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Impression Formation and Durability in Mediated Communication

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Abstract:

Using literature from impression formation and social information processing theory, we examine the impact of communication style on impression formation and durability in a mediated environment. We leverage common writing styles found in workplace emails—emoticons, uppercase, lowercase, typographical errors—to examine how message receivers evaluate senders using these styles. Via a lab experiment with 748 subjects, including undergraduate students, graduate students, and working professionals, we found that impressions were associated with writing style beyond the email content. Receivers perceived senders of emails containing emoticons, errors, or written entirely in uppercase or lowercase as less functionally competent. They also perceived senders as less methodologically competent when emails used emoticons and less politically competent when emails were all lowercase or contained errors. They perceived senders using a neutral writing style as less sociable than senders using emoticons. In contrast to impression durability in face-to-face environments, receivers positively revised impressions when senders changed their style to neutral from any of the non-neutral styles. We attribute this difference to two characteristics of the IT artifact: symbol variety and reprocessability.

Keywords: Computer-mediated Communication, Social Information Processing Theory, Impression Formation, Email Styles.

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> *Vicki Walker, a financial controller with ProCare Health in Auckland, New Zealand, was fired after two years with the company for, according to ProCare, creating "disharmony in the workplace by using block capitals, bold typeface, and red text in her emails."* (Spitznagel, 2012, p. 100)

1 Introduction

Although work in the academic and practitioner literature has described the potential benefits of bringing together dispersed employees using computer-mediated communication tools well, concerns remain that virtual work arrangements may not be as effective or efficient as they could be due to the very technology that provides flexibility in their design and formation (Breu & Hemingway, 2004; Mesmer-Magnus, DeChurch, Jiminez-Rodriguez, Wildman, & Shuffler, 2011). Contributing factors include the additional time that virtual interactions require and the constraints that communication media impose on the interactions necessary to support virtual work (Culnan & Markus, 1987; Cummings, Espinosa, & Pickering, 2009; Lea & Spears, 1992; Tanis & Postmes, 2003; Walther, 1996). An important predictor of productive virtual work is the speed with which employees can develop rapport to leverage one another's expertise to address the task at hand (Harvey, Novicevic, & Garrison, 2005).

To develop rapport and establish strong working relationships, virtual employees need to develop quick, accurate, and positive impressions of one another (Byron, 2008; Epley & Kruger, 2005; Johri, 2012; Weisband & Atwater, 1999). These first impressions likely have an impact on subsequent interpersonal development and performance as the positivity (or negativity) of these impressions can influence ongoing interactions in mediated environments (Giumetti et al., 2013; Tanis & Postmes, 2003; Vignovic & Thompson, 2010). However, much of the research on impression formation has been conducted in face-to-face (FTF) contexts or in replications of FTF contexts where the results consistently indicate that first impressions have a strong and enduring impact on perceptions (Fiske & Taylor, 1991). In these FTF contexts, individuals unavoidably make many of their personal characteristics public; however, in a computer-mediated environment, many of the elements that contribute to impression formation are not so obvious. Because of these differences, research has assumed that computer mediation would limit the communication of information used in developing impressions and ultimately lead to, for example, reduced stereotyping (e.g., Weisband & Atwater, 1999). However, work has not clearly supported this assumption. Research has found that individuals use information sent in leaner communication environments (e.g., email, chat rooms) to develop impressions of senders (e.g., Byron & Baldridge, 2007; Hancock & Dunham, 2001; Spottswood, Walther, Holmstrom, & Ellison, 2013; Tanis & Postmes, 2003; Tidwell & Walther, 2002). Thus, understanding mediated impression formation not only has implications for virtual work relationships but also impacts a wide variety of virtual interactions that occur both professionally and socially.

In reconciling results from prior research, we focus on two important characteristics of the IT artifact—symbol variety and reprocessability (Dennis, Fuller, & Valacich, 2008)—that have the potential to influence impression-related outcomes in mediated environments. Specifically, the limited modality of the communication (i.e., limiting symbol variety to text only) combined with the reprocessability of the medium (Dennis et al., 2008) leads to different outcomes in the mediated environment than in FTF contexts. Consistent with Walther (1996), we expect that individuals form impressions from text-based mediated environments as they attend to available cues. However, in contrast to prior FTF research indicating that impressions endure after as little as 30 seconds of interaction (Ambady & Rosenthal, 1992, 1993), we propose that impressions that individuals form in mediated environments are more fragile because they are based on a single mode of evidence—text (Johri, 2012). In addition, because text-based interactions create a record of the interaction (i.e., they are reprocessable; Dennis et al., 2008), individuals do not have to rely on their memories of events, which improves their access to feedback that can repair impressions and reduces cognitive load. Because individuals reduce their cognitive load, they are less susceptible to confirmation biases (Fiske & Neuberg, 1990; Johri, 2012; Snyder & Stukas, 1999). Thus, text-based communication environments enable individuals to identify disconfirming evidence more readily than do FTF environments. For these reasons, we propose that impressions formed via text-based interactions are actually *less* enduring than those formed in FTF interactions.

In this study, we ask:

RQ1: How does message style in text-based mediated communication influence individuals' first impressions of potential collaborators?

RQ2: How durable are these initial impressions?

We apply social information processing (SIP) theory and impression formation research to identify how individuals attend to communication styles and cues in developing impressions of potential virtual work collaborators with whom they interact using computer-mediated, text-based interactions. We also apply research in communication competence and computer-mediated communication to identify characteristics of text-based communication that influence how individuals form impressions regarding two aspects of competence relevant to virtual work environments: social and task. In answering our research questions, we contribute to the literature in four ways. First, we extend SIP theory's usefulness to include how information from electronic messages influences task-related perceptions. Second, we explore the role and permanence of first impressions in electronic communication contexts. Third, we expand impression formation theorizing by demonstrating the importance of two characteristics of the IT artifact: symbol variety and reprocessability. Finally, we integrate aspects of task competence into models of communication media perceptions that have mainly focused on social competence.

2 Theoretical Background

In this section, we review SIP theory and research on impression formation. We conclude by overviewing research on social and task competence.

2.1 Impression Formation and Social Information Processing (SIP) Theory

First impressions are attributions a receiver makes of a sender based on initially received information (Asch, 1946). These first impressions influence interactions and unintentionally affect communication outcomes because impressions form an important part of the context that communicators use to develop understanding (Dickey, Burnett, Chudoba, & Kazmer, 2007; Tanis & Postmes, 2003). When people first meet, their expectations or preconceived notions of how the other person will behave (based, in part, on the other person's physical appearance or what others have shared about them) influence their interaction (Stukas & Snyder, 2002). These expectations can have a significant positive or negative impact on interactions by filtering observed cues to those that are consistent with initial expectations (Smith, Neuberg, Judice, & Biesanz, 1997).

A great deal of research supports this self-fulfilling prophecy approach to interaction and impression formation (for a review, see Jussim, 1991). Impressions evolve with additional communication and accumulation of cues, such as those derived from interaction with an individual across various situations or observing individuals interacting with others (Johri, 2012). Over time, one uses this accumulated evidence to test, adapt, and modify initial impressions (Fiske & Taylor, 1991).

Considering impression formation in distributed environments, early communication media research found that media differ in their information-carrying capability. For example, the research found that textual media (e.g., email) carry certain cues such as tone of voice and gestures less efficiently than "richer" media (e.g., video conferencing). Research adopting this view of media argues that individuals using text-based media are less capable of transmitting emotional content and sense of presence than individuals using rich media. This view, which research refers to as the cues filtered out (CFO) perspective, suggests that text-based computer-mediated interactions lack the typical cues that individuals need to form impressions (Walther & Burgoon, 1992). The lean media "filter" the cues, which suppresses their transmission from sender to receiver and which, in turn, leads to low levels of relational communication for those using text-based media (Culnan & Markus, 1987; Sprecher, 2014; Sproull & Kiesler, 1991; Walther, 1996).

Typical text-based identification information such as email addresses and user IDs do not provide information sufficient to determine a sender's work ethic, reliability, or personality. Likewise, text-based communication lacks physical cues such as height, skin color, or physical impairments and auditory cues such as stutters, excitement, and pauses. As such, individuals are unlikely to use biases (both positive and negative) that result from these cues to form impressions of others (Driskell, Radtke, & Salas, 2003). Thus, research suggests that text-based media include inhibitors that delay or impede the ability of geographically dispersed individuals to communicate the necessary information to develop accurate impressions (Johri, 2012).

In contrast to the CFO perspective, SIP theory (Walther, 1996; Walther, Van Der Heide, Ramirez, Burgoon, & Pena, 2015) proposes that individuals attempt to develop social relationships and impressions through communication regardless of the media they use. SIP theory focuses on the cues and social identity information that individuals use to develop relationships when communicating over various kinds of media (Walther, 1996). In the absence of obvious physical and audible cues (as in lean text-based communication media), the theory states that individuals attend to those cues that are available through the media (Walther et al., 2015) and may actually attempt to "fill in the blanks" in an effort to develop an impression of the sender

(Walther & Tong, 2014). In computer-mediated settings, individuals may over-attribute impressions based on the stereotypical examination of a few initial cues (Walther, 1996, 1997). Furthermore, in an environment with limited timely feedback, individuals may experience difficulties in developing accurate impressions of others, which may cause them to refer back to biased or stereotypical impressions (Johri, 2012).

Although original CFO approaches suggest that lean media types constrain impression formulation, SIP suggests that individuals may actually form stronger impressions through lean media (Walther, 1996). For example, Hancock and Dunham (2001) found that impressions of others formed in mediated environments were less specific but more intense than those formed in FTF environments due to over-attribution on fewer cues. In FTF interactions, individuals base their impressions of others on a greater variety of cues collected by multiple senses that allow them to triangulate and make specific assessments on aspects such as introversion or professionalism (Johri, 2012). Alternatively, in mediated environments, individuals develop impressions from limited cues or even a single cue, and these impressions tend to be more general in nature. However, individuals initially hold these impressions more strongly due to their tendency to exaggerate or over-emphasize the limited cues they receive (Hancock & Dunham, 2001).

