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Seeing Through the Screen:

Are Interpersonal Judgements More Accurate

in a Face-to-face or Computer-Mediated Context?

by

Brenda G. Hebert

A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
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Abstract

In view of the many computer-mediated communication technologies currently available to people, it is important to understand how using these technologies affects interpersonal judgements. Pairs of previously unacquainted students participated in the present study. One pair member was assigned to the role of target and one pair member was assigned to the role of judge. Judges communicated their evaluation of an essay written by the target in a face-to-face or computer-mediated context using electronic mail. The key question was whether targets' understanding of the judges' evaluation (i.e., meta-accuracy) would be affected by communication mode. The primary hypothesis that information about liking would be most clearly communicated through face-to-face feedback, while information about task performance would be most clearly conveyed through computer-mediated feedback, was not supported. Neither communication mode emerged as clearly better in terms of accuracy based on mean directional differences. However, in terms of absolute discrepancies between ratings of judges and targets, a marginal interaction occurred whereby meta-accuracy for task-relevant information was greater in the face-to-face context, while meta-accuracy for relational information was greater in the electronic mail context. The feedback delivered by judges varied in that its clarity was greater for task performance than it was for liking. Overall, judges viewed targets more positively in the face-to-face condition relative to electronic mail, liking targets more and considering them to be more skilled. On balance, the study suggests that the face-to-face communication of feedback results in more positive assessments of both skills and liking by both parties, and more accurate metaperceptions of task-relevant information compared to electronic mail.

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Seeing through the screen:
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Technologies for computer-mediated communication (CMC) such as voice messaging, electronic mail, bulletin boards, chat rooms, and video-conferencing have become increasingly commonplace in recent years. These communication technologies enable the exchange of ideas and information within and between organizations, and allow people to converse with family, friends, and business associates without regard to time or location. However, while the new media are efficient and expedient means of communicating, their impact on social relations is not yet fully understood.

Because media selection preferences affect communication patterns, personal and organizational effectiveness, and product development (El-Shinnawy & Markus, 1997), the rise in use of computer-mediated communication is accompanied by a need to better understand its social psychological implications. While there is no clear consensus on the social relations impact of new communication technologies, some researchers suggest that changes to traditional patterns of communication may alter the ways in which people relate to each other. Bradley, Holm, Steere, and Stromqvist (1993) for instance, acknowledge that all forms of business communication (e.g., e-mail, telephone, meetings and mail) are intended to complement each other; however, they hypothesize that human-human interaction will decrease when expert computer technology is in place. Sproull and Kiesler (1991) assert that electronic communication will be "franker and will demonstrate less audience awareness" (p. 55) relative to other forms of communication, whereas others such as Walther and Burgoon (1992) believe that normal social relationships simply take longer to develop within CMC than in face-to-face contexts.

A meaningful area for the study of CMC is that of the accuracy of interpersonal judgments in everyday communications, both in terms of knowing what one is communicating and in correctly appraising others. As McArthur and Baron (1983) point out, forming accurate social perceptions is adaptive at the level of individual goal attainment, or "getting from others that which we desire and escaping that which we dislike" (p. 220).

Research on the effects of computer-mediated communication within groups has been ongoing for several years, but literature on communication within dyads is sparse. Previous studies have focused on such issues as task performance and decision making within computer-mediated groups (e.g., Reid, Ball, Morley, & Evans, 1997; Savicki, Kelley, & Oesterreich, 1998; Siegel, Dubrovsky, Kiesler, & McGuire, 1986), de-individuation and group polarization (e.g., Spears, Lea & Lee, 1990), dynamics of internet group participation (e.g., McKenna & Bargh, 1998), and relational communication and impression development within groups (e.g., Walther, 1993; Walther & Burgoon, 1992). Questions related to the accuracy of interpersonal judgments within computer-mediated communication have not yet been specifically addressed.

It is important to both business and personal relationships to know whether and how people's capacity to make accurate interpersonal judgments is influenced by the new communication media. The goal of the present study, therefore, was to examine whether interpersonal judgments are more accurate in face-to-face or computer-mediated interactions, using electronic mail. The study also examined whether, when giving task performance feedback to others, the nature of the feedback varies across these two types of communication in a way that affects the accuracy of metaperceptions, or people's estimates of how they are viewed by others.

Interpersonal Judgments

Factors Involved in the Formation of Interpersonal Judgments

Multiple factors, both internal and external to the self, are involved in the formation of impressions about others. The ecological theory of social perception described by McArthur and Baron (1983) for example, emphasizes the selectiveness of awareness. These authors argue that the perceiver's social goals, status, and abilities cause the perceiver to be attuned to specific affordances in others, as opposed to attending to all possible information. From this perspective, detecting what the other person has to offer becomes a focal point for attention, and since different information will be relevant to each individual's behavioral goals, errors in social perception will necessarily result.

While internal motives may affect the type of information to which people attend, interpersonal judgments are clearly influenced by the actions of the partner. "The way in which people move, talk, and gesture – their facial expressions, posture, and speech – all contribute to the formation of impressions about them" (Ambady & Rosenthal, 1992, p. 256). Much of this expressive behavior is subtle and unconscious, but manages nonetheless to communicate one's attributes to an observer.

In situations involving ambiguity or deception, accurate decoding can be a difficult task. For instance, when verbal and nonverbal channels convey inconsistent information, nonverbal behaviors are often viewed as expressing the true message. Perceivers seem to expect that while words are consciously selected, it is more difficult to control nonverbal behaviors such as tone of voice (Ambady & Rosenthal, 1992). The kind of emotional information conveyed by nonverbal behavior is "sometimes more intensely and inescapably personal" than the words that are spoken (DePaulo, 1992, p. 205). This may not be the case for people with negative self-views, however. Data gathered by Swann, Stein-Seroussi, and McNulty (1992) demonstrated that people with negative self-conceptions ignored negative nonverbal feedback from their interaction partners in favour of attending to more positive verbal feedback.

During interactions, the formation of interpersonal judgments is an active process in which neither perceivers nor targets are passive senders or receivers. As described by Swann (1984), the identities of targets are established through a sequence of behavioral exchanges with perceivers. When the target's self-conception and the perceiver's expectancies differ, Swann suggests that impression accuracy will be greatest if the target is able to successfully convey his/her own perception of identity. Theoretically, future behavior should conform to one's self-conceptions; thus, the perceiver will be better equipped to make accurate predictions when his/her impressions coincide with the target's self-perception. If, however, the perceiver is able to gather behavioral confirmation of his/her erroneous expectancies in the first stages of the interaction, the resulting judgment is less likely to be accurate.

Gilbert and Krull (1988) assert that interactants differ from passive perceivers in ways that affect the attributions assigned to others. When forming interpersonal judgments during social interactions, the cognitive demands of managing one's own impressions, recalling and relaying information, and analyzing

alternatives inhibits people's ability to process linguistic information. As a result, people make a greater number of automatic inferences based on nonverbal cues. When placed in the role of passive perceivers however, the appraisal of language is emphasized.

Given the impediments to accuracy such as selective awareness, ambiguity, deception, expectancies, and cognitive busyness, it is perhaps surprising that people's judgments about others can be very accurate, even when based only on brief observations and limited information (Albright, Kenny, & Malloy, 1988; Ambady & Rosenthal, 1992). For example, Ambady and Rosenthal's meta-analysis of brief observations of behavior found that interpersonal judgments made from less than 30 seconds of observation were just as accurate as those made from 5 minute observations, and that the presence or absence of speech was not a determinant of accuracy. In addition, levels of accuracy derived from these short observations were not significantly different from those of judgments based on longer periods of time. It seems that possessing additional information does not necessarily lead to greater accuracy. Ambady and Rosenthal suggest that trait dimensions characterized by observability (e.g., extraversion) and affectivity (e.g., anxiety) may best facilitate making accurate predictions from brief observations.

Accuracy of Interpersonal Judgments

Generalized Metaperceptions.

More complex than the process of simply judging others, metaperception involves people's estimates of what others think of them. Generalized metaperceptions refer to people's perceptions of how they are seen by groups of other people, while the term dyadic metaperceptions describes people's beliefs about how they are differentially viewed by specific others. Sue, for example, may believe that while most of her friends think that she is a hard working student, John uniquely holds the opinion that Sue could be devoting more time and energy to her studies. Meta-accuracy, in turn, reflects the degree to which people's perceptions about the actual impressions of others are correct. For instance, Sue may or may not be right in her assessment of John's views, or those of everyone else.

In order to form a perception of how one is viewed by others, the process of metaperception requires a person to make a judgment about another person's judgment. In the absence of direct feedback,

metaperception involves two stages of inference. The first stage involves identifying the behavioral information available to the other person, and the second stage involves deducing how that person will apply the information to form a judgment (Albright & Malloy, 1999). In part, difficulty in making accurate inferences arises in that nonverbal information is only available to the observer. Albright and Malloy for example, found that self-observation (using videotape) rather than a second exposure to others' feedback, resulted in increased levels of meta-accuracy for social competence. It seems that when people can see themselves from the observer's perspective, they may be more precise in estimating the other person's judgment of them.

