).

Alternative Experiences

Some experiences provided by interviewees failed to support or even challenge the role of communication media in facilitating emotion regulation and in counteracting emotional contamination. One type of alternative experience is that interviewees

perceived emotion regulation to be easier in face-to-face communication. For example, an interviewee commented,

> (when the communication is) through technology I can make hand motions, I can make facial expressions, which I think will cause my emotion to be incorrect through that message…Because if I am feeling frustration, somehow or another I think that would be portrayed in the message that I would type out. While in face to face I can't get frustrated.

In the above example, communication media reduced the interviewee's awareness of emotion regulation, a phenomenon that has been examined in the flaming literature (e.g., Kiesler et al., 1984; Spears & Lea, 1994). However, this type of alternative experience falls outside the boundary of my theory because identified media affordances are action-potentials provided by media for *goal-oriented individuals who seek to regulate emotion*.

The other type of alternative experience seems to suggest that media may facilitate (rather than counteract) emotional contamination. For example, an interviewee mentioned one instance in which he received an email from a customer who called the IT help desk "the helpless desk," with several others copied on the email. That is, the carbon-copying feature *facilitated* emotional contagion. However, in this type of alternative experience, the goal of emotion regulation did not exist. Hence, this type of alternative experience also falls outside the boundary of my theory.

DISCUSSION

In this study, I identified media affordances for work-based emotion regulation as well as feature(s) providing each affordance. Interviews with IT help desk employees of a large organization revealed pervasive emotion regulation when interacting with communication partners expressing hostility at work. Research suggests that negative emotions are more contagious (Bartel & Saavedra, 2000; Joiner, 1994) and that such

displays motivate individuals to expend more effort in resisting negative emotions when present. Identified media affordances suggest that communication media have the potential for functioning in a *hostility decontaminating* role. The affordance of hostility decontaminating exists at two levels (i.e., the system level and the individual level) and has several aspects: at the system level, hostility filtering may be exercised by leaders on behalf of the system to prevent all individuals belonging to the system from being contaminated by hostility targeting the system level. At the individual level, media afford hostility isolating, hostility barriering, and hostility containing. Hostility isolating may be leveraged by individuals to avoid interactions with hostility targeting either the system level or oneself. Individuals who actualize hostility isolating do not need to interact with the hostility themselves, avoiding being contaminated. Hostility barriering may be leveraged to add a cushion between individuals and the unavoidable hostility to affect the duration, the extent, or the temporality aspects of the interaction with the hostility, reducing or delaying the contamination. Finally, hostility containing may be leveraged to prevent contaminating outsiders who are not involved in the emotional interaction.

I also identified media feature(s) providing each affordance. The extant technology affordance literature largely examined technology-specific features giving rise to affordances. For example, Leonardi (2011) examined affordances provided by, for example, the "check model" feature of CrashLab. The extant literature provides a foundation for understanding technology (e.g., media) features providing affordances. In this study, I extend previous research by examining affordances provided by general media features discussed in the CMC literature. The focus on general features (rather

than technology-specific features) may increase the transferability of obtained understandings.

This study contributes to the literature in a number of ways: First, these data contribute to the emotion regulation literature by illustrating the facilitating role of media for emotion regulation. Extant literature focused on individuals' *internal* capabilities of emotion regulation (e.g., Grant, 2013). Media affordances are *external* capabilities that can be leveraged by individuals with personal- or system-level emotion regulation goals (Volkoff & Strong, 2013). Identified media affordances may complement individuals' internal capabilities to better regulate their emotions, and may reduce the demand on their limited cognitive regulation resources (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998), and thereby further reduce associated negative consequences such as burnout. Further, an understanding of external capabilities is something that managers can leverage through technology acquisition and training.

This study also contributes to the literature at the intersection of CMC and emotional contagion. Extant research at this intersection focused on whether the cues-filtered-out context (i.e., the feature of fewer symbol sets) may counteract emotional contagion (e.g., Cheshin, Rafaeli, & Bos, 2011; Hancock, Gee, Ciaccio, & Lin, 2008). This study suggests that communication media may counteract emotional contagion via affecting *whether and how* individuals interact with hostility. Specifically, hostility filtering (at the system level) and hostility isolating may be leveraged to affect *whether* individuals interact with hostility, hence preventing individuals from being contaminated; hostility barriering may be leveraged to control *how* individuals interact with hostility, hence weakening or delaying the contamination; hostility containing may

be leveraged to control who else may be involved in the emotional interaction, preventing contaminating outsiders. Corresponding to the different media affordances, various media features (other than the feature of fewer symbol sets) may be leveraged to supplement individuals' lack of immunity against emotional contagion (e.g., Doherty, 1997; Jazaieri, McGonigal, Jinpa, Doty, Gross, & Goldin, 2014; Shah & Gardner, 2008).

CONCLUSION

Relying on the qualitative research method, I identified communication media affordances supporting the use of emotion regulation strategies as well as media feature(s) providing each affordance. Findings suggest that the facilitating role of communication media for emotion regulation may counteract the contagion of negative emotion at work, or hostility decontaminating. The hostility decontaminating potential exists at two levels and has several aspects (i.e., hostility filtering, hostility isolating, hostility barriering, and hostility containing). These hostility decontaminating affordances may be leveraged to prevent IT help desk employees from being contaminated by hostility from their communication partners (e.g., customers, peers), to weaken or delay the contamination, or to prevent contaminating outsiders (e.g., peers) who are not involved in the aggressive and emotion-laden messaging. Moreover, I identify general media feature(s) (as discussed in the CMC literature) providing each affordance. I hope that my discussion of media affordances as well as media features providing each affordance may provide practical implications for individuals who struggle or are burdened with emotion regulation when interacting with hostile communication partners at work.

CHAPTER 4: HOW SHOULD TECHNOLOGY AFFORDANCES BE MEASURED? AN INITIAL COMPARISON OF TWO MEASUREMENT APPROACHES

ABSTRACT

This study examines the measurement issue for the relational concept of technology affordance. Specifically, I compare the predictive capability of two measurement approaches (i.e., the objective computed technology affordance and the perceived technology affordance) in the context of media asynchronicity affordance for display regulation. Data was collected from help desk employees using a survey with policy-capturing scenarios. The results are insignificant and the question of how to measure the relational concept of technology affordance remains. Implications of research findings and limitations are discussed.

INTRODUCTION

The technology affordance perspective is an emerging lens in the information systems (IS) literature to understand technology use and consequences. Technology affordances are defined as "possibilities for goal oriented action afforded to specific user groups by technical objects" (Markus & Silver, 2008, p622; Volkoff & Strong, 2013). Affordances may also include the ease of undertaking certain actions because of a technology for goal-oriented individuals (Leonardi, 2011; Treem & Leonardi, 2012). Despite the existence of different affordance perspectives[4], researchers in the area of technology use and consequence generally agree that a technology affordance is a relational concept that exists between a technology (or its features) and a goal-driven user(s) (Leonardi, 2013; Volkoff & Strong, 2013; Zammuto et al., 2007). Most of the existing technology affordance research is either qualitative or conceptual. Researchers argue that to establish the status of the technology affordance perspective as a theoretical lens to understand technology use and consequence, it is necessary to apply the technology affordance perspective to a specific context, generate some testable propositions and empirically test these propositions (Majchrzak & Markus, 2012).

To empirically test propositions developed via the technology affordance lens, researchers need to first measure the relational concept of technology affordance. There are two potential ways to measure technology affordance based on one difference in researcher understandings. Although technology affordance researchers in the field of technology use and consequence generally agree that technology affordances exist

[4] Another affordance perspective in the IS literature (e.g., human-computer interaction) is that by Norman (1988), in which affordances refer to "designed-in" properties of technical artifacts (p.9).

independent of individuals' perceptions, i.e., affordances exist whether they are (immediately) perceived or not (see Michaels, 2003 for a review), they disagree on whether technology affordances need to be first perceived before resulting in certain outcomes (e.g.,Leonardi, 2011; Volkoff & Strong, 2013). The difference in the emphasis on perceptions of technology affordances may influence how the construct can be measured.