When communicating in lean environments, the communication style represents one important type of cue that one can use to form impressions. Communication style refers to how a sender forms a message beyond its content, which can include the use of emoticons or grammatical conventions. Research has shown some communication styles to cause message receivers to generate a strong neutral or negative impression of message senders (as opposed to positive) in mediated environments. For example, Walther and D'Addario (2001) found that both negatively and positively valenced statements generated more negative impressions when accompanied by negatively valenced emoticons (i.e., a sad face ☹) and that negatively valenced statements did not necessarily generate any different perceptions when accompanied by positively valenced emoticons (i.e., a happy face ☺). When communication styles do not differ from expected norms of, or preferences for, communicating, receivers are less likely to generate negative impressions of the sender. However, as sender communication styles deviate from expectations, receivers may develop a negative initial impression of the sender (Al-Natour, Benbasat, & Cenfetelli, 2011; Selfhout, Denissen, Branje, & Meeus, 2009). As a result, lean communication environments provide a unique context for impression development due to the influence that various components of message style can have on the impression-formation process.

2.2 Social Competence and Task Competence

Ample tutorials and guidelines suggest how individuals should properly portray themselves when communicating over lean media. A simple Internet search on "netiquette" finds many websites and books devoted to the topic. However, what is less clear is how receivers generate impressions about senders based on their messages' communication style or form. Additionally, while the norms regarding some styles of communication have become more acceptable (e.g., using capital letters to signify shouting or emphasis), the impressions developed from using other communication conventions are less clear. We draw on computer-mediated communication and communication competence research to provide guidance regarding the cues that might be influential in the impression-formation process for members in a virtual work environment.

Prior research in computer-mediated communication has identified both social and task-oriented interactions as key for successful team outcomes (Kollmann, Hasel, & Breugst, 2009; Wang & Haggerty, 2011). Social interactions are an important element of relationship development because they facilitate cohesion and improve participation (Schaubroeck, Lam, & Peng, 2011; Yoo & Alavi, 2001). Equally important are task-oriented interactions wherein colleagues interact with one another to complete tasks. These interactions directly influence task execution and performance outcomes (Dennis et al., 2008; Xu, Kim, & Kankanhalli, 2010). This stream of research has found that the performance of employees working in virtual environments typically improves when they can exchange enough socially oriented information early on so as to facilitate task-oriented interactions later (Chang & Bordia, 2001; Kennedy & Vozdolska, 2010; Powell, Piccoli, & Ives, 2004).

Much of the research on computer-based impression formation has focused on initial interactions where communication tends to be socially oriented (Byron, 2008; Lipnack & Stamps, 1997; Tanis & Postmes, 2003). Less research on computer-based impression formation has examined how individuals form impressions about the task competence of their virtual colleagues. Both social- and task-related evaluations regarding competence are made by the communication receiver and contain judgments about the communication and the communicator (Pavitt & Haight, 1985). Developing an understanding of how individuals form impressions of both

social competence and task competence via lean media is an important but under-theorized aspect of research in virtual team, virtual community, and other computer-mediated environments[1].

2.2.1 Social Competence

In FTF interaction, individuals equate certain behaviors with greater social competence. Social competence refers to an individual's effectiveness in communicating thoughts and feelings to another (Wiemann, 1977). For example, handshakes, erect posture, and pleasantness (both in tone of voice and facial expressions) contribute to positive perceptions of an individual (Burgoon & Walther, 1990). Individuals tend to perceive others who are emotive in their interaction through using vocal and facial expressions as competent social communicators (Burgoon, Birk, & Pfau, 1990; Burgoon & Walther, 1990). On the other hand, individuals perceive others who hesitate, stutter, or make inaccurate comments as incompetent and unsociable (Hosman, Huebner, & Siltanen, 2002). Individuals attribute characteristics to the communicator based on behaviors they observe the communicator make.

We cannot list all social competence characteristics here. Instead, we focus on the characteristics of social competence derived from previously theorized relationships in the first impression and communication competence literatures based on their importance in computer-mediated social communications. Social competence is an important individual characteristic that represents the impressions that other individuals hold in the virtual environment regarding an individual's personality, disposition, and sociability. In terms of evaluating communicators, higher levels of social competence are associated with higher evaluations of verbal competence, engagement, and generally positive attitudes toward the communicator (Burgoon & Walther, 1990) and, in virtual environments have been shown to have a positive relationship with knowledge exchange (Phang, Kankanhalli, & Sabherwal, 2009). Social competence represents a characteristic that individuals perceive they can discern (whether accurately or inaccurately) from text-based messages, and research has found that social competence has significant implications for evaluation and impression formation (Epley & Kruger, 2005; Walther, 1995).

2.2.2 Task Competence

Another important aspect of impression formation in virtual environments deals with the perception that individuals will be competent and contributing employees. Much work in the virtual environment focuses on projects (i.e., it focuses on non-routine tasks performed by teams with flexible membership). This context provides little insight in terms of defined procedures or prior performance measurements, which makes it difficult to assess the potential contribution of a virtual employee (Chudoba, Wynn, Lu, & Watson-Manheim, 2005). Additionally, given the potential for shirking, low commitment, and absenteeism in a virtual environment (Jarvenpaa & Leidner, 1999), assessing one's potential contribution is important because it may influence future interactions and performance. In the virtual context, task competence refers to an individual's effectiveness as a productive employee in a virtual environment (Hertel, Konradt, & Voss, 2006; Kauffeld, 2006). It entails the skills, abilities, and proficiencies that enable a person to productively participate on a task in the virtual work setting (Hertel et al., 2006; Kauffeld, 2006; Wang & Haggerty, 2011). Although one individual may develop positive impressions of another individual regarding the latter's personality, disposition, and sociability, it does not mean that the former would perceive the latter as a productive member when working on a project in a virtual environment. Given the preponderance of task-related communications that research has found to dominate initial communications in a virtual environment, the need to appropriately identify employees who can be productive in this environment has increased in importance (Harvey et al., 2005; Majchrzak, Malhotra, Stamps, & Lipnack, 2004; Scott & Einstein, 2001).

Prior research has identified three task competencies that are useful for predicting the likelihood that an individual will succeed in a virtual work environment. Functional or professional competence is the task domain-specific skills that an individual brings to bear on virtual task activities (Kauffeld, 2006; Scott & Einstein, 2001). Political competence is an individual's ability to cooperate with others (Kauffeld, 2006); this competence is similar to Bartram's (2005) supporting and cooperating competence, Kollman et al.'s (2009) interpersonal competence, and Majchrzak, Malhotra, and John's (2005) collaboration know-how. Methodological competence is an individual's ability to bring forth the personal resources necessary to complete a task, including creative problem solving and critical decision making skills (Kauffeld, 2006; Scott & Einstein, 2001), and is similar to Kollmann et al.'s (2009) realization competence. The methodological

[1] Although we leverage the virtual team as a context for this research, the findings are relevant and intended for all types of professional virtual interactions where the IT artifact for communicating is text-based.

competence definition we use in this paper encompasses two of Bartram's (2005) competencies: 1) creating and conceptualizing and 2) organizing and executing. Appendix A compares the task competencies used in the paper and their derivation.

3 Hypothesis Development

One cannot doubt that email and text-based communication systems have enabled timely dissemination of information across time zones and distances (Munter, Rogers, & Rymer, 2003). When communicating with unknown others, differences in communication mannerisms and styles influence how a message's recipients form impressions of the sender (Epley & Kruger, 2005; Jensen, Averbeck, Zhang, & Wright, 2013; Walther & D'Addario, 2001). Of specific interest in this study is how the style in which a message is communicated over text-based systems influences the message recipient's initial impression of the sender in terms of social and task competence and the durability of these initial impressions. In this study, we focus on the extent to which a message's characteristics and stylistic cues (independent of the content) influence the receiver's evaluation of the sender since these cues may differ from the neutral[2] or unnuanced communication that the receiver expects (Belanger & Watson-Manheim, 2006). In this section, we develop hypotheses regarding receiver-formed impressions of a sender's social and task competence as impacted by five common styles of email writing.

3.1 Message Styles and Social Competence

As we note above, social competence refers to a message receiver's perception that a message's sender effectively communicates personal thoughts and feelings (Wiemann, 1977). In general, the perception of social competence is an impression in which communication receivers assess senders based on appearance, behaviors, and communication mannerisms (Hancock & Dunham, 2001). In a computer-mediated environment, particularly one that relies on email or text-based interaction as the primary communication medium, communication between senders and receivers is constrained by the medium's limited capability to deliver visual and audible cues and enhanced by the medium's capability to store a history of these cues for later review (Dennis et al., 2008; Walther, 1995). In this context, one can only form impressions of a message's sender based on the sender's use of grammar and syntax, the sender's word choice, and the appropriateness of sender's textual communication symbols (Canale & Swain, 1980; Hymes, 1966). Differences in perceptions of the message sender can arise as receivers perceive differences in the style that the sender applied either knowingly or unknowingly when crafting a message (Watson-Manheim, Chudoba, & Crowston, 2012). Prior research examining message styles provides some insights about using uppercase, lowercase, and emoticons and avoiding errors when creating messages. We next examine how these styles might contribute to the creation of initial impressions of competence in a virtual work environment.

SIP theory proposes that message-receiving individuals attend to cues a sender presents to understand the message and the sender. These cues provide a basis for forming initial impressions through the textually conveyed information. Prior research has shown that individuals develop impressions of others' sociability based on email messages (Tanis & Postmes, 2003). In examining perceptions of online review writers, Jensen et al. (2013) found that readers of affect-laden reviews developed lower perceptions of these writers' credibility. However, we do not know about the relationship between specific types of cues that accompany messages (beyond the message content itself) and sociability perceptions. Further, we do not know whether these cues have lasting effects on sociability perceptions. We address these topics next.

Many people use uppercase to convey extreme feelings of emotion in an email or text message (Byron, 2008). In fact, one could consider uppercase as one mechanism for increasing social presence in a traditionally lean medium (Rezabek & Cochenour, 1998; Utz, 2000). However, communication in all uppercase might suggest to a receiver that the sender has failed to distinguish between and has paid little attention to communication norms. Thus, receivers may perceive senders using all uppercase letters to have less awareness of others or lower sociability than senders of neutrally written emails and, thus, to have lower social competence.

