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The effectiveness of communication by e-mail:

are we as polite as we think?

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Abstract

Research suggests that that computer-mediated communication can lead to a number of problems, in part due to the lack of non-verbal cues. Without non-verbal cues, miscommunication can occur though people are overconfident about their ability to communicate. The present research examines the communication of politeness by e-mail, as it is a factor which to some extent requires non-verbal cues, and also is tied in with social status which research suggests is less salient with e-mail technology. In a yoked-design study participants were instructed to compose e-mails targeted to either a good friend or a lecturer, and rate them on two criteria: how polite they felt the message was, and whether they thought a recipient would accurately detect the identity of the target. A second group of participants then rated the politeness of the messages and were asked who they thought the intended recipient was. The senders of the message were typically overconfident concerning the recipients' ability to correctly detect the target. No significant difference was found between politeness ratings of senders and recipients, although a difference was found between messages intended for friends and lecturers. The results suggest that students have a similar perception as to what is a polite e-mail message, and also shows difficulties inherent in the method of communication, such as overconfidence in one's ability to get the message across.

Internet communication is rising in popularity, but the difficulties of communicating in a text-only medium are also becoming more apparent. Within the last decade or so, the Internet has become a very important part of our lives. Today, over 14 million households in the United Kingdom have access to the Internet, and many more people can access it easily through work, libraries or otherwise (National Statistics, 2006). One of the most popular activities on the Internet is emailing, and many people also use it for chatting to others on forums or chat rooms (National Statistics, 2006). Therefore, it is fair to say that the Internet is often used for communication, both with users' real-life friends, and in many cases, Internet friends (George, 2006). Using the Internet is one form of computer-mediated communication (CMC), which can be defined as "a process of human communication via computers" (December, 1997), and it can be applied to any communication between people mediated by computers. Internet-based CMC can be a very pleasant experience for some. It allows people to communicate regardless of many boundaries, such as those posed by geography or religion (Postmes, Spears & Lea, 1998). George (2006) suggests that people may be more comfortable informing online friends on social networking sites of stigmatised behaviours such as drug taking, while McKenna and Bargh (1998) report that people who may normally feel marginalised, such as homosexuals or conspiracy theorists can be bought closer to like-minded people. Indeed, McKenna and Bargh (1998) found that many people who participated in the newsgroups dedicated to their particular marginalised characteristic experienced greater self-acceptance. E-mail technology is also valuable to

businesses: it speeds up the flow of information, saving many hours of company time (Sproull & Kiesler, 1986).

Problems inherent in computer-mediated communication

There are many less pleasant aspects of Internet communication. Bringing like-minded individuals together can mean that hate groups can form: since the 1980s neo-Nazis have been publishing material on bulletin boards (Levin, 2002), and today there are more than 1500 “hate sites” (Franklin, 2007). Terrorist groups also use the Internet for a variety of purposes including recruitment and information sharing with other groups (Weimann, 2004). “Flaming” is another common problem in CMC (Lea, O’Shea, Fung & Spears, 1992). This is sending deliberately hostile or insulting messages or expressions to another individual or group by computer.

It has been argued that communication via the Internet leads to several effects due to the anonymity it allows. This may be due to deindividuation: a state of decreased self-evaluation leading to disinhibition and behaving antinormatively (Postmes *et al.*, 1998). However, deindividuation fails to account for local group norms which people conform to in CMC; in certain groups flaming *is* the norm (Postmes *et al.*, 1998). Therefore, the SIDE (Social Identity model of Dindividuation Effects) model was proposed, suggesting that the effects that were previously attributed to deindividuation may be connected to social identity within a group (Postmes *et al.*, 1998). There are some interesting outcomes which may emerge from this. For example, Douglas and McGarty (2001) found that participants were more likely to stereotype outgroup members, and thus follow ingroup norms, when

they were identifiable to the ingroup. This would suggest that social identity is indeed important to flaming behaviour, and that perhaps it is done in order to appear favourable to the ingroup. The effects are not limited to flaming: attitudes can change in the direction of the ingroup by CMC (Robertson, 2006) and polarisation has been reported in the direction of the group in decision-making tasks (Lea & Spears, 1991).

