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# E-MAIL RECIPIENTS' IMPRESSIONS OF SENDERS' LIKABILITY

The Interactive Effect of Nonverbal Cues and Recipients' Personality

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*Although e-mail recipients rely on nonverbal cues to form impressions of senders, relatively little is known about specific contextual factors that may influence sender perceptions in computer-mediated communication. Results from an experiment found that the receivers' personalities influenced their perceptions of the e-mail sender both directly and indirectly through perceptions of nonverbal cues. These results support the notions that the meaning of nonverbal cues is contextually bound and that receivers' personalities influence perceptions of both nonverbal cues and senders. Implications for managers and organizational performance are discussed.*

**Keywords:** e-mail; computer-mediated communication (CMC); nonverbal cues; recipients' personality; five-factor model; uncertainty reduction; emoticons

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Contemporary workers increasingly use computer-mediated communication (CMC) such as e-mail to communicate with their coworkers, customers, and clients (Fallows, 2002; OfficeTeam, 2006). This increase in the use of CMC likely is due in part to the advantages e-mail has over other communication media. For example, e-mails may be sent easily to a large number of people and can facilitate collaboration by coworkers separated in time and space. Among these features of e-mail communication, the relative absence of social context cues has been noted by CMC

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researchers as both an advantage and disadvantage. Some have argued that the relative lack of cues in e-mail, as well as in other forms of CMC, democratizes decision making by freeing users from status and power differentials (Dubrovsky, Kiesler, & Sethna, 1991; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). Others have argued that reduced availability of cues in e-mails makes them ill suited for communicating ambiguous or emotional information (Daft & Lengel, 1986) and may increase the likelihood of anti-social behavior (for a review, see Walther, Anderson, & Park, 1994).

However, the emerging consensus among CMC researchers appears to be that CMC users actively search for social context cues to form impressions of those with whom they are communicating. Research suggests that e-mail users use a variety of cues to convey social context information such as status or immediacy (see Walther, 1992, for a review). In turn, e-mail users rely on a variety of cues in e-mail messages to form judgments about senders (Nowak, 2003; Sherblom, 1988; Sherman, 2003; Walther & Tidwell, 1995). However, the results of these studies suggest that such cues are not uniformly interpreted; there exists significant variability in how these cues are used and interpreted to form an impression of an e-mail sender.

In this study, we investigated two nonverbal cues commonly used in e-mail communication—capitalization and emoticons—to examine how different users form impressions of senders who use (or do not use) these cues. Research on this topic seems particularly important in light of the widespread and frequent reliance on e-mail for business communication. In an experiment, we asked participants to complete a personality profile, read two short e-mail messages, and then answer questions about their perceptions of the sender. We manipulated the two common nonverbal cues in this experiment and found that the receivers' personalities influenced their perceptions of the e-mail sender both directly and indirectly through perceptions of nonverbal cues.

## **THEORETICAL BACKGROUND AND HYPOTHESES**

Uncertainty reduction theory serves as the theoretical underpinning of our study (Berger & Bradac, 1982). According to this theory, people are uncomfortable with uncertainty, partly because they want to predict others' behavior, and therefore are motivated to reduce uncertainty by seeking information about others. A large body of research on face-to-face communication has established the importance of uncertainty reduction in work and nonwork

relationships (Berger & Douglas, 1981; Parks & Adelman, 1983). Consistent with others (Ramirez, Walther, Burgoon, & Sunnafrank, 2002; Walther, 1992), we argue that the reduced availability of cues in e-mail and their often equivocal meaning make recipients especially motivated to discover information about the sender.

### Uncertainty Reduction and the Search for Cues

Many communication theories focus on the lack of cues in e-mail communication and the adaptation of e-mail to provide more cues, but uncertainty reduction theory helps explain why recipients of e-mail messages are motivated to interpret whatever cues are available. It suggests that people seek to reduce uncertainty so they can better predict the attitudes and behaviors of others (Brashers, 2001; McPhee & Zaug, 2001; Ramirez & Burgoon, 2004). Similarly, people are motivated to form impressions of senders to help them make sense of people and situations and thereby reduce uncertainty.

Whereas early research found that CMC inhibits impressions of the sender (Siegel et al., 1986), subsequent work indicates that users actively search for information about the sender and use any available cues to form judgments (Lea & Spears, 1992; Tidwell & Walther, 2002). E-mail receivers and other users of CMC rely on diverse cues, such as the time lag of a response (Walther & Tidwell, 1995), e-mail signatures (Sherblom, 1988), communication styles (Walther & Burgoon, 1992; Yates, 1997), emoticon use (Walther & D'Addario, 2001), punctuation marks, and spelling or typing errors (Lea & Spears, 1992). In terms of e-mail communication, the desire to reduce uncertainty helps explain both a recipient's motivation to form an impression of the sender and the potential that he or she will overinterpret messages when fewer cues are available.

