VERBAL IRONY USE IN FACE-TO-FACE AND COMPUTER-MEDIATED CONVERSATIONS

JEFFREY T. HANCOCK
Cornell University

Speakers use a range of cues to signal ironic intent, including cues based on contrast with context, verbal, and paralinguistic cues. Speakers also rely on cues provided by addressees regarding comprehension of irony. When such cues are unavailable, speakers *may be less willing to use irony because of the risk of miscommunication, and* addressees *may be more likely to misinterpret irony. The present study tested these hypotheses by examining the production and comprehension of irony in multimodal (face-to-face) and unimodal (computer-mediated) conversations. Contrary to expectations, speakers in the computer condition used* more *irony than face-to-face speakers. Comprehension of irony did not appear to differ across settings, although addressees in the computer condition provided less feedback (positive or negative) to their partners about their comprehension. These surprising results are discussed in terms of possible differences in the discourse goals and relational strategies engendered by computer-mediated and face-to-face communicative settings.*

Keywords: *irony; sarcasm; figurative language; computer-mediated communication*

One of the hallmarks of figurative forms of language, such as verbal irony, is its ability to convey multiple meanings with a single expression. For example, imagine two friends have just finished a disappointing meal in a highly regarded restaurant. As they leave, one friend smiles and says to the other, "Well that may be the best meal I've had in years!" The literal meaning that might be construed from a strictly semantic analysis of this statement would be a positive evaluation of the meal, which, in context, is obviously inconsistent with the speaker's intended ironic meaning.

A considerable amount of theoretical work has explored the linguistic mechanisms that a speaker uses to convey an ironic meaning that is different from what is literally said. In one of the earliest psychological models of irony, Grice (1975, 1978, 1989) argued that the ironist intentionally violates conversational maxims (e.g., the maxim of quality) during conversation, and that this type of violation suggests to the addressee that some figurative meaning may be implied by the utterance. In the case of the friends above, the speaker has violated the cooperative principle by not stating what he believes to be true (i.e., the maxim of quality), which should signal to the addressee that she should reject the literal meaning of the utterance and search for a more plausible interpretation (i.e., an ironic interpretation). Similarly, in the allusional-pretense model of verbal irony, Kumon-Nakamura, Glucksberg, and Brown (1995) argued that the ironist employs *pragmatic insincerity*, in which the speaker's intended meaning is something other than what is usually associated with that utterance. The insincerity is described as pragmatic because the speaker's insincerity does not apply to the semantic properties of an utterance, but instead applies to how the language is used (i.e., the pragmatic level). Instead of violating the cooperative principle, as suggested by Grice, the ironist accomplishes pragmatic insincerity by violating one or more of the felicity conditions for well-formed utterances, as originally discussed by Austin (1962). For example, declaratives such as the friend's statement above should accurately represent his psychological state (i.e., that he disliked the meal).

Regardless of whether the speaker conveys their ironic meaning by violating cooperative principles, as proposed by Grice, or by violating felicity conditions, as assumed in the allusional-pretense model, the ironist must somehow signal the violation to the addressee (Hancock, Purdy, & Dunham, 2000). That is, the speaker must provide the addressee with some evidence that his or her utterance may involve a conversational violation and therefore multiple possible interpretations. A review of the literature reveals that speakers have a diverse range of communicative cues to signal their ironic intent, and these cues tend to fall into one of three categories: contextual, verbal, and paralinguistic. Contextual cues involve discrepancies between the utterance and the circumstance in which it is uttered, such as "Lovely weather" said during a downpour. The greater the disparity between the situation and the utterance, the more likely that utterance will be interpreted as ironic (Gerrig & Goldvarg, 2000).

The verbal category includes the verbal markers that tend to signal irony. Kreuz (1996), for example, has suggested that ironic remarks often include adverbs and adjectives that amplify an utterance's evaluative intent. In one test of these verbal markers in the perception of irony, Kreuz and Roberts (1995) compared the perception of counterfactual remarks that either contained hyperbolic adverbs and

adjectives (e.g., "I'll never be able to repay you for your help!") or did not (e.g., "Thanks for helping me out!"). As expected, because hyperbolic phrases increased the disparity between what was said and what was expected, participants rated remarks that contained hyperbolic cues as more ironic than remarks that did not contain these cues (see also Colston & O'Brien, 2000b).