Kenny and DePaulo (1993) assume that the causal direction is from self-perception to metaperception, which parallels the findings of inconsistency between people's self-perceptions and the actual impressions of others described by Shrauger and Schoeneman (1979). Kenny and DePaulo suggest that people form their own impressions of themselves, and then expect others to see them in the same way, that is, these "metaperceptions are clouded by self-relevance" (p. 150). In the eight studies reviewed by Kenny and DePaulo, generalized accuracy of metaperceptions for personality traits was substantial, and generalized metaperceptions for liking were also positive. Dyadic meta-accuracy was relatively weak in seven of the eight studies examined, with accuracy for liking being somewhat stronger than for traits. Thus, people seem better at forming an "average"-other metaperception than at forming a "specific"-other metaperception. Shechtman and Kenny (1994) found a similar pattern of results within the context of direct feedback, from which they also concluded that people's own perceptions of their behaviors must be the driving force behind metaperceptions. This self-focused explanation finds inferential support based in the uniqueness of dyadic interactions. If a person uses his/her behaviour rather than an individual partner's feedback as the primary cue for assessing how he/she is viewed by that partner, then accurate dyadic metaperceptions are less likely to be formed. At the same time, the person may still be fairly accurate in knowing how he/she is generally seen by others, at least to the degree that generalized self-perceptions of behavior are correct.

However, Albright and Malloy's (1999) research suggests that meta-accuracy may be hampered due to a lack of objective stimulus information rather than exclusively because of perceptual or motivational biases. Albright and Malloy found that when participants had access, through videotaped interactions, to the same visual and verbal information that was available to their partners, the first stage of metaperception was no longer based on inference, and the ability to determine how the other person had judged them was enhanced.

While Shrauger and Schoeneman's (1979) review concluded that metaperception accuracy of personality traits is generally low, Funder (1987) contends that such errors in social judgment only happen when study participants do not know each other well, or when unreliable rating scales have been used. Consistent with this, Malloy, Albright, Kenny, Agatstein, and Winquist (1997) found that the accuracy of generalized metaperceptions across social groups was greatest for family, then for friends, and was least accurate for people's knowledge of how they were viewed by coworkers. Similarly, Atwater and Yammarino (1992), although not specifically examining metaperceptions, found average self-ratings of leadership to be significantly higher than the ratings of either subordinates or superiors. Finally, Funder (1980) found that self- and peer-attributions of personality traits correlated strongly among friends, especially within traits high in social desirability.

It may be that people are generally more accurate in assessing information about social relationships than they are in their metaperceptions concerning specific personality traits. Kenny, Bond, Mohr, and Horn (1996) for example, found that even with limited information, people seem to be able to discern how much another person likes a third party.

Dyadic metaperceptions.

Dyadic meta-accuracy appears to be poorer than generalized meta-accuracy. It may be that "when people are reacting to others' evaluations of them, the principal or even exclusive information that they process is whether they are being perceived in some globally positive, negative, or neutral way" (Shrauger & Schoeneman, 1979, p. 559). If people do extract only broad assessments about how others view them,

then little information about how they are seen by particular others, especially with regard to individual characteristics, would be available to use in forming accurate dyadic metaperceptions.

Kenny and DePaulo (1993) also concluded that while people are fairly accurate in their knowledge of how others generally view them, people are less able to judge how they are seen by specific individuals. People seem to think that they make a consistent impression on others, and that they are seen with the same consistency. In addition, Kenny and DePaulo obtained substantial agreement between self-perceptions and dyadic metaperceptions, concluding that "if people see themselves as acting differently with different people, they think that the different targets see them differently too" (p. 153). In general however, people seem more likely to be able to discern being liked by a specific person than to be able to differentiate how the same person uniquely evaluates their personality traits.

When people interact with various partners one at a time, they show heightened meta-accuracy compared to situations in which participants interact with multiple partners simultaneously and then rate each partner's perceptions of them. In the first instance, the metaperceiver's behavior will differ in each interaction, and in the second, all partners have access to the same information about the metaperceiver, although each may react to the person differently. Such results, suggest Kenny and DePaulo (1993), provide support to the idea that dyadic metaperceptions are largely based on one's own behaviour.

Among study participants who were roommates, Levesque (1997) found substantial meta-accuracy for the personality traits of "agreeable" and "interesting", but low accuracy for "extraversion", "conscientious", "emotional stability", and "culture". Dyadic meta-accuracy for "liking" and "desired future relationship" were also significant. These results suggest that levels of dyadic meta-accuracy for traits may vary according to the specific dimension being measured. Malloy and Albright (1990) for example, also worked with acquainted individuals, but obtained little evidence of dyadic meta-accuracy for the traits of "sociable", "good-natured", "responsible", "calm", and "intellectual", while generalized meta-accuracy was strong for all traits. Significant target variance was apparent for all five traits, and there was significant perceiver variance for all traits except "sociable". In considering the surprising absence of dyadic meta-accuracy, the authors note that although the group members considered themselves to be well acquainted,

there was no pattern of individual friendship formation. Malloy and Albright suggest that dyadic accuracy may only occur when intimate friendships lead to the possession of unique knowledge about the traits of individuals.

Overall, there is agreement in the literature that interpersonal judgments are affected by the actions and beliefs of both the target and perceiver in social interactions. In addition, it seems that generalized meta-accuracy, at least with regard to personality traits, is consistently stronger than dyadic meta-accuracy. However, certain dyadic metaperceptions such as for reciprocal liking can be fairly accurate, and it may be that a hierarchy of accuracy exists that is linked both to the trait being measured and the perceiver's level of acquaintance with the interaction partner. Finally, self-perceptions appear to be influential in deriving metaperceptions, particularly when the interactants do not share an intimate relationship.

Giving and receiving feedback

If people conveyed their impressions clearly and honestly to others and recipients attended to the feedback, then meta-accuracy would presumably be high. It seems likely that one factor contributing to the mismatch between people's metaperceptions and the actual views of specific others is the delivery and receipt of feedback.

Feedback in everyday social interactions

People seem generally reluctant to provide others with direct feedback, and when they do, may make a conscious effort to put a "positive spin" on negative information. Blumberg (1972) for example, asked participants about various hypothetical and real life communication situations, and found that while people were quite open in discussing the traits of others with their friends, both positive and negative information tended to be withheld from the person actually being evaluated. Blumberg's research also demonstrated that there was a tendency to communicate information more often when it was known from firsthand observation, and that positive information circulated to a greater degree than did negative information. "It is as if the social norms were devised to keep people from learning too much about what others think of them" (p. 161), he concluded. Similarly, Shrauger and Schoeneman (1979) point out that "strong sanctions are often maintained against making direct appraisals, particularly when they are

negative" (p. 565). As a result, people may deliver negative feedback in a falsely positive manner (Langer & Wurf, 1999), and hide their dislike for another behind kind words (Swann, Stein-Seroussi, & McNulty, 1992).

Asking participants whether they would or would not communicate affective messages in different situations, Tesser and Rosen (1977) also found that bad news tended to be withheld, but that good news would be more freely shared. Three considerations were proposed as factors in deciding whether or not to communicate information: concern for oneself, concern for the recipient, and social norms regarding the transmission of messages. Concern for self and normative concerns were considered to be most relevant to withholding information, while concern for others was related to the decision to relay information. Felson (1980) noted similar barriers to feedback in that third party communication occurred more often than direct communication, and positive information was more readily conveyed than was negative information. Among the children in Felson's sample, boys were more likely to deliver negative communication than were girls, and girls were more likely to receive positive communication than were boys.

Not only is feedback rarely direct within social interactions, but people may also ignore the indirect cues that are available to improve meta-accuracy. Kenny and DePaulo (1993) suggest that people decide how they are viewed by others based on their own self-perceptions and not from the feedback that they receive. These authors propose that "if subjects were attuned to the feedback provided by targets during ongoing social interactions, they might have attained higher levels of dyadic accuracy" (p. 155). Kenny and DePaulo assert that people's inattention to feedback may stem from factors such as: poor quality or limited information contained in the feedback; desire to maintain one's self-concept; and "seeing what one expects to see" in reading the reactions of others.

Even in situations where direct feedback is provided, it seems that people may not apply the information. Shechtman and Kenny (1994) for example, attempted to experimentally increase the likelihood of direct feedback and examine its effects on meta-accuracy. Studying the interaction process within Israel, a society thought to have a cultural norm of frankness in interpersonal communication, and using a group assessment procedure expected to generate straightforward interactions, Shechtman and Kenny (1994)

found that participants still retained low levels of meta-accuracy. In this study as in others, people believed themselves to be viewed consistently by others, and did not differentiate between raters based on the feedback they received. It should be noted however, that the assumption of explicit feedback was only indirectly assessed. In addition, Shechtman and Kenny found that correlations between self- and meta-perceptions were large, thus supporting Kenny and DePaulo's (1993) self-perception theory.

According to Levesque (1997), people fail to attend to individual feedback because it may simply be unimportant to recipients most of the time, given that generalized metaperceptions provide people with considerable information about how they are viewed by others. People might therefore focus only on feedback that is consistent across many judges, or on dyadic-level feedback when it is necessary to ensure pleasant interpersonal relationships. Levesque's finding of selective dyadic meta-accuracy for the traits of agreeable and interesting for example, may reflect their importance to relationship development. As Malloy and Albright (1990) suggest, it may be that dyadic effects on perception are evident only in intimate relationships.

Also, to the extent that there are ambiguities in the stimulus information, as is the case with most feedback, McArthur and Baron (1983) suggest that it may be functional to attend to self-confirming information since people are more often right than wrong in their assumptions. The ecological approach put forth by these authors also asserts that because accurate social perception is important to attaining goals, people will tend not to rely on assumptions when concrete or adaptively relevant information is available.

Feedback specific to performance appraisal within organizations

The organizational behavior literature relating to feedback focuses mainly on its relationship to improving task performance, and on the feedback recipient as an active participant in the process. Many of the findings of this body of research appear applicable to both business and interpersonal communication processes.