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We consider two cues: the use of capitalization and the use of emoticons. The use of correct capitalization in the absence of other cues is generally viewed as emotionally neutral, whereas the use of all capital letters can be used to indicate positive emotions such as joy, negative emotions such as anger, or neutral emotions (e.g., to distinguish an e-mail's original content from the reply) (Byron & Baldrige, 2005; Higgins, 1997). Many authors of "netiquette" articles warn against the use of all capital letters, especially in business communication, because its meaning is unclear and can carry a negative connotation (Calem, 1995; Higgins, 1997). Therefore, we expect that the use of capitalization will influence the perceived likability of an e-mail sender such that senders will be evaluated more favorably when they use correct capitalization because messages in all capital letters can lead to uncertainty regarding the sender's intent.

Emoticons, or text-based symbols read sideways that represent tone or affect, are another common way of attempting to communicate the emotional meaning of an e-mail message. We examine the impact of using a smiley-face emoticon—which looks like a person smiling when read sideways :-)—because it is one of the most commonly used emoticons. Specifically, we expect senders of e-mails that include a smiley-face emoticon to be perceived as more likable. Previous research has found mixed support for this hypothesis. Thompsen and Foulger (1996) found that in general, verbally hostile e-mail messages with a smiley-face emoticon are less likely to be perceived as flaming (i.e., hostile verbal behavior) than are the same messages without an emoticon. The results of another study of the effect of emoticons on recipients' perceptions also indicate that the use of a smiley-face emoticon coupled with a positive message is perceived as conveying greater happiness than a positive message alone; however, they suggest no difference between the perceived happiness of a negative message with and without a smiley-face emoticon (Walther & D'Addario, 2001). Despite these inconsistencies, we expect that the use of a smiley-face emoticon will positively influence the perceived likability of an e-mail sender because when coupled with a nonnegative message, the emoticon serves to decrease uncertainty regarding the sender's intent.

To summarize, we propose the following hypotheses:

*Hypothesis 1:* The use of capitalization influences perceived sender likability. Specifically, recipients of e-mails written in all capital letters perceive the sender as less likable than do those who receive an e-mail with correct capitalization.

*Hypothesis 2:* Use of emoticons influences perceived sender likability. Specifically, recipients of e-mails including a smiley-face emoticon

perceive the sender as more likable than do those who receive an e-mail without a smiley-face emoticon.

### Receiver's Personality and Sender Evaluations

We also examine whether receivers' personality influences how they evaluate unknown e-mail senders. The information processing model of perception provides theoretical support for the idea that individual differences such as personality affect perception in predictable ways (Cronshaw & Lord, 1987). Namely, people selectively perceive and differentially evaluate subsets of environmental stimuli based on their individual differences. Due in part to the popularity of the five-factor model of personality in the organizational literature, we use several traits from the five-factor model to explain receivers' perceptions of e-mail senders.

The five-factor model identifies five abstract dimensions that represent most personality attributes: conscientiousness, agreeableness, emotional stability, openness to experience, and extroversion (Schneider & Hough, 1995). Of the five factors, we select emotional stability/neuroticism and extroversion for further examination because of their strong relationships with the experience of positive and negative states and with evaluations of both ambiguous and emotionally valenced stimuli (e.g., Costa & McCrae, 1980). Those higher in emotional stability (lower in neuroticism) are more relaxed, secure, and unworried; more extroverted persons are described as more outgoing, talkative, and sociable and less shy or reticent (John, 1990). In general, those with less emotional stability tend to experience more negative moods, whereas those who are higher in extroversion tend to experience more positive emotions (Costa & McCrae, 1980). Research on trait-congruent judgments suggests some support for the relationship between emotional stability/neuroticism and extroversion and their effect on perceptions of ambiguous stimuli (for a review, see Rustig, 1998). Specifically, more extroverted people tend to make more positive judgments, whereas those with less emotional stability tend to make more negative judgments of ambiguous stimuli. Therefore, we propose that receivers' emotional stability and extroversion is positively related to their perceptions of the e-mail sender's likability.

*Hypothesis 3:* Receiver emotional stability influences perceived sender likability. Specifically, recipients who are lower in emotional stability evaluate e-mail senders more negatively than do those who are higher in emotional stability.

*Hypothesis 4:* Receiver extroversion influences perceived sender likability. Specifically, recipients who are lower in extroversion evaluate e-mail senders more negatively than do those who are higher in extroversion.

### Receiver's Personality and Reactivity to Ambiguous and Emotional Stimuli

Although some research is available regarding how employees interpret cues such as emoticons in CMC (Walther & D'Addario, 2001; Walther, Loh, & Granka, 2005), less is known about the contextual factors that may influence perceptions of various cues. In particular, prior research has not fully explored the interaction between personality and perceptions of nonverbal cues.