The first measurement approach, which provides an objective measure of the construct, is the indirect measurement (Kristof, 1996) or the atomistic approach (Yang, Kang, Oh, & Kim, 2013). In the indirect measurement approach in general, the focal construct is computed from other constructs (as interaction terms, difference scores, residuals, and, etc); the other constructs from which the focal construct is computed can be either perceptual or objective measures. Since this measurement approach computes the focal construct, it is an objective measure of the focal construct (Kristof ,1996). A frequently computed construct in the extant literature is fit (e.g., person-organization fit, task-technology fit, strategy-structure fit). According to Venkatraman (1989), there are different ways to conceptualize fit (i.e., as matching, as moderation, as mediation, as covariation, as gestalts, and as profile deviation) and different ways to operationalize fit. For example, the fit as matching conceptualization was operationalized as difference scores (e.g., environmental uncertainty-volatility fit was computed as the absolute differences between the standardized perceived environmental uncertainty scores and the standardized objective volatility scores using industrial statistics, Bourgeois, 1985) and residuals (e.g., structure-technology fit was operationalized as residuals of the

regressions of perceived structures and control styles on perceived routineness of technology, Dewar & Werbel, 1979).

Applying the indirect measurement approach to measure technology affordance, I would follow the computing method recommended for the fit as moderation conceptualization. A well-kown example of the fit as moderation conceptualization in the IS literature is task-technology fit (e.g., Goodhue, 1995). The relational concept of technology affordances, i.e., "potential interactions between people and technology" (Majchrzak & Markus, 2012, p. 832), is conceptually similar to task-technology fit: in both cases, the existence of the focal construct does not depend on either of the two relevant elements (i.e., technology characteristics and task characteristics for task-technology fit, technology characteristics and individual goals for technology affordance); it, instead, depends on the interaction between the two relevant elements. The fit as moderation conceptualization, according to Venkatraman (1989), should be operationalized as the interaction term between the two (objective or perceived) elements related to the focal fit. For example, task-technology fit was operationalized as the interaction term between (objective or perceived) task characteristics and technology characteristics (e.g., Belanger, Collins, & Cheney, 2001; Dishaw & Strong, 1998; Shirani, Tafti, & Affisco, 1999). Hence, if the indirect measurement approach were to be applied to measure technology affordances, then researchers only need to measure—possibly using extant measures—the two elements giving rise to the focal technology affordances, i.e., (objective or perceived) technology characteristics and individual goals; objective technology affordances may then be computed as the interaction term between the two elements when researchers are trying to understand

impacts of technology affordances (i.e., the criterion variable in the research model required by the fit as moderation conceptualization, Venkatraman, 1989).

However, if one believes that technology affordances must be perceived in order to impact the criterion variable, then measuring users' perceptions of technology affordances is needed (e.g., Goodhue, 1995). The second approach, which is also called the direct measurement (Kristof 1996) or the molar approach (Yang et al., 2013), measures perceived technology affordances. The direct measurement approach in general involves directly asking individuals' judgments about the focal construct. Continue the discussion with the example of fit, Posner, Kouzes, and Schmidt (1985) used the direct measurement approach to assess personal value-organizational value fit in which participants rated how compatible their personal values were with those of their organizations. Hence, measuring perceived technology affordances via the direct measurement approach will involve asking individuals to rate what the technology affords them to do in achieving certain goal—and before this can done, researchers need to first develop their own measurement of technology affordance for each specific context by conducting qualitative research, reviewing existing literature and/or cautiously adapting existing measures. That is, measuring perceived technology affordances via the direct measurement approach requires a two-step process for each context-specific technology affordance.

To sum up, corresponding to the different emphases on perceptions of technology affordances, there are two measurement approaches. The first approach requires researchers to measure (objective or perceived) technology features and individual goals using possibly extant measures and then compute objective technology

affordances as the interaction term between the two elements; the second approach requires researchers to first development scales for each context-specific technology affordance and then ask individuals to rate the scales to collect their perceptions of technology affordances. I believe these differing perspectives represent an interesting debate for which a methodological test employing different measures of the same technology affordance may provide some insight.

The research objective of this essay is to provide an initial comparison regarding the predictive capability of computed objective technology affordances and that of users' perceptions of technology affordances. Should results of this comparison suggest that the predictive capability of computed objective affordances is equal to or higher than that of perceived technology affordances, then researchers only need to measure technology characteristics and individual goals—both of which may have existing measures— and then compute objective affordances as the interaction term. Alternatively, if results suggest that the predictive capability of perceived technology affordances is higher, researchers will need to first develop scales for each of the context-specific technology affordances and then ask individuals to rate developed scales to collect their perceptions of technology affordances.

LITERATURE REVIEW

In the following, I will first discuss how technology affordances have been measured in the extant literature and an alternative measurement approach that is yet to be applied. Next, I will describe the chosen context for comparing the predictive capability of the two measurement approaches, followed by a discussion about the relevant elements of as well as the focal technology affordance in the chosen context.

Measuring Technology Affordance

The technology affordance perspective, which originated from Gibson (1977)'s affordance perspective, takes into consideration both psychological or social behaviors and technology characteristics in understanding technology uses and consequences, overcoming the limitations of previous theories that focus on only one of the two aspects. In the technology use and consequence literature, researchers agree that technology affordance is a relational concept that depends on the interaction between a technology (or its features) and a goal-driven user(s) (e.g.,Leonardi, 2013; Strong et al., 2014; Volkoff & Strong, 2013). Specially, the same technology feature may provide various affordances to individuals with different goals, and different features may provide different affordances to individuals who have the same goal. For example, Gibbs, Rozaidi, and Eisenberg (2013) argued that social media may afford visibility (i.e., signaling one's availability) for individuals who seek to share knowledge and may afford invisibility (i.e., signaling one's unavailability) for individuals who seek to conceal or restrict knowledge.

The technology affordance perspective, though quite limited, has been applied in empirical research. For example, Malhotra and Majchrzak (2012) applied the technology affordance perspective to understand knowledge coordination within virtual teams. In this study, perceived technology affordances (i.e., virtual co-presence creation and knowledge evolution monitoring) were measured via adapting existing scales, i.e., the direct measurement approach (Kristof, 1996).

The indirect measurement approach (Kristof, 1996) is yet to be applied in the existing technology affordance literature. In the indirect measurement approach, the

focal construct is computed from other constructs (as difference scores, residuals, etc) and is hence an objective measure (Kristof, 1996). If the indirect measurement approach were to be applied to measure technology affordance, technology affordances (to be exact, objective technology affordances) should be computed as the interaction term between the two elements giving rise to the affordances (i.e., technology characteristics and individual goals): the relational concept of technology affordance is conceptually similar to the fit as moderation conceptualization (e.g., task-technology fit, Goodhue, 1995), which, according to Venkatraman (1989), should be operationalized as the interaction term between the two elements.

The Chosen Context for Comparison

Technology affordances, either objective or perceived, are context-specific (Strong et al., 2014). As such, the comparison of the predictive capability of the two measurement approaches needs to be conducted in a specific context. The chosen context is the affordance provided by media asynchronicity (i.e., the technology feature) for individuals who seek to utilize display regulation (i.e., the goal). This context is chosen because of its potential theoretical and practical implications: communication media could be broadly classified as synchronous media and asynchronous media, and the strategy of display regulation (which I will define below) is probably the most frequently studied strategy in the emotion regulation literature and the most frequently employed strategy in organizational communication (e.g.,Elfenbein, 2007). In the following, I will first describe the two relevant elements (i.e., display regulation and media asynchronicity) for the chosen context and then discuss the media asynchronicity affordance for display regulation.

Display Regulation

Display regulation refers to an emotion regulation strategy (i.e., the method individuals employ to manage their emotional experiences or expressions) in which individuals manage their external emotional expressions without changing their internal emotional feelings (Gross, 1998). Display regulation often involves two sub-tasks, hiding undesired emotional expressions that one is not supposed to display and alternatively painting on desired emotional expressions (that may or may not be genuine). For example, bill collectors are required to show irritations to debtors on the phone despite feeling sympathetic for friendly debtors (Sutton, 1991). The use of display regulation, which is often (explicitly or implicitly) required at the workplace, is demanding. Research suggests that engaging in display regulation on a frequent basis may lead to burnout (e.g., Rutner et al., 2008). Moreover, despite individuals' attempt to manage emotion expressions displayed to communication partners, unintentional leaking of undesired emotion expressions may still occur and the painted on emotions may appear nongenuine to communication partners (e.g., Ekman & Friesen, 1969; Elfenbein, 2007).