Differences between e-mail and face-to-face communication

Face-to-face communication is something that is often found to be relatively natural and easy. Dialogue is much easier than monologue, for example many find giving a speech difficult, but holding a conversation enjoyable and easy (Garrod & Pickering, 2004). This goes against many traditional language-processing accounts (Garrod & Pickering, 2004). Speaking, planning what is going to be said next and listening to the addressee all require a large amount of multi-tasking and task-switching, and yet it is a common, pleasant activity for humans. Garrod and Pickering (2004) therefore proposed interactive alignment to account for this: humans are designed for dialogue rather than monologue, and situational models are aligned in conversation. It is highly unlikely that the same is the case for CMC and e-mailing. E-mail technology is an asynchronous medium, that is, the sender and the receiver do not necessarily attend to the same communication at the same time (Sproull & Kiesler, 1986), which means that transactional communication cannot occur (Carter, 2003). Other forms of CMC are synchronous, such as chat rooms, which allow for real-time communication, but the speed of this has been

hypothesised to create more, rather than less room for error (Kruger, Epley, Parker and Ng, 2005).

E-mailing is a lot faster than communicating using other asynchronous media such as sending a memorandum or a fax (Sproull & Kiesler, 1986). The speed of CMC itself can lead to problems; it seems that e-mailing can be as spontaneous as communicating face-to-face with someone, though the message is more permanent than conversation and can be easily shared with others—e-mail leaves a record of the communication (Lightfoot, 2006). Lightfoot (2006) suggests that when e-mailing a peer, students tend to put a similar amount of thought into composing an e-mail as they would when talking face-to-face, though when e-mailing a group of students or an instructor they perceived that they put more thought into it. This would probably be necessary in CMC, as it is unlikely to be as natural or as spontaneous as face-to-face communication, and would suggest a degree of awareness of the permanence of their message. In a meta-analysis of literature comparing CMC to face-to-face communication, Bordia (1997) suggests that there are several major differences present. Performance in group tasks is typically better in CMC groups, albeit slower, though the groups do not perform as well as face-to-face groups in tasks involving socioemotional interaction. However, perception of the communication partner is worse in CMC, both in terms of understanding one another and in favourable evaluation. Evidence for disinhibited behaviour was also found in many of the studies analysed. This would certainly suggest dramatic differences between CMC and face-to-face communication.

One of the largest differences between CMC and face-to-face communication is that the latter medium is rich in non-verbal cues, while CMC has very few, if any (Carter, 2003). A large amount of face-to-face communication would seem to be non-verbal, with figures ranging from 60 to 90 per cent (Thorne, 2005). There are several aspects to non-verbal communication. One example is paralinguistic cues: tone, inflection and prosody of speech seems to be something people are highly sensitive to; and in some languages, such as Mandarin Chinese, changes in intonation of the same word can lead to different meanings (Townsend, 1985). Non-verbal communication also includes factors such as “body language”, touch, following gaze and facial expressions (Hall, Coats & LeBeau, 2005).

Some research suggests that CMC is not entirely devoid of non-verbal cues. Carter (2003) argues that although traditionally recognised non-verbal cues such as paralinguistic cues and body language cannot translate to the text-based medium, quasi-non-verbal cues may be present. A rather obvious example of this would be emoticons, which are frequently used in e-mail communication. In online role-playing games, non-verbal communication can occur verbally, with text commands used to allow one’s character to display an emotion or perform an action (Masterson, 1991). However, this does not properly reflect true non-verbal communication: it lacks spontaneity and it takes place between user-created characters rather than the users themselves. Emoticons can help the recipient of the message understand the emotional tone, although these are still inadequate as the sender’s own facial expressions cannot be seen (Carter, 2003). However, other widely recognised quasi-non-verbal cues that appear in CMC include “shouting” by writing in

capital letters and repeated punctuation marks (Lane, no date). These seem to be more similar to conventional non-verbal communication, although the cues provided in CMC are unlikely not to be as rich as in face-to-face communication. They also require a certain knowledge of conventions in CMC: there are surely many people who are unaware that “;)” implies that the sender is winking, perhaps denoting a saucy suggestion.