In their qualitative analysis of text-based discourse, Ferrara, Brunner, and Whittemore (1991) found that lack of capitalization occurred in almost 70 percent of emails. Despite the prevalence of using all lowercase letters in practice, these authors were among the first to explicitly investigate this communication style and

[2] We use neutral to refer to the use of proper grammar, proper capitalization, no emoticons, correct spelling, and correct punctuation.

the characteristics that individuals attribute to people who use this style. If lowercase writing is associated with individuals' not being interested in conforming to neutral communication norms, then we might expect receivers to ascribe senders with traits consistent with that mental model. Similar to perceptions of senders using all uppercase, receivers may perceive senders who send all lowercase emails to be less aware of others and less sociable and, thus, have lower social competence than senders of neutrally written emails.

Perceptions of email and other forms of text-based computer-mediated communication essentially evolved in two ways. Early views of email considered it as a replacement for more formal memos (Markus, 1994). Another, and perhaps more prevalent perspective today, view considers it as a replacement for verbal communication (Fuller, Vician, & Brown, 2006; Orlikowski & Yates, 1994). In this second view, individuals are likely to approach email interaction as quick and easy and focus little on writing perfectly. Thus, some individuals write emails with a focus on speed and efficiency rather than on grammatical and spelling accuracy (Ferrara et al., 1991). We have not identified any research associating communication carelessness or writing errors with receiver impressions of sociability; therefore, any expectations regarding errors on receiver perceptions are somewhat exploratory. However, errors in messages may indicate a lack of concern or interest in the communication and result in negative perceptions of the sender (Ferrara et al., 1991; Ybarra, 2002). As a result, we expect that receivers of emails containing errors will develop initial impressions of the sender's sociability and ascribe lower social competence to them. As such, we hypothesize:

H1a: Receivers are more likely to develop initial impressions of senders as lower in social competence when senders write electronic communications in all uppercase/lowercase and when the electronic communications contain errors than when senders write electronic communications in a neutral style.

Many people use uppercase to convey extreme feelings of emotion in an email or text message (Byron, 2008; Walther & D'Addario, 2001), and emoticons can be an important mechanism for increasing one's social presence (Rezabek & Cochenour, 1998; Utz, 2000). Although emoticons are ubiquitous in text-based communication, few studies have investigated the initial impression that receivers develop regarding senders who use emoticons. In FTF environments, gestures and facial expressions that express emotion are associated with perceptions of sociability (Burgoon et al., 1990). Using communication cues to express emotion highlights relational connectivity between two communicators (Colley et al., 2004). Thus, we hypothesize that receivers will develop initial social competence impressions of senders who transmit messages using emoticons. As such, we hypothesize:

H1b: Receivers are more likely to develop initial impressions of senders as higher in social competence when senders write electronic communications using emoticons than when senders write electronic communications in a neutral style.

3.2 Message Styles and Task Competence

Researchers have used SIP theory to explain that message receivers attend to email cues to develop understanding of social relationships. Similarly, we believe that one can apply SIP theory to explain how message receivers form initial impressions of task-based competencies from the same cues. For competent communication to occur, one must effectively present both a message's specific content and style that influences how the receiver makes sense of the information.

Message style should influence the development of initial impressions of senders as it relates to their functional, political, and methodological competence in the virtual context. One can equate the selective use of uppercase letters in a text with the speaker's use of facial expressions and gestures, such as amplifying text, conveying mood, and enriching communication (Sproull & Kiesler, 1991). However, receivers may perceive messages sent using *all* uppercase letters as confusing because the message's components show little distinction. Research has shown that individuals perceive messages using all uppercase letters as having unclear meanings and carrying negative connotations (Calem, 1995; Higgins, 1997). As a result, receivers may see senders as lacking in effectiveness in performing tasks at hand. Research has also shown that individuals see senders using all uppercase letters in messages as intensely emotional and less rational (Byron & Baldridge, 2007) and, thus, less functionally competent. Individuals can also perceive messages in all uppercase as demonstrating aloofness and a general lack of attentiveness to the receiver. Individuals may perceive a sender who creates messages using all uppercase as abrasive and inconsiderate of receiver concerns (Byron, 2008). Thus, we expect that messages written in all uppercase letters will be associated with negative assessments of the sender's political competence. Finally, someone who writes a message in all uppercase suggests that the sender is unaware of, or disinterested in, the influence that message style might

have on the receiver. Likewise, it suggests a lack of attention to communication norms in an electronic or virtual environment (Calem, 1995; Higgins, 1997). As a result, receivers of such messages will likely perceive the sender to be less methodologically competent due to the sender's close-minded approach to communication and insufficient attention to the receiver's needs.

Individuals will likely perceive messages in all lowercase similar to those in all uppercase. One can view someone who chooses to use all lowercase in an email as someone who knows the rules but simply chooses not to follow them (Ferrara et al., 1991). The sender may feel that eliminating keystrokes saves time (Ferrara et al., 1991), but the receiver may interpret the all-lowercase message as indicating the sender's laziness, disengagement, or a lack of concern or understanding for the topic of discussion. Receivers view correct capitalization in the absence of other cues as emotionally neutral, but they view a message in all lowercase as potentially suggesting non-neutral communication and as confusing (Byron & Baldridge, 2007), which may result in individuals' developing initial impressions of the sender as functionally incompetent regarding the topic or ineffective at expressing details about the topic. A message in all lowercase is also associated with a receiver's perception that the sender has a lack of interest in the norms of communication (Ferrara et al., 1991). As a result, we expect that individuals will view messages in all lowercase as a sender's disassociation with collaborative communication and, thus, lower political competence. Because all-lowercase communication is associated with the sender's low concern or awareness of communication norms, receivers may also view these messages as indicating the sender's lacking direction or strategy to approach a problem. In the same way that research has associated uppercase with shouting, individuals may perceive lowercase as associated with whispering or a lack of assertiveness and a potential sign of uncertainty and caution. As a result, individuals would associate all-lowercase communications with initial impressions of low methodological competence.

One can equate emoticon use in text-based interaction with a speaker's use of facial expressions and gestures, which enrich communication (Sproull & Kiesler, 1991). However, much prior research on emoticon use has been in a social context, not a task- or project-oriented context (Walther & D'Addario, 2001). Research has found emoticon use to increase perceptions of social likability. However, recent research has found that individuals view its use in task-oriented contexts as a distraction and unprofessional (Jensen et al., 2013). Thus, emoticon use is likely associated with perceptions of low functional competence. While we expect the use of emoticons to increase perceptions of social competence, we expect its influence on initial impressions of political competence to be negative because research has found that individuals have associated emoticon use with social messages and because it may actually confuse readers of task-oriented messages who do not expect the messages to contain social content. Additionally, because emoticons carry emotional connotations (Byron & Baldridge, 2007), their use in task-oriented contexts provide additional confusion in that they potentially lessen the perceived sincerity of messages and negatively impact impressions of senders' political competence. We further expect emoticon use to be associated with lower impressions of senders' methodological competence. If a message is associated with extraneous emotional or social content during task communications, the intent of the message becomes unclear, and research has shown receivers to judge message senders negatively (Byron & Baldridge, 2007).

Finally, receivers may not understand a message used for task-based communication that contains errors. In addition, receivers will likely perceive the sender of such a message as someone who is careless, incompetent, and ineffective (Ferrara et al., 1991). This perception of the sender is consistent with prior research that has shown the tendency to make typographical or spelling errors during online activities is negatively associated with education level (Hargittai, 2006), which leads to negative perceptions of senders regarding functional competence. Likewise, research has shown that receivers perceive senders of messages with errors as having little interest in the communication topic because they do not correct such messages before sending (Lea & Spears, 1992). Given findings in prior research that have shown receivers perceive senders of messages that include errors as uninterested in the communication (Lea & Spears, 1992), we expect that individuals will negatively perceive the political competence of senders of messages with errors. In the same manner, we anticipate that receivers, when viewing these communications, will form low initial impressions of senders' methodological competence. The existence of errors in communication suggests a lack of attention to detail, and, while potentially associated with visionary or creative/innovative approaches to tasks, errors are not associated with the successful completion of tasks. Research has shown errors to be associated with negative perceptions of the sender (Ferrara et al., 1991; Ybarra, 2002). As such, we hypothesize:

H2: Receivers are more likely to develop initial impressions of senders as lower in functional competence (H2a), political competence (H2b), and methodological competence (H2c) when

senders write electronic communications with all uppercase, all lowercase, errors, or emoticons than when they write them in a neutral style.

3.3 Durability of Impressions

Our second research question (RQ2) focuses on the durability of impressions over time. While initial impressions are important, we understand little about how durable these initial impressions are in a virtual environment. While SIP and other research suggests that individuals accumulate communication cues to develop an initial social impression of others (Burgoon & Lepoire, 1993; Walther, 1996), researchers have found evidence that individuals are biased toward confirming cues and often overlook disconfirming evidence to maintain consistency, reduce cognitive dissonance, and even strengthen initial impressions and beliefs (Dougherty, Turban, & Callender, 1994; Fiske & Taylor, 1991; LePoire & Yoshimura, 1999; Walther, 1997). This finding is not surprising because in FTF interactions one has a great deal of (visual, auditory, olfactory, etc.) evidence to consider. The additional cues increase the receiver's cognitive load, which leads the receiver to rely more heavily on confirming evidence (Fiske & Neuberg, 1990; Harris & Perkins, 1995; Snyder & Stukas, 1999). Yet, text-based mediated environments contain fewer types of cues surrounding each interaction (i.e., limited symbol variety; Dennis et al., 2008), and such environments more likely record the interaction (i.e., reprocessability; Dennis et al., 2008). With the ability to review the interaction, a receiver reduces the cognitive load required to assess cues. Thus, the receiver can process information and embrace differences in style in subsequent communication rather than disregard them because of confirmation bias. Research has shown the medium's capability to support reprocessability to be useful in assimilating new cues, which supports knowledge internalization (Scott & Sarker, 2010). Instead of altering perceptions of cues to fit initial impressions, we propose that, in mediated communication, individuals will reform impressions to fit perceptions of subsequent cues, which will result in reduced cognitive dissonance (Festinger, 1957). We contend that, in text-based interactions, one can more easily identify differences, which renders initial impressions less enduring and more fragile in this environment. Thus, unlike in FTF interactions where first impressions endure (Lim, Benbasat, & Ward, 2000), we argue that, due to the IT artifact characteristics of limited symbol variety and high reprocessability, the mediated environment facilitates receivers' reassessing sender impressions in each communication. As such, we hypothesize:

H3: Receivers of electronic communications previously written with all uppercase (H3a), all lowercase (H3b), errors (H3c), or emoticons (H3d) will change their initial perceptions of the sender's social competence and task competence (e.g., functional competence, political competence, and methodological competence) after receiving an electronic communication from the same sender written in a neutral style.