We expect a receiver's personality attributes and perception of nonverbal cues in e-mail communication to interact and influence perceptions of e-mail senders for several reasons. First, existing research and theory suggest that perceptions related to the use of new media are more variable than those that pertain to older, more established media (Carlson & Zmud, 1999; Fulk, Schmitz, & Steinfield, 1990). The relative newness of the medium means that norms are less firmly established, which means individual differences may have a greater influence on the interpretation of particular cues. Second, research on perceptions of nonverbal cues, such as facial expressions and vocal tone, implies variability among persons (Elfenbein & Ambady, 2002) such that individual differences, including personality, affect a person's sensitivity to, reactions to, and ability to accurately interpret particular cues (Pollak & Kistler, 2002).

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Prior research further suggests that emotional stability (neuroticism) and extroversion may be particularly important in perceptions of emotional cues (Matsumoto et al., 2000; Roberts, Zeidner, & Matthews, 2001; Sjöberg & Engelberg, 2004). For example, both emotional stability and extroversion may be positively related to a person's sensitivity to positive

and negative nonverbal cues. Matsumoto and colleagues (2000) also found that more emotionally stable and extroverted persons are more accurate in their perceptions of positive and negative facial expressions.

In our study, we consider the interaction among these personality attributes and two nonverbal cues, one with the potential to increase uncertainty about the emotional meaning of a message (improper use of capitalization) and another that decreases uncertainty (inclusion of an emoticon). As we indicated previously, the use of all capital letters can indicate excitement or emphasis and express positive, negative, or neutral emotions. Thus, all capital letters lead to less certainty regarding the emotional meaning of the e-mail, whereas correct capitalization in absence of other emotional cues may encourage e-mail receivers to project their own emotions onto the e-mail senders (Gross & Brodt, 2001; Sherwood, 1981). Therefore, those higher in extroversion and emotional stability likely will perceive e-mail senders more favorably in the absence of clear emotional cues.

In turn, we propose the following hypotheses:

*Hypothesis 5a:* The relationship between recipients' emotional stability and perceived sender likability is moderated by the use of capitalization.

Specifically, the relationship is stronger when correct capitalization is used.

*Hypothesis 5b:* The relationship between recipients' extroversion and perceived sender likability is moderated by the use of capitalization. Specifically, the relationship is stronger when correct capitalization is used.

In contrast, smiley-face emoticons help reduce uncertainty by signaling a positive affective tone, and research suggests that those higher in emotional stability and extroversion are faster to respond to positive cues (Derryberry & Reed, 1994; Reed & Derryberry, 1995). These two personality traits also may be differentially related to different types of cues. In a study of brain reactivity, researchers find that extroversion is positively related to brain reactivity to positive emotional stimuli but neuroticism is positively related to brain reactivity to negative emotional stimuli (Canli et al., 2001). However, due to a lack of broad consensus on this topic, we examine the potential influence of both emotional stability and extroversion and predict a stronger relationship for both when a smiley-faced emoticon is used (than when none is used) because people higher in these attributes are more apt to be influenced by positive nonverbal cues.

Therefore, we expect the following:

*Hypothesis 6a:* The relationship between recipients' emotional stability and perceived sender likability is moderated by the use of emoticons. Specifically, the relationship is stronger when a smiley-face emoticon is used.

*Hypothesis 6b:* The relationship between recipients' extroversion and perceived sender likability is moderated by the use of emoticons. Specifically, the relationship is stronger when a smiley-face emoticon is used.

## METHOD

### Sample

Participants for this study were 304 undergraduate and graduate students taking a management course at one of two large universities. We eliminated 11 participants due to missing data, for a total of 293 participants who received extra credit for participating in the experiment and were not told the purpose of the study until after they had completed it. Similar to the universities as a whole, most participants were men (62%), ranged in age from 19 to 48 years ( $M = 24.1$ ,  $SD = 5.21$ ), and had previous work experience ( $M = 5.7$ ,  $SD = 4.62$ ).

We conducted a power analysis to determine the statistical power of our analyses. On the basis of results obtained in previous research, we estimated an incremental change in  $R^2$  of .15 for main effects and .03 for interaction effects. We used a less conservative alpha of .10 for the interaction effects because of the generally low statistical power associated with detecting interactive effects (Aguinis, Beaty, Boik, & Pierce, 2005; McClelland & Judd, 1993). With a sample size of 293, the power to detect both main and interactive effects exceeds 70%.