According to authors such as Larson (1989) for example, supervisors are reluctant to give employees negative performance feedback, and employees often use biased feedback-seeking strategies that will verify self-perceptions and minimize the amount of negative information received. As in everyday

interactions, "much less negative feedback is actually given than might objectively be warranted" (p. 418). In addition, it seems that supervisors may give significantly higher ratings when they know that the employees will receive the feedback than when ratings will not be shared (Fisher, 1979). Work by Shore, Adams, and Tashchian (1998) suggests that supervisors are motivated to assess employees consistently with employee self-assessments, often distorting evaluations in an upward direction. Ashford and Cummings (1983) discuss people's tendency to interpret feedback in line with their own performance expectations. It seems then, that supervisors may be complicit in employees' efforts at self-verification.

Wayne and Liden (1995) discuss the impression management behaviors used by employees to protect and enhance their self-images, and to influence the performance feedback received. In this study, supervisors' perceptions of demographic similarity to subordinates significantly influenced the performance ratings assigned. The authors suggest that supervisors' liking of and perceived similarity to subordinates may bias information recall when appraising performance (Wayne, Liden, Graf, & Ferris, 1997), and influence the positiveness of performance ratings (Lefkowitz & Battista, 1995).

A review by Ilgen, Fisher, and Taylor (1979) found that positive feedback tends to be perceived more accurately than negative feedback, and that the credibility and power of the source influences accuracy. The source of feedback also seems influential in determining whether or not people will seek out feedback. Kluger and Adler (1992) for example, found that people were much more likely to request computer-generated feedback on task performance than they were to ask for task feedback from another person. These researchers speculate that people may be unwilling to solicit feedback from others because of the potential social costs of its receipt.

Kluger and DeNisi (1996) suggest that while feedback interventions can have both negative and positive impacts on performance, its variable outcome has been largely ignored by researchers in favour of a biased positive view. Their meta-analysis suggested that within an organizational context, feedback interventions are likely to be impactful because of their implications to the self. However the feedback may be perceived in relation to the self, the task, or the task details. Feedback cues (e.g., class grades), the nature of the task, situational and personality variables all influence the effect of feedback on subsequent

performance. Of particular relevance to the present research, Kluger and DeNisi propose that verbal feedback involving the salience of another person decreases people's attention to the task information being conveyed, while this is not the case with written feedback.

In sum, both the social psychological and organizational behavioral research literatures are consistent in the finding that people are generally hesitant to convey direct, especially negative, feedback to others. It also appears that the influence of feedback may be further reduced by the recipient's failure to attend to it, particularly when the feedback contradicts the recipient's self-concept, or their generalized metaperceptions. Demographic similarity and liking may be important moderators of feedback valence, and the credibility and power of the feedback source may influence the extent to which the recipient attends to the information.

Face-to-face and computer-mediated communication compared

Given the obstacles to the clear and efficient exchange of information inherent in interpersonal judgments and feedback, it seems reasonable that the mode of communication may also be a factor in improving or reducing people's accuracy. The two broad communication categories relevant to the present study are face-to-face and CMC. Within CMC, electronic mail likely enjoys the greatest application in both business and personal communications.

Information differences between face-to-face communication and CMC

Quantity and pacing of communication.

Electronic mail is a form of CMC in which two or more people exchange textual information using locally, regionally, nationally or internationally networked computers. Taking only seconds or minutes to transmit, electronic mail is fast compared to written communication in the form of letters sent to other geographic locations (Finholdt, 1997). Although computers can store electronic mail, Sproull and Kiesler (1991) suggest that people seem to perceive these communications as being ephemeral in nature, since the text can appear and disappear from the computer screen by pressing a few keys. As opposed to other forms of written communication, there are no tangible artifacts involved in electronic mail unless one prints the message (Sproull & Kiesler). However, all types of written communication have the advantage of being

available in their original form for later reference, without the information loss due to listening skills or memory found in face-to-face communication.

There are obvious differences in immediacy between computer-mediated and face-to-face communication. Face-to-face communication occurs in real time, while in CMC one party types an electronic mail message and sends it to another. There is an unspecified delay in knowing whether the message has been received, opened, read, and understood. Some form of reply is needed from the recipient in order to complete the communication. Unlike face-to-face conversations, in CMC the parties do not have to be available at the same time for the discourse to take place. This time lapse has the benefit of providing senders with greater control over the content, style, and language used in the information conveyed, relative to face-to-face communication.

Brennan (1998) frames the coordination of conversations in terms of "grounding". Whether communicating in person or through computers, people need to coordinate both what they are saying and the actual process of communicating. In electronic communication, the grounding process involves the exchange of sufficient, incremental information to ensure that both parties understand one another. "In media where people are not co-present ...people tend to ground larger installments than in spoken conversation" (p. 203). This implies that the information content of computer-mediated communications should be greater than in face-to-face conversations.

Gender differences.

In addition to contrasts between the pacing of conversations and the quantity of information conveyed in the two types of communication, gender differences may also be influential, particularly in face-to-face communication. For example, women tend to be more nonverbally expressive than are men (DePaulo, 1992). Similarly, Gallois and Callan (1986) found that in delivering emotional messages with ambiguous content, women were better decoded than men through both verbal and visual channels. Female decoders however, were only more accurate than men in the audiovisual condition. For both sexes, positive messages were least well understood, while negative messages were decoded most accurately. Although there were some differences based on sex and nationality of speaker, the authors noted that most

participants had been reluctant to smile when giving positive messages, and proposed that the lack of facial cues may have obscured the positivity of the message.

In a 1972 literature review of visual behavior studies, Ellsworth and Ludwig found that North American women generally engage in more eye contact than men during neutral and positive social interactions, suggesting that they may be more dependent on visual feedback than are men. Personality differences were weaker and less consistent predictors than were gender differences. Research into gender differences in communication suggests that the meta-accuracy of women for social information may be greater than that of men in a face-to-face context, as well as being greater than the meta-accuracy of women in a computer-mediated context (e.g., DePaulo, 1992; Ellsworth & Ludwig; Gallois & Callan, 1986; Savicki et al., 1997).

Presence or absence of nonverbal behavior.

Another important distinction between face-to-face and computer-mediated communication is that in CMC, each conversant lacks access to the other person's nonverbal behavior and feedback, although this information can be simulated to some extent by the use of symbols (e.g., ☺, ☹, !!). However, since electronic mail involves the exchange of exclusively textual information, this form of CMC provides both parties with access to the complete communication, whereas in face-to-face communication, people have direct knowledge about the behavior of others but only indirect access to their own interpersonal behavior (Albright & Malloy, 1999). Since people can neither see nor hear themselves as others do in a face-to-face interaction, they lack important information about the impressions they convey. Nonverbal feedback from the other interactant provides clues about how people's behavior appears to others, but also allows people to excuse or ignore behaviors which may have created an undesirable impression (DePaulo, 1992).

Spears et al. (1990) suggest that the absence of visual information in CMC may serve to strengthen group allegiance and influence. The unavailability of information about other people's physical appearance and demeanor will, they propose, eliminate the possibility of people's images of group ideals becoming tarnished. This conclusion is consistent with the literature on nonverbal communication that emphasizes the affective and interpersonal information disclosed by nonverbal behaviors. The body of research on physical

attractiveness demonstrating that an individual's appearance affects other's perceptions of his/her social desirability in terms of personality traits is well known (Albright, Kenny, & Malloy, 1988). In face-to-face communication, body type, attractiveness, head shape and size, skin color, and facial wrinkles can be major influences on perceivers' impressions (DePaulo, 1992), as are vocal characteristics and facial expressions (McArthur & Baron, 1983).

In addition to the impression effects derived from people's physical attractiveness, other nonverbal influences are apparent in face-to-face communication situations. Research reviewed by Kleinke (1986), and Ellsworth and Ludwig (1972) on visual behavior, for example, found that eye contact and gaze are used to provide and obtain information, regulate the interaction, express intimacy, exercise social control, and facilitate service and task goals. In addition, it seems that people who are spontaneously expressive create more favourable impressions on others, and are able to elicit more feedback from others about their own behaviours (DePaulo, 1992). Nonverbal behavior therefore, appears to provide clues that might increase people's meta-accuracy, especially for social information. Nonetheless, as DePaulo points out, nonverbal behavior in face-to-face communication is more difficult to quantify than it is to recall and assess words spoken. This contributes to the flexibility with which nonverbal information can be interpreted and used by either party.

Theory and research related to media applications

Media richness theory (Daft & Lengel, 1986) suggests the ranking of communication media according to their ability to handle uncertainty and equivocality. Rich media such as face-to-face and telephone are proposed to be suitable to resolving ambiguous situations, whereas lean media such as written documents and electronic mail are thought to apply best to situations requiring the exchange of straightforward information. El-Shinnawy and Markus (1997) suggest that communication media appropriate to ambiguous situations need to facilitate explanation and clarification, rather than simply conveying factual information. According to media richness theory, a lean medium such as electronic mail will suffice when the information to be conveyed is clear, however in communicating ambiguous or

emotional information, a richer medium that provides immediate verbal and non-verbal feedback is needed (Walther, 1992).

El-Shinnawy and Markus (1997) compared people's usage of and preferences for voice mail versus electronic mail, obtaining results contrary to those predicted by media richness theory. In this study, participants preferred electronic mail over voice mail for situations that required explanation or negotiation, as well as for situations involving uncertainty. Respondents also believed that electronic mail was better than voice mail in conveying the real meaning of a communication, by reducing misleading and distracting cues. El-Shinnawy and Markus point out that senders and receivers may have different needs and preferences, and suggest that people may value other facets of communication than richness (e.g. information storage, search, and retrieval capacities). It may also be that situational or interpersonal considerations such as the desire to establish either intimacy or distance in communications are influential in determining people's preferences for communication modes.

Negative implications of CMC for relationships.