4 Methodology

We used a repeated-measures laboratory experiment with a single between-subjects factor (i.e., email style) that comprised five treatments (neutral [control], uppercase, lowercase, errors, emoticons) and a single within-subjects factor (i.e., sequence) that represented the two measurement periods. To factor out potential confounds due to participants' age or work experience, we measured age and work experience and included them in the analysis as covariates. We randomly assigned participants to one of the five treatments. The words and sentences used to construct email messages we presented to participants were the same across all five treatments; the emails differed only in their writing style. Participants remained assigned to the email style treatment for the duration of the experiment and never saw any other email style except for the final email (in the final measurement period) in which all participants received a message in the neutral style to test Hypothesis 3. Participants assigned to the neutral treatment saw only neutral-style emails throughout the experiment.

To ensure that results obtained resulted from the emails' style and not their content, a subset of participants followed the same experimental procedures but with emails with different content and one of the five email styles. This latter group followed the exact same procedures and completed the same task and surveys. We compared the data collected from this second group of participants with the data from the initial group and found no statistically significant differences between them in terms of the dependent variables due to differences in email content ($F_{(16,1647)}$ =0.967, p = n.s.). Therefore, we combined both groups into a single group for analysis and hypothesis testing.

4.1 Participants

Seven hundred forty-eight individuals participated in the study. Among them were working professionals, upper-level undergraduate business students, and full-time and part-time master's students in business enrolled at universities in the southeast and southwest United States. We randomly assigned participants to the treatments, and they represented a variety of functional business areas and backgrounds. Participants were mostly male (59.5%) with a mean age of 24.7 years and four years of work experience. To examine for the aforementioned potential impact of email content, 434 participants were in the first email content (e.g., initial content) participant group and 314 were in the second email content (e.g., altered content) participant group. Table 1 provides the participants' descriptive statistics.

Table 1. Study Participants

Age mean (s.d.)	24.7 (3.68)
Age range	18-60
Gender	59.5% male
Work experience mean (s.d.)	4.01 (3.47)
Experience range	0-40
N	748

4.2 Experimental Task and Procedures

Experimental procedures were the same for all five email style treatments. The experimental session was a single session lasting approximately 30 minutes. Prior to conducting the experiments, we conducted pilot tests of the instrument and procedures. In addition, we conducted card sorts of the items used to measure the forms of competence. The card sorting helped us to identify the appropriate set of items to measure the constructs and to ensure that the items were meaningful to participants. The pilot tests helped to ensure that the participants would notice the differences across the email styles and that the styles were not so overbearing that they distracted the subjects. Pilot tests also indicated that 30 minutes was sufficient to complete experimental activities. We provided the experimental materials to all participants via a Web interface that presented the task instructions, treatments, and all measurement scales. We used the Web interface to ensure that we consistently presented the materials and instructions to all participants. We directed participants to the website, which asked them to provide their consent to participate in the study and then their demographic information.

After completing the demographic questions and a self-assessment of their own social and task competence, the website provided participants with the task scenario. It told participants that they would work virtually to diagnose problems experienced by their client, an online drugstore company. To identify other potential employees for the task in this virtual environment, the website asked the participants to evaluate an unknown fellow employee as a potential coworker on this task. At this point, the website randomly assigned participants to one of the five email style treatments and subsequently provided them with an initial email in the appropriate email style treatment from their potential coworker for evaluation. After reading the email, the website directed participants to assess the sender of the email using a semantic differential scale to evaluate social and task competence. This first email assessment lasted approximately 10 minutes. After completing the assessment, the website provided participants a second email from the potential coworker that was written in the same initial email style (designed to reinforce the initial impression). The website then provided participants with a third and final email written in the neutral email style (regardless of prior treatment) designed to test the durability of their initial impressions. The website again directed participants to assess the email sender. This last email assessment lasted approximately 10 minutes. After participants performed the last assessment, we debriefed them. In summary, the website provided participants with three emails: two emails written in their treatment style and a final email written in a neutral style. Based on these emails, we assessed participants two times (sequence) regarding their perceptions of the sender.

4.3 Measures

The independent variable in this research was email style. The dependent variables were impressions of social and task (i.e., functional, political, and methodological) competence. Email style is the difference in the style depicted in the emails that the participants received. For each base message, we used the same textual content. The treatment was the style in which text appeared. The first style, neutral, had proper grammar, no emoticons, and correct punctuation—the base email message for control purposes. The second style, uppercase, had entirely uppercase text. The third style, lowercase, had entirely lowercase text. The fourth style, errors, contained misspellings and improper punctuation. This email style contained seven misspellings/typos, two missing words, and one punctuation error. The fifth style, emoticon, included several emoticons and asterisks around one word (see Appendix B).

We asked participants two manipulation check questions after they performed the final email assessment to determine if they noticed the email style to which they were assigned and to ask how many individuals sent them emails they had to assess (all emails contained the same from/to information). Results showed that all participants properly identified the email style presented to them and all participants recognized that the emails they received were from the same person, so we included all participants in the analysis.

All social and task competence measures employed in the research applied semantic differential scales with eight measurement points (1-8) (see Appendix C). The measures for impression of social competence comprised items designed to assess participant perceptions of the email sender as a communicator of personal thoughts or feelings. We measured social competence via a semantic differential scale that comprised three items derived from Leary (1957). The population of items to measure social competence is quite large (Cavell, 1990). To keep the scale at a reasonable length, we focused on specific social skills that we deemed most appropriate for the context—the foundational element in Cavell's (1990) tri-component approach. The semantic differential scale poles we used to measure social competence were unconfident/confident, introvert/extravert, outgoing/shy.

We adapted the measures for task competence from Kauffeld (2006). The measures comprised items designed to assess participant perceptions of the email sender's task competence. These impressions comprised assessments of functional, political, and methodological competence. The poles for the semantic differential scale we used to measure impressions of functional competence included skilled/unskilled, professional/unprofessional, educated/uneducated, capable/incapable, effective/ineffective, and incompetent/competent. We measured impressions of political competence with four items that included fair/unfair, cooperative/uncooperative, sharing/keeping, and considerate/inconsiderate. Finally, the four items we used to measure impressions of methodological competence included visionary/grounded, creative/practical, spontaneous/planned, and open-minded/myopic.

We tested the measures for discriminant validity and reliability. As Table 2 shows, the measures showed appropriate discriminant validity by loading more strongly on their own construct than any other construct. The measures also showed adequate reliability with alpha coefficients over the 0.70 threshold except for social competence at 0.67. We kept all items for social competence to remain faithful to the original measures and to enhance the content validity of the measure. We averaged the items to create the constructs we used in the remainder of the analyses.

We used these measures three times in this research. Prior to exposing subjects to any email message, we asked them to perform a self-assessment using these items. We used this initial measure to evaluate the random assignment of participants to the five email style treatments. We then used the measures two more times: 1) to capture initial receiver perceptions of the sender after receiving the first email and 2) to assess the durability of these perceptions after the receivers received a last neutral email from the sender.

Table 2. Confirmatory Factor Analysis and Reliability

	Construct			
Measure	S	FC	PC	MC
Extrovert	0.808	-0.056	0.091	0.186
Outgoing	0.717	0.056	0.263	0.353
Confident	0.659	0.442	0.036	-0.038
Professional	-0.058	0.850	0.067	-0.133
Educated	0.010	0.842	0.241	-0.021
Skilled	0.058	0.841	0.208	-0.006
Capable	0.124	0.809	0.263	-0.048
Competent	0.157	0.789	0.152	-0.215
Effective	0.115	0.782	0.129	-0.043
Cooperative	0.099	0.204	0.844	0.078
Fair	0.089	0.267	0.841	0.040
Sharing	0.209	0.097	0.791	0.200
Considerate	-0.049	0.519	0.618	0.066
Visionary	0.108	0.060	0.033	0.838
Spontaneous	0.108	-0.427	-0.011	0.705
Creative	0.191	-0.283	0.196	0.702
Open-minded	0.127	0.140	0.480	0.598
Alpha	0.67	0.92	0.86	0.77

Note: S = social competence; FC = functional competence;
PC = political competence; MC = methodological competence

5 Results

Table 3 depicts the descriptive statistics for the constructs. Statistical tests found no difference across the five treatments in terms of gender, age, or years of work experience.

To determine whether email style influenced the receiver's perceptions of the sender, we performed an overall repeated-measures MANOVA. The results (see Table 4) indicate a significant main effect for email style ($F_{(16,2215)}$ = 11.748, p = 0.001). Thus, perceptions of the dependent variables differed due to the email style (treatment). The interaction between email style and sequence was also significant ($F_{(16, 2215)}$ = 23.340, p = 0.001), which indicates that there was a differential change in perceptions depending on the email style treatment provided over the sequence of measurements. The covariates added in the model to account for age and work experience effects were not significant either directly or in interaction with our within-subjects treatment of sequence. Given the significant main effects of email style and the significant interaction effect, we performed follow-up univariate tests. As one can see from the results in Table 5, we found significant main effects of email style on perceptions of social competence ($F_{(4,728)}$ = 6.32, p = 0.001), functional competence ($F_{(4,728)}$ = 20.24, p = 0.001), political competence ($F_{(4,728)}$ = 2.40, p = 0.049), and methodological competence ($F_{(4,728)}$ = 7.68, p = 0.001). We also found significant interaction effects of email style and sequence on perceptions of social competence ($F_{(4,728)}$ = 20.77, p = 0.001), functional competence ($F_{(4,728)}$ = 47.59, p = 0.001), political competence ($F_{(4,728)}$ = 6.11, p = 0.001), and methodological competence ($F_{(4,728)}$ = 42.40, p = 0.001).