Media Asynchronicity

Media synchronicity refers to the capability of media to support synchronicity, a state in which actions move at the same rate and exactly together (Dennis et al., 2008, p.581). The lack of such media capability is referred to as media asynchronicity. According to media synchronicity theory (MST) (Dennis et al., 2008), there are five fundamental features, i.e., symbol sets, transmission velocity, parallelism, rehearsability and reprocessability. Among the five features, rehearsability and transmission velocity

are most relevant to synchronicity for message senders while reprocessability and transmission velocity are most relevant to synchronicity for message receivers (e.g., Burgoon et al., 2002; Carlson & George, 2004; Carlson et al., 2004).

Media Asynchronicity Affordance for Display Regulation

When individuals are trying to utilize display regulation, they are message senders. Hence, the two aspects of asynchronicity relevant to the use of display regulation are transmission velocity and rehearsability. Specifically, media asynchronicity is characterized as low transmission velocity and high rehearsability.

Low transmission velocity may interact with the display regulation goal to provide time to regulate emotion expressions. High transmission velocity increases the need for immediate responses (Reinsch et al., 2008). Research on deception suggests that high feedback immediacy puts deceivers in an unfavorable position, as they are not given time "to plan, edit, or rehearse message content and style and must instead respond 'on the fly' to receiver skepticism or queries" (Carlson et al., 2004,p .21). The argument applies to emotion expressions: when the need for immediate responses is high, individuals do not have the time to carefully hide undesired emotions or to paint on desired emotions that are not genuinely felt. As a result, their emotion expressions are more reactive than reflective (i.e., carefully crafted) (Berry, 2006; Derks et al., 2008). For example, research on social support in computer-mediated environments found that low transmission velocity enabled individuals to provide thoughtful emotional support to others (Braithwaite et al., 1999).

High rehearsability may interact with the display regulation goal to allow crafting emotion expressions in-advance. Rehearsability, in general, enables individuals

to “compose the message and get it just right” (Riordan & Kreuz, 2010,p.1669). The opportunity to craft the message before-hand is a crucial reason that individuals prefer communication media over face-to-face interactions for emotional communication (e.g., Riordan & Kreuz, 2010). When individuals seek to utilize the strategy of display regulation, high rehearsability enables individuals to craft their emotion expressions to “get it just right”, hiding undesired emotion expressions and painting on desired emotion expressions. Tracy (2000) found that cruise staffs use the mirrors in the elevator to check their smiles before going to the work zone to interact with customers. Rehearsability works just like the mirror, enabling individuals to carefully craft emotion expressions before responding to partners (Dennis et al., 2008; Treem & Leonardi, 2012).

These two aspects of media asynchronicity affordance (i.e., having time to regulate emotion expressions and crafting emotion expressions in-advance) are consistent with the existing understanding that computer-mediated communication (CMC) may affect both the temporal and the content aspects of the communication (Derks et al., 2008; Feaster, 2010; Walther & Boyd, 2002). Having time to regulate emotion expressions focuses on individuals’ control over the temporal scale of the interaction (i.e. the length of the interval between interactions) (Hesse, Werner, & Altman, 1988), while crafting emotion expressions in-advance focuses on composing (e.g., editing, planning, contemplating) the content of emotion expressions (e.g., word choice, intonation) prior to responding to partners (Walther, 2007). Overall, the reduced spontaneity and the opportunity to change the message before sending may lead to more controlled emotion expressions in CMC (Derks et al., 2008).

Consequences of Media Asynchronicity Affordance for Display Regulation

To compare the predictive capability of the two measurement approaches, it is necessary to have a criterion, i.e. outcome where the impact of technology affordance is manifested (Venkatraman, 1989). I chose three frequently studied consequences associated with the use of display regulation at work, namely, emotional exhaustion, i.e., a "state of depletion and fatigue that is considered the main component of job burnout" (Grandey, 2003,p.89), job satisfaction and task performance, i.e., the extent to which individuals fulfill task performance requirements (Judge, LePine, & Rich, 2006). Media asynchronicity affordance for display regulation, via helping individuals control the temporal and content aspects of the emotional communication with partners, should reduce emotional exhaustion (e.g.,Grandey, 2000, 2003; Moore, 2000; Rutner et al., 2008) and increase task performance and job satisfaction (e.g.,Ashforth & Humphrey, 1993; Feaster, 2010; Grandey, 2003; Tracy, 2000; Tracy & Tracy, 1998). Hence,

> *Hypothesis: Media asynchronicity affordances for display regulation will reduce emotional exhaustion and increase task performance and job satisfaction.*

METHODOLOGY

To compare the predictive capability of the two measurement approaches in the context of media asynchronicity affordance for display regulation, I collected data, via a survey, from IT help desk employees. Help desk employees are appropriate samples for this study because they rely heavily on communication media for interactions and frequently engage in display regulation at work (Rutner et al., 2008). In the following, I describe data collection, constructs data analysis and results.

Data Collection

Internal help desk employees (n= 84) from 13 organizations participated in this study. Each participant was randomly presented with one of the four policy-capturing scenario combinations (see Appendix B). Each scenario combination included two IT help desk scenarios adapted from extant research (e.g.,Goldberg & Grandey, 2007) and revised after a pilot test[5] . Participants were asked to think of themselves as the internal IT help desk employee in the hypothetical scenarios and answer questions for each scenario (including their actual responses to customers in the hypothetical scenarios). Each scenario combination is assumed to occur in one of the two work environments (i.e., one requires its employees to provide service with a smile despite the circumstance, and the other does not); these work environments are designed to manipulate display regulation goals. Manipulation check questions were asked to verify if participants understood the requirement on managing emotion displays in their given work environment. The two scenarios included in each scenario combination used two communication media (i.e., the phone and email) separately in one of the two orders (i.e., the phone scenario first vs. the email scenario first). Manipulation check questions were asked to verify if participants were able to distinguish the two media in terms of media asynchronicity. Hence, a mixed design was used with medium (i.e., media asynchronicity) as the within-subject treatment and work environment (i.e., display

[5] A pilot test was conducted using 107 undergraduate students enrolled in a database class in a Midwestern university. The main objective of the pilot study was to fine tune the policy-capturing scenarios and to validate the instruments. One major modification (i.e., the manipulation of display regulation goal) was made based on pilot test results and conversations with industry people.

regulation goal) as the between-subject treatment. Control variables were collected once the scenarios were completed. The survey took approximately 30 minutes to finish.

Constructs

Appendix C provides detailed information regarding constructs used in this study. Specifically, the two elements (i.e., media asynchronicity and display regulation goal) giving rise to media affordances were both manipulated in the scenarios. Objective media asynchronicity affordance for display regulation (objective MAADR) was computed as the interaction term.

Perceived media asynchronicity affordance for display regulation (perceived MAADR) was measured. The two aspects of perceived MAADR (i.e., having time to regulate emotion expressions and crafting emotion expressions in-advance) were adapted from scales measuring the temporal aspect of interaction management (item1-4) (Walther & Boyd, 2002) and scales measuring the rehearsal function of imagined interaction (item 5-9) (Honeycutt & Brown, 1998) respectively. Finally, Walther (2007) suggested that crafting a message may also include aborting and starting a new message. Hence, item 10 was added.

Dependent variables included emotional exhaustion, task performance and job satisfaction. Emotional exhaustion items were adapted from the job-related emotion exhaustion scale (Wharton, 1993), which has been used or adapted in research examining the exhaustion of IT personnel (e.g.,Moore, 2000; Rutner et al., 2008). Task performance items were adapted from scales measuring self-reported task performance (Judge, LePine, & Rich, 2006). The three item Michigan job satisfaction scale

(Cammann, Fichman, Jenkins, & Klesh, 1979) and the job satisfaction index (Brayfield & Rothe, 1951) were used to measure job satisfaction.

Control variables included gender, work experience with IT help desk, self-monitoring and CMC anxiety (i.e., email and phone anxiety). Individuals with high self-monitoring are likely to adapt their behaviors to fit role expectations (Kilduff & Day, 1994). Extensive studies have found that self-monitoring is related to successful utilizations of display regulation (e.g.,Brotheridge & Lee, 2003; Diefendorff, Croyle, & Gosserand, 2005; Gangestad & Snyder, 2000). The other-directness subscale of the self-monitoring scale, which measures individuals' ability and willingness to adapt their behaviors for different communication partners or situations, was used. CMC anxiety has been found to mediate impacts of computer anxiety, communication apprehension and CMC familiarity on CMC use and attitudes (e.g., Brown, Fuller, & Vician, 2004). Participants were asked about their anxiety in both phone and email communications, which are labeled as phone anxiety and email anxiety respectively.