Siegel et al. (1986) discuss shifts of attentional focus, de-individuation, and conformity in relation to CMC within groups. In their view, these three factors combine to suggest that when using CMC, people are less concerned with the social aspects of communication. People may focus on the content of messages sent and received rather than attending to the other participant, producing cold and impersonal communication (Hiltz, Johnson, & Turoff, 1986). Seigel et al. suggest that people using CMC may feel a loss of identity, display uninhibited behavior, and conform less to social norms. Similarly, researchers such as Kiesler, Siegel, and McGuire (1984), and Sproull and Kiesler (1991) argue that the lack of social cues in CMC leads to a greater incidence of antisocial and uninhibited behaviors such as "flaming" (i.e., swearing, or using strongly negative, hostile language) than occurs in face-to-face communication. Consistent with the idea of social distance being inherent in CMC, Bradley et al. (1993) suggest, based on interview data, that computers may be used to communicate with people when face-to-face communication would be unpleasant and therefore undesirable.

Researchers such as Kiesler et al. (1984), Siegel et al. (1986), and Sproull and Kiesler (1991) believe that electronic mail eliminates normal communication and feedback mechanisms. Sproull and Kiesler for example, contend that senders cannot match the tone and content of their message to the receiver's response in order to determine how the information is being received. These authors further suggest that the absence of nonverbal cues makes it difficult to convey subtle information such as nuance, individuality, and dominance. From the receiver's perspective, there are few social cues contained in electronic mail that relate to the sender or their position, thus weakening the role of status differences apparent in face-to-face communication (Kiesler et al, Sproull & Kiesler). This perspective, referred to as the "cues-filtered-out" approach, also suggests that the absence of nonverbal cues in CMC leads to impersonal and task-oriented communication. Interactants may sometimes lose sight of the fact that they are communicating with another person, and not the computer (Kiesler et al). By extension, it seems that lower meta-accuracy for liking and higher meta-accuracy for skills might be apparent in CMC compared to face-to-face communication, at least in the early stages of relationship formation.

Positive implications of CMC for relationships.

Other researchers however, such as Spears et al. (1990), Walther and Burgoon (1992), and McKenna and Bargh (1998) have found 'reality' in the 'virtual'. According to these studies, CMC group members do tend to form and apply the same general social norms as do face-to-face group members. Walther and Burgoon for example, found that many of the relational dimensions of CMC groups evolve in a positive direction over time, eventually approximating those of face-to-face groups. Over several weeks of group interaction, study participants' ratings of each other's composure/relaxation, informality, receptivity/trust, and social orientation increased, and their ratings of dominance decreased. In this regard, researchers such as Reid et al. (1997) are critical of the cues-filtered-out approach; specifically, the "brief and ad hoc nature of group interaction in these experiments, and the lack of opportunity they provide for slower moving CMC interaction to establish normal patterns of interpersonal communication" (p. 242).

Similarly, Savicki et al. (1997) concluded that communication is not driven solely by the characteristics of its medium, but is also dependent on the power of language. In this study, people's

"visibility was based upon their use of language" (p. 178), and the authors attest to the importance of both the skills and motivations of the communicators in reducing the potential for distance and anonymity in CMC. Scharlott and Christ (1995) also point out that in a CMC context, "the words a person types are of paramount importance in determining what effect any act of communication will have" (p. 195). Walther (1992) agrees that intimacy can be enhanced or reduced through the use of linguistic cues, thereby creating a "normal" conversational style within CMC.

Finding the balance – what are the social psychological effects of CMC?

"Proponents of the efficiency benefits of computer-based communication often assume that it delivers the same message as any other medium but simply does so more rapidly. That view is misleading because a message – even the 'same' message – changes its meaning depending on the forum within which people convey it" (Sproull & Kiesler, 1991, p. 38). These authors assert that the technological changes associated with CMC have created a new social situation in which traditional norms have lost their potency - instruction and experience is lacking - and people must develop new protocols and behaviours.

As familiarity with the new computer-based technologies increases, people may apply compensatory measures to overcome any limitations to effective communication. Rime (1982) found for example, that when communication channels were restricted, people seemed to make adaptations in order to be understood. He concluded that people enhanced their use of the available mode to compensate for the lack of full spectrum communication opportunity. Rime had participants interact verbally, either face-to-face or visually separated, discussing their personal opinions about a neutral topic. He found that participants quickly accommodated to the situation; while accuracy was not assessed, there were no significant differences in participants' assessments of the quality of the communication, affective involvement, or their interpersonal perceptions. Rime suggests that people may have used the available verbal channel to convey information equivalent to nonverbal gestures and facial expressions. It seems reasonable to expect that people communicating through computer-based media might similarly make adaptation efforts aimed at ensuring clarity and facilitating interpersonal relationships.

On balance, the literature comparing face-to-face and computer-mediated communication is somewhat equivocal, but suggestive of specific advantages for each medium. In conveying factual information, electronic mail provides interactants with greater linguistic control, more detail, fewer distractions, and a lasting reference. In CMC, a particular advantage for clear, impersonal communication may be conferred upon people with greater linguistic abilities. However, since all conversations contain elements of social information, this may be better communicated through verbal and nonverbal behaviors in face-to-face situations, at least in the early stages of relationship formation. It seems possible however, that this difference may dissipate over time with relationship development.

The Present Study

The growing use of electronic mail for both personal and business communications lends itself to research into the implications of the medium for making and conveying interpersonal judgments, such as task performance feedback. The present research study therefore explored the question of whether interpersonal judgments were more accurate in face-to-face or electronic mail interactions. The study also examined whether feedback differs across these two types of communication in a way that affects meta-accuracy for liking and task performance. In addition to investigating questions of accuracy, the study indirectly addressed the more process-oriented issue of the source of the metaperception (i.e., self-perception or feedback-based).

As suggested by the cues-filtered-out perspective, it was thought that CMC might facilitate direct and explicit communication, while at least initially, hindering more indirect and subtle communication. Since people seem generally reluctant to provide direct and honest feedback to others, it seemed that the possible social "distancing" of CMC would facilitate this task, and also that eliminating the ambiguity of nonverbal cues would enhance meta-accuracy related to the communication's central purpose of providing task performance feedback. At the same time however, it was thought that the absence of nonverbal and verbal cues such as tone of voice might make indirect relational feedback from judges less available to targets in CMC. In an assessment situation, therefore, it was expected that skills feedback would be more clearly communicated in CMC than interpersonal feedback (i.e., liking), which focuses on a task-irrelevant

dimension. Therefore, I hypothesized that the meta-accuracy associated with the two communication modes would vary according to the dimension of judgment, yielding a two-way interaction between mode and dimension.

Judges were expected to be less reluctant to provide clear performance feedback to targets from "behind the screen", and this would be reflected in consistency between judges' ratings of target skills and the feedback provided in CMC. In the face-to-face condition however, I anticipated that the judges' feedback would demonstrate more positivity than would be reflected by the ratings of their actual impressions of the targets' performance.

In exploring the circumstances under which metaperceptions are self-concept driven, I expected to find a positivity bias in targets' ratings of those dimensions about which they received ambiguous or no feedback from judges. It was anticipated that targets would base those assessments on self-perception rather than on the feedback received. For example, little or no feedback about the judges' liking of targets would be available in the electronic mail condition; therefore targets' self- and meta-perceptions should correlate strongly. Also, judges were expected to convey more positive skills feedback than was reflected in their actual impressions in the face-to-face condition. While some nonverbal evidence of this exaggeration may have been present, it should reflect a difference in the degree of the judge's liking for the target rather than implying deception. In this ambiguous situation, targets were also expected to rely on self-perceptions in forming their metaperceptions. Finally, since skills feedback in the electronic mail condition and liking feedback in the face-to-face condition were both expected to be clearly communicated and consistent with actual impressions, target metaperceptions on these items should have correlated strongly with both judges' feedback and impressions, and related less closely to self-perceptions.

Specifically, the key hypotheses to be tested were that:

1. *Target meta-accuracy for liking would be greatest in the face-to-face condition in terms of mean (directional) and absolute discrepancies.*
2. *Target meta-accuracy for skills would be greatest in the electronic mail condition in terms of mean (directional) and absolute discrepancies.*

3. *Skills feedback provided by judges (as evaluated by independent raters) would be expressed more positively and less clearly than was reflected by the judges' actual impressions in the face-to-face condition relative to the electronic mail condition.*
4. *Feedback regarding liking provided by judges (as evaluated by independent raters) would be expressed less clearly in the electronic mail condition than in the face-to-face condition.*

In addition, the following exploratory hypotheses were examined:

5. *Target self- and meta-perception for skills would correlate most strongly in the face-to-face condition, and for liking in the electronic mail condition.*
6. *Judges' feedback and impressions would correlate most strongly for liking in the face-to-face condition, and for skills in the electronic mail condition.*
7. *Judges' overall impressions of targets would be most positive in the face-to-face condition.*

Thus, the study consisted of a 2 (communication mode – face-to-face, electronic mail) by 2 (dimension – liking, skills) by 2 (judgement type – impression, metaperception) design. I predicted that targets would exhibit high levels of meta-accuracy in the context of direct feedback (i.e, for liking in the face-to-face condition and for skills in the electronic mail condition), and that judges would provide feedback that corresponded to their impressions for liking in the face-to-face context and for skills in the computer-mediated context.

Method

Participants

164 unacquainted students (82 pairs) who were familiar with using electronic mail and word processing were recruited from the University of Manitoba introductory psychology participant pool. Students participated in the study for course credit. Participants were randomly assigned to roles within same-sex pairs, balanced by gender across the two communication conditions. Data from two mixed-sex pairs was not included in the analysis, leaving a final sample size of 80 pairs. In advance of the full study,

an initial pilot was conducted to establish how participants responded to the experimental procedures; no procedural changes resulted from the pilot.