The paralinguistic category includes the nonverbal signals that are frequently associated with ironic utterances, such as tone of voice and facial expressions. Vocal prosodic signals include changes in the tone of voice, which may be characterized by increased intensity or stress and a reduced speaking rate, as well as other acoustic features, and various nonlinguistic vocal events, such as laughter (Anolli, Ciceri, & Infantino, 2000; Bryant & Fox Tree, 2002; Capelli, Nakagawa, & Madden, 1990; Cutler, 1974; Gibbs, 2000; Haiman, 1998; Milosky & Ford, 1997; Rockwell, 2000). Kinesic cues associated with verbal irony consist primarily of facial expressions, such as smiling and eyebrow raising (Coates, 1991; Haiman, 1998; Kreuz, 1996).

Although a speaker has a number of cues that can be used to *signal* ironic intent, the ironist also relies upon cues from the addressee that provide *feedback* regarding the addressee's comprehension. Indeed, because irony involves multiple potential interpretations, irony in conversation tends to involve close coordination between the speaker and the addressee (Coates, 1991). In general, addressees can provide *positive* or *negative* evidence regarding their comprehension of the speaker's meaning (Clark, 1996). *Positive* evidence suggests that the addressee has correctly interpreted the speaker and can be in the form of explicit acknowledgment, such as smiling or laughing, or by extending the irony with their response (e.g., the friend above replies "Yep, the tastiest food I've ever eaten"). Addressees can also provide negative evidence, which suggests that the addressee has not detected the speaker's ironic intent and has interpreted the speaker literally (e.g., "Really? I thought the food was awful") (Coates, 1991; Gibbs, 2000).

Considered together, ironists rely on a wide range of cues when using verbal irony in conversation. The large number of cues associated with the use of irony is perhaps not surprising given the potential risks associated with using ambiguous forms of language. Although irony helps to accomplish a number of communicative functions, such as expressing a negative attitude or being humorous (Roberts & Kreuz, 1994), there are certain important costs if an ironic utterance is misinterpreted. The most obvious is failed communication (Clark, 1996), but there are also interpersonal risks associated with misunderstanding ironic remarks. For example, if the addressee from the example above failed to detect the negative intent of the speaker's restaurant remark, the addressee's perception of the speaker's communicative skills and/ or aesthetic sensibilities will change for the worse. Unless corrected, such miscommunication will require adjustments in each person's

prior impressions and understanding of the other (Fiske & Taylor, 1991).

If a primary goal in human discourse is to avoid miscommunication and to construct a common ground of shared information (Clark, 1996), a speaker's decision to use a nonliteral form of language such as irony should be affected by factors suspected of undermining the communicative process. For example, speakers should feel more comfortable using an ironic form when the communicative setting permits them to use the cues that mark such statements and/or provide evidence that the addressee has detected the irony. We would expect, then, that our two friends from the restaurant should feel comfortable producing ironic statements because they share the same physical environment (i.e., co-presence), in which cues that depend upon contrast with the context (e.g., situational disparity) are highly salient. Moreover, the *Face-to-Face* (FtF) setting supports the use of paralinguistic cues that signal the speaker's pragmatic intent (e.g., smiling or using an ironic tone of voice), while simultaneously permitting the addressee to provide relatively effortless evidence of her comprehension (e.g., with a laugh or a nod).

Although no single cue provides an unconditional guarantee of irony comprehension, and the absence of signals does not preclude ironic intent, speakers and addressees should be more confident about irony use when *several* cues are present at the same time (Kreuz, 1996). In particular, Kreuz refers to a *principle of inferablity*, in which speakers are assumed to assess the communicative setting for the availability of cues when deciding to employ the ironic form. If the principle of inferability is correct, then speakers should produce less irony in communicative environments that reduce the cues described above.

Consider, for example, text-based computer-mediated communication (CMC) settings, such as e-mail, instant messaging, Internet chat, and message boards, in which speakers and addressees interact only through text from disparate locations (Hancock & Dunham, 2001b). A comparison of the cues available in CMC and FtF settings suggests that with the exception of verbal markers, CMC speakers are at a disadvantage relative to FtF speakers in each category of the cues that signal ironic intent. First, because CMC participants do not share the same physical space, the category of cues that depend upon situational disparity should be undermined. Similarly, the text-based nature of CMC interactions eliminates the array of paralinguistic cues (i.e., visual and vocal) that typically mark the ironic intent of a statement in FtF interactions. Although some conventions, such as emoticons (Walther & D'Addario, 2001), have been developed to signal irony or humorous intent, the range and nuance of such signals obviously falls short of that allowed by FtF communication.