Data Analysis and Results

Manipulation Check and Descriptive Statistics

The manipulation check for media asynchronicity manipulation (Appendix C) had two items to verify if participants had accurate understandings about the asynchronicity of two media used. Paired sample t-test suggested that participants perceived email to be significantly higher ($t=13.19$, $p<0.001$) in rehearsability and lower ($t=-7.907$, $p<0.001$) in transmission velocity than the phone, suggesting the media asynchronicity manipulation worked. The manipulation check for display regulation goal manipulation had four items to verify if participants understood the requirement on

display regulation in their given work environment, specifically, whether they needed to show positive emotions regardless of how customers were behaving. Independent sample t-test suggested that participants in the work environment requesting help desk employees to provide service with a smile despite circumstance scored significantly higher ($t=9.637$, $p<0.001$) on manipulation check questions. Descriptive statistics are in Appendix D.

Exploratory and Confirmation Factor Analysis

I first conducted exploratory factor analysis (EFA) using principle component analysis with Promax rotation and Eigenvalue>1 as the rule to determine the number of generated factors. I chose Promax rotation because it allows for correlations between factors. The resultant pattern matrix is displayed in Appendix E. Problematic items (as indicated via*) were dropped. The construct of self-monitoring, whose Cronbach's alpha had a peak value of 0.701 with just three remaining items (self-monitoring 4, 5, and 7), was dropped due to convergent validity issue.

Confirmatory factor analysis (CFA) was then conducted using the PROC CALIS procedure in SAS for the remaining factors and items as suggested by the EFA. Overall, the model has decent fit. The CFA fit statistics are in Table 7.

Table 7 CFA Fit Statistics

Test Statistics	GFI	CFI	NNFI	RMSR	RMSEA
Expected Value	>=0.8	>=0.95	>=0.9	<=0.1	<=0.07
Study value	0.782	0.930	0.922	0.164	0.066

Construct Reliability and Validity

The reliability and validity statistics for the remaining constructs are in Table 8. As can be seen, all constructs with remaining items had good reliability and there is no discriminate or convergent validity concern.

Table 8 Construct Reliability and Validity

Construct	Cronbach's alpha	CR	AVE	MSV	ASV
Phone Anxiety	0.896	0.897	0.598	0.151	0.041
Email Anxiety	0.889	0.904	0.705	0.135	0.058
Emotional Exhaustion	0.918	0.918	0.653	0.555	0.134
Job Satisfaction	0.939	0.940	0.725	0.555	0.127
Task Performance	0.914	0.915	0.729	0.151	0.057
Perceived MAADR	0.965	0.965	0.734	0.007	0.004

1. CR: Composite Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Squared Variance; ASV: Average Shared Square Variance.
2. Reliability threshold: Cronbach's alpha >0.8, CR>0.7; Convergent validity threshold: CR > AVE, AVE>0.5; Discriminant validity threshold: MSV < AVE, ASV < AVE

Common Method Bias

Both Harman's one-factor test and common latent factor test were used to check if common method bias was a concern in this study. When Harman's one-factor was used, results showed that one factor explained 0.24 of the variance, which is below the 0.5 cut-off point, hence suggesting no common method bias. When the common latent factor test was used, the factor model with one factor accounting for all remaining items had poor fit (GFI=0.282, CFI= 0.311, NNFI= 0.269, RMSEA= 0.193, and RMSR=0.663), again suggesting that common method bias was not a concern.

Hypothesis Testing

Hypothesis Testing Using Objective MAADR: The impacts of objective MAADR on the dependent variables were tested using multiple regression[6]. Model 1

[6] Because objective MAADR is the interaction term between two dichotomous variables, alternative analyses were conducted to detect the potential impacts of

and Model 2 results in Table 9 suggest that objective MAADR did not have a significant impact on any of the dependent variables, and none of the R-square changes associated with adding objective MAADR to the base model (i.e., model with covariates) were significant.

Hypothesis Testing Using Perceived MAADR: I then tested the hypothesis using perceived MAADR in multiple regression. Model 1 and Model 3 results in Table 9 suggest that perceived MAADR did not have a significant impact on any of the dependent variables and none of the R-square changes associated with adding perceived MAADR to the base model were significant.

Alternative Hypothesis Testing Using Both Objective and Perceived MAADR: The different opinions regarding whether technology affordance needs to be perceived to be impactful suggests that the divergence concerns the mediating role of perceived affordance. In the context of media asynchronicity affordance for display regulation, the debate is essentially a test of whether the impacts of objective MAADR on the dependent variables are (partially) mediated by perceived MAADR. If the impacts are (partially) mediated by perceived MAADR, then it suggests that measuring individuals' perceptions of MAADR is necessary; otherwise, researchers only need to measure the two elements giving rise to the focal media affordance and then compute objective MAADR as the interaction term.

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objective MAADR (or the interaction effect). These additional analyses did not find significant impacts of objective MAADR. Details about these additional analyses are in Appendix F.

Table 9 Multiple Regression Results

	Model 1			Model 2			Model 3		
	EE	**TP**	**JS**	**EE**	**TP**	**JS**	**EE**	**TP**	**JS**
Gender	-0.0319	-0.0742	0.1512*	-0.0365	-0.0672	0.1527*	-0.0311	-0.0744	0.1508*
Work Experience	0.0284	-0.0094	0.1264	0.0299	-0.0116	0.1260	0.0272	-0.0086	0.1270
Phone Anxiety	0.2971***	-0.3920***	-0.2409**	0.2967***	-0.3899***	-0.2407**	0.2971***	-0.3920***	-0.2409**
Email Anxiety	0.0419	-0.3276***	-0.0819	0.0377	-0.3175***	-0.0806	0.0388	-0.3249***	-0.0804
Objective MAADR				-0.0578	0.1078	0.0187			
Perceived MAADR							-0.0327	0.0274	0.0161
R-square	0.099	0.292	0.125	0.102	0.304	0.126	0.100	0.293	0.126
Δ R-square				0.003	0.011	0.001	0.001	0.001	0.001

1. EE: Emotional Exhaustion; TP: Task Performance; JS: Job Satisfaction
2. For EE and JS , all data was used in multiple regression; for TP , four outliers were removed before running multiple regression
3. Adding the main effects of media asynchronicity and display regulation goal as covariates led to no change in the impacts of objective or perceived MAADR

The mediating role of perceived MAADR was tested using mediated moderation testing (Muller, Judd, & Yzerbyt, 2005). Muller's method is an extension of Baron and Kenney (1986)'s mediation testing and can be used when the moderation (or interaction) is between two dichotomous variables, as is the case with this study. Specially, three regressions—controlling for gender, phone anxiety, email anxiety and work experience—need to be run for each of the dependent variables, are summarized below.

Step 1: DV=β1 Objective MAADR + Covariates

Step 2: Perceived MAADR = β2 Objective MAADR + Covariates

Step 3: DV= β3 Objective MAADR + β4 Perceived MAADR + Covariates

Table 10 summarizes the expected and the actual results for the three dependent variables. For all of the dependent variables, step 3 (i.e., the test of whether perceived MAADR mediates the impacts of objective MAADR) could not be conducted due to non-significant results in step 1.

Table 10 Mediated Moderation Testing Results

Analysis Step	**Expected Result**	**Actual Result**		
		EE	**TP**	**JS**
Step 1	β1 is significant	β1 is non-significant		
Step 2	β2 is significant	β2 is significant		
Step 3	β3 is non-significant or still significant but to a less extent compared to β1	Could not be conducted		

1. EE: Emotional Exhaustion; TP: Task Performance; JS: Job Satisfaction

In summary, the above hypothesis testing results suggest that after controlling for covariates, neither objective nor perceived MAADR had a significant impact on any of the dependent variables. Instead, what affected the dependent variables were gender (i.e., women had significantly higher job satisfaction than men), and the individual trait of phone anxiety. This construct had a significant positive impact on emotional

exhaustion and a significant negative impact on job satisfaction and task performance. Finally, the individual trait of email anxiety had a significant negative impact on task performance.