If indeed so much of communication relies upon these non-verbal cues, a detrimental effect should be expected in CMC, especially with purely text-based media, such as e-mail technology. Rainey (2000) suggests that e-mail technology has perhaps the fewest non-verbal cues of any communication medium. The telephone allows for paralinguistic cues, and even asynchronous voice-only media such as voicemail allow for this. Without non-verbal cues, communication can be difficult and miscommunication becomes more likely (Kruger et al., 2005)

One area in which non-verbal signals can be fairly important is when communicating politely. Gestures such as putting the hands together as if praying when making a request are considered polite in some cultures (Brown & Levinson, 1987) Eye contact is another factor which can be linked to politeness, although there are cross cultural differences regarding what is considered polite: in Western cultures maintaining eye contact is polite, although in Asian cultures it is sometimes considered more polite to avoid it (Sifianou, 1992). Another factor linked to politeness is prosody of speech (Brown & Levinson, 1987). Prosody is the pattern of stresses that are used when speaking, and also encompasses intonation of words. It can be used in a variety of different ways, for example to gain common ground with the

listener by exaggerating, or conversely to indicate deference to the listener (Brown & Levinson, 1987). This is a factor that definitely could not translate well to a purely text-based medium as it requires the human voice to succeed. However, that is not to say that all politeness depends upon non-verbal cues; many politeness strategies are verbal, for example indirectness when making a request (Brown & Levinson, 1987). Perhaps it is not surprising that very young children will use the word “please” to upgrade the politeness of their requests after an unsuccessful first attempt (Brown & Levinson, 1987).

Status differences are another area that can be conveyed by non-verbal cues. For example, Asians often avoid eye contact with a person who has authority (Panigua, 2005). Across all cultures, it would seem that politeness is used differently between people of different social statuses. Brown and Levinson (1987) examined social status using the variables of power and social distance. Power of the addressee over the addresser is especially linked to social status. The authors stressed the contextual specificity of these differences: sometimes one has power, but at other times one does not. Depending on the relative power of the addressee, a request may be phrased differently. Brown and Levinson (1987) suggest that when the addressee has power, negative politeness strategies may be used, that is, showing deference rather than solidarity. These can be verbal or non-verbal. Indeed, using such strategies when communicating with a close friend, when there is very low social distance and power differences, may sound somewhat standoffish, or ironic at best (Brown & Levinson, 1987).

Jessmer and Anderson (2001) studied participants’ perceptions of e-mail messages depending upon the level of politeness of the message. They found

that readers of an e-mail message infer a different social status of the sender depending upon how polite it is: impolite messages are typically more likely to be thought to be sent by somebody in a position of power. Polite messages were perceived as someone having less power, and also less likely to have been written by a male sender. Gender and power seem to be somewhat intrinsically linked; women typically have less power than men (Carli, 1999), which would suggest, again, that polite messages are thought to originate from someone with less power. It would seem that even despite the effect of non-verbal cues, people may make assumptions about the social status of the sender. It must be stressed, though, that these assumptions may not necessarily be correct, and it is likely to be a result of stereotypes and expectancies of the recipients. Research by Epley and Kruger (2004) certainly seems to suggest that expectancies exist in e-mail. Indeed, the researchers found that stereotypes were more persistent by e-mail than by telephone, possibly due to the lack of non-verbal cues. This may account for the findings in the work of Jessmer and Anderson (2001); and would certainly seem to suggest that such inferences of the status or gender of the sender of an e-mail message based solely upon politeness and grammatical correctness may be very inaccurate.