In addition to reducing the availability of cues that a speaker may use to signal ironic intent, the constraints imposed by text-based

interactions may make it difficult for addressees to provide evidence of their comprehension (Clark & Brennan, 1991; Hancock & Dunham, 2001b). Whereas acknowledgments (e.g., "good one," smiling) are effortless and spontaneous in FtF interactions, such acknowledgements must be typed and cannot be precisely timed in text-based interactions, which increases the cost of providing evidence of one's comprehension. As such, the reduced feedback in CMC should make it more difficult for speakers to determine whether their partner has correctly interpreted their ironic intent.

According to the principle of inferability, because CMC speakers have fewer cues to irony use available to them than FtF speakers, they should produce irony less frequently than their FtF counterparts. A review of the literature concerned with mediated communication suggests that surprisingly little research has examined nonliteral forms of language in CMC contexts. Some initial research has begun to examine humor, a related phenomenon, in mediated settings (e.g., Baym, 1995; Danet, Ruedenburg-Wright, & Rosenbaum-Tamari, 1997; Holcomb, 1997; Hubler & Bell, 2003; Morkes, Kernal, & Nass, 1999). For example, Morkes et al. (1999) compared people's responses to partners who were either humorous or not humorous in CMC interactions. The results suggest that the participants detected and responded to their partner's humor with their own. Although these results suggest that people are capable of producing and comprehending humor in an online text-based interaction, because they are limited to comparisons within CMC conditions they do not indicate whether production rates of nonliteral forms of language, such as humor, are higher or lower in CMC relative to FtF conversations.

The present study investigated the principle of inferability, which predicts that a speaker is less likely to produce ironic forms and risk miscommunication when fewer cues are available, by directly comparing irony production in CMC and FtF conditions. A secondary goal of the study was to examine and compare the types of cues that speakers and addressees use to signal ironic intent in FtF and CMC settings. When speakers do employ irony, how do they signal their ironic intent? Finally, by examining the rates of negative and positive evidence regarding the addressee's detection of ironic intent, the study also sought to determine whether, as the preceding analysis suggests, irony would be more difficult to comprehend in a text-based setting than an FtF setting.

METHOD

Participants

Participants were 80 (16 male, 64 female) English-speaking students who received course credit or token remuneration for their

participation. Participants were randomly paired to form 40 stranger-stranger dyads. Because more women volunteered to participate, there were 26 female-female dyads, 12 male-female dyads, and only 2 male-male dyads. No gender effects were observed, although the unequal number of males and females severely reduced power to detect differences. As such, gender was not considered further.

Procedure

Participants were told that they would be interacting with a stranger to complete several conversation tasks. Dyads were assigned to one of two communication conditions, CMC or FtF. In the CMC condition, participants were led separately to isolated computer terminals, networked such that signal transmission between stations was virtually instantaneous. Participants used a generic chat program to compose messages in a private window. Once the message was composed, participants pressed the enter key to send their message to the shared chat screen, which was visible to both participants. Messages displayed on the shared chat screen were accompanied by a date and time stamp. In the FtF condition, participants were seated at a table across from each other. A 36-cm vertical barrier in the center of the table permitted face-to-face contact, but prevented them from seeing their partner's stimulus materials during the tasks. All FtF interactions were videotaped for analysis.

In both conditions, dyads completed two conversation tasks that were designed to elicit irony. One task involved the discussion of five celebrity fashion images taken from the "Worst Dressed" pages of contemporary pop-culture magazines. Participants were instructed to comment on the outfits as if they were providing commentary for a fashion show. In the other task, participants were instructed to plan a five-course meal of disgusting foods (i.e., appetizer, soup, salad, entrée, dessert, and a drink) for someone they disliked (e.g., Coates, 1991). Because tasks tend to take four to five times longer to complete in CMC settings relative to FtF (Hancock & Dunham, 2001a; Walther, 1993), participants were allowed unlimited time to perform both tasks. In both conditions, half of the dyads completed the fashion task first; the other half completed the dinner task first.