Post Hoc Analysis: I conducted post hoc analysis of participants' actual responses to customers in the hypothetical scenarios to make sense of the non-significant impacts on the dependent variables. After reading through participants' responses (with a focus on the politeness of their emotion expressions), I noticed that participants' responses to customers were generally polite. That is, some participants self-regulated their emotion expressions even if they were not required to do so, hence counteracting the display regulation goal manipulation. Moreover, in the work environment where participants were not required to be polite to offensive customers, participants' responses to customers in the phone scenario were more polite than those in email scenario—This is in contrast to my expectation that when participants are not required to be polite to offensive customers, their responses to customers in the phone scenario and email scenario will be similarly polite (though less polite than those in the work environment requiring individuals to be polite to offensive customers). In fact, 8 (out of 39) participants responded to customers boldly in email scenario while only 1 (out of 39) did so in the phone scenario. In summary, the analysis of qualitative data suggests that even if being told that they do not need to regulate emotion expressions to offensive customers, participants may self-regulate their emotion displays, especially in phone communications.

Moreover, upon further examination, I noticed that 4 of the 8 bold responses to customers in the email scenario came from one single organization (out of 13

participating organizations) and this organization had male participants only. Hence, I repeated data analyses controlling for the organizational difference (i.e., the one organization contributing many bold responses was coded as1 and the other organizations were coded as 0). Results are identical to those in previous analyses with one exception (i.e., gender did not have a significant impact on job satisfaction after controlling for the organizational difference).

DISCUSSION

In this section, I will discuss implications of research findings, limitations of current study design and revising directions for future research.

Implications of Research Findings

The non-significant impacts of perceived and objective media affordances and the significant impacts of phone anxiety and email anxiety may suggest two things. First, the context of help desk employees engaging in display regulation during CMC may not be as ideal as originally believed to understand the facilitating (or constraining) role of communication media. Results show that what affects the well-being (i.e., emotional exhaustion and job satisfaction) and task performance of help desk employees is largely the individual trait of CMC anxiety. For help desk employees who are anxious about CMC, the facilitating role of media does not help much, and for those who are comfortable with CMC, the constraining role of media does not restrain much. Hence, what really matters is help desk employees' internal capabilities rather than the external facilitating (or constraining) role of communication media. This also suggests that the current focus on individuals' internal capabilities in the emotion regulation literature is on the right track. Practically, it suggests that if an organization is concerned about the

well-being and performance of help desk employees, then the recruiting and training should focus on their internal capabilities such as their anxiety about CMC.

Second, the non-significant impacts of objective and perceived affordances may be due to the inherent difficulty of quantitatively measuring the relational concept of technology affordance and of testing its nomological network. Theoretically, researchers have argued that technology affordances (as well as associated outcomes should those affordances being actualized) may not be recognized by individuals (e.g.,Volkoff & Strong, 2013). The unrecognizability of technology affordances and associated outcomes may explain the non-significant impacts on the dependent variables (all of which are perceptual measures). Further, the difficulty with construct measurement and nomological network testing suggests that the technology affordance perspective might just serve as a 'latent explanatory mechanism', which I define as a mechanism used to theoretically explain a phenomenon without being measured. For example, Jung, Schneider and Valacich (2010) relied on the technology affordance perspective and argued that the design of system may affect performance via motivational affordance, i.e., the system's potential to fulfill users' motivational needs (e.g., the desire to influence others). Although the concept of motivational affordance played a major role in the theoretical arguments in Jung et al (2010), it was not measured (e.g., whether a certain system design indeed fulfills one's desire to influence others).

Limitations of Current Study Design and Revising Directions for Future Research

Limitations of current study design may also be responsible for the non-significant impacts of objective and perceived affordances on the dependent variables.

The first limitation is related to the self-regulating behaviors in the work environment where participants are not required to be polite to offensive customers. This unexpected self-regulating behavior, which counteracts the display regulation goal treatment, may be due to the lack of a competing goal in the current study design (Taylor & Thompson, 1982). When there is another goal competing for attention and regulatory resources, individuals are less likely to devote attention and regulatory resources to something they are not required to do (i.e., self-regulating emotion expressions). Hence, instead of telling participants that they do not need to engage in display regulation when dealing with offensive customers, I should have requested them to focus on using a different emotion regulation strategy such as experience regulation (i.e., purposively changing one's emotional experience via certain defense mechanism such as venting).

The second limitation is the choice of the dependent variables. Policy-capturing is often used to examine individuals' decisions or judgments such as job choice (Zedeck, 1977), media choice (Webster & Trevino, 1995), organizational effectiveness judgment (Hitt & Middlemist, 1979) and deception detection confidence (Carlson & George, 2004). That is, dependent variables examined using policy-capturing are largely cognitive (even though there is some affective component in, for example, job choice). In this study, the dependent variable of emotional exhaustion is affective; the dependent variable of job satisfaction is both affective and cognitive (Moorman, 1993), but the job satisfaction measure used in this study inclines towards affective job satisfaction. Those affective dependent variables may be less likely to be influenced in a relatively short study period.

One way to overcome the above limitation is to use more objective and cognitive dependent variables in future research. For example, in a call center simulation study in which participants answered hostile phone calls from customers, Goldberg and Grandey (2007) examined impacts of display regulation on task performance (i.e., third-party rated accuracy of filling our order sheets and calculating subtotals, taxes and shipping charges).

If affective dependent variables were to be kept, then another way to overcome the above limitation in future research is to increase the level of immersion experienced by participants (Aguinis & Bradley, 2014; Pierce& Aguinis, 1997). The audio presentation (i.e., a hostile phone call instead of plain texts of the phone call) was used in the current study design, but more can be added to make participants' experience more immersed. For example, constraints can be added to the time that participants have to reply to hostile customers on the phone. Currently, participants had as much time as they wanted to come up with a response to the hostile customer in the phone situation, whereas real phone calls from customers need to be responded immediately. Adding time constraints may increase the similarity between the study setting and the natural setting and hence may make participants' experience more immersed, leading to stronger impacts on the affective dependent variables. Furthermore, other more advanced virtual reality technology (e.g., three-dimensional work environment) could also be used to increase the level of immersion experienced by participants in future research (Pierce& Aguinis, 1997).

Another limitation with the current study design is the limited number of scenarios. Policy-capturing researchers have suggested that the ratio of scenarios to cues

should be 5:1 (Karren & Barringer, 2002) or even 10:1 (Aiman-Smith, Scullen, & Barr, 2002). Industrial statistics show that help desk employees receive 30-70 help requests per day. Hence, the two scenarios included in the current study design may be inadequate to induce a level of pressure and depletion comparable to what help desk employees experience on a daily basis at work, leading to the non-significant impacts on the dependent variables. Stronger impacts on the (affective) dependent variables may be achieved by adding more scenarios (with shortened measures) in future research.

Related to the above point of adding scenarios, another change that I would make is to include other communication media varying in the level of media asynchronicity (should it be feasible with new participating organizations). Help desks at different organizations may use different media (e.g., chat, web form, Twitter), but the two media included in the current study design (i.e., the phone and email) are common across participating IT help desks. If I were able to collect data from a few big help desks that also use other communication media, I would include those media. This is not feasible with the current 13 participating help desks because scenarios using communication media that are not actually used at participating help desks will appear "unrealistic" to participants (Aiman-Smith et al., 2002; Karren & Barringer, 2002).

The last limitation is related to the measurement of objective technology affordances. Currently, participants did not actually interact with customers via the communication media. As a result, there is no purely "objective" measure of technology affordances. If researchers seek to measure objective technology affordances, then both technology features and individual goals need to be real (or real enough so that participants are deeply immersed in the study setting). In future research, it would be

ideal if simulations, just like what Goldberg and Grandey (2007) did in the call center simulation study, could be conducted with working professionals. If alternative participants (e.g., student participants) were to be used, then the potential threat to external validity should be taken into consideration when designing the study.

CONCLUSION

This study seeks to contribute to the emerging technology affordance literature by examining the measurement issue for the relational concept of technology affordance, an issue that needs to be addressed for technology affordance research to proceed to empirical testing. Specifically, I compared two measurements of technology affordance (i.e., the objective technology affordance computed via the indirect measurement approach and the perceived technology affordance via the direct measurement approach) in the context of communication media asynchronicity affordance for display regulation. Data was collected from help desk employees using a survey with policy-capturing scenarios. The current study was unable to draw a conclusion regarding the predictive capability of the two measurement approaches due to the non-significant impacts of both measurement approaches on the dependent variables examined in this study. Implications of research findings and limitations were discussed.