### Procedure

We conducted an experiment to test the study's hypotheses. First, we asked participants to complete a short survey and personality inventory. Second, we randomly assigned them two of four e-mail messages that asked them to comply with a simple request because it is not uncommon in organizations to be presented with simple requests from unknown others. For example, an employee may receive an e-mail from a coworker in another department who needs a small piece of information or from a customer who wants a more detailed invoice. In our own experience, we frequently receive e-mails from unknown doctoral students requesting information about our research or from other professors with whom we are not acquainted requesting a copy of a paper. The first e-mail was ostensibly from an unnamed high school student who was considering

attending their university and asked the participant what he or she liked most about the university. Half of the e-mail messages were typed in all capital letters (coded 1), and the other half used correct capitalization (coded 0). The second e-mail was from an unnamed student interested in getting the name and contact information of a tutor for an accounting class. Half of these e-mail messages included a smiley-face emoticon (1), whereas the other half did not (0). After reading each e-mail, the respondents indicated their perceptions of each e-mail sender.

## Measures

*Personality traits of receiver.* Participants completed a 10-item scale of emotional stability (Goldberg, 1999) by indicating how accurately each item described them according to a 5-point scale ranging from 1 (*very inaccurate*) to 5 (*very accurate*). Sample items include “am relaxed most of the time” and “worry about things” (reverse-coded). We summed the 10 items to form a scale score ( $\alpha = .86$ ). Using the same 5-point scale, participants also indicated the extent to which the 10 items of the extroversion scale described them (Goldberg, 1999). We then summed their responses to the items, which included “am the life of the party” and “have little to say” (reverse-coded) ( $\alpha = .88$ ).

*Perceptions of sender.* We asked participants to evaluate the e-mail senders in terms of perceived likability according to a four-item likability scale (Jones, Moore, Stanaland, & Wyatt, 1998). Using a 7-point scale, participants responded to four sets of bipolar adjectives: from *not friendly at all* (1) to *very friendly* (7), from *not understanding at all* (1) to *very understanding* (7), from *not likable at all* (1) to *very likable*, and from *not respectable at all* to *very respectable*. We averaged the four items to form a scale score ( $\alpha = .87$  for the capitalization e-mail;  $\alpha = .92$  for the emoticon e-mail).

*Control variables.* In addition, we included two control variables: the recipient's e-mail usage level and gender (male = 1, female = 2). To gauge their e-mail usage level, we asked participants to distribute 100 percentage points across five different modes of communication (i.e., e-mail/instant messaging, face-to-face communication, phone, letter writing/snail mail, and other). The percentage of time they spent e-mailing or instant messaging others serves as a control variable because those more familiar with electronic communication may be more likely to respond to electronic

messages and perceive the mode as a richer form of communication (Carlson & Zmud, 1999; Lee, 1994; Schmitz & Fulk, 1991). We statistically controlled for gender because other research has suggested that women are more sensitive to nonverbal cues than are men (Hall, 1984) and that men and women differ in their use of nonverbal cues in e-mails (Rezabek & Cochenour, 1998; Witmer & Katzman, 1997).

### Pilot Test

To determine if the content of the two e-mail messages without cues was considered emotionally neutral, we conducted a pilot test with 66 undergraduate business students. Half read the text without the cue, and to provide a comparison group, the other half read the text with a cue (i.e., all caps or an emoticon). After reading the e-mail, they indicated the affective tone of each, using a scale ranging from negative (-1) to positive (1), with neutral (0) as the midpoint. For both e-mails, participants rated the affective tone of the cueless e-mail as significantly more neutral, that is, closer to 0, than that of the e-mail with the cue (.09 vs. -.43 for the first e-mail; .11 vs. .60 for the second e-mail, respectively).

## RESULTS

In Table 1, we provide descriptive statistics and correlations for the study variables. More extroverted participants tended to be more emotionally stable ( $r = .28, p < .001$ ), and participants' ratings of the perceived likability of the two e-mail senders were positively correlated ( $r = .22, p < .001$ ). Those higher in emotional stability tended to perceive the first e-mail sender as more likable ( $r = .16, p < .01$ ), whereas more extroverted participants evaluated the second e-mail sender as more likable ( $r = .17, p < .01$ ). For the most part, the control variables were not significantly related to the senders' perceived likability for either e-mail; however, female participants rated the first e-mail sender as more likable than did male participants ( $r = .21, p < .001$ ).

In Tables 2 and 3, we report the regression analysis results used to test the hypotheses. We report the unstandardized rather than the standardized regression coefficients because standardized coefficients should not be used when an interaction exists (Aiken & West, 1991). To test the study hypotheses, we employed hierarchical regression. In the first step, we entered the control variables and the main effects; then in the second step, we added the interaction terms (Baron & Kenny, 1986).