Procedure

Participants were invited to the lab in pairs, where they were briefly introduced. The purpose of having participants meet was to provide them with equivalent information about each other's physical appearance, regardless of the communication condition. This was intended to eliminate any potential confounds linked to what would otherwise be a total absence of visual information in the electronic mail condition. In order to control pre-experimental interaction, after meeting, participants were taken to separate rooms, and individually briefed on the experiment's objectives and procedures related to understanding social perception in evaluative situations. Informed consent was obtained (see Appendix A). Targets were then assigned a selected current affairs topic on which to write a 1-2-page persuasive essay (see Appendix B). They were told that the essays would be judged for overall writing quality, logic, clarity of arguments and persuasive power. The essays were typed in both experimental conditions. During this fifteen-minute period, the judges were required to stay in a separate room.

Judges then read and critiqued the essays, having been provided with a list of criteria against which to provide feedback to the target (see Appendix C). During the ten minutes that the judges prepared their feedback, targets remained in a separate room. In the face-to-face condition, the pair sat across a table during the feedback; in the computer-based condition there was no visual or verbal contact, and the judge transmitted an electronic mail message containing the feedback. With participants' permission, the feedback was tape recorded in the face-to-face condition, and archived in the electronic mail condition for later coding of the judge's liking and skills appraisals by independent raters.

Following receipt of the feedback, targets were asked to assess how they thought the judge felt about their likability and skills; thus quantifying their metaperceptions. They also provided self-assessments of the same factors (see Appendix D). Judges completed a parallel evaluation for their impressions of targets (see Appendix E). After completing the instruments, the pair was briefed concerning the full study hypotheses.

Twelve, seven-point bipolar scales were constructed using personality trait descriptors established by Anderson (1968) as relating positively to high and low levels of liking. The adjectives selected all had high empirically-derived meaningfulness scores, and included the following words: intelligent, sincere, open-minded, thoughtful, honest, understanding, phony, obnoxious, untruthful, insulting, narrowminded, selfish. Trait scales were reverse-scored for data entry as required. Additional seven-point bipolar scales were used to assess: global liking, desire for future relationship, and writing skills (quality, logic, clarity, persuasiveness).

Post-experimentally, three research assistants acted as independent raters, globally assessing both the liking and skills dimensions of the feedback given to targets by judges, in terms of the clarity and positivity of the feedback (see Appendix F). Raters each reviewed all of the judges' assessments, using either the electronic message or audiotape.

Results

In the present study, accuracy was defined as a common understanding, implied by judge and target sharing consensual or converging perceptions, as discussed by Swann (1984). Inaccuracy was quantified as the amount of discrepancy between the target's metaperception and the judge's impression.

In considering the measurement of accuracy, it is important to bear in mind that "discrepancy scores must be limited to the assessment of relative differences in accuracy; they cannot be used to assess accuracy in an absolute sense" (Ryan, 1995, p. 192). Errors such as language confounds and systematic differences in the use of scales will contribute to variances between subjects. Further, as observed by McCauley, Jussim, and Lee (1995), "self-descriptions, especially regarding personality traits or behaviors loaded with social desirability, are notoriously subject to self-serving and self-enhancing biases. Thus, a discrepancy ...means that at least one group is incorrect", but the source of error cannot be identified by the presence of a discrepancy (p. 294). These concerns are minimized in the present study, however, which was focused on examining the accuracy of metaperceptions rather than self-perceptions.

Statistical Analysis of the Four Key Hypotheses

Target Meta-Accuracy for Liking and for Skills

I first examined the two central hypotheses that target meta-accuracy for liking would be greatest in the face-to-face condition, and that target meta-accuracy for skills would be greatest in the electronic mail condition. To do this, a statistical assessment was conducted using a 2(communication mode: face-to-face vs. electronic mail) x 2(dimension: liking vs. skills) x 2(judgement type: metaperception vs. impression) repeated-measures ANOVA with pairs as the unit of analysis. The first variable was between-pairs, and the rest were within-pairs. Individual participant scores for the liking dimension were calculated as the mean of each participant's answers to 14 scaled questions included in the appendices, 2 of which assessed affect and 12 which rated personality traits. Scores for the skills dimension were derived by taking the mean of each respondent's answers to 4 scaled questions concerning the quality of the target's writing. All scales had a 7-point range of values (with appropriate reversals) anchored by low (1) and high (7) extremes of the quality, trait or skill under inquiry.

As summarized in Table 1, the expected three-way interaction between communication mode, dimension, and judgement type (such that target meta-accuracy for the skills dimension would be greatest in the electronic mail condition, and that accuracy for the liking dimension would be greatest in the face-to-face condition) was not present. Rather, the data yielded a two-way interaction between judgement type and dimension, with F (1, 78) = 29.84, $p < .001$ whereby targets underestimated how much they were liked, but not how positively their skills were viewed. Judges' overall impressions of liking (M = 5.71, SD = .76) were greater than were target metaperceptions of liking (M = 5.09, SD = .85), with F (1, 79) = 35.26, $p < .001$. The assessments of skills however, were closely matched for both judges and targets (Ms = 5.04 and 5.06, SDs = 1.06 and 1.17 respectively), with $F < 1$, ns. The analysis also yielded a marginal main effect for communication mode with F (1, 78) = 3.37, $p = .07$, suggesting that ratings in the face-to-face condition tended to be higher than ratings in the electronic mail condition.

Next, the data were examined for effects related to the inclusion of culturally-mixed pairs (i.e., pairs in which only one person is of a visible minority), by adding a between-subject variable of ethnicity

(same vs. different) to the original 2(communication mode) x 2(dimension) x 2(judgement type) analysis of variance. No significant effects involving ethnicity were found.

Examination of the data for gender-specific differences was conducted using a 2(communication mode) x 2(sex) x 2(dimension) x 2(judgement type) analysis of variance technique. A four-way interaction between judgement type, dimension, communication mode and sex was present, with F (1, 76) = 4.58, p = .04, so I proceeded to examine gender-specific results, by recalculating the ANOVA using sex as a sorting variable. For the male-only grouping (see Table 2), no three-way interaction was present (F (1, 76) < 1, ns). For female pairs (see Table 3), a significant three-way interaction between judgement type, dimension and communication mode was found (F (1, 76) = 4.15, p = .05). In the face-to-face condition, the two-way interaction between judgement type and dimension was significant, with F (1, 76) = 17.36, p < .001, such that female targets underestimated how much they were liked, but not the judges' impressions of their skills. A simple effect was present for liking (F (1, 76) = 27.48, p < .001), but not for skills (F (1, 76) < 1, ns). Within the electronic mail condition, the two-way interaction between judgement type and dimension was not significant, with F (1, 76) < 1, ns. Thus, although there were gender effects present in the data, they were small. Overall, there appears to have been a greater tendency for females to underestimate how much they were liked compared to males, particularly in the face-to-face communication condition.

In addition to assessing meta-accuracy in terms of mean differences, absolute discrepancies were evaluated. Discrepancies were determined by taking the absolute values of the difference between target and judge ratings on each of the four items related to writing skills and the fourteen items related to liking, and computing the domain means for each participant. The means of absolute discrepancies did not differ significantly between the skills and liking dimensions or by communication mode when compared using a 2(dimension) x 2(communication mode) ANOVA. Cell means for liking were M = 1.19 (SD = .63) and M = 1.23 (SD = .60) in the face-to-face and electronic mail conditions respectively. Cell means for skills were M = 1.03 (SD = .56) and M = 1.20 (SD = .63) in the face-to-face and electronic mail conditions.

Taking Levesque's (1997) finding of greater meta-accuracy for "liking" and "desired future relationship" than for certain personality traits, it seemed reasonable to explore the data for potential differences based on responses to items related to affect. Therefore, I recalculated discrepancies for the liking dimension using only the two scale items for "liking" and "desire to get to know better", and computed a second 2 x 2 ANOVA. These cell means are shown in Table 4. The analysis resulted in a marginally significant two-way interaction between dimension and communication mode, with $\underline{F}$ (1, 78) = 3.53, $\underline{p}$ = .06, in which discrepancies for skills tended to be greatest in the electronic mail condition and discrepancies for liking tended to greatest in the face-to-face condition. This interaction is in opposition to the hypothesized result that target meta-accuracy would be greatest for liking in the face-to-face condition and for skills in the electronic mail condition. Simple effects for discrepancy across the two conditions were $\underline{F}$ (1, 78) = 2.45, $\underline{p}$ = .10 in the face-to-face condition, and $\underline{F}$ (1,78) = 1.48, $\underline{ns}$ in the electronic mail condition.

Clarity and Positivity of Judges' Feedback

Raters provided estimates of judges' evaluations on each of the 14 scaled items related to liking and 4 items related to skills, and also responded to 2 questions evaluating the clarity of the feedback (see Appendix E). Table 5 presents rater assessments of judges' feedback in terms of clarity and positivity.

Inter-rater reliabilities were calculated using a standardized item alpha as; .75 for clarity of skills feedback, .36 for clarity of liking feedback, .85 for positivity of liking feedback, and .86 for positivity of skills feedback. The inter-rater reliability for clarity of liking feedback was surprisingly low.