CHAPTER 5: CONCLUSION

The main goal of the dissertation was to understand how communication media facilitate the use of emotion regulation strategies in organizational communication, a theoretically and practically important issue. Utilizing the emerging technology affordance perspective as the theoretical lens to understand the role of communication media, this dissertation comprised of three essays.

The first essay, utilizing a deductive approach, focused on regulating undesired emotions in organizational dyadic communication. Specifically, I relied on media synchronicity theory to understand features of communication media and developed a set of propositions regarding media feature affordances that exist at the intersection of media features and emotion regulation strategies. Developed propositions together suggested that media may facilitate the use of emotion regulation strategies in three ways, namely, reducing the emotion regulation workload, hiding individuals' emotion regulation behaviors from communication partners (who often react negatively towards individuals' use of emotion regulation strategies), and providing the prerequisites (e.g., time, crafting opportunity) needed to use emotion regulation strategies. These media affordances make it possible or easier to fulfill the organizational requirement on emotion regulation, reducing potential negative consequences (e.g., burnout) on individuals who have to engage in emotion regulation on a frequent basis at work.

The second essay utilized a qualitative and inductive approach to understand what are the communication media affordances for emotion regulation and which media feature(s) provide each affordance. Data was collected using the semi-structured interview with twenty IT help desk employees. Borrowing metaphors from the medicine

literature, I proposed that communication partners' emotionally-charged messaging (i.e., hostility) at work are like viruses, that regulating emotions when interacting with hostile partners is akin to resisting contamination with viruses, and that communication media may facilitate emotion regulation via its potential of *hostility decontaminating*. Also, the hostility decontaminating potential has several aspects existing at the system (i.e., team) level (i.e., *hostility filtering*) and the individual level (i.e., *hostility isolating, hostility barriering, and hostility containing*). These system and individual level affordances may be used individually or jointly to counteract emotional contagion at work. Lastly, I identified media features providing identified media affordances; identified media features went beyond those discussed in media synchronicity theory.

The third essay focused on the construct measurement issue, i.e., how should the relational concept of technology affordance be measured. Specifically, I compared the predictive capability of two potential measurements (i.e., objective technology affordances via the indirect measurement approach and perceived technology affordances via the direct measurement approach) in the context of media asynchronicity affordance for display regulation. The objective technology affordances can be computed as the interaction between technology features and individual goals(using likely extant scales); the perceived technology affordances, which shed lights on the nature of technology affordances, require a two-step process for each of the context-specific technology affordances (i.e., first developing scales by, for example, conducting a qualitative study , and then implementing developed scales to collect individuals' perceptions). Data was collected from 84 help desk employees using a survey with policy-capturing scenarios. The third essay was unable to draw a

conclusion regarding the relative predictive capability of the two potential measurements. Current findings provided implications for research, e.g., the difficulty of measuring the relational concept of technology affordance and testing its nomological network. Future research directions to continue examining the construct measurement issue for the relational concept of technology affordance were discussed.

Collectively, findings from this dissertation suggest that communication media may be leveraged to facilitate emotion regulation at the workplace, reducing potential negative consequences associated with unregulated emotions (e.g., hostility contamination) and with having to comply with the organizational requirement on emotion regulation on a frequent basis at work (e.g., burnout). Moreover, apart from individuals' own attempt to leverage communication media, leaderships at the organization may take advantage of communication media at the system (e.g., team) level, protecting individuals who work in the system from being burdened by emotion regulation.

The technology affordance perspective, despite being useful in helping researchers theoretically understand the facilitating role of communication media, faces challenges in empirical research. Despite the disagreement regarding whether technology affordances need to be perceived to be impactful, both objective and perceived technology affordances are hard to use in empirical research: theoretically, researchers have argued that individuals may not recognize the existence of technology affordances as well as associated outcomes. The unrecognizability makes it difficult for researchers to measure the relational concept of technology affordances and to test its impacts. Future attention to the construct measurement issue is need.

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APPENDICES

Appendix A: Interview Protocol

Demographic Information

1. How long have you been working in XX?
2. Could you describe your job title and job duties?
3. How long have you been in that position?
4. Can you tell me something about your previous working experience (nature of the job, how long)?

Personal Use of Communication Media

5. Which communication media do you use (most often) for your job?
6. Can you give me some examples of how you use communication media for different tasks?

Personal Views towards Organizational Feeling or Display Rules

7. Do you sometimes have emotional experience during your interactions with coworkers, supervisors, subordinates, or customers at work? Can you give me an example?
8. Is there any explicit or implicit organizational norm regarding what kind of emotion is appropriate to feel or express during interactions with customers, coworkers, and supervisors/subordinates? Please explain.
9. Let's say that you are very upset at someone (a customer, a coworker, a subordinate or a supervisor), what are the known expectations regarding whether and how should you communicate your emotion?

Emotion Feeling or Display in Computer-mediated Communication (CMC)

10. Can you describe an experience in which you were careful about the emotion you were experiencing during interactions with customers, coworkers, and supervisors/ subordinates via communication media?
11. Can you describe an experience in which you were careful about how you express your emotions during interactions with customers, coworkers, and supervisors/ subordinates via communication media?

Specific ERSs and CMC

12. Can you tell me about a time when you decided to avoid a CMC that might make you emotional?
13. Can you tell me about a time when you decided to switch to CMC (or switch from CMC to face-to-face communication) when anticipating that a communication interaction might make you emotional?
14. Can you tell me about a time when you decided to (temporarily) turn attention away from a CMC that might make you emotional?
15. Can you tell me about a time when you had an emotion during computer-mediated communication and you purposively tried to change your emotion feeling?
16. Can you tell me about a time when you had an emotion at work and you expressed an emotion other than what you were experiencing during computer-mediated communication?

Choice of ERS and Medium

17. We have talked about different methods to manage your emotion feeling or expression. How do you decide how to manage your emotion? How do you decide which communication medium to use for that?

Ending Question

18. Is there anything else you would like to add about managing emotion and communication media, or any of the topics brought up during the interview?

Appendix B: Scenario Combinations

Scenario Combination 1

Work Environment: You are an employee working at an internal IT help desk of a university. Your responsibility is to record and answer problems reported by faculty, staff and students, who are considered as your customers. You are evaluated on how accurately, or correctly, you can do the tasks.

Further, because your job is a customer service job, you are also evaluated on your ability to be friendly and considerate when interacting with customers. The requirement at your help desk is to *provide service with a smile despite the circumstances*. That is, if you experience any negative feelings (e.g. irritation, frustration) when dealing with customers, please try your best not to let those feelings show, and instead always appear to be friendly, considerate, and show positive emotion despite the circumstances. If you express negative emotions (e.g., frustration) to customers, even though the customer is being offensive to you, your performance evaluation will suffer.

Background: There was a university-wide email outage, which caused faculty, staff and students to be unable to access their university email. When the university was trying to solve the email outage problem, a decision was made at the top that the highest priority would be directed toward the restoration of personal email accounts; after that, service accounts (i.e. usually department account such as pricecollege@ou.edu) and email aliases (i.e. an email address that takes place of an assigned account, e.g. msmith@ou.edu in place of msmith_03@ou.edu) will be addressed on a case-by-case basis.

1st Situation and Task: When the IT help desk was working on the email outage problem, you and a few others were responsible for answering phone calls. The call volume was extremely high and as a result, it took much longer for customers to get through the call queue. You received the following phone call from a professor.

[please click to listen to the phone call]

You need to respond to the above help request from the professor. How you respond to the professor is up to you. Further, remember that as an employee working for the IT help desk, *you will be evaluated on how accurately you record and answer problems from customers as well as your ability to provide service with a smile despite the circumstances*. Answer the following questions for the above scenario.

2nd Situation and Task: Several hours after the outage, the IT help desk had successfully restored personal email accounts and was working on resolving remaining email issues (i.e. email aliases and service accounts). You received the following an email from a professor：

I am writing to express my disappointment at the abject failure on the part of your IT department to fix the email exchange problem in a timely manner. My personal email

finally became active after it has been down for several hours. Given the critical nature of a stable and reliable email server it boggles my mind that you didn't have a backup parallel server to serve in case of an emergency. This suggests a level of incompetence that I have not witnessed before.