**Table 1. Descriptive Statistics and Intercorrelations of Study Variables**

Variable	M	SD	1	2	3	4	5	6	7
Personality									
1. Emotional stability	32.79	7.20							
2. Extroversion	33.45	7.62	.28****						
Control variables									
3. Sex	1.38	0.49	-.03	.01					
4. E-mail usage	28.90	17.90	-.07	-.02	.10				
E-mail 1									
5. Sender likability	4.67	1.06	.16****	.05	.21****	-.03			
6. Capitalization	0.50	0.50	-.02	.01	-.12**	-.13**	-.15****		
E-mail 2									
7. Sender likability	4.98	1.15	.09	.17***	.06	.02	.22****	-.03	
8. Emoticon	0.48	0.50	-.09	.00	.01	.04	-.10	-.11	.26****

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

**Table 2. Results of Regression Analysis Examining Relationship of Capitalization, Emotional Stability, and Extroversion on Perceived Sender Likability**

Independent Variable	Perceived Likability of Sender					
	Step 1			Step 2		
	<i>b</i>	SE <sub><i>b</i></sub>	<i>t</i>	<i>b</i>	SE <sub><i>b</i></sub>	<i>t</i>
Sex	.43	.12	3.50***	0.40	.12	3.25***
E-mail usage	.00	.00	-0.99	0.00	.00	-0.64
Capitalization	-.28	.12	-2.34**	1.67	.68	2.46**
Emotional stability	.02	.01	2.67***	0.04	.01	2.94***
Extroversion	.00	.01	0.12	0.02	.01	1.33
Emotional Stability × Capitalization				-0.03	.02	-1.68*
Extroversion × Capitalization				-0.03	.02	-1.85*

Note: Total  $R^2 = .12$ ; adjusted  $R^2 = .09$ .

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

**Table 3. Results of Regression Analysis Examining Relationship of Emoticon, Emotional Stability, and Extroversion on Perceived Sender Likability**

Independent Variable	Perceived Likability of Sender					
	Step 1			Step 2		
	<i>b</i>	SE <sub><i>b</i></sub>	<i>t</i>	<i>b</i>	SE <sub><i>b</i></sub>	<i>t</i>
Sex	.14	.13	1.03	.14	.13	1.09
E-mail usage	.00	.00	0.13	.00	.00	0.34
Emoticon	.61	.13	4.72***	-.94	.74	-1.28
Emotional stability	.01	.01	1.33	-.01	.01	-0.48
Extroversion	.02	.01	2.46**	.02	.01	1.42
Emotional Stability × Capitalization				.03	.02	1.82*
Extroversion × Capitalization				.01	.02	0.73

Note: Total  $R^2 = .12$ ; adjusted  $R^2 = .10$ .

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .001$ .

Hypothesis 1 states that the use of capitalization influences perceived sender likability. When entered in the regression model (Table 2, Step 1), capitalization was negatively related to likability, in support of Hypothesis 1

( $b = -.28$ ,  $SE_b = .12$ ,  $p < .05$ ). Hypothesis 2 argues that the use of emoticons influences perceived sender likability, and as we expected, emoticon use was positively related to perceived likability, in support of Hypothesis 2. E-mail senders who include a smiley-face emoticon were rated as more likable than are those who did not (Table 3, Step 1) ( $b = .61$ ,  $SE_b = .13$ ,  $p < .001$ ).

We also predicted that more emotionally stable (Hypothesis 3) and extroverted (Hypothesis 4) recipients would rate senders as more likable. We found mixed results for these hypotheses. Recipients' emotional stability was positively related to sender likability in the e-mail for which we manipulated the use of capitalization (Table 2, Step 1) ( $b = .02$ ,  $SE_b = .01$ ,  $p < .01$ ) but not for the e-mail in which we manipulated the inclusion of an emoticon (Table 3, Step 1) ( $b = .01$ ,  $SE_b = .01$ , *ns*). Furthermore, recipients' extroversion related positively to sender likability for the latter e-mail (Table 3, Step 1) ( $b = .02$ ,  $SE_b = .01$ ,  $p < .05$ ) but not the former (Table 2, Step 1) ( $b = .00$ ,  $SE_b = .01$ , *ns*).

Hypotheses 5a and 5b state that recipients' emotional stability and extroversion, respectively, moderate the relationship between the use of capitalization and perceived sender likability. We first inspected the significance of the regression coefficients for each interaction term (Emotional Stability  $\times$  Capitalization, Extroversion  $\times$  Capitalization). Both interaction terms were significant, providing evidence of the interaction effects. Next, we used the method suggested by Aiken and West (1991) to explicate the form of this interaction. For emotional stability and extroversion, we fitted two regression models, one for e-mails with correct capitalization and one for e-mails written in all caps, to regress sender likability on the receivers' personality traits. As we show in Table 4, which includes the unstandardized regression coefficients for these analyses, emotional stability was positively related to sender likability when the e-mail was written in correct capitalization ( $b = .04$ ,  $SE_b = .01$ ,  $p < .001$ ) but not when it is written in all caps ( $b = .00$ ,  $SE_b = .01$ , *ns*). Similarly, extroversion related positively to sender likability when the e-mail was written in correct capitalization ( $b = .03$ ,  $SE_b = .01$ ,  $p < .01$ ) but not when the e-mail was written in all caps ( $b = -.01$ ,  $SE_b = .01$ , *ns*). To help visualize these relationships, we graph the interactive effects in Figures 1 and 2.