Participants subsequently completed a three-item questionnaire that required them to rate (on 5-point Likert-type scales) their partner's sense of humor. The items were as follows: (a) *This person can often crack people up with the things he/she says*, (b) *This person does not often understand sarcasm*, and (c) *This person uses wit or humor to help master difficult situations*.

Coding and Data Analysis

The CMC conversations yielded chat transcripts organized into turns with each participant's remarks identified clearly. For analysis of the FtF conversations, transcripts of the conversations were used in conjunction with the videotapes. Videotapes were transcribed to include exact wording, but they did not include overlapping speech. Turn beginnings were counted whenever there was a speaker change in the conversation or when two utterances from the same speaker were separated by a pause and/or a change in topic.

The conversations were coded for four types of irony (Gibbs, 2000): (a) *sarcasm*, in which the speaker intended the pragmatic opposite of what was said in an effort to convey a negative attitude (e.g., "Matt Stone is looking just ravishing in his pink dress"), (b) *understatement*, in which the speaker stated less than was the case (e.g., "A little too much hairy cleavage for a formal event"), (c) *hyperbole*, in which the speaker exaggerated the situation (e.g., "The most vile thing known to man . . . hot dogs"), and (d) *rhetorical questions*, in which the speaker ostensibly asked a question in order to express an attitude but did not expect an answer (e.g., "What the hell was she thinking?").[1]

Utterances identified as ironic were also analyzed for the cues that speakers used to signal irony. In the FtF condition, signals that were coded included amplifiers (adjectives or adverbs used to exaggerate or minimize a statement), prosody (a change in speaking rate or tone), facial expressions, laughter, and kinesic signals (e.g., gestures). In the CMC condition, signals included amplifiers, ellipsis, punctuation (e.g., "!!!" or *lovely*), emoticons [e.g., ":)"] and adapted vocalizational signals (e.g., "haha" "mmmmmyum").

A second rater coded 30% of the transcripts from both conditions. Comparisons between raters revealed adequate consistency (Cohen's kappa = .80 and .74 in the FtF and CMC conditions, respectively).

Finally, responses to ironic statements were analyzed to determine the addressee's comprehension of the speaker's ironic intent. Addressees could provide three types of evidence (Clark, 1996): (a) *negative evidence*, indicating that the speaker's ironic intent had been misinterpreted or required additional clarification for comprehension (e.g., "You really like that hat?"), (b) *positive evidence*, indicating comprehension of the ironic intent, either by acknowledging the ironic intent (e.g., "good one," a laugh, etc.) or by extending the initial irony with a subsequent ironic remark, or (c) *no evidence*, in which the addressee did not acknowledge or respond directly to the ironic statement. When the addressee provided no evidence (e.g., by changing the subject), the addressee's comprehension of irony could not be determined.

RESULTS

People normally talk faster than they type, and they typically take longer to accomplish communicative tasks in CMC relative FtF (Hancock & Dunham, 2001a; Walther, 1993). Accordingly, CMC participants required four times as long to complete the conversation tasks (M = 40.74 minutes, SD = 12.81) as the FtF participants (M = 10.14 minutes, SD = 4.86), $t(38)$ = 9.99, p < .001. Although CMC participants took fewer turns (M = 107.6, SD = 60.6) than FtF participants (M = 131.0, SD = 65.2), this difference was not significant. Nonetheless, to adjust for this slight difference, the number of turns identified as ironic was computed for each dyad and all data were analyzed and reported as proportions. Because proportions tend to be skewed, the analysis reported below was also conducted on arcsine square-root transformed proportions. The pattern of results did not differ from those reported below.

Irony Production Measures

The rate of irony production did not differ across the fashion and meal-planning tasks; hence, the data were collapsed across the two tasks. The first question of interest was whether participants would produce fewer ironic statements in the CMC environment compared to the FtF condition. Contrary to the principle of inferability, a MANOVA comparing all four types of ironic statements across the FtF and CMC conditions revealed significantly greater proportional use of irony in the CMC environment, $F(4, 35)$ = 6.27, p < .001. As indicated in Figure 1, subsequent univariate comparisons indicated that the increased use of irony in the CMC environment was due to significantly higher rates of sarcasm, $F(1,38)$ = 18.37, p < .001, and rhetorical questions, $F(1,38)$ = 8.63, p < .01. Hyperbole and understatement tended to be used less frequently than sarcasm. Whereas the use of hyperbole did not differ across the two communicative settings, $F(1, 38)$ = 2.15, $n.s.$, understatement was marginally more frequent in the FtF condition relative to the CMC condition, $F(1, 38)$ = 3.25, p = .08.