Table 3. Means and Standard Deviations

	First impression email		Last neutral email	
	Social competence			
	Mean	SD	Mean	SD
Neutral	5.285	1.264	5.485	1.121
Uppercase	5.534	1.179	5.566	1.266
Lowercase	5.058	1.480	5.949	1.101
Errors	4.974	1.237	5.644	1.108
Emoticons	6.067	1.196	5.542	0.977
	Functional competence			
	Mean	SD	Mean	SD
Neutral	5.631	1.216	5.746	1.312
Uppercase	5.007	1.566	6.066	1.293
Lowercase	4.393	1.683	6.324	1.302
Errors	3.528	1.531	5.976	1.467
Emoticons	3.604	1.274	6.408	1.295
	Political competence			
	Mean	SD	Mean	SD
Neutral	5.705	1.227	5.857	1.190
Uppercase	5.293	1.365	5.978	1.360
Lowercase	5.253	1.353	6.132	1.240
Errors	5.018	1.258	5.844	1.334
Emoticons	5.468	1.159	6.015	1.177
	Methodological competence			
	Mean	SD	Mean	SD
Neutral	3.942	1.234	4.400	1.197
Uppercase	4.071	1.354	4.422	1.326
Lowercase	4.327	1.307	4.414	1.257
Errors	4.298	1.324	4.162	1.081
Emoticons	5.517	1.353	3.897	1.132

Table 4. Overall Repeated-Measures MANOVA Results

Independent variable	Wilk's lambda	F	Hyp df	Error df	p-value
Age	0.992	1.410	4	725	0.229
YearsExp	0.994	1.167	4	725	0.324
Email style	**0.780**	**11.748**	**16**	**2215**	**0.001**
Sequence	0.996	0.806	4	725	0.522
Sequence*Age	0.996	0.754	4	727	0.555
Sequence*YearsExp	0.992	1.477	4	725	0.207
Sequence * Email style	**0.610**	**24.340**	**16**	**2215**	**0.001**

Table 5. Univariate Results

	Dependent variables							
	Social comp.		Funct. comp.		Political comp.		Method. comp.	
Independent variable	*F*	*p-value*	*F*	*p-value*	*F*	*p-value*	*F*	*p-value*
Age	0.83	0.362	0.36	0.548	2.74	0.098	4.32	0.038
YearsExp	0.46	0.497	0.44	0.505	0.00	0.964	2.83	0.093
Email style	**6.32**	**0.001**	**20.24**	**0.001**	**2.40**	**0.049**	**7.68**	**0.001**
Sequence	0.42	0.838	2.50	0.114	2.17	0.141	0.02	0.877
Sequence*Age	0.01	0.913	2.11	0.147	0.02	0.899	0.31	0.575
Sequence*YearsExp	1.21	0.272	1.38	0.240	0.22	0.637	3.64	0.057
Email style*Sequence	**20.77**	**0.001**	**47.59**	**0.001**	**6.11**	**0.001**	**42.40**	**0.001**

5.1 Hypotheses Testing: Comparisons to Neutral Emails

To determine how the various email styles influenced receiver perceptions of the sender compared to a neutral email, we performed Bonferroni corrected t-tests with an overall family alpha level of 0.05 for the four dependent variables. We used these results to test our hypotheses. Table 6 summarizes the results for the paired comparisons.

Table 6. H1 and H2 Results

		First email, between treatments		
	Treatment comparison	**Mean difference**	**t**	**p-value**
Social competence				
H1a	Neutral > Uppercase	-0.243	1.61	Ns
	Neutral > Lowercase	0.232	1.54	Ns
	Neutral > Errors	0.319	2.11	Ns
H1b	Neutral < Emoticon	-0.783	5.25	**0.001**
Functional competence				
H2a	Neutral > Uppercase	0.614	3.55	**0.004**
	Neutral > Lowercase	1.232	7.12	**0.001**
	Neutral > Errors	2.091	12.09	**0.001**
	Neutral > Emoticons	2.026	11.85	**0.001**
Political competence				
H2b	Neutral > Uppercase	0.401	2.67	**0.078**
	Neutral > Lowercase	0.454	3.03	**0.026**
	Neutral > Errors	0.676	4.51	**0.001**
	Neutral > Emoticons	0.224	1.51	Ns
Methodological competence				
H2c	Neutral > Uppercase	-0.119	0.77	Ns
	Neutral > Lowercase	-0.372	2.40	Ns
	Neutral > Errors	-0.343	2.19	Ns
	Neutral > Emoticons	-1.582	10.34	**0.001**
Note: p-values are Bonferroni corrected with alpha = 0.05.				

H1a proposes that receivers perceive senders who write emails in all uppercase, in all lowercase, or with errors as lower in social competence than senders who write emails using a neutral style. The t-test results do not provide support for this hypothesis. However, receivers perceived senders who wrote emails using

a neutral style as significantly lower in social competence than senders who wrote emails using emoticons (t = 5.25, p = 0.001), which supports H1b.

H2 proposes that receivers perceive senders who write emails in all uppercase, in all lowercase, with emoticons, or with errors as less functionally (H2a), politically (H2b), and methodologically (H2c) competent than senders who write emails using a neutral style. The results provide support for H2a because receivers perceived senders who wrote emails in all uppercase (t = 3.55, p = 0.004), all lowercase (t = 7.12, p = 0.001), with errors (t = 12.09, p = 0.001), and with emoticons (t = 11.85, p = 0.001) as having less functional competence than senders of emails who wrote emails in a neutral style. For H2b, receivers perceived senders who wrote emails in all lowercase (t = 3.03, p = 0.026) and with errors (t = 4.51, p=0.001) as having less political competence than senders who wrote emails in a neutral style, which provides partial support for H2b. For H2c, receivers perceived senders who wrote emails with emoticons (t = 10.34, p = 0.001) as *more* methodologically competent than senders who wrote emails in a neutral style, which does not support H2c.

5.2 Hypothesis Testing: Durability of First Impressions

H3 proposes that receivers will change their prior perceptions of the sender after receiving an email written in a different, neutral format. In FTF environments, first impressions endure, even with one receives contradictory evidence. However, due to the reduced cues available in mediated interaction, coupled with the ability to review prior messages (i.e., reprocessability), impressions of the sender are more likely to be fragile in computer-mediated communication. As a result, we expected initial sender perceptions would change after we presented the final neutral email to receivers who initially received uppercase emails (H3a), lowercase emails (H3b), emails with errors (H3c), or emails with emoticons (H3d). We performed Bonferroni corrected t-tests with an overall family alpha level of 0.05 to test these differences. Table 7 presents the results of the t-tests for H3a-d.

For receivers of uppercase emails, the results show significant differences in initial and final perceptions for functional competence (t = 6.70, p = 0.001), political competence (t = 5.93, p = 0.001), and methodological competence (t = 2.71, p = 0.007) but no difference in social competence, which partially supports H3a. For receivers of lowercase emails, the results show significant differences in initial and final perceptions for social competence (t = 7.14, p = 0.001), functional competence (t = 12.16, p = 0.001), and political competence (t = 7.64, p = 0.001) but no difference in perceptions of methodological competence, which partially supports H3b. For receivers of emails that contained errors, the results show significant differences in initial and final perceptions for social competence (t = 5.50, p = 0.001), functional competence (t = 15.57, p=0.001), and political competence (t = 7.17, p = 0.001) but no difference for methodological competence, which partially supports H3c. For receivers of emails containing emoticons, the results show significant differences for all four dependent variables (social competence (t = 4.38, p = 0.001), functional competence (t = 18.29, p = 0.001), political competence (t = 4.89, p = 0.001), and methodological competence (t = 12.71, p = 0.001)), which supports H3d.

The results of the pairwise comparisons indicate that, for the uppercase treatment, after receiving the neutral email, receivers perceived senders as more functionally, politically, and methodologically competent, but they did not change their perceptions of senders' social competence. Participants in the lowercase treatment perceived senders as significantly higher in social competence and more functionally and politically competent but not different in methodological competence after receiving the neutral email. Participants in the error treatment perceived senders to be significantly more social and more functionally and politically competent but not different in methodological competence after receiving the neutral email. Finally, participants in the emoticon treatment altered their impressions of the sender after receiving the neutral email such that they perceived senders as less socially and methodologically competent but as more functionally and politically competent. The results of the pairwise comparisons provide broad support for H3 because receivers changed most of their perceptions of the sender after receiving the neutral email, although methodological competence evaluations seem to be the most enduring across the email styles.

Table 7. H3 Hypothesis Results

Email within treatments, final-first			
	Mean difference	**t**	**p-value**
Neutral (for comparison)			
Social competence	0.192	1.52	ns
Functional competence	0.116	0.72	ns
Political competence	0.155	1.31	ns
Methodological competence	0.447	3.31	**0.001**
Uppercase			
H3a Social competence	0.037	0.30	ns
Functional competence	1.058	6.70	**0.001**
Political competence	0.683	5.93	**0.001**
Methodological competence	0.358	2.71	**0.007**
Lowercase			
H3b Social competence	0.886	7.14	**0.001**
Functional competence	1.921	12.16	**0.001**
Political competence	0.879	7.64	**0.001**
Methodological competence	0.086	0.65	ns
Errors			
H3c Social competence	0.677	5.50	**0.001**
Functional competence	2.444	15.57	**0.001**
Political competence	0.824	7.17	**0.001**
Methodological competence	-0.125	0.95	ns
Emoticon			
H3d Social competence	-0.526	4.38	**0.001**
Functional competence	2.817	18.29	**0.001**
Political competence	0.548	4.89	**0.001**
Methodological competence	-1.627	12.71	**0.001**
Note: p-values are Bonferroni corrected with alpha = 0.05			

6 Discussion

We examined the formation and durability of impressions in text-based computer-mediated environments. We proposed that, as an extension to findings in prior research (e.g., Walther, 2007; Walther & D'Addario, 2001), the style of the communication has an impact, over and above the content, on how receivers perceive senders. The results show that, compared to emails written in a neutral style, receivers perceived senders who wrote emails with emoticons, errors, or in all uppercase or all lowercase as less functionally competent. For some styles, receivers perceived senders as less politically competent (i.e., lowercase or containing errors) and more socially competent (i.e., emoticons) regardless of the actual email content. Thus, our results provide evidence that, *independent of email content*, individuals use email styles as a means of attributing traits that lead to the formation of first impressions. Apparently, at least initially, the style in which the email appears has a differential impact on how a receiver assesses senders' attributes.