Reduced social cues and miscommunication

Without cues as to the social context of the communication taking place, certain drawbacks may ensue. E-mail technology reduces social context cues, which are defined by Sproull and Kiesler (1986) as three main variables: geographical location; situational variables, such as emotional compatibility

between the communicators or the topic of communication; and organisational position. The latter variable is perhaps most relevant to this research, and different statuses within a business setting can affect information exchange: information is more likely to be exchanged within rather than across organisational units (Sproull & Kiesler, 1986). E-mail is not as sensitive to organisational position as, for example, sending memoranda and business letters, which can at least be communicated by the use of headed notepaper (Bordia, 1997). Reduced social cues may have negative effects. The lack of social cues itself has been posited to cause flaming behaviour, for a number of possible reasons, including frustration at lack of feedback, or, as discussed above, deindividuation (Lea & Spears, 1991). Kiesler, Siegel and McGuire (1984) suggest another reason that reduced context cues may be problematic in CMC. The lack of status cues in CMC can result in more equal participation, reducing the influence of high status or charismatic individuals. This may seem as though it is positive, but by undermining leadership there may be fewer constraints on antinormative behaviour, possibly leading to extreme arguments being exchanged and uninhibited behaviour being displayed. Research certainly seems to suggest that when communicating in an environment with low social context cues, behaviour becomes more extreme and less socially differentiated, leading to uninhibited behaviour including flaming (Sproull & Kiesler, 1986). The authors also reported that people preferred to communicate with a superior by email than with a subordinate, and these results were attributed to status equalisation in a medium with reduced social cues: participants may have had fewer reminders of the differences in status using email. However, Thomas and Thomas

(1994) suggest that the removal of status cues can create a more egalitarian communication medium which is beneficial for people from “respect” cultures, that is, cultures who are more likely to use negative politeness strategies.

Because of the lack of non-verbal cues, miscommunication on the Internet should be fairly likely to occur. Even in face-to-face communication problems can arise. Kruger, Gordon, Cameron and Kuban (2006) examined teasing behaviour between couples, room-mates and other dyads, and found that there was a difference in perception of intentions between the teaser and the person being teased. The teased individuals generally viewed the intentions of the teasers as less good than the teasers viewed their own intentions. The teasers failed to effectively communicate their good intentions and therefore their behaviour was misread. Different interpretations of words can also lead to miscommunication: Karelitz and Budescu (2004) suggest that miscommunication is likely to occur when describing the probability of an event, as people vary in their interpretation of phrases such as “likely”. Likewise, Allbritton, McKoon and Ratcliff (1996) found that people were inconsistent in providing prosodic cues to produce the intended meaning in a syntactically ambiguous sentence. Sufficient cues were produced, though, for trained participants. However, face-to-face communication and communication using synchronous media allow for immediate clarification in the case of miscommunication or misunderstanding. This is not the case with e-mail.

Miscommunication can occur even with a richness of non-verbal cues, though these are absent in asynchronous text-based media like e-mail. Rainey (2000) suggests that people in a business setting are aware of the

limitations of e-mail, and that the majority see it as less effective than face-to-face communication, although more efficient. Despite this awareness, miscommunication still occurs.

In a recent study of the effectiveness of communication by e-mail, Kruger, Epley, Parker and Ng (2005) examined participants sending sarcastic messages. Sarcasm is something which requires non-verbal cues, as it is usually communicated by tone of voice. In a medium devoid of such cues, however, this is impossible. The authors hypothesised that in such a case, participants may be egocentric in their estimation of their ability to communicate sarcasm by e-mail: the sender may know the intended meaning, and assumes that because of this others will also know this. This may be due to the lack of feedback that e-mail affords, leading people to focus on themselves as the only real audience available (Lightfoot, 2006). Kruger and colleagues (2005) found, in a series of studies where participants e-mailed one another, that in all experiments, senders tended to overestimate their ability to communicate their message. Indeed, in the case of the first study, senders predicted 97% accuracy in recipients' detection of tone, but in reality the figure was much lower, at 84%. Participants were also overconfident in their ability to detect sarcasm. This is contrary to Rainey's (2000) finding that people seem to be aware of the limitations of e-mail technology; although it is possible that both are correct—it may be that even with knowledge of the limitations of e-mail, an egocentric perspective dominates and people may lose sight of how a reader may interpret the message. It is also noteworthy that the researchers did not allow participants to use the quasi-non-verbal cue of emoticons. This would probably have given the recipients very important

clues to the tone of the message. On the whole, though, the findings of Kruger and colleagues (2005) would suggest that miscommunication can easily occur by e-mail and their participants tended to overestimate their own ability to communicate a message.