Cues to Irony

The next set of analyses examined whether speakers in the CMC setting used fewer cues to mark their ironic intent, relative to FtF speakers. The data were collapsed across irony categories, and the proportion of all ironic statements marked by a cue was calculated for each dyad. As described above, in the CMC condition, cues included amplifiers, ellipsis, punctuation, emoticons, and adapted vocalizations; in the FtF condition, cues included amplifiers, prosody, laughter, and kinetic signals. As expected, a larger percentage of ironic statements produced
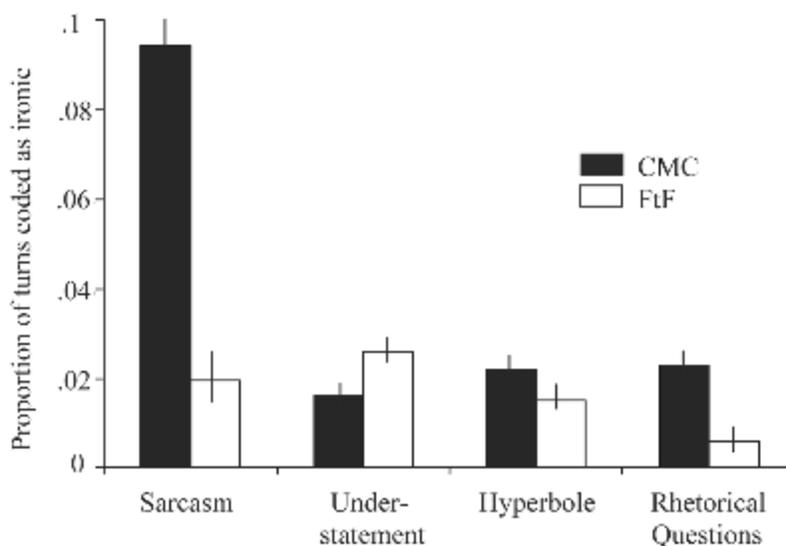
Figure 1. **Mean (Standard Error) Proportion of Ironic Turns Produced in FtF and CMC Settings.**

in the FtF condition was explicitly marked by a cue ($M = 76.4\%$, $SD = 19.4$, $n = 19$) compared to the CMC condition ($M = 51.3\%$, $SD = 23.0$, $n = 20$), $t(37) = 3.67$, $p < .001$ (one dyad in the FtF condition produced no ironic turns and was therefore excluded from this analysis), suggesting that speakers in the signal-poor CMC condition used fewer cues to mark their ironies.

More detailed examination of the ironic signals revealed that some signals were used more than others in the FtF condition, $F(4, 72) = 7.52$, $p < .001$ and in the CMC condition, $F(4, 76) = 10.38$, $p < .001$. FtF ironists used laughter and prosody more frequently to signal ironic intent than gestures; laughter, prosody, amplifiers, and facial expression signals were used equally often (Tukey's tests, $p < .05$; see Table 1). CMC ironists used punctuation more frequently than amplifiers, nonverbal signals, and emoticons, whereas ellipsis was used more frequently than emoticons (Tukey's tests, $p < .05$; see Table 1).

Evidence of Irony Comprehension

As predicted, an examination of responses to irony indicated that addressees in the CMC setting provided less evidence (positive or negative) of their comprehension ($M = 58.5\%$, $SD = 17.5\%$) compared to their counterparts in the FtF setting ($M = 83.4\%$, $SD = 9.7\%$), $t(37) = 5.47$, $p < .001$ (see Figure 2). Hence, CMC participants had less infor-

Table 1

Percentage of Signals per Irony for FtF and CMC Conditions

	Laughter	Prosody	Amplifiers	Facial Expression	Gestures
FtF	34.1	28.6	20.6	15.1	2.9