To examine the durability of perceptions, participants in the study received two emails in a particular style and a third email written in a neutral style. Based on prior research in FTF impression formation, we anticipated that the final neutrally written email would have a perception-changing influence due to the text-based interaction. The results largely supported our hypotheses. Participants noted changes in social and task competence between the initial treatment email and the last neutral email across all email styles. However, to our surprise, some influence of the initially viewed email style persisted such that receivers continued to perceive those senders who wrote emails with emoticons as less functionally and

methodologically competent and those senders who wrote in all lowercase as less sociable and less functionally competent even after receivers received an email written using a neutral style.

The results suggest that, while these email styles influence initial development of receiver impressions, some stylistic cues of email have a stronger influence on impression formation while other stylistic cues do not. While receivers notice deviations from a neutral style (e.g., Jensen et al., 2013; Walther & D'Addario, 2001), a sender's returning to a neutral style has a differential effect on the receiver's perception depending on the original style used. For example, while receivers initially saw senders who wrote emails with errors as less functionally and politically competent (but equally sociable) than writers of neutral-style emails, a single neutrally written email was enough to reverse these initial perceptions. However, receivers initially saw senders who wrote emails with emoticons as more sociable and less functionally and methodologically competent. When presented with a neutrally written email by the same sender, receivers rated the (originally emoticon oriented) sender as equally sociable but still less functionally and methodologically competent. This finding indicates the stronger, more durable effect of task competency perceptions developed from emoticon-style emails than emails with errors. Email style matters for both initial and on-going impressions.

We also examined the effect sizes for where we found significant differences between subject groups (see Table 8). Effect size provides evidence of the overall impact of the results and provides evidence regarding their practical significance (Ferguson, 2009). Following Glass's *Δ,* we calculated effect sizes as the mean difference between our comparison groups (email styles) divided by the standard deviation of the base comparison group (e.g., the neutral style group in Hypothesis 1 and Hypothesis 2; see Table 6). We found the effect sizes for initial sociability assessments to be 0.62. Functional competence had the strongest effects: it ranged from a low of 0.51 for uppercase comparisons to 1.72 for error comparisons. Political competence had the lowest effect sizes in the initial email comparison: it ranged from 0.33 to 0.55.

For the hypotheses (H3) regarding impression durability, effect sizes were more modest, with uppercase comparisons ranging from 0.26 (methodological competence) to 0.68 for functional competence. Lowercase comparison effect sizes ranged from 0.64 and 0.65 for sociability and political competence, respectively, to 1.14 for functional competence. Error comparisons were similar with sociability and political competence effects at 0.55 and 0.65, respectively, and a functional competence effect size of 1.60. Finally, emoticon comparison effect sizes ranged from a high of 2.22 for functional competence and 1.21 for methodological competence to lower effects of 0.44 for sociability and 0.47 for political competence.

In terms of practical significance, Ferguson (2009) suggests that a Glass's *Δ* of .41 is the "recommended minimum effect size representing a 'practically' significant effect" (p. 533). Our results meet this criterion for all but three of the relationships. Functional competence assessments had the strongest effect associated with the email style received, followed by methodological competence, sociability, and political competence. According to Ferguson, one would not classify the effects of uppercase and lowercase in political competence as practically significant. The style used had varying durability depending on the assessment type, but emails that used emoticons had the strongest lingering effect of any email style, and uppercase had the weakest.

6.1 Implications for Research

This study has important implications for research on impression formation and SIP theory. Although most research on first impression bias has studied it in FTF interactions or has focused on the marketing of goods, our results suggest that in text-based interactions, a relatively short email message is enough to provide a first impression of a sender. Consistent with prior research (Hancock & Dunham, 2001; Walther, 1996; Walther, 1997; Walther & D'Addario, 2001), we found that receivers of text-based messages develop impressions of senders based on limited information. However, we identified that stylistic cues, beyond the content of the text alone, are key determinants of impression formation.

Our results help shed light on the potential for bias formation or stereotyping even in text-based communication. Our study shows that, independent of content, certain communication styles impact perceptions and impression formation. We developed two different sets of emails to ensure that the effect we found was due to the stylistic treatment and not the emails' content. Prior research on impression formation has focused on FTF interactions in which individuals derive cues based on an individual's physical appearance (Stukas & Snyder, 2002) or observable behaviors (Gilbert, 1998). Our research suggests that, rather than suppressing bias-generating mechanisms as some researchers suggest (e.g., Weisband & Atwater, 1999), stylistic cues in text-based interactions replace the visual/auditory cues of FTF interaction and provide receivers with different information with which to form impressions. Additionally, using a medium limited in symbol variety, while constraining the diversity of symbols that one may transmit, still allows one

to transmit different cues that are text-based in nature. Although text-based interaction might hide certain cues, we found that it can highlight others. Our research identifies one set of stylistic elements that contributes to impression formation. We need more work to identify additional text-based elements (e.g., font choice, text color) that influence impression formation for virtual interactions to understand the degree to which the impressions accurately reflect reality or are simply a new mechanism for stereotyping.

Table 8. Effect Sizes for Significant Results

	Treatment comparison	Mean difference	Effect size
Sociability			
H1b	Conventional < Emoticon	0.783	0.62
Functional competence			
H2a	Conventional > Uppercase	0.614	0.50
	Conventional > Lowercase	1.232	1.01
	Conventional > Errors	2.091	1.72
	Conventional > Emoticons	2.026	1.67
Political competence			
H2b	Conventional > Uppercase	0.401	0.33
	Conventional > Lowercase	0.454	0.37
	Conventional > Errors	0.676	0.55
Methodological competence			
H2c	Conventional > Emoticons	1.582	1.28
Uppercase			
H3a	Funct. Comp.	1.058	0.68
	Pol. Comp.	0.683	0.50
	Meth. Comp.	0.358	0.26
Lowercase			
H3b	Sociability	0.886	0.64
	Funct. Comp.	1.921	1.14
	Pol. Comp.	0.879	0.65
Errors			
H3c	Sociability	0.677	0.55
	Funct. Comp.	2.444	1.60
	Pol. Comp.	0.824	0.65
Emoticon			
H3d	Sociability	0.526	0.44
	Funct. Comp.	2.817	2.22
	Pol. Comp.	0.548	0.47
	Meth. Comp.	1.627	1.21

Our study contributes to SIP theory in two important ways. First, we demonstrate that text-based stylistic elements are important cues used in processing social information, and we demonstrate that not all stylistic elements used in communication carry equal perception-changing weight. SIP theory suggests that individuals attend to cues over time as they develop impressions regarding a communication sender and that individuals use certain cues to confirm or disconfirm these initial impressions. Prior research has examined email content and some stylistic cues (e.g., Walther & D'Addario, 2001). In our study, our IT artifact of interest is communication media characterized by limited symbol variety (i.e., text only) and high reprocessability. These communication media characteristics provide a relevant technological context to examine the impact of stylistic cues (beyond content) on impression formation and durability by manipulating multiple cues in two different sets of message content. We also demonstrate that certain cues such as

emoticons and lowercase communication, when received via an IT artifact characterized by high reprocessability, may be more durable and have a longer lasting impact on certain elements of impression development (social or task) than other styles, such as uppercase or errors. As a result, when considering the manner in which individuals accumulate cues in impression development, researchers must consider the differential weight (or lack thereof) that certain communication styles have in promoting or demoting certain impression attributes. Furthermore, researchers should assess the impact the characteristics of the IT artifact may have in allowing the transmission of cues via symbol variety and the ability to revisit and review cues already received via reprocessability. For example, we found that emails that used emoticons, while promoting social competence impressions, simultaneously depressed impressions of functional competence such that a receiver may disregard communications of a task-like nature. A receiver differentially adjusts these impression attributes depending on the focus of the communication.

Second, we demonstrate that a relationship between stylistic cues and perceptions of task competence exists. This relationship is especially important when viewed in light of SIP theory. Whereas SIP theory has traditionally focused on explaining how individuals use limited information to develop social impressions, we expand the use of this theory to encompass task competence impressions. Individuals do not merely use information in text-based communication as a way to assess likability and similarity but also to assess task-related competence. This extension is crucial because individuals work in contexts where relationships begin and persist as virtual interactions. Thus, future work incorporating SIP theory needs to account for the interaction between stylistic cues and different communication orientations (i.e., task, social). In addition, we need to expand existing theory and/or develop new theory that considers the stylistic cues that individuals use to make task-based impressions.

Finally, our results can inform design science research aimed at developing systems to reduce stereotyping. Compared to FTF environments, our findings, obtained in the context of an IT artifact characterized by limited symbol variety and high reprocessability, suggest that individuals can and will use the available capabilities of the technology to develop and test impression formation assumptions. Systems developers should pay attention to ensuring that collaborative technologies deliver complementary capabilities to help users collect and assess communication cues and supporting both the transmission of information and the processing of that information for evaluation and assessment (Dennis et al., 2008). Particularly in virtual work environments that have limited opportunities for FTF interaction prior to task engagement, systems that deliver both types of capabilities could have a positive impact on the development of accurate impressions by supporting interactions and positive performance outcomes.

6.2 Limitations and Directions for Future Research

This paper has several limitations. An important limitation concerns the length of time subjects spent in the study. We used a series of email messages in one experimental setting to assess H3 (whether or not impressions endured), but one could ask whether the time was sufficient to form lasting impressions. The fact that individuals maintained any of the impressions after exposure to the last, neutral email provides some evidence that impressions endure. In fact, prior research suggests that five minutes is sufficient to form lasting first impressions (Carney, Colvin, & Hall, 2007), with some research demonstrating that lasting impressions can be formed in as little as 30 seconds (Ambady & Rosenthal, 1992, 1993). Thus, the time frame of our study does not appear to be a problem. However, with more time and repeated exposure to the non-neutral emails, impressions could be even stronger and more enduring. We need future research to examine these issues.