In Hypotheses 6a and 6b, we predicted that recipients' emotional stability and extroversion, respectively, moderate the relationship between emoticon use and perceived sender likability. We first inspected the significance of the regression coefficients for each interaction term (Emotional Stability  $\times$  Emoticon, Extroversion  $\times$  Emoticon) and found

**Table 4. Results of Regression Analyses to Explicate Interactions**

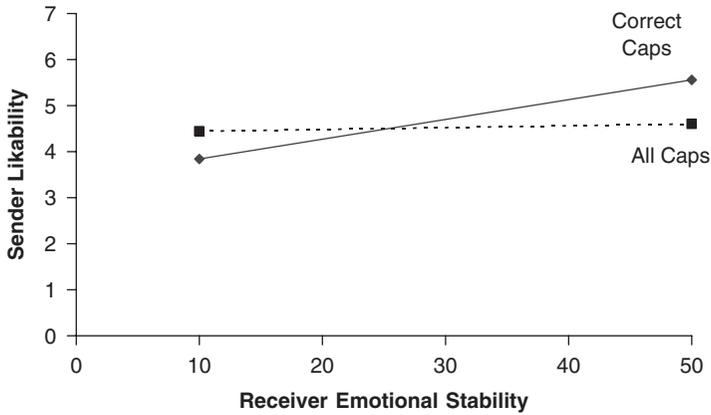
	<i>Perceived Likability of Sender</i>					
	<i>Correct Caps</i>			<i>All Caps</i>		
	<i>B</i>	<i>SE<sub>b</sub></i>	<i>t</i>	<i>b</i>	<i>SE<sub>b</sub></i>	<i>t</i>
Hypothesis 5a						
Sex	.36	.15	2.34**	.46	.20	2.36**
E-mail usage	.00	.01	0.22	-.01	.01	-1.10
Emotional stability	.04	.01	4.13****	.00	.01	0.31
Hypothesis 5b						
Sex	.36	.16	2.25**	.44	.19	2.29**
E-mail usage	.00	.01	-0.10	-.01	.01	-1.02
Extroversion	.03	.01	2.78***	-.01	.01	-1.05
	<i>No Emoticon</i>			<i>Emoticon</i>		
Hypothesis 6a						
Sex	.10	.18	0.54	.22	.21	1.05
E-mail usage	.00	.01	0.12	.00	.01	0.20
Emotional stability	-.00	.01	-0.11	.04	.01	2.80***

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

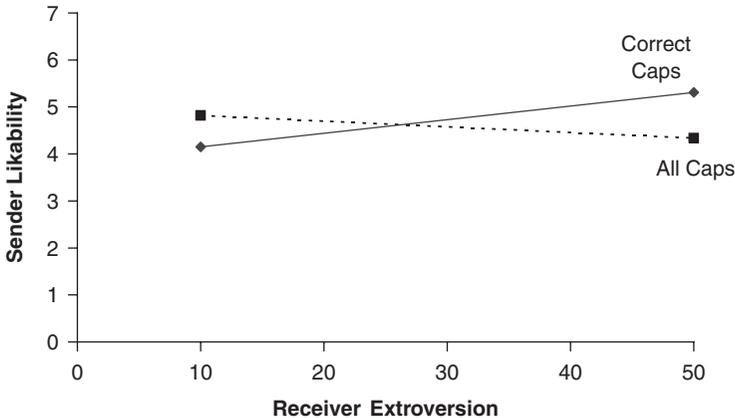
only one significant interaction term (Emotional Stability  $\times$  Emoticon) in support of an interaction effect ( $b = .03$ ,  $SE_b = .02$ ,  $p < .10$ ). We fitted two regression models, one for e-mails without an emoticon and one for e-mails with an emoticon, and regress sender likability on the receivers' emotional stability. Emotional stability was significantly and positively related to sender likability when an e-mail included an emoticon ( $b = .04$ ,  $SE_b = .01$ ,  $p < .01$ ) but not when the e-mail did not ( $b = -.00$ ,  $SE_b = .01$ ,  $ns$ ). Again, to help visualize this relationship, we graph the interaction in Figure 3.