Then, because of your absurd policy of trying to prioritize re-connection, I was not able to access the departmental email for over 24 hours. This inconvenience (to put it mildly) came at a time when the department had arranged some corporate visitors to our College whose contact information and emails to the department email account could not be accessed. How am I supposed to contact them for the upcoming event in a timely manner with this outage taking so long to fix? The upcoming event is the most important annual event with industry. And I need someone to take care of my department email account NOW!!! Otherwise, I will report it to the College CIO and the Director of your IT team, both of whom I know well.

Thank you for your incompetence in addressing this issue in a timely fashion. Best regards for future competency.

Professor Robert Johnson

You need to respond to the above help request from the professor. At the IT help desk, emails are general expected to be responded by the end of the day. How you respond to the professor is up to you. Further, remember that as an employee working for the IT help desk, *you will be evaluated on how accurately you record and answer problems from customers as well as your ability to provide service with a smile despite the circumstances*. Answer the following questions for the above scenario.

Scenario Combination 2

Work Environment and background is the same as that in scenario combination 1; the order of the two situations and tasks is switched.

Scenario Combination 3

Work Environment: You are an employee working at an internal IT help desk of a university. Your responsibility is to record and answer problems reported by faculty, staff and students, who are considered as your customers. You are evaluated on how accurately, or correctly, you can do the tasks.

While some organizations demand that their help desk employees provide service with a smile despite the circumstances—your organization demands that all employees treat each other respectfully because you *all* work for the same organization. Therefore, it is within your job description that when customers engage in behavior with you that you deem offensive, you are *not* obligated to be civil in return. Your organization's leadership believes that a customer who does not treat help desk employees with civility does not deserve to be treated with civility in return. If you express negative emotions (e.g., frustration) to customers who are being offensive to you, your performance evaluation will *not* suffer.

Background: There was a university-wide email outage, which caused faculty, staff and students to be unable to access their university email. When the IT help desk was trying to solve the email outage problem, a decision was made at the top that the highest priority would be directed toward the restoration of personal email accounts; after that, service accounts (i.e. usually department account such as pricecollege@ou.edu) and email aliases (i.e. an email address that takes place of an assigned account, e.g. msmith@ou.edu in place of msmith_03@ou.edu) will be addressed on a case-by-case basis.

1st Situation and Task: When the IT help desk was working on the email outage problem, you and a few others were responsible for answering phone calls. The call volume was extremely high and as a result, it took much longer for customers to get through the call queue. You received the following phone call from a professor.

[please click to listen to the phone call]

You need to respond to the above help request from the professor. How you respond to the professor is up to you. Further, remember that as an employee working for the IT help desk, *you will be evaluated on how accurately you record and answer problems from customers; also, you are not obligated to be civil to customers who are being offensive to you.* Answer the following questions for the above scenario.

2nd Situation and Task: Several hours after the outage, the IT help desk had successfully restored personal email accounts and was working on resolving remaining email issues (i.e. email aliases and service accounts). You received the following email from a professor:

I am writing to express my disappointment at the abject failure on the part of your IT department to fix the email exchange problem in a timely manner. My personal email finally became active after it has been down for several hours. Given the critical nature of a stable and reliable email server it boggles my mind that you didn't have a backup parallel server to serve in case of an emergency. This suggests a level of incompetence that I have not witnessed before.

Then, because of your absurd policy of trying to prioritize re-connection, I was not able to access the departmental email for over 24 hours. This inconvenience (to put it mildly) came at a time when the department had arranged some corporate visitors to our College whose contact information and emails to the department email account could not be accessed. How am I supposed to contact them for the upcoming event in a timely manner with this outage taking so long to fix? The upcoming event is the most important annual event with industry. And I need someone to take care of my department email account NOW!!! Otherwise, I will report it to the College CIO and the Director of your IT team, both of whom I know well.
Thank you for your incompetence in addressing this issue in a timely fashion. Best regards for future competency.

Professor Robert Johnson

You need to respond to the above help request from the professor. At the IT help desk, emails are general expected to be responded by the end of the day. How you respond to the professor is up to you. Further, remember that as an employee working for the IT help desk, *you will be evaluated on how accurately you record and answer problems from customers; also, you are not obligated to be civil to customers who are being offensive to you.* Answer the following questions for the above scenario.

Scenario Combination 4

Work Environment and background is the same as that in scenario combination 3; the order of the two situations and tasks is switched.

Appendix C: Constructs

Construct	Construct Type	Construct Details
Media Asynchronicity	Manipulated	Media asynchronicity was manipulated via specifying the medium used in the scenario, i.e. email (an asynchronous medium) and phone (a synchronous medium) (Dennis et al 2008).
Media Asynchronicity Manipulation Check	Measured	We would like to know your opinion about the phone (email) communication in general. Please answer the following questions (1 strongly disagree, 7 strongly agree). 1. The phone (Email) allows me to slow down the pace of communication between me and any communication partners. 2. The phone (Email) allows me to rehearse or fine tune a message before sending it to any communication partners.
Display Regulation Goal	Manipulated	Display regulation goal was manipulated in the scenario via specifying organizational requirements regarding display regulation.
Display Regulation Goal Manipulation Check	Measured	Based on evaluation criteria described earlier, please indicate to what extent do you agree with the following statements (1 strongly disagree, 7 strongly agree)? 1. I was expected to always show positive emotions (e.g., friendliness) to customers, according to what I would be evaluated on. 2. I was expected to hide my negative emotions (e.g., frustration) from customers no matter how customers behave, according to what I would be evaluated on. 3. Expressing negative emotions to offensive customers would negatively affect my performance evaluation. 4. If I experience negative emotions when dealing with offensive customers, I would need to put on a show to be friendly and considerate.
Objective MAADR	Computed	Objective MAADR was indicated as the interaction between media asynchronicity and display regulation goal.

Appendix C: Constructs (Continued)

Construct	Construct Type	Construct Details
Perceived MAADR	Measured	Adapted from Honeycutt and Brown, 1998; Walther, 2007; Walther & Boyd, 2002. Please answer the following questions regarding the role of the communication medium phone (compared to face-to-face interaction) in the above scenario (1 strongly disagree, 7 strongly agree). 1. The medium would allow me time to regulate my emotion expressions. 2. The medium would enable me to avoid expressing emotions on the spot. 3. I would have time to manage my emotion expression on the medium. 4. The medium would give me plenty of time to express exactly the emotion I want to express. 5. The medium would enable me to clarify my thoughts and emotion expressions prior to responding to my communication partner 6. The medium would enable me to plan before-hand what I am going to express with my communication partner 7. The medium would enable me to practice before-hand what I am actually going to express to my communication partner. 8. The medium would enable me to edit my emotion expressions for my partner better. 9. The medium would enable me to understand my emotion expressions better prior to responding to communication partner 10. The medium would enable me to abort and start a new way to express my emotions prior to responding
Emotional Exhaustion (EE)	Measured	Adapted from the Job-Related Emotion Exhaustion Scale (Wharton, 1993), which has been used or adapted in research examining the exhaustion of IT personnel (e.g., Moore, 2000; Rutner et al., 2008). Please answer the following questions concerning the IT help desk interaction you just completed in the above scenario (1 strongly disagree, 7 strongly agree). 1. I felt emotionally drained from this interaction. 2. I felt used up at the end of the interaction. 3. I felt burned out from this interaction. 4. I felt frustrated by this interaction. 5. I felt I was working too hard on my job.