I first evaluated the hypothesis that judges' feedback for skills would be assessed by raters to be more positive than judges' actual impressions in the face-to-face condition relative to the electronic mail condition, by computing a 2(communication mode: face-to-face vs. electronic mail) x 2(judgement type: rater assessment vs. judge's impression) repeated-measures ANOVA with pairs as the unit of analysis. The first variable was between-pairs, and the second was within-pairs. Scores for the skills dimension were derived by taking the mean of each respondent's answers to 4 scaled questions concerning the quality of the target's writing. The relevant cell means are presented in Table 6. The expected two-way interaction was

not present, with F (1, 78) < 1, ns. A marginally significant main effect for communication mode (F (1, 78) = 3.44, p = .07) suggested that the evaluations of both judges and raters tended to be more positive in the face-to-face condition compared to the electronic mail condition. So, while raters did indeed evaluate judges' feedback for skills as being most positive in the face-to-face condition, judges' actual impressions of targets' skills were also more positive in that context.

To test the two hypotheses that judges' feedback for skills would be most clear in the electronic mail condition and that judges' feedback for liking would be most clear in the face-to-face condition, statistical analysis was conducted using a 2(dimension: skills vs. liking) x 2(communication mode: face-to-face vs. electronic mail) ANOVA on rater evaluations of clarity. The analysis revealed a marginal two-way interaction between dimension and communication mode, with F (1,78) = 2.86, p = .08, whereby raters felt that the clarity of judges' feedback tended to be greatest for skills in the face-to-face condition. A main effect for dimension (F (1, 79) = 331.31, p < .001) indicated that the clarity of feedback for skills was much greater than was the clarity of feedback for liking, with Ms = 5.27 (SD = 1.26) and 2.54 (SD = .70) respectively.

Statistical Analysis of the Exploratory Hypotheses

Relationships Between Target Self- and Meta-Perceptions

Within-subject correlation coefficients were calculated to test the hypothesis that target self- and meta-perceptions for skills would correlate most strongly in the face-to-face condition and for liking in the electronic mail condition. These relationship values are illustrated in Table 7. The correlation between target self- and meta-perceptions for skills was r (42) = .66 in the face-to-face condition, and r (38) = .33 in the electronic mail condition. Thus, as hypothesized, the relationship is strongest in a face-to-face context, with the significance of the difference between the two coefficients being p = .06. For liking, the correlation between target self- and meta-perceptions was r (42) = .56 in the face-to-face condition, and r (38) = -.06 in the electronic mail condition, demonstrating a stronger relationship between self- and meta-perceptions in the face-to-face condition. This difference is significant at p = .01, and is the opposite of that hypothesized.

Overall then, target self- and meta-perceptions for both liking and skills were most closely associated in the face-to-face condition compared to electronic mail.

Relationships Between Judges' Feedback and Impressions

The hypothesized relationship between judges' feedback (as assessed by raters) and their actual impressions was that it would be strongest for liking in the face-to-face condition and strongest for skills in the electronic mail condition. Correlation coefficients between feedback and impressions were calculated to test this hypothesis, and are illustrated in Table 7. For liking, the relationship was r (42) = .26 in the face-to-face condition, and r (38) = .33 in the electronic mail condition. For skills, r (42) = .72 in the face-to-face condition, and r (38) = .57 in the electronic mail condition. In neither case was the difference between the two independent values significant. It was noted however, that there was better overall correspondence for judges' feedback and impressions of skills (r (80) = .64) than for liking (r (80) = .26), with the significance of the difference being $p = .04$.

Relationships Between Target Self-perceptions and Judge Impressions

Although no relationship between target self-perceptions and judge impressions was originally hypothesized, correlation coefficients between these two variables were also calculated. For liking, the association was non-significant in both the electronic mail (r (38) = -.13) and face-to-face conditions (r (42) = -.02). Target self-perceptions and judge impressions of skills however, were significantly correlated in both communication conditions, with r (38) = .36, $p = .05$ in the electronic mail condition and r (42) = .38, $p = .01$ in the face-to-face condition. The coincidence between judge impressions and target self-perceptions of skills was strong, regardless of the communication mode.

Positivity of Judges' Overall Impressions

The final hypothesized result was that judges' overall impressions of targets would be most positive in the face-to-face condition. To test this hypothesis, I created a new variable comprised of the mean values of judge impressions for liking and skills, and ran a one-way ANOVA to compare the resultant cell means for the face-to-face and electronic mail conditions (Ms = 5.53 and 5.20, and SDs = .80 and .76 respectively). The difference was marginally significant, with F (1, 79) = 3.61, $p = .06$, demonstrating that

judges' overall impressions tended to be more positive in the face-to-face condition relative to electronic mail.

Summary of Findings

Table 8 provides a summary of means for all cells, and a context from which to summarize the main results of the data analysis. First, although target meta-accuracy for skills in terms of directional discrepancies had been expected to be greatest in the electronic mail condition, it was strong in both the face-to-face and electronic mail conditions. Also, while meta-accuracy for liking in terms of directional discrepancies had been expected to be greatest in the face-to-face condition, it was weak in both of the communication conditions in this study. Participants generally underestimated how much they were liked. Second, absolute discrepancies did not differ for skills vs. liking or according to communication mode except when affect ratings were analyzed separately from trait ratings for liking. Then, the discrepancy for skills tended to be greater in the electronic mail condition and the liking discrepancy tended to be greater in the face-to-face condition, a result opposite to that predicted. Third, while it had been anticipated that judges' feedback for skills would demonstrate elevated positivity and reduced clarity in the face-to-face condition relative to electronic mail, this did not occur. Instead, raters evaluated the skills feedback to be most clear in the face-to-face context, and both rater assessments and judge impressions of skills were more positive in that context. Fourth, feedback regarding liking had been expected to be least clear in the electronic condition, but was evaluated by raters to be weakly expressed in both communication modes. Fifth, correlations between target self- and meta-perceptions were strongest in the face-to-face condition for both liking and skills, although this pattern had been expected to be present for skills only. Finally, judges overall impressions of targets had been expected to be most positive in the face-to-face condition, and this was borne out by the data. Indeed, the overall assessments of judges, targets, and raters tended to be higher in the face-to-face condition relative to electronic mail.

Discussion

Although the results did not conform to the main study hypotheses, the data provide some interesting insights into the relative strengths of face-to-face and computer-mediated communication. While

neither communication mode emerged as better in terms of accuracy based on mean directional differences, a marginal interaction based on absolute discrepancies occurred whereby meta-accuracy for task-relevant information tended to be greater in the face-to-face context, while meta-accuracy for liking tended to be greater in the electronic mail condition. It seems that the face-to-face communication of feedback may lend itself to more positive appraisals of people's skills and their likability, greater meta-accuracy for task-relevant information, a better sense of clarity in the communication of skills appraisals, and increased feelings of being understood (as demonstrated by the heightened self- and meta-perception correspondence). Overall, the results suggest that providing others with task feedback in a face-to-face rather than a computer-mediated context may be beneficial to both parties in an evaluative situation.

Implications of the Findings

In this study, target meta-accuracy for skills (in terms of mean directional differences) was strong in both the face-to-face and electronic mail conditions. However, when meta-accuracy was examined in terms of absolute discrepancies, it was found that targets tended to be best able to discern judges' impressions of their skills after having received task feedback in person. Given the expectation that communication of task-relevant information would be most effective in the electronic mail condition, how should this result be interpreted?

First, the quality of skills feedback may have varied between the two conditions. It may be that the face-to-face condition facilitated the judges' ability to give targets clearer and more detailed information about task performance than was the case when judges were required to provide feedback in written form. For example, judges may have spoken about their assessments at more length and/or provided more reasons for their thinking relative to electronic mail feedback. If targets were given more information on which to base their metaperceptions in the face-to-face condition, this may have resulted in somewhat greater meta-accuracy. In future studies, a qualitative analysis of the differences in feedback between the two conditions would be useful in making such a determination.

Second, it may be that the task of providing skills feedback to others is less a matter of conveying factual information than it is of enhancing the positive aspects of performance (Shore et al, 1998),

regardless of the communication mode being applied. Thus, any ambiguity inherent in the judges' assessments might be best decoded within a face-to-face context, consistent with media richness theory (Daft & Lengel, 1986).

At the same time, meta-accuracy for liking in this study was not greatest in the face-to-face context as had been anticipated. Instead, it was perceived by targets to be unclear in both communication conditions when examined in the context of directional differences. Since target meta-accuracy for liking was poor in both conditions, it is apparent that the additional communication channels present in the face-to-face context did not lead to greater accuracy, as would have been predicted by media richness theory. Indeed, when absolute discrepancies for affective measures of liking were compared, accuracy tended to be greatest in the electronic mail condition.

So, why might skills feedback have been understood better by targets than feedback for liking, and why might accuracy for liking be greater in the electronic mail condition compared to the face-to-face context? The explanation may lie in the actual structure of the experimental procedures. In this study, judges were instructed to focus their comments exclusively on skills feedback, and targets were cautioned to passively receive the information. Although it was expected that feedback for liking would nonetheless be communicated indirectly by judges in the face-to-face condition, it is possible that eliminating normal social interaction between participants had the effect of 'leveling the playing field' between the face-to-face and electronic mail conditions. Rather than demonstrating what might be a real-world advantage for the in-person communication of liking, the study procedures may have rendered information about liking relatively inaccessible to targets in both conditions. This explanation is internally consistent with the study finding that judges' actual impressions of liking were consistently more positive than either targets or independent raters were able to discern. It seems that judges did not communicate much relational information to targets, while task performance information was more clearly conveyed, regardless of the communication mode.