## DISCUSSION

Although communication research has increasingly recognized that e-mail users actively search for cues to form impressions of message senders, how nonverbal cues in e-mail communication are used remains incompletely understood. Research on this topic is particularly important

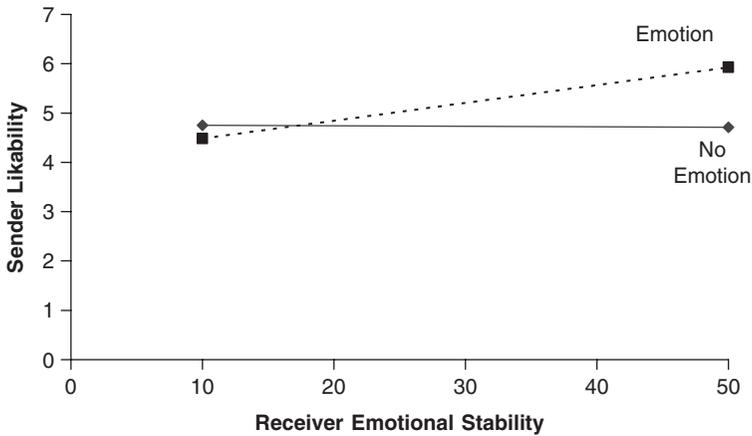


**Figure 1. Receiver Emotional Stability and Sender Likability for All Caps and Correct Capitalization E-Mails**



**Figure 2. Receiver Extroversion and Sender Likability for All Caps and Correct Capitalization E-Mails**

because employees are increasingly likely to communicate using CMC such as electronic mail with coworkers, customers, clients, and other colleagues. Although the popularity of e-mail attests to its many advantages, there are also challenges associated with this lean channel that may lead to variability in how e-mail messages and their senders are perceived. In



**Figure 3. Receiver Emotional Stability and Sender Likability for Emoticon and No Emoticon E-Mails**

our study, participants provided a personality profile and read two short e-mail messages in which we manipulated two common nonverbal cues—use of capitalization and inclusion of emoticons. The results suggest that these nonverbal cues influence recipients' impressions of senders directly and through an interaction between the nonverbal cues and recipient personality attributes.

As we expected, the use of correct capitalization and inclusion of a smiley-faced emoticon are associated with more favorable impressions of e-mail senders. Theory, such as the hyperpersonal CMC perspective (Walther, 1996) and social information processing perspective (Walther, 1992), suggests that users adapt CMC to express messages with an affective or relational content and that without traditional nonverbal cues, recipients adapt by making greater use of other remaining cues. Our results provide further support for the idea that e-mail recipients actively search for information about the sender and use available cues to form their judgments. In terms of particular cues, our findings provide evidence that when e-mail content is emotionally ambiguous, the use of all capital letters leads to more negative impressions of senders, whereas the inclusion of smiley-faced emoticons leads to more favorable impressions. Although we did not consider the full range of cues, we find that at least two of the most frequently used cues

influence recipients' impressions of senders. We therefore encourage further research that examines other nonverbal emotional cues, such as the use of different typefaces, the inclusion or lack of greetings and closings, or the use of different punctuation marks, such as exclamation points.

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Although the present study focuses on how impressions of unknown others are formed in e-mail communication, uncertainty reduction theory (Berger & Calabrese, 1975) helps explain why recipients of e-mail messages are motivated to understand the person behind a message, even when little information is available. We have conducted this investigation under the common assumption of uncertainty reduction theories that people are motivated to communicate in part to reduce their uncertainty, particularly in response to behavior or communication that is ambiguous, equivocal, or difficult to understand. As we have noted, research on uncertainty avoidance in CMC suggests that e-mail recipients are motivated both to interpret the emotional meaning of an e-mail and to form impressions of the sender because in so doing, their uncertainty about future interactions lessens. Moreover, e-mail recipients may be especially motivated to rely on cues that may indicate emotion (e.g., all caps or emoticons) because emotional information is often ambiguous and less available in CMC than in some other forms of communication. Our results suggest that e-mail recipients may turn to cues, such as the use of capitalization and emoticons, to form impressions of e-mail senders. Simply put, in e-mail communication, the desire to reduce uncertainty may help explain both the motivation to form an impression of the sender and the potential to heavily rely on any available cues to do so.

The findings from the current study not only show that use of nonverbal cues in e-mail influences receivers' impressions of senders but also emphasize the influence and importance of individual differences in shaping e-mail recipients' perceptions of nonverbal cues. Specifically, we find that the relationship between recipients' emotional stability and perceived

sender likability is moderated by the use of capitalization such that this relationship is stronger with correct capitalization. We also find that the relationship between recipients' extroversion and perceived sender likability is moderated by the use of capitalization such that this relationship also is stronger when correct capitalization is used. These findings indicate that personality differences influence e-mail recipients' sensitivity to, reactions to, and ability to accurately interpret nonverbal cues. These findings are generally consistent with research on the influence of personality in other types of communication and extend those findings to nonverbal cues in CMC. In particular, in an emotionally ambiguous e-mail message, the relationship between emotional stability and more favorable impressions of the sender is stronger when the sender uses correct capitalization as is that between extroversion and favorable impressions. Furthermore, when correct capitalization is used and the content of the e-mail is emotionally ambiguous, receivers who have greater emotional stability and extroversion perceive the e-mail senders more favorably in the absence of other clear emotional cues. There are at least two ways to interpret these findings. First, these findings are consistent with the notion that the use of all capital letters increases uncertainty whereas the use of correct capitalization does not. Due to the increase in uncertainty with the use of all caps in e-mail messages, e-mail receivers are motivated to rely on the cue to form an impression of the sender and motivated to evaluate the sender negatively. Another way to interpret these findings is that they attest to the strength of the cue (all capital letters). That is, the negative connotation of the cue overrides any potential effects of personality on its perception. Future research is needed to explore which interpretation is more consistent with these findings.