	Punctuation	Ellipsis	Amplifiers	Nonverbal	Emotions
CMC	25.8	14.1	9.4	2.9	1.1

Note. More than one signal type could be used per irony. Consequently, totals may sum to more than 100%.
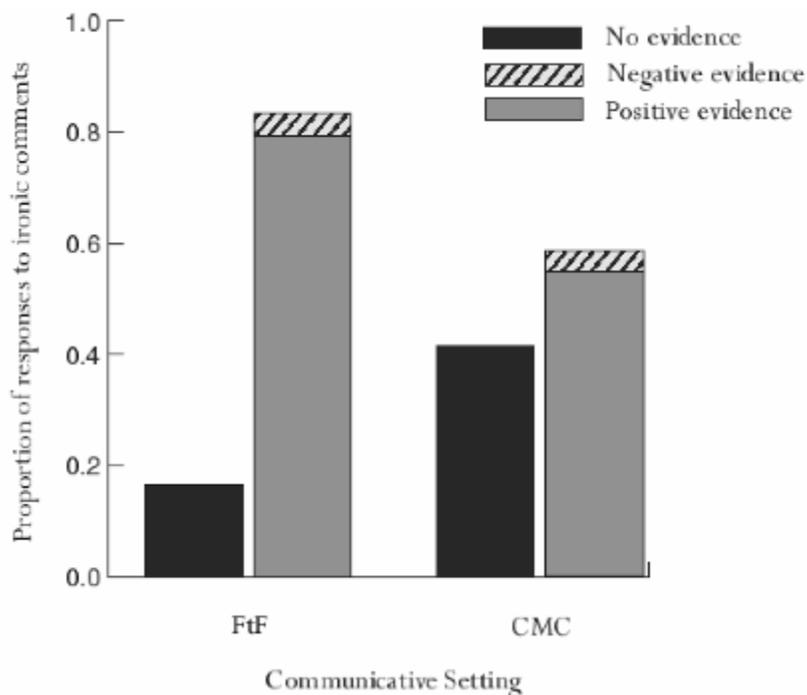

Figure 2. **Proportion of Positive, Negative, and No Evidence Provided by Addressees to Ironic Remarks.**

mation about whether their partner understood their ironic intent. Nonetheless, there was no evidence that irony was misinterpreted more frequently in the CMC condition (i.e., comparison of negative evidence was nonsignificant). In fact, negative evidence was infrequent in both conditions (FtF: $M = 4.7\%$ of evidence provided, $SD = 11.6$; CMC:

Table 2
Means and (Standard Deviations) of Humor Measures

"This person . . .	FtF M	FtF SD	CMC M	CMC SD	Univariate Comparison
. . . cracks people up"	3.23	.59	3.80	.66	$p < .01$
. . . understands sarcasm"	3.70	.50	4.20	.78	$p < .05$
. . . uses humor to master situations"	3.05	.69	3.85	.65	$p < .001$

Note. Univariate analyses based on *F* tests with 1 and 38 degrees of freedom.

$M = 6.2\%, SD = 9.3$). These findings are consistent with previous estimates of misinterpretation in FtF interactions, which indicate that approximately 5% of ironies are misunderstood (Gibbs, 2000).

Sense of Humor Measures

The finding of increased use of irony in the CMC condition was further supported by participants' perceptions of their partner's sense of humor. A MANOVA on the three items revealed that compared to their FtF counterparts, CMC participants perceived their partners to be more humorous, $F(3, 36) = 5.26, p < .01$. Indeed, univariate analyses indicated that CMC participants rated their partners more positively on each of the three items (see Table 2). Evidence that the coding scheme accurately assessed irony production is provided by the correlation between the sarcasm item (i.e., the degree to which participants perceived sarcasm in their conversation) and the overall use of irony in the conversation identified by the coders, $r = .53, p < .05$. The same correlation was not significant in the FtF condition, although the lower absolute number of ironic remarks limited variability.

DISCUSSION

The present study is the first to examine the production and comprehension of verbal irony across different communication media. In contrast to predictions flowing from the principle of inferability (Kreuz, 1996), the production of irony in the CMC condition surpassed that of the FtF condition. Specifically, participants in the unimodal CMC setting produced significantly more sarcasm and rhetorical questions compared to their counterparts in the multimodal FtF setting. This result is particularly interesting because consistent with our assumptions, CMC speakers marked their ironic comments less frequently than FtF speakers (51% vs. 76%), and they received less feedback that their irony was understood (i.e., the CMC speakers received no feedback about the partner's comprehension for 41.5% of their ironic

remarks compared to only 16.6% for FtF speakers). Both of these observations should confirm that the risk of miscommunication associated with using a nonliteral form of language was inflated in the CMC exchanges. Why, then, did the CMC participants produce more irony than their FtF counterparts?