We investigated four characteristics discussed in literature that have relevance for first impressions: social, functional, political, and methodological competence. We leveraged Kauffeld's (2006) work on team competence as the foundation. However, we recognize that one could examine other competencies in this context, such as leadership and collaboration competencies. Thus, one direction for future research would be to evaluate additional competencies. Another important research extension is to explore how different presentation styles affect receivers' perceptions of senders' personality traits. Investigating whether receivers ascribe any of the "big 5" personality traits (Goldberg, 1990) to senders based on email style would provide information to employees as they interact with clients and colleagues through mediated interactions. For example, if certain email styles signal "agreeableness", then this form of email may be ideally suited to initiating a sale. On the other hand, employees may not want to use email styles that signal "neuroticism".

In the current study, we focused on two IT artifact characteristics: limited symbol variety and high levels of reprocessability. We demonstrate that, in this context, first impressions do not endure. Our results highlight the need to consider the media capabilities of the mediated environment. Our text-based environment

provided a mechanism for reprocessing the messages. However, interactions that take place over Snapchat, for example, would not. What impact might the limited cues and limited reprocessability have on impressions in that environment? Future research should also examine the impact of other IT artifact characteristics on mediated impression formation. For example, future research could examine which sets of media capabilities are most complementary in supporting the information transmission and processing needed for accurate impression formation. Although our research suggests that reprocessability is useful in mediated environments with limited symbol variety, we do not know which media capabilities might benefit from being matched with others to support impression formation. Additionally, our study suggests that reprocessability may be a useful IT artifact characteristic in environments where feedback is low to support impression formation repair. Research specifically comparing the manner in which reprocessability can successfully compensate for or augment environments with limited feedback could improve our understanding of how to better incorporate this characteristic to limit bias, stereotypes, and inappropriate impression formation (Johri, 2012).

We focused on five common styles found in email communication: neutral, emoticons, uppercase, lowercase, and errors. However, we examined the impact of only one of these at a time. There is a possibility that interactions among the styles would lead to even different perceptions. Similarly, the fit between style and characteristics available through the IT artifact could influence impression formation. Thus, we encourage future research to both expand the style set and examine style-based impression formation across IT artifact characteristics and consider the interaction among multiple styles because these styles could generate additive or diminished influence on impression formation. Although we feel that our identification of the five styles that influence textual communication represents appropriate and typical examples of styles commonly found in text-based interaction, other emerging styles potentially exist that researchers should examine. Future research could help to create a stronger taxonomy of communication styles in virtual contexts along the lines of a taxonomic theory that Gregor (2006) proposes. Developing this taxonomy could help examine the nature of these styles and how they may manifest across IT artifact and other communication contexts.

This interaction could similarly encourage future research on the change in perceptions of what is considered “correct” language and message content presentation that could be influenced by communication styles. For example, we ignored “textspeak” in which individuals use acronyms, unconventional spellings, shortened words, and emoticons (Fullwood, Quinn, Chen-Wilson, Chadwick, & Reynolds, 2015). Based on our results, we would expect similar results for textspeak because, on the surface, it appears to represent an interaction of errors and emoticons. However, it would be interesting to see how characteristics of the IT artifact systematically influence the manner in which individuals modify their language usage and, thus, cause the formation of new words and styles of communication (e.g., LOL, “you have been pwned”) that become part of the norm of communicating through that particular artifact. Extending the current work to understand the impact of porting these new words and styles across artifacts would be valuable. Finally, the results regarding the enduring nature of the impressions formed in a mediated environment raise some interesting questions. It is possible that the nature of the experimental task was such that participants felt that, by removing the stylistic elements from their messages, senders were signaling that they were “cleaning up their act”; that is, becoming a positive contributor working in a virtual environment. The nature of the task could also be associated with a distancing that occurs in mediated communication where the sender is able to manipulate a message so receivers perceives them differently (Schlosser, 2009). Thus, the relationship between the impressions formed about the person and the person themselves may be weaker than in the physical world. As a sender, it may be easier to manipulate perceptions in mediated communication environments due to the weakness of the associations made between messages and senders. Future research should study the relationship between senders and messages to explore its effect on relationship formation in virtual environments.

6.3 Implications for Practice

This research has many implications for practice. From an individual perspective, the research highlights that one should always be aware that any text-based messages are foremost a type of communication. Beyond the content, the context in which message content is embedded communicates information to receivers, which influences perceptions of the sender and can subsequently affect receiver engagement in communication with the sender (Phang et al., 2009). In addition, despite early beliefs that mediated interaction would diminish stereotyping (Weisband & Atwater, 1999), our results demonstrate that the potential for stereotyping and bias formation is still quite strong even when traditional cues are filtered out. Email senders need to understand the conditions surrounding their communication. Questions that email senders may wish to ask include: what is the purpose of the message? Is this the first time that I have

communicated with this person? Is this communication formal or informal? After crafting a message, it is worthwhile to review the message to ensure that errors are kept to a minimum and the message portrays a proper image. The good news is that one can reverse initial impressions based on some cues. However, since some cues have lasting effects, it is best to exercise caution.

From an organizational perspective, this research is important because individuals conduct a great deal of organizational communication via text-based systems, particularly email. If employees disregard formal writing conventions in text-based interactions, it could reflect negatively on the company or at least the sender, which the quote opening this paper depicts. The implications from this research suggest that organizations must make clear to employees, through training sessions or company-wide policies, that they should apply formal writing conventions in all communication where the employee represents the company (Jarrahi & Sawyer, 2015). The use of formal writing conventions is especially important when employees communicate across cultures via different media. When individuals from different backgrounds communicate via a text-based system, more opportunities for misunderstandings arise (Hansen, Fabriz, & Stehle, 2015; Watson-Manheim et al., 2012). Using emoticons, incorrect grammar, or informal conventions (lowercase formats or uppercase formats) may convey the wrong meaning (both literally and figuratively).

The influence of these stylistic cues on impression formation is particularly salient for email communications, the focal medium of our research. Given the typical use of email as a less-synchronous form of text-based communication, senders do not necessarily have the ability to micro-manage impression formation based on receiver feedback or to interject questions to enhance understanding or provide clarification of messages sent as is possible in more synchronous, text-based communication media (Dennis et al., 2008; Dickey et al., 2007). As a result, senders need to recognize the full message being sent (i.e., its content and context) and craft their email messages accordingly.

7 Conclusion

In this paper, we propose that communication style (beyond message content) influences impressions formed in mediated environments. We identify five common email styles: neutral, emoticon, uppercase, lowercase, and error based. Drawing on impression formation and SIP theory, we examined four key outcome perceptions of email senders: social, functional, political, and methodological competence. Our results extend our understanding of SIP theory's role in impression formation by showing that people attend to communication styles beyond content and use those cues to develop impressions of email senders, which is especially true when senders use all lowercase letters or send emails with many errors. In some instances, and contrary to impression durability in face-to-face interactions, senders may be able to reverse first impressions by sending subsequent messages using neutral grammar and punctuation. We attribute this difference in durability to two characteristics of the IT artifact: symbol variety and reprocessability. Presentation may not be everything, but it goes a long way toward making a first impression in mediated interactions.

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Appendix A: Task Competencies Comparison

Table A1. Task Competencies Comparison

Functional competence: Task domain-specific skills that an individual brings to bear on virtual task activities.		
Bartram (2005)	Enterprising and performing	Focuses on results and achieving personal work objectives. Works best when work relates closely to results and the impact of personal efforts is obvious. Shows an understanding of business, commerce, and finance. Seeks opportunities for self-development and career advancement.
Kollman et al. (2009)	Business management knowledge	Knowledge in strategic management, finance, marketing, organization, business ethics, and customer management.
Kauffield (2006)	Professional competence	Ability to classify and to assess organizational knowledge, to identify problems, and to generate solutions is an integral part of professional team competence.
Political competence: Ability of an individual to cooperate with others		
Bartram (2005)	Supporting and cooperating	Supports others and shows respect and positive regard for them in social situations. Puts people first and works effectively with individuals and teams, clients, and staff. Behaves consistently with clear personal values that complement those of the organization.
Kollman et al. (2009)	Interpersonal competence	Ability to manage and lead projects and to understand, motivate, and persuade others.
Kauffield (2006)	Social competence	Ability to communicate and cooperate with each other in a self-organized way.
Methodological competence: an individual's ability to bring forth the personal resources necessary to complete a task, including creative problem solving and critical decision making skills.		
Bartram (2005)	Analyzing and interpreting	Shows evidence of clear analytical thinking. Gets to the heart of complex problems and issues. Applies own expertise effectively. Quickly takes on new technology. Communicates well in writing.
	Creating and conceptualizing	Works well in situations requiring openness to new ideas and experiences. Seeks out learning opportunities. Handles situations and problems with innovation and creativity. Thinks broadly and strategically. Supports and drives organizational change.
Kollman et al. (2009)	Realization competence	Knowledge and experience in analysis and design in creatively solving business problems and in using external knowledge such as knowledgeable people or Web resources.
Kauffield (2006)	Methodological competence	Make means and resources available and to use them for the accomplishment of tasks.
Other competencies		
Bartram (2005)	Leading and deciding	Takes control and exercises leadership. Initiates action, gives direction, and takes responsibility.
	Organizing and executing	Plans ahead and works in a systematic and organized way. Follows directions and procedures. Focuses on customer satisfaction and delivers a quality service or product to the agreed standards.
	Interacting and presenting	Communicates and networks effectively. Successfully persuades and influences others. Relates to others in a confident, relaxed manner.
	Adapting and coping	Adapts and responds well to change. Manages pressure effectively and copes well with setbacks.
Kollman et al. (2009)	Entrepreneurial competence	Concerns both recognizing and envisioning new business opportunities and combining and organizing resources for the venture. Among others, an important component of entrepreneurial competence is prior experience of how to create and develop new routines.
	E/business competence	Knowledge on e-business platforms and concepts, online marketing, search engines, Web security, payment systems, and legal and ethical issues in e-business.