Finally, we find support for the idea that the relationship between recipients' emotional stability and perceived sender likability is moderated by use of emoticons as well such that the relationship is stronger when a smiley-face emoticon is used. Whereas the use of all capital letters increases uncertainty, the inclusion of a smiley-face emoticon helps reduce uncertainty by signaling a positive affective tone. Again, our findings are consistent with prior research on the influence of personality on perceptions and extend prior research by exploring the role of personality in the perception of nonverbal cues in CMC. Specifically, we provide evidence that persons with higher emotional stability and extroversion are more responsive to nonverbal cues than are those who score lower on these personality attributes. Our findings however are not consistent with prior research that suggests a differential effect. Rather, we find an interaction between a positive cue and emotional stability but not between a positive cue and extroversion.

In aggregate, these findings are consistent with organizational and psychological literature that supports an interactionist perspective. The results of our study also complement recent research that shows e-mail communication can be a rich and varied medium capable of conveying emotional and social content (Ku, 1996; Lee, 1994; Walther & D'Addario, 2001). Moreover, they reinforce the view that people vary in their perceptions of emotion from nonverbal cues (Elfenbein & Ambady, 2002; Walther & D'Addario, 2001; Walther & Tidwell, 1995) and that e-mail characteristics alone cannot explain how an e-mail and its sender will be perceived. Overall, the results lend support to theoretical perspectives, such as the hyperpersonal CMC perspective (Walther, 1996) and the channel expansion model (Carlson & Zmud, 1999), that consider media characteristics as more subjective and less rigid than prior theoretical perspectives of communication media have. Finally, although we find mixed results for a main effect of recipient personality, we recommend that additional research explore both the direct and indirect effects of individual differences in perceptions of e-mail senders, including the potential roles of gender, national culture, and age, as well as organizational-level factors, such as organizational culture or attitudes toward emotional expressions.

Before discussing the implications of our findings, we note a few limitations of our study. As is always the case when a cross-sectional design is used, we cannot deduce causal relationships. That said, additional and important insights are likely to emerge from additional longitudinal studies. Similarly, because we measured the variables at the same time from the same source, we cannot rule out common method variance. However, Evans (1985), after conducting an extensive Monte Carlo study examining whether method variance can generate artifactual interactions, concluded, "The results are clear-cut. Artifactual interactions cannot be created; true interactions can be attenuated" (p. 305). In addition, we used students and hypothetical rather than real e-mails in the workplace for our study. It is important to note that our participants all had substantial experience using e-mail to communicate inside and outside of the workplace, and though it would be desirable to study actual e-mail messages in the workplace among employees who know one another, our use of hypothetical e-mail messages from a stranger has the distinct advantage of eliminating content differences. That is, by using identical message content while manipulating the nonverbal components, we were able to control some potentially confounding influences and test our hypotheses more rigorously. Lastly, the present study considers only what Ramirez and his colleagues (2002) considered passive, or unobtrusive, strategies of seeking information about e-mail

senders; future research should consider other types of information-seeking strategies such as interactive strategies that involve further direct communications with the sender to determine if information obtained using other strategies is similarly interpreted.

What is the message of these findings for managers and professionals? They must be aware that e-mail recipients often are motivated to reduce their uncertainty by making sense of the person behind the message. When e-mail senders fail to convey their emotional message clearly, recipients may misinterpret the affective message. Although the use of emoticons such as smiley-faces has the potential to make the emotional meaning of an e-mail clearer, because these symbols are not well accepted in business communication, they also have the potential to reflect poorly on the sender when they deviate from organizational norms. That said, cues such as word choice, greeting, and closing can help clarify the emotional meaning of an e-mail message without deviating from business communication norms. From a practical standpoint, our findings also emphasize the importance of understanding how and when emotions get conveyed and perceived in e-mail communication. As e-mail communication continues to replace other forms, misunderstandings and uncertainty regarding the emotional content of e-mail messages can be expected to take a toll on workplace relationships and perhaps even organizational effectiveness. Managers should be aware that e-mail recipients may vary in their need and ability to make sense of the emotional meaning of an e-mail message. In particular, managers should be aware that different receivers interpret the same message and cues differently. A better understanding of the processes by which emotions are conveyed and perceived in e-mail messages thus is needed to help guide managerial attempts to ensure that the use of e-mail facilitates rather than hinders organizational communication.

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