The present research, therefore, will examine miscommunication over e-mail, focusing on communicating politeness as opposed to sarcasm. Like sarcasm, politeness involves a certain amount of non-verbal cues. It is also sensitive to status differences, which are present in educational settings between lecturers and students (Thomas & Thomas, 1994). Therefore, the present research will examine the differences between senders' and recipients' ratings of the politeness of an e-mail message, targeted to either a good friend or a lecturer. Two hypotheses can be generated from the current literature regarding miscommunication over e-mail. It is hypothesised that a sender's perception of the politeness of a message and a recipient's perception will differ significantly. It is also hypothesised that senders will overestimate the accuracy of a recipient's detection of the intended recipient of the message.

Method

Participants

For the first phase (the senders) of the study, 70 Psychology students (11 male, 59 female; age 18-25; mean age=19.4) from the University of Kent at Canterbury were recruited to fulfil part of a course requirement. It was not possible to use data from two participants as they had failed to complete the numerical ratings of their messages. 68 participants were therefore recruited

for the second phase (the recipients) of the study (29 male, 37 female; age 18-51; mean age=21.4). These participants were approached in university campus cafes and asked if they would like to participate in a psychology study with no reward. All were students at the University of Kent at Canterbury, though most did not study psychology. None of the second phase participants had participated in the first phase, which was necessary as they therefore had no prior knowledge of the aims. All participants in both phases of the study were given the opportunity to make an informed judgement about whether to give their consent to participate. All participants were native English speakers. All students at the university are provided with e-mail accounts; therefore it is very likely that all participants had at least some experience of e-mail technology.

Design

This study employed a two-way yoked design. Each factor had two levels. The independent variables were participant (sender or recipient) and target (good friend or lecturer). The dependent variables were accuracy of detection of target, and politeness ratings. Counterbalancing procedures were employed in both phases of the study in order to minimise order effects.

Materials

The first phase of the study was carried out online. The first web page informed participants of the nature of the study; their rights to withdraw their data; contact, confidentiality and complaints procedures and a box to tick to

indicate their consent. The second page consisted of ten text boxes. Above each box was a university-themed request that the participants were instructed to convey (e.g. asking for help proof-reading an essay), and its intended recipient (a good friend or a lecturer). An example instruction would be “Please ask for the slides from your last lecture. Imagine you are sending this message to a lecturer”. Half the requests were directed to a lecturer and half to a good friend. Questionnaires were counterbalanced; although in all cases five messages were directed to a friend and five to a lecturer, the intended recipients were reversed in half of the questionnaires. The third web page presented the messages the participant had typed in a random order, in a read-only format. This was necessary so that participants did not change their messages when the notion of politeness was made salient. Under each message was a box to tick for whether they thought a recipient would think the message was for a friend or for a lecturer, and a five-point scale for participants to rate the politeness of their messages, with 1 being “very impolite” and 5 as “very polite”. The final page consisted of a debrief and a repeat of contact information. The data was sent over a secure server in order to ensure confidentiality. Please see Appendix x for an example of the questionnaire.

A unique questionnaire was constructed for each second phase participant. The messages from one phase one participant were presented on paper. Below each message participants were instructed to tick a box to denote whether they thought the message was for a lecturer or for a friend, and the same five-point scale used in the first phase for participants to rate the politeness of the messages. The messages were presented in one of four

random orders in to minimise order effects. Please see Appendix x for an example.

Procedure

Participants in the first phase of the study (senders) were directed to the online questionnaire via a university course credit website. They were able to carry out the experiment from any computer, whether at home or on campus. The consent information was as full as possible, but it did not mention that politeness was being investigated as it was thought that this may influence their responses. Participants were then directed to the questionnaire outlined above. The questionnaire took approximately ten minutes, and after participation they were rewarded with the credit.

Phase two participants (recipients) were approached in university campus cafes and asked if they would like to be involved in a psychology study. If they agreed, they were given a copy of the questionnaire with the consent form on top. They were given the opportunity to ask questions to the researcher. While the participant filled in the questionnaire, the researcher left the area to avoid any experimenter effects. The researcher returned approximately ten minutes later to collect the completed questionnaire and debrief the participant.