Correlations between target self- and meta-perceptions were expected to provide information suggestive of the source of the metaperception (i.e., whether self-perception or feedback based), with the

strongest relationship occurring for liking in the electronic mail condition and for skills in the face-to-face condition. In both of these situations, feedback was expected to be least direct, and it was thought that targets would rely on self-perceptions in forming their metaperceptions. For both skills and liking, target self- and meta-perceptions correlated most strongly in the face-to-face condition. Since meta-accuracy (in terms of absolute discrepancies) for skills was also greatest in the face-to-face condition, it seems likely that the stronger correlations between self- and meta-perceptions may be reflective of the greater positivity of judges. Judges felt their partners to be more skilled and more likable in the face-to-face context, and perhaps this positivity may have led targets to feel better understood and to more readily use their self-perceptions in appraising how they were being viewed.

Judges had been expected to be more direct in delivering skills feedback from 'behind the screen' than in person (Joinson, 1998), but the correlations between feedback (as assessed by raters) and judges' actual impressions did not differ between the two conditions. Feedback for skills was viewed by raters as more positive in the face-to-face context than in electronic mail, but this difference was also consistent with the actual impressions of the judges. It seems that judges conveyed their true ratings of targets, regardless of the communication mode. The possibility is acknowledged however, that judges' behavior in delivering the feedback may have driven their subsequent impression reports.

Overall, judges' impressions of targets tended to be more positive in the face-to-face context relative to electronic mail. Judges liked targets more, and believed them to be more skilled. Targets' meta-accuracy for skills tended to be somewhat stronger in the face-to-face condition compared to electronic mail, and targets felt (and were) least liked in the electronic mail condition. On balance, the present study suggests that the face-to-face communication of feedback may result in more positive assessments of both skills and liking by both parties and more accurate metaperceptions of task-relevant information compared to electronic mail.

Study Limitations

In addition to the possible procedural implications for the findings related to the meta-accuracy of liking mentioned in the previous section, two other limitations of this study are retrospectively apparent.

The first relates to the age and experiences of the sample, and the second to the distinction between electronic mail specifically and computer-mediated communication generally.

As Morahan-Martin (1998) points out, a "generation of children is growing who have been socialized to the Internet and computers from an early age" (p. 187). According to Morahan-Martin, these young people take technology for granted, consider computers to be part of their environment, and use new technology more than do older generations, regardless of whether they have home computers. How then might the present sample of first-year university students, who are probably at the front end of this cohort, have affected the results of this study? It would be reasonable to expect that another group of people who are less experienced in the use of computers would have greater difficulty in conveying and interpreting task and liking feedback information using electronic mail than did the present sample. Therefore, the advantages found in this study for face-to-face communication should be accentuated in a broader sample of the adult population.

Also, it may be that the social aspects of electronic mail differ in fundamental ways from those relating to internet usage. The notion of disinhibition for example, seems to be largely based on the "improbability of any local, real-life repercussions for on-line social activity" (King & Moreggi, 1998), and this idea of greater frankness in CMC factored in the main hypotheses of the study. While researchers such as Joinson (1998) have found that people behave more honestly in CMC even when there is no anonymity, it may be that electronic mail communications are a 'special class' of CMC. Perhaps people retain more self-presentation concerns in electronic mail relative to internet usage since electronic mail communications are often nested within ongoing personal or business relationships. It may be that the participants in this study had self-presentation concerns stemming from the possibility of future encounters with their study partner.

Final Thoughts

While the results are somewhat mixed, the present study suggests potential advantages for face-to-face communication relative to electronic mail in forming positive interpersonal judgements, increasing impressions of liking and being liked, and perhaps improving metaperception accuracy for feedback about

task performance. Contrary to the hypothesized results, information about task performance was not most clearly conveyed through electronic mail, and information about liking was not most clearly communicated through face-to-face feedback.

Computer-mediated technologies are increasingly available for people's use in their social and business communications. However, before we can fully take advantage of the potential for interpersonal relationships in computer-mediated communications, we need to better understand the social psychological implications of the medium. The results of the present study are a preliminary step in identifying possible limitations for the application of electronic mail, and also imply potential distinctions between subgroups of computer-based communication technologies. While the results of this research differed substantially from expectations, I am encouraged by Putnam (2000), who points out that "very few things can yet be said with any confidence about the connection between social capital and internet technology" (p. 170).

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Appendix A

Thank you for your interest in this study of communication. The study is being conducted by Brenda G. Hebert, under the supervision of Dr. Jacquie Vorauer (Department of Psychology, University of Manitoba).

If you agree to participate, you will be asked to write or critique a short essay, and to fill out a questionnaire providing your perceptions. Your responses will be kept completely confidential, and will be recorded by your participant number only. Information that you provide will not be linked to your name. A portion of the experimental session will be audiotaped for later analysis.

Your participation in this study is voluntary. If at any time you wish to terminate your participation, you may do so without penalty. The session should take approximately 60 minutes. Students will receive 2 course credits for participation.

Please feel free to ask any questions you might have about the experimental procedures. At the end of the study, you will be given an explanation of the study hypotheses.

This study has been approved by the Department of Psychology Human Ethics Review Committee (HERC), and any complaints regarding procedures may be reported to the Chair of HERC, Dr. Bruce Tefft (474-8259) or to Dr. J. Vorauer (474-8250). In addition, the services of the Psychological Service Centre (474-9222) are available should you find that the session causes you any discomfort or distress.

My signature below indicates that I have read the above statements, and have given my informed consent to participate in this study. I also provide my permission for audiotaping of the experimental session.

_____ _____

Signature Date

_____

Printed name

_____ _____

Witness signature Date

Appendix B

Task Instructions for Target

Read the brief discussion below, and write a short (1 to 2- page) persuasive essay, arguing either of the alternative points of view. The study participant with whom you have been paired will then evaluate the essay for its logic, persuasive power, and the clarity of arguments presented, and provide you with comments.

You have 15 minutes to complete this task.

Manitoba may soon implement a 'graduated license system' for teen drivers. The proposal calls for restricted driving privileges as experience is gained in low risk situations. Initially, for example, the novice driver could only operate a vehicle when accompanied by someone who is fully licensed. After perhaps six months (with a good driving record), the new driver might be allowed to drive alone during daytime hours – to and from school, for instance. Full driving privileges could be withheld until the driver reaches 18 years of age. Infractions slow the licensing process, and penalties for traffic violations may be harsh. Ontario's graduated licensing system is one of the toughest in the country. It takes 20 months to complete, and requires two road tests and one theory test.

Those in favour of graduated licensing believe that the higher risk of accidents among new drivers would be greatly reduced. Opponents feel that graduated licensing is biased against young, responsible drivers.

Do you think this is a good idea or not? Defend your position.

Appendix C

Essay Evaluation and Feedback Instructions for Judges

Your task is to evaluate the essay written by the person with whom you have been paired, and to provide your partner with feedback on his/her performance. In order to do so, please:

1. Carefully read the essay s/he has written.

2. As you are reading, consider the following criteria and questions:

    a. Logic. Is a chain of reasoning evident? Does it make sense? Does the person provide evidence for her/his arguments? Are the arguments defensible/reasonable/believable?

    b. Clarity of arguments. Is it easy to understand the person's point of view? Has s/he made her/his points clearly?

    c. Persuasive power. To what extent would someone holding another point of view change her/his mind based on this essay? Would you be convinced?

    d. Global assessment. Is the essay well written?

3. Make detailed notes of your evaluation. (Steps 1 to 3 should take you about 10 minutes). Be sure to keep your own agreement/disagreement with the person's points separated from the feedback you give them on the quality of the essay.

4. Provide the other participant with feedback, explaining your assessment as fully as possible. (Written – about 1 or 2 pages / In person – about 5 minutes). Please note that your feedback will be tape recorded/saved for later evaluation.

Appendix D

Assessment Instructions - Target

A. Circle the number that best approximates your assessment of what your study partner thinks about you.

1. My partner thought my essay was:

Very well written						Not at all well written
1	2	3	4	5	6	7

2. My partner thought that the arguments in my essay were:

Not at all logical						Very logical
1	2	3	4	5	6	7

3. My partner thought that my essay was:

Very clear						Not at all clear
1	2	3	4	5	6	7

4. My partner thought that my essay was:

Not at all persuasive						Very persuasive
1	2	3	4	5	6	7

5. My partner:

Likes me a lot						Doesn't much like me
1	2	3	4	5	6	7

6. My partner would be:

Not very interested in getting to know me better						Very interested in getting to know me better
1	2	3	4	5	6	7

7. My partner views me as:

Very intelligent						Not at all intelligent
1	2	3	4	5	6	7

8. My partner views me as:

Not at all phony						Very phony
1	2	3	4	5	6	7

9. My partner views me as:

Very sincere						Not at all sincere
1	2	3	4	5	6	7

10. My partner views me as:

Not at all obnoxious						Very obnoxious
1	2	3	4	5	6	7

11. My partner views me as:

Very open-minded						Not at all open-minded
1	2	3	4	5	6	7

12. My partner views me as:

Not at all untruthful						Very untruthful
1	2	3	4	5	6	7

13. My partner views me as:

Very thoughtful						Not at all thoughtful
1	2	3	4	5	6	7

14. My partner views me as:

Not at all insulting						Very insulting
1	2	3	4	5	6	7

15. My partner views me as:

Very honest						Not at all honest
1	2	3	4	5	6	7

16. My partner views me as:

Not at all narrow-minded						Very narrow-minded
1	2	3	4	5	6	7

17. My partner finds me:

Very understanding						Not at all understanding
1	2	3	4	5	6	7

18. My partner finds me:

Not at all selfish						Very selfish
1	2	3	4	5	6	7

B. Circle the number that best approximates your assessment of yourself.

1. I thought that my essay was:

Very well written						Not at all well written
1	2	3	4	5	6	7

2. I thought that the arguments in my essay were:

Not at all logical						Very logical
1	2	3	4	5	6	7

3. I thought that my essay was:

Very clear						Not at all clear
1	2	3	4	5	6	7

4. I thought that my essay was:

Not at all persuasive						Very persuasive
1	2	3	4	5	6	7

5. As a person, I am generally:

Very likable						Not at all likable
1	2	3	4	5	6	7

6. Most people are:

Not at all interested in getting to know me better						Very interested in getting to know me better
1	2	3	4	5	6	7