Appendix C: Constructs (Continued)

Construct	Construct Type	Construct Details
Job Satisfaction (JS)	Measured	The job satisfaction Michigan scale (Cammann et al., 1979) and job satisfaction index were used (Brayfield & Rothe, 1951). Please answer the following questions concerning the IT help desk interaction you just completed in the above scenario (1 strongly disagree, 7 strongly agree). 1. In general, I do not like my job. 2. All in all, I am satisfied with my job. 3. In general, I like working here. 4. I feel fairly well satisfied with my present job 5. Most days I am enthusiastic about my work 6. Each day of work seems like it will never end 7. I find real enjoyment in my work 8. I consider my job rather unpleasant
Task Performance (TP)	Measured	Adapted from scales measuring self-reported task performance (Judge et al., 2006). Please answer the following questions concerning the IT help desk interaction you just completed in the above scenario (1 strongly disagree, 7 strongly agree). 1. I adequately completed assigned duties. 2. I fulfilled responsibilities specified in job description. 3. I performed tasks that are expected of me. 4. I met formal performance requirements of the job. 5. I engaged in activities that would directly affect my performance evaluation. 6. I neglected aspects of the job I am obligated to perform 7. I failed to perform essential duties
Gender	Measured	Male=0, Female=1
Work Experience (WE)	Measured	Work Experience with IT help desk (in years)

Appendix C: Constructs (Continued)

Construct	Construct Type	Construct Details
Phone Anxiety (PA)	Measured	Adapted from Brown et al. (2004). The statements below concern how you feel about phone communication in general. 1. Using phone makes me nervous 2. Using phone makes me uneasy 3. I feel comfortable using phone 4. I would be comfortable making phone calls that I know a lot of people will listen 5. While composing a phone call to someone I don't know, I feel tense 6. I would be fearful of making phone call to someone I don't know
Email Anxiety (EA)	Measured	Brown et al. (2004). The statements below concern how you feel about email communication in general. 1. Using email makes me nervous 2. Using email makes me uneasy 3. I feel comfortable using email 4. I would be comfortable sending email messages that I know a lot of people will read 5. While composing an email message to someone I don't know, I feel tense 6. I would be fearful of sending email to someone I don't know
Self-monitoring (SM)	Measured	Adapted from the other-directness subscale of the self-monitoring scale (Diefendorff et al., 2005; Gangestad & Snyder,2000). The statements below concern your personal reactions to a number of different situations (True or False). 1. At parties and social gatherings, I do not attempt to do or say things that others will like. 2. I can only argue for ideas which I already believe. 3. I guess I put on a show to impress or entertain others. 4. In different situations and with different people, I often act like very different persons. 5. I'm not always the person I appear to be. 6. I would not change my opinions (or the way I do things) in order to please someone or win their favor. 7. I may deceive people by being friendly when I really dislike them.

Appendix D: Descriptive Statistics

	N	Mean	Std Dev	MA	DRC	EE	JS
Media Asynchronicity (MA)	172	0.500	0.502	1.000			
Display Regulation Goal (DRG)	172	0.541	0.500	0.012	1.000		
Emotional Exhaustion (EE)	172	4.033	1.501	-0.023	-0.136	1.000	
Job Satisfaction (JS)	172	4.257	1.497	-0.032	0.071	-0.699***	1.000
Task Performance (TP)	172	5.946	0.916	-0.046	0.227**	-0.012	0.009
Perceived MAADR	170	4.643	1.712	0.716***	-0.014	-0.081	0.058
Gender	164	1.207	0.407	0.000	-0.141	-0.070	0.184*
Work Experience (WE)	162	8.148	6.166	0.000	0.040	0.023	0.135
Phone Anxiety (PA)	170	2.431	1.320	-0.004	-0.006	0.291***	-0.257***
Email Anxiety (EA)	167	2.005	1.052	0.001	-0.135	0.105	-0.137
Object MAADR	172	0.273	0.447	0.613***	0.565***	-0.076	0.048

Appendix D: Descriptive Statistics (Continued)

	TP	Perceived MAADR	Gender	WE	PA	EA
Media Asynchronicity (MA)						
Display Regulation Goal (DRG)						
Emotional Exhaustion (EE)						
Job Satisfaction (JS)						
Task Performance (TP)	1.000					
Perceived MAADR	0.032	1.000				
Gender	-0.068	0.021	1.000			
Work Experience (WE)	0.012	-0.035	0.032	1.000		
Phone Anxiety (PA)	-0.348***	-0.013	-0.177*	-0.016	1.000	
Email Anxiety (EA)	-0.347***	-0.101	-0.010	0.002	0.156*	1.000
Object MAADR	0.143	0.463***	-0.079	0.023	-0.003	-0.075

Appendix E: Exploratory Factor Analysis (EFA) Pattern Matrix

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
EE1						0.756					
EE2	-0.304					0.715					
EE3						0.724					
EE4	-0.397					0.566					
EE5						0.614				-0.307	
EE6	-0.472					0.596					
JS1	0.779										
JS2	0.892										
JS3	0.910										
JS4	0.968										
JS5	0.874										
JS6*	0.593					-0.359					
JS7	0.902										
JS8*	0.662					-0.340					
TP1				0.836							
TP2				0.861							
TP3				0.907							
TP4				0.885							
TP5*										0.793	
TP6*								0.608			
TP7*								0.767			

1. Only loadings greater than 0.3 are displayed for better readability
2. Items indicated via * were deleted during data analysis

Appendix E: Exploratory Factor Analysis (EFA) Pattern Matrix (Continued)

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
Perceived MAADR 1		0.873									
Perceived MAADR 2		0.898									
Perceived MAADR 3		0.792									
Perceived MAADR 4		0.854									
Perceived MAADR 5		0.869									
Perceived MAADR 6		0.886									
Perceived MAADR 7		0.847									
Perceived MAADR 8		0.908									
Perceived MAADR 9		0.871									
Perceived MAADR 10		0.900									

1. Only loadings greater than 0.3 are displayed for better readability
2. Items indicated via * were deleted during data analysis

Appendix E: Exploratory Factor Analysis (EFA) Pattern Matrix (Continued)

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
PA1					0.946						
PA2					0.916						
PA3*					0.317				0.308		
PA4*										-0.493	
PA5					0.754						
PA6					0.948						
EA1			0.871								
EA2			0.883								
EA3			0.901								
EA4			0.674								
EA5			0.720								
EA6			0.833								
SM1*											0.850
SM2*									-0.871		0.326
SM3*								-0.404	0.482		
SM4*							0.921				
SM5*							0.891				
SM6*							0.402	0.340			0.348
SM7*							0.570				

1. Only loadings greater than 0.3 are displayed for better readability
2. Items indicated via * were deleted during data analysis

Appendix F: Additional Analyses Using Objective MAADR

The first additional analysis conducted was mixed factorial ANOVA using medium (i.e., media asynchronicity) as within-subject factor and goal treatment as between-subject factor for each of the dependent variables (controlling for covariates). Since the within-subject factor has only 2 levels, the assumption of sphericity is met. F statistics are summarized below. The interaction term (i.e., objective MAADR) did not have a significant impact on the dependent variables.

Another way to test the interaction effect is to see whether the within-subject DV differences vary between the two goal treatments. The within-subject DV difference was calculated as the difference in the DV scores between the phone scenario and the email scenario for each participant (e.g., exhaustion difference= exhaustion score in the phone scenario- exhaustion score in email scenario). Each participant had one score for each of the three DV differences (i.e., exhaustion difference, performance difference and satisfaction difference). Normality tests (i.e., Shapiro-Wilk) suggested that none of the three DV differences were normally distributed. Hence, I first conducted 2 independent sample non-parametric (i.e., Mann–Whitney U and Kolmogorov–Smirnov Z) tests using the goal treatment as the grouping variable. Results suggested that the two goal treatments did not significantly differ from each other (in terms of both the median and the distribution of the within-subject DV differences), failing to find the interaction effect. I also tried to first normalize the within-subject DV differences by removing outliers and then use independent sample t-test. Results also suggested that for all of the within-subject DV differences, there was no significant difference between the two goal treatments, again suggesting no interaction.

Additional Analysis 1: Mixed Factorial ANOVA (F statistics)			
	Emotional Exhaustion	Task Performance	Job Satisfaction
Gender	.221	1.757	2.305
Work Experience	.114	.002	1.558
Phone Anxiety	8.478**	15.987***	5.465*
Email Anxiety	.075	11.417***	.580
Display Regulation Goal	1.204	3.912*	.103
Media Asynchronicity	0.081	1.762	.204
Objective MAADR	0.163	.550	.918
Additional Analysis 2: Non-parametric Test of DV Differences			
	Exhaustion Difference	Performance Difference	Satisfaction Difference
Mann-Whitney U	763.500	829.000	755.000
Kolmogorov-Smirnov Z	.689	.522	.590
Additional Analysis 3: Independent Sample T-test of DV Differences			
	Exhaustion Difference	Performance Difference	Satisfaction Difference
T-test	-1.2224	1.416	-0.247