Results

Politeness ratings

The data were analysed using a two-way within-participants ANOVA with the independent variables of participant (sender or recipient) and target (friend or lecturer). An alpha level of 0.05 was used. Table 1 presents means and

standard deviations for each variable. The ANOVA revealed that there was no significant interaction between participant and target, $F(1, 67)=.154$, $MSE=.245$, $p=.696$ There was no significant main effect for participant, $F(1, 67)=1.635$, $MSE=.547$, $p=.205$. However, a significant main effect for target was found, $F(1, 67)=136.996$, $MSE=.415$, $p<0.001$. Messages intended for lecturers were rated as more polite than messages intended for friends by both senders and recipients. The results suggest that there was no significant difference between senders' and recipients' perceptions of politeness of the messages, though there was a significant difference in their perceptions of politeness between messages targeted to a lecturer or a close friend.

Table 1: Means and standard deviations for politeness ratings

		Participant	
		Sender	Recipient
Target	Good friend	3.100 (*S.D.* .719)	3.001 (*S.D.* .558)
	Lecturer	4.038 (*S.D.* .634)	3.900 (*S.D.* .622)

Accuracy of detection

The data were coded as "1" for "correct" and "0" for "incorrect". A sum of correct answers was computed for both senders and recipients, grouped by whether the message was intended for a friend or for a lecturer. Typically, senders predicted higher accuracy than recipients; see table 2 for descriptive statistics.

Table 2: Means, percentages and standard deviations for accuracy of detection

		Participant	
		Sender	Recipient
Target	Good friend	4.912 (98%) (S.D. .414)	4.441 (88%) (S. D. .761)
	Lecturer	4.721 (94%) (S.D. .569)	4.132 (82%) (S. D. .960)

A two-way within-participants ANOVA with the independent variables of participant (sender or recipient) and target (friend or lecturer) was then computed. An alpha level of 0.05 was used. There was no significant interaction between participant and target, $F(1, 67)=.624$, $MSE=.377$, $p=.432$. A significant main effect was found for participant, $F(1, 67)=33.218$, $MSE=.574$, $p<.001$. Senders overestimated the accuracy of recipients' detection). A main effect was also found for target, $F(1, 67)=17.523$, $MSE=.243$, $p<.001$. There was both a higher level of accuracy and a higher predicted level of accuracy in detection for messages targeted to a good friend. The results suggest that senders tended to overestimate recipients' ability to detect the target of the message.

Discussion

The results suggest a significant difference between a sender's prediction of a recipient's detection of the intended recipient, and the recipient's actual accuracy of detection. It would seem that the senders overestimated this ability, thus lending support to the second hypothesis of the present research. The results, however, were inconsistent with the first hypothesis, that there would be a difference between senders' and recipients' perceptions of the politeness of a message. The analysis of the results revealed that there was no significant difference. However, a significant result was found for differences in politeness ratings for messages targeted to a friend or to a lecturer.

The difference in politeness ratings between messages targeted to a friend and to a lecturer are interesting, although not altogether unsurprising. Both senders and recipients rated the messages targeted to a lecturer as more polite, consistent with Brown and Levinson's (1987) suggestion that more politeness strategies would be used when addressing somebody with more power, which in this case would be a lecturer. What is interesting, however, is that even though the recipients were not always able to detect the intended recipient of the message, they were nonetheless aware of an elevated level of politeness in the messages intended for a lecturer. Jessmer and Anderson (2001) found that impolite messages were often perceived as originating from somebody with more power. If the reverse is true, it is likely that a message would be more polite when originating from a low-status individual addressing somebody with more power, for example a student addressing a lecturer. If this were the case, then it is probable that the messages targeted to a lecturer would be perceived as more polite. The present research certainly suggests that even with an absence of non-verbal cues, it seems that it is possible to communicate in a way that is perceived more polite with somebody with more power. However, it is peculiar that despite the messages targeted to a lecturer being rated as more polite, the recipients were not always able to accurately detect the identity of the intended target. It is possible that this is not as much of a difficulty detecting the target on the part of the recipients, but rather due to an overestimation of the recipients' ability to detect the target on the part of the senders. In other words, perhaps despite the level of politeness of the message, the intended recipient was still somewhat unclear.