7. As a person, I am generally:

Very intelligent						Not at all intelligent
1	2	3	4	5	6	7

8. As a person, I am generally:

Not at all phony						Very phony
1	2	3	4	5	6	7

9. As a person, I am generally:

Very sincere						Not at all sincere
1	2	3	4	5	6	7

10. As a person, I am generally:

Not at all obnoxious						Very obnoxious
1	2	3	4	5	6	7

11. As a person, I am generally:

Very open-minded						Not at all open-minded
1	2	3	4	5	6	7

12. As a person, I am generally:

Not at all untruthful						Very untruthful
1	2	3	4	5	6	7

13. As a person, I am generally:

Very thoughtful						Not at all thoughtful
1	2	3	4	5	6	7

14. As a person, I am generally:

Not at all insulting						Very insulting
1	2	3	4	5	6	7

15. As a person, I am generally:

Very honest						Not at all honest
1	2	3	4	5	6	7

16. As a person, I am generally:

Not at all narrow-minded						Very narrow-minded
1	2	3	4	5	6	7

17. As a person, I am generally:

Very understanding						Not at all understanding
1	2	3	4	5	6	7

18. As a person, I am generally:

Not at all selfish						Very selfish
1	2	3	4	5	6	7

Appendix E

Assessment Instructions – Judge

Circle the number that best approximates your assessment of the person you are evaluating.

1. I thought my partner's essay was:

Very well written						Not at all well written
1	2	3	4	5	6	7

2. I thought that the arguments in my partner's essay were:

Not at all logical						Very logical
1	2	3	4	5	6	7

3. I thought that my partner's essay was:

Very clear						Not at all clear
1	2	3	4	5	6	7

4. I thought that my partner's essay was:

Not at all persuasive						Very persuasive
1	2	3	4	5	6	7

5. I:

Liked my partner a lot						Didn't like my partner at all
1	2	3	4	5	6	7

6. I would be:

Not very interested in getting to know my partner better						Very interested in getting to know my partner better
1	2	3	4	5	6	7

7. I thought that my partner was:

Very intelligent						Not at all intelligent
1	2	3	4	5	6	7

8. I thought that my partner was:

Not at all phony						Very phony
1	2	3	4	5	6	7

9. I thought that my partner was:

Very sincere						Not at all sincere
1	2	3	4	5	6	7

10. I thought that my partner was:

Not at all obnoxious						Very obnoxious
1	2	3	4	5	6	7

11. I thought that my partner was:

Very open-minded						Not at all open-minded
1	2	3	4	5	6	7

12. I thought that my partner was:

Not at all untruthful						Very untruthful
1	2	3	4	5	6	7

13. I thought that my partner was:

Very thoughtful						Not at all thoughtful
1	2	3	4	5	6	7

14. I thought that my partner was:

Not at all insulting						Very insulting
1	2	3	4	5	6	7

15. I thought that my partner was:

Very honest						Not at all honest
1	2	3	4	5	6	7

16. I thought that my partner was:

Not at all narrow-minded						Very narrow-minded
1	2	3	4	5	6	7

17. I thought that my partner was:

Very understanding						Not at all understanding
1	2	3	4	5	6	7

18. I thought that my partner was:

Not at all selfish						Very selfish
1	2	3	4	5	6	7

Appendix F

Coding Instructions for Raters

After listening to the audiotape or reading the judge's written feedback to the target, please provide your responses to the following questions.

1. The judge's feedback regarding the overall quality of the target's essay was:

Very difficult to understand						Very easy to understand
1	2	3	4	5	6	7

2. The judge's feedback regarding how much he/she liked the target was:

Very easy to understand						Very difficult to understand
1	2	3	4	5	6	7

3. The judge thought that the target's essay was:

Not at all well written						Very well written
1	2	3	4	5	6	7

4. The judge thought that the arguments in the target's essay were:

Not at all logical						Very logical
1	2	3	4	5	6	7

5. The judge thought that the target's essay was:

Very clear						Not at all clear
1	2	3	4	5	6	7

6. The judge thought that the target's essay was:

Not at all persuasive						Very persuasive
1	2	3	4	5	6	7

7. I think that overall, the judge:

Liked the target a lot						Didn't like the target at all
1	2	3	4	5	6	7

8. The judge would be:

Not very interested in getting to know his/her partner better						Very interested in getting to know his/her partner better
1	2	3	4	5	6	7

9. The judge thought that the target was:

Very intelligent						Not at all intelligent
1	2	3	4	5	6	7

10. The judge thought that the target was:

Not at all phony						Very phony
1	2	3	4	5	6	7

11. The judge thought that the target was:

Very sincere						Not at all sincere
1	2	3	4	5	6	7

12. The judge thought that the target was:

Not at all obnoxious						Very obnoxious
1	2	3	4	5	6	7

13. The judge thought that the target was:

Very open-minded						Not at all open-minded
1	2	3	4	5	6	7

14. The judge thought that the target was:

Not at all untruthful						Very untruthful
1	2	3	4	5	6	7

15. The judge thought that the target was:

Very thoughtful						Not at all thoughtful
1	2	3	4	5	6	7

16. The judge thought that the target was:

Not at all insulting						Very insulting
1	2	3	4	5	6	7

17. The judge thought that the target was:

Very honest						Not at all honest
1	2	3	4	5	6	7

18. The judge thought that the target was:

Not at all narrow-minded						Very narrow-minded
1	2	3	4	5	6	7

19. The judge thought that the target was:

Very understanding						Not at all understanding
1	2	3	4	5	6	7

20. The judge thought that the target was:

Not at all selfish						Very selfish
1	2	3	4	5	6	7

Table 1

Target Metaperceptions and Judge Impressions by Communication Mode and Dimension

	Face-to-Face				Electronic Mail			
	Liking		Skills		Liking		Skills	
	M	SD	M	SD	M	SD	M	SD
Judges' impression	5.88	.66	5.19	.79	5.51	.82	4.89	1.01
Targets' metaperception	5.19	.79	5.21	1.17	4.97	.91	4.90	1.17

Note. The higher the score, the greater the attribution (values ranged from 1 to 7).

Table 2

Target Metaperceptions and Judge Impressions by Communication Mode and Dimension – Male Pairs

	Face-to-Face				Electronic Mail			
	Liking		Skills		Liking		Skills	
	M	SD	M	SD	M	SD	M	SD
Judges' impression	5.86	.51	5.20	1.23	5.59	.70	4.86	1.08
Targets' metaperception	5.31	.69	5.15	1.23	4.92	1.06	5.01	1.19

Note. The higher the score, the greater the attribution (values ranged from 1 to 7).

Table 3

Target Metaperceptions and Judge Impressions by Communication Mode and Dimension – Female Pairs

	Face-to-Face				Electronic Mail			
	Liking		Skills		Liking		Skills	
	M	SD	M	SD	M	SD	M	SD
Judges' impression	5.90	.79	5.15	.97	5.43	.94	4.92	.95
Targets' metaperception	5.07	.88	5.26	1.12	5.02	.77	4.79	1.16

Note. The higher the score, the greater the attribution (values ranged from 1 to 7).

Table 4

Absolute Discrepancy between Targets' Metaperceptions and Judges' Impressions

	Face-to-Face				Electronic Mail			
	Liking		Skills		Liking		Skills	
	M	SD	M	SD	M	SD	M	SD
Absolute difference	1.26	.85	1.03	.56	1.03	.73	1.20	.63

Table 5

Rater Assessments of Feedback by Communication Mode and Dimension

	Face-to-Face				Electronic Mail			
	Liking		Skills		Liking		Skills	
	M	SD	M	SD	M	SD	M	SD
Feedback positivity	4.70	.59	5.12	.82	4.76	.68	4.66	1.05
Feedback clarity	2.48	.65	5.45	1.05	2.62	.76	5.06	1.44

Note. The higher the score, the greater the attribution (values ranged from 1 to 7).

Table 6

Skill Ratings of Targets by Communication Mode and Judgement Type

	Face-to-Face		Electronic Mail	
	M	SD	M	SD
Judges' impressions	5.19	.79	4.89	1.01
Raters' evaluations of positivity	5.12	.82	4.66	1.05

Note. The higher the score, the greater the attribution (values ranged from 1 to 7).

Table 7

Within-Subject Correlations by Judgement Type, Communication Mode, and Dimension

	Face-to-Face		Electronic Mail	
	Liking	Skills	Liking	Skills
Judge - $R_{Impression\text{-}Feedback}$	.26	.72	.33	.57
Target - $R_{Meta\text{-}perception\text{-}Self\text{-}perception}$	.56	.66	-.06	.33

Table 8

Summary of Ratings by Judgement Type, Communication Mode, and Dimension

	Face-to-Face				Electronic Mail			
	Liking		Skills		Liking		Skills	
	M	SD	M	SD	M	SD	M	SD
Judge – impression	5.88	.66	5.19	.79	5.51	.82	4.89	1.01
Target – metaperception	5.19	.79	5.21	1.17	4.97	.91	4.90	1.17
- self-perception	5.84	.69	4.82	1.08	5.68	.58	4.83	.81
Rater – feedback clarity	2.48	.65	5.45	1.05	2.62	.76	5.06	1.44
- positivity	4.70	.59	5.12	.82	4.76	.68	4.66	1.05

Note. The higher the score, the greater the attribution (values ranged from 1 to 7).