Table A1. Task Competencies Comparison

	IT/business vision	Interpret technological trends, understand the interdependencies between IT and business, and envision business processes that technology can enable in the future.
	Technology knowledge	Concerns current and emerging technologies that can be valuable for the organization including specific languages, applications, platforms, and tools.
	Conceptual knowledge	Concerns formal methods, theories, and abstract concepts of computer science.
Kauffield (2006)	Self competence	Create conditions in order to grow in the process of work.

Appendix B: Email Styles

First Email Presented to Participants

Email Treatment: Neutral

Date: Mon, 13 Jan 2014 13:07:13 -0600 (MST)

From: **********

To: **********

Subject: Group Contributions

I haven't worked on a virtual team before now. I really look forward to experiencing it with all of you. You will find that I am very organized and I will create weekly schedules in order to help us keep on track. I have many years of experience in the field of auditing. I foresee that my skills will aid in our analysis of More.com. I hope that you will find me to be an asset to the team, and again I really look forward to working with all of you.

Email Treatment: Uppercase

Date: Mon, 13 Jan 2014 13:07:13 -0600 (MST)

From: **********

To: **********

Subject: GROUP CONTRIBUTIONS

I HAVEN'T WORKED ON A VIRTUAL TEAM BEFORE NOW. I REALLY LOOK FORWARD TO EXPERIENCING IT WITH ALL OF YOU. YOU WILL FIND THAT I AM VERY ORGANIZED AND I WILL CREATE WEEKLY SCHEDULES IN ORDER TO HELP KEEP US ON TRACK. I HAVE MANY YEARS OF EXPERIENCE IN THE FIELD OF AUDITING. I FORESEE THAT THOSE SKILLS WILL AID IN OUR ANALYSIS OF MORE.COM. I HOPE THAT YOU WILL FIND ME AN ASSET TO THE TEAM, AND AGAIN I REALLY LOOK FORWARD TO WORKING WITH ALL OF YOU.

Email Treatment: Emoticons

Date: Mon, 13 Jan 2014 13:07:13 -0600 (MST)

From: **********

To: **********

Subject: Group Contributions

I haven't <!> worked on a virtual team before now. :O I really look forward to experiencing it with all of you. :) You will find that I am very organized and I will create weekly schedules in order to help keep us on track. ;) I have many years of experience in the field of auditing. I foresee that those skills will aid in our analysis of More.com. I hope that you will find me an asset to the team, and again I *really* look forward to working with all of you. :)

Email Treatment: Lowercase

Date: Mon, 13 Jan 2014 13:07:13 -0600 (MST)

From: **********

To: **********

Subject: group contributions

i haven't worked on a virtual team before now. i really look forward to experiencing it with all of you. you will find that i am very organized and i will create weekly schedules in order to help keep us on track. i have many years of experience in the field of auditing. i foresee that those skills will aid in our analysis of more.com. i hope that you will find me an asset to the team, and again i really look forward to working with all of you.

Email Treatment: Errors

Date: Mon, 13 Jan 2014 13:07:13 -0600 (MST)

From: **********

To: **********

Subject: Group COntributions

I havent worked on a virtual team before now. I really lokk forward to experiencing it with all of you. You will find that I am very organized and I will create weekly shcedules in order to help keep us on track. I have many years of experience in the feild of auditing. I foresee that those skills will ade in our analysis of More.com. I hope that you will find me an asset to the team, and again, I really look forward ot working with all of you.

Second Email Presented to Participants

Email Treatment: Neutral

Date: Mon, 13 Jan 2014 14:38:23 -0600 (MST)

From: **********

To: **********

Subject: Virtual Team

I hope that you all received my earlier email. I forgot to mention that I have also had a number of experiences in developing new businesses which might be valuable to our current project at More.com. I really look forward to learning about your skills and the contributions you think you will be able to make to this project. If you would like any other information about me, please do not hesitate to ask.

Email Treatment: Uppercase

Date: Mon, 13 Jan 2014 14:38:23 -0600 (MST)

From: **********

To: **********

Subject: VIRTUAL TEAM

I HOPE THAT YOU ALL RECEIVED MY EARLIER EMAIL. I FORGOT TO MENTION THAT I HAVE ALSO HAD A NUMBER OF EXPERIENCES IN DEVELOPING NEW BUSINESSES WHICH MIGHT BE VALUABLE TO OUR CURRENT PROJECT AT MORE.COM. I REALLY LOOK FORWARD TO LEARNING ABOUT YOUR SKILLS AND THE CONTRIBUTIONS YOU THINK YOU WILL BE ABLE TO MAKE TO THIS PROJECT. IF YOU WOULD LIKE ANY OTHER INFORMATION ABOUT ME, PLEASE DO NOT HESITATE TO ASK.

Email Treatment: Emoticons

Date: Mon, 13 Jan 2014 14:38:23 -0600 (MST)

From: **********

To: **********

Subject: Virtual Team

I hope that you all received my earlier email. I forgot <!> to mention that I have also had a number of experiences in developing *new* businesses which might be valuable to our current project at More.com. :) I really look forward to learning about your skills and the contributions you think you will be able to make to this project. If you would like any other information about me, please do not hesitate to ask. ;)

Email Treatment: Lowercase

Date: Mon, 13 Jan 2014 14:38:23 -0600 (MST)

From: **********

To: **********

Subject: virtual team

i hope that you all received my earlier email. i forgot to mention that i have also had a number of experiences in developing new businesses which might be valuable to our current project at more.com. i really look forward to learning about your skills and the contributions you think you will be able to make to this project. if you would like any other information about me, please do not hesitate to ask.

Email Treatment: Errors

Date: Mon, 13 Jan 2014 14:38:23 -0600 (MST)

From: **********

To: **********

Subject: Virtual Teem

I hope that you all recieved my earlier email. I forgot mention that I have also had a nubmer of experiences in developing new businesses which might be valauble to our current project at Morecom. I really look forward to leaning about you skills and the contributions you think you will be able to make to this porject. If you wood like any other information about me, please do not hesitate ask.

Last Email Presented to All Participants

Email Treatment: Neutral

Date: Tues, 14 Jan 2014 09:16:28 -0600 (MST)

From: **********

To: **********

Subject: Re: Virtual Team

Thank you for your email describing your skills and abilities. It seems like we have many capable people on our team. I think that we will have a great working relationship because our skills are very compatible. This project will be a good opportunity to learn about More.com and it will also give us the chance to learn from each other. What do you think our next step should be? Perhaps we should have an online meeting to plan our approach. Let me know what you think.

Appendix C: Semantic Differentials

Semantic differential scale

I would classify the sender of this message as: (put a check or an x on the line to indicate your choice)

1.	Effective	|---------|---------|---------|---------|---------|---------|---------|	Ineffective
2.	Unconfident	|---------|---------|---------|---------|---------|---------|---------|	Confident
3.	Professional	|---------|---------|---------|---------|---------|---------|---------|	Unprofessional
4.	Introvert	|---------|---------|---------|---------|---------|---------|---------|	Extrovert
5.	Creative	|---------|---------|---------|---------|---------|---------|---------|	Practical
6.	Incompetent	|---------|---------|---------|---------|---------|---------|---------|	Competent
7.	Outgoing	|---------|---------|---------|---------|---------|---------|---------|	Shy
8.	Cooperative	|---------|---------|---------|---------|---------|---------|---------|	Uncooperative
9.	Fair	|---------|---------|---------|---------|---------|---------|---------|	Unfair
10.	Sharing	|---------|---------|---------|---------|---------|---------|---------|	Keeping
11.	Capable	|---------|---------|---------|---------|---------|---------|---------|	Incapable
12.	Skilled	|---------|---------|---------|---------|---------|---------|---------|	Unskilled
13.	Spontaneous	|---------|---------|---------|---------|---------|---------|---------|	Planned
14.	Visionary	|---------|---------|---------|---------|---------|---------|---------|	Grounded
15.	Considerate	|---------|---------|---------|---------|---------|---------|---------|	Inconsiderate
16.	Open-minded	|---------|---------|---------|---------|---------|---------|---------|	Myopic
17.	Educated	|---------|---------|---------|---------|---------|---------|---------|	Uneducated

About the Authors

Susan A. Brown is the McClelland Professor of Management Information Systems in the Eller College of the University of Arizona. Prior to joining the University of Arizona, she was an assistant professor at Indiana University. She completed her PhD at the University of Minnesota and an MBA at Syracuse University. Prior to receiving her MBA, she worked as a programmer/analyst and IS manager in a hospital. Her research interests include technology implementation, individual adoption, computer-mediated communication, technology-mediated learning, and related topics. She has received funding for her research from the National Science Foundation, and other public and private organizations. Her work has appeared in leading journals including *MIS Quarterly, Information Systems Research, Organizational Behavior and Human Decision Processes, Communications of the ACM, Journal of Management Information Systems, Journal of the Association for Information Systems, and others. She has served as an AE at MIS Quarterly, Information Systems Research, Journal of the Association for Information Systems,* and *Decision Sciences*, and is currently an SE at *MIS Quarterly*.

Robert M. Fuller is the Jan R. Williams Professor and an Associate Professor in the Department of Accounting and Information Management at the University of Tennessee. He completed his PhD in Management Information Systems at Indiana University. His research interests focus on the use of collaborative technologies, communication media, and social media for virtual team interactions and performance. His research has been published in *MIS Quarterly*, *Information Systems Research*, the *Journal of the Association for Information Systems*, *Decision Support Systems*, and others. His work on communication media won MIS Quarterly's paper of the year and the Association for Information Systems paper of the year awards in 2008. He was also awarded *MIS Quarterly*'s Reviewer of the Year award in 2010. He serves as an Associate Editor at *MIS Quarterly*.

Sherry M. B. Thatcher is currently a Professor of Business Administration and a Moore Business Partnership Foundation Fellow in the Management Department of the Darla Moore School of Business at the University of South Carolina. She received her PhD in organizational behavior from the Wharton Business School at the University of Pennsylvania. Her research revolves around teams and includes diversity faultlines, identity, the social effects of computer communication technologies, and conflict. Her work has appeared in the *Academy of Management Review*, *Academy of Management Journal*, *Journal of Applied Psychology*, *Organization Science*, *Journal of Management*, *Decision Support Systems*, and *Negotiation Conflict and Management Research*.