Senders tended to overestimate recipients' ability to detect the intended recipient; this is in line with the work of Kruger and colleagues (2005). As with the aforementioned study, senders predicted close to 100% accuracy of detection, although in reality the figure was lower. It is likely that these findings were a result of senders employing an egocentric perspective; they knew that the messages were intended for a lecturer, and assumed that others would also know this, as with the results of Kruger and colleagues (2005). In fact, the figures were remarkably similar to the findings of Kruger and colleagues (2005) in their study 1; in their case, senders predicted 97% accuracy in detection of tone, but recipients were only correct 84% of the time. This may be merely coincidental, although it may provide evidence for a similar mechanism causing both sets of results. It is, however, important to note that in both the present research and the work of Kruger and colleagues (2005) that the recipients were still fairly accurate in their detection. In the present research, recipients were almost 90% accurate in detecting messages targeted for a good friend, although they were significantly less able to detect messages intended for a lecturer. It is unlikely that these results arose because of a lack of familiarity with the limitations of e-mail technology. All students at the University of Kent have a university e-mail address, and university life necessitates using it.

It is likely that this result is a side-effect of the reduced status cues present in e-mail technology. Bordia (1997) mentions that unlike in other methods of communicating within organisations e-mail is not sensitive to factors such as titles, such as "Dr" for a lecturer. Therefore it is possible that the participants lost sight of who they were e-mailing. While the senders themselves knew that

the message was intended for a lecturer, the recipients may have found no such cues. E-mail is a more egalitarian communication medium than other methods (Thomas & Thomas, 1994), and therefore it is possible that the social norms in communicating with somebody with more power is to some extent forgotten. Certainly, research suggests that people prefer communicating with a superior by e-mail, perhaps due to status equalisation (Sproull & Kiesler, 1986). Therefore, it is possible that the difficulty faced by recipients in determining the target of the message may be due, in part, to status equalisation. In conjunction with senders employing an egocentric perspective when considering accuracy of detection on the part of the recipient, the difference can be accounted for.

It is interesting, though, that no difference was found between politeness ratings in senders and recipients. This is somewhat surprising, as clear differences were found between senders' and recipients' detection of the intended recipient. It was therefore expected that a difference would also exist between the politeness ratings due to differing perceptions. However, this was not the case. It would seem that accuracy of detection and the politeness ratings are two independent areas. While the detection results behaved in a similar manner to those found in Kruger and colleagues (2005), politeness ratings seem to be discrete from these, and similar regardless of rating by sender or recipient. Perhaps this occurred because both sets of participants, senders and recipients, were university students. Therefore, they hold the same social status in the university hierarchy. Because of this, it is possible that they may have the same ideas about the correct way to communicate politely by e-mail. An interesting direction for future research, therefore, may

be to replicate the present research, with university lecturers, rather than students, acting as recipients. This would highlight whether the effect was due to students having a similar perception of politeness. If the lack of difference in politeness ratings between senders and recipients was due to both sets of participants being of the same status in the university, then it is probable that lecturers would have a different perception of the politeness of the messages.

There are several limitations to the present research, which cannot be overlooked. One important methodological issue is that in order to create an air of experimental realism, senders entered their data on to a computer. However, recipients viewed the messages on paper. There is a possibility, therefore, that the different media used in each phase of the study may have somewhat contaminated the results. Research suggests, however, that a printed e-mail is perceived in much the same way as one presented on a computer screen. Jessmer and Anderson (2001) found no significant difference between participants' perceptions of the sender whether the message was presented on paper, or on a computer screen. No effect was found for the media used for presentation in any of the authors' analyses. Likewise, Douglas and McGarty (2002) found no difference between the effects of identifiability in a pen-and-paper setting and a CMC setting. It is likely, therefore, that the different media used by senders and recipients had no real effect on the results; the literature suggests that this should not be the case.

Another limitation is the scales used in rating the politeness of the messages. The scales ranged from "very impolite" to "very polite". However, it is possible that this may have led to the lack of difference in politeness scores

between senders and recipients for semantic reasons. Although “impolite” can be thought to be the opposite of “polite”, a better low-end measure could have been “not polite at all”. “Impolite” means “rude”, and it is possible that many participants avoided giving low scores because the messages were not necessarily rude, but just not polite.

The use of students as research participants has already been touched upon in the context of how it may have affected the politeness ratings between senders and recipients. Broadly speaking, however, there are other caveats in using students as participants. There are problems with generalising the findings from a student population to others, as students differ from non-students in a number of ways. In a meta-analysis of findings in CMC research, Bordia (1997) cites studies that suggest that students perform differently to non-students in experimental tasks. Bordia (1997) goes so far as to suggest that documented instances of flaming may be a student phenomenon, as the effect is far smaller in a study using corporate managers as participants. Sears (1986) argues that students are more egocentric than older adults. If indeed this is the case, then it is possible that the results of the present research and that of Kruger and colleagues (2005) would not necessarily generalise to the rest of the population. On the other hand, in the case of the present research, using students as participants may not present that large a problem. After all, the tasks at hand were very much related to university life. The findings may not necessarily generalise to other settings in which e-mail is used, in particular business, but they certainly seem to present a picture of miscommunication by e-mail in an educational setting. E-mail is increasingly used in an educational setting both in conventional university

settings (Thomas & Thomas, 1994), and in “virtual learning” situations, where classes are conducted over the internet (Lightfoot, 2006). Because of this, of e-mail communication between students and lecturers warrants research, to examine both its benefits and its pitfalls.

The present research presents some interesting directions for future research. As mentioned above, firstly, it would be interesting to replicate the study with lecturers as recipients in order to determine whether lack of differences in politeness ratings was due to students having similar perceptions as to what is a polite e-mail. Another possible direction would be to replicate the study with people from other cultures as recipients. This would be an interesting, as research suggests that politeness is a cultural issue; different cultures have different perceptions as to what is polite, and it is possible that this would translate to communication by e-mail. It would also be prudent to investigate the effect of education in composing polite, formal e-mails to a lecturer; it may be that recipients found it hard to tell what was intended for whom as they had no idea how to go about e-mailing a lecturer politely.

There are several implications to the findings of this study. Most importantly, the results would suggest that, as with the work of Kruger and colleagues (2005), students tend to overestimate the ability of a recipient to detect who the e-mail is intended for. This may be due to an egocentric perspective, but at any rate, it suggests that there is a problem present. In a magazine interview, Nicholas Epley suggests ways of avoiding employing an egocentric perspective when e-mailing: for example, by reading the message out loud using the opposite tone of voice to your intention, or by using another

method of communication—in short, being aware of the drawbacks of e-mail (Enemark, 2006). Similar considerations should probably be made when e-mailing somebody with more power. It is possible that training in the art of constructing an e-mail for a lecturer would alleviate the problem, as students already perceive that they put more thought into the message (Lightfoot, 2006). However, a question is also raised as to whether it is necessarily negative that it can be difficult to tell the difference between messages intended for a lecturer and those for a friend: Thomas and Thomas (1994) suggest that it should not be problematic and might actually be positive. More research into lecturers' perceptions of messages may be necessary to answer this question. The findings of this study certainly add to our understanding of miscommunication by e-mail. While Kruger and colleagues (2005) demonstrated that it is difficult to communicate tone by e-mail, the present research also suggests that it is somewhat difficult to communicate social status. However, it would also suggest that members of a similar peer group have similar perceptions of what is a polite way of e-mailing. This would not be problematic when e-mailing one another, although it may be the source of problems when e-mailing other people. The present research has examined problems related to e-mail, particularly in an educational setting, although there is a possibility that the results may be generalised to organisations. Once the problems have been identified, research can begin to generate possible solutions, if indeed they prove to be necessary. The present research has contributed greatly to our understanding of miscommunication, and politeness by e-mail, both in a theoretical manner and may practically demonstrate problems present.

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