Because CMC dyads took almost four times longer to complete the tasks, one could argue that the CMC participants simply had more time to construct ironic statements. Previous research suggests that ironic utterances take longer to produce and involve more complex utterances on average than literal statements (Hancock & Dunham, 2002), which would suggest that the CMC speakers, who had more time to produce their messages, had a possible advantage over FtF speakers, who were required to produce ironic remarks extemporaneously. Although this explanation cannot be discounted given the differences across the CMC and FtF communicative environments, there was no relationship between communication time and production of irony in either condition (CMC, $r = -.28$; FtF, $r = .14$). These findings imply that the total amount of time spent in the communicative environment was not an important factor in the production of irony in either condition.

Although any explanation for the increased rate of irony production in the CMC setting is, at this point, admittedly speculative, two types of explanations suggest themselves. The first type of explanation is derived from theoretical approaches to pragmatics. For example, the *discourse goals* approach to irony, outlined by Kreuz and his colleagues (Kreuz, 2000; Kreuz, Long, & Church, 1991; Roberts & Kreuz, 1994), focuses on the interpersonal objectives that figurative speech acts are designed to accomplish, such as to be polite, to be humorous, or to protect oneself. In the present study, the two very different communicative environments may have interacted with the participants' discourse goals. Consider the discourse goals of participants sitting face-to-face with a partner for the first time. Under these conditions, participants may be particularly concerned with creating a good first impression (Fiske & Taylor, 1991). Hence, goals in this situation should include politeness and the avoidance of offending when making evaluative statements. Of the various forms of irony observed in the present study, understatement is perhaps the most consistent with these goals. It allows the speaker to express negative opinions politely and, at the same time, avoids the potential miscommunication arising from oppositional forms of irony (Colston & O'Brien, 2000a; Roberts & Kreuz, 1994). Our data are consistent with these assumptions. The only form of irony observed more frequently in the FtF condition, albeit marginally, was understatement.

Alternatively, consider the impact of the communicative environment on the discourse goals of CMC participants. CMC participants were visually anonymous and were not told that they would meet their

partners face to face. Previous research suggests that under these conditions, participants are unlikely to ever expect to meet their partner again (Walther, 1994). As such, CMC participants may have been less concerned with the impression they created (Joinson, 2001; Matheson & Zanna, 1988). If this were the case, then the potential interpersonal costs of irony use outlined above may have been decreased, and the discourse goals of being polite and protecting oneself may have become less important than other communicative goals, such as being humorous. Given these conditions, one might expect the CMC participants to adopt more readily riskier but more humorous forms of irony, such as sarcasm (Roberts & Kreuz, 1994). Consistent with this argument, sarcasm was produced five times more frequently in the CMC condition. The same argument is also consistent with the increased production of rhetorical questions observed in the CMC setting. Because rhetorical questions function to connote a negative, derogatory attitude, CMC speakers, who were presumably less concerned with creating a positive social impression than FtF speakers, may have been more likely to use this derogatory form of irony.

The second type of explanation for the present data is derived from Social Information Processing (SIP) theory (Walther, 1992; Walther & Burgoon, 1992), a CMC-oriented approach to relational communication. SIP's central assumption is that social information is conveyed at a slower rate in text-based interactions than in FtF interactions. Given sufficient time, participants in CMC settings should be able to communicate relational information to the same degree as in FtF settings. The important point to note in the present context, however, is that the need or desire to communicate relational information is assumed to be no less important in CMC conversations than it is FtF (Walther, 1992). According to SIP, the more frequent use of the various types of verbal irony observed in the CMC condition may reflect the speaker's attempts to communicate relational information in a text-based communication environment, in which nonverbal means of communicating relational information are unavailable. That is, when nonverbal cues cannot be relied on to express oneself interpersonally, irony, and humor more generally, may be used to compensate.

If this is the case, then the discourse goals and SIP explanations make the same prediction but for very different reasons. According to the discourse goals explanation, the increased use of a risky form of language, such as irony, reflects changes in the degree to which speakers are concerned about their social impression in the face of addressees they do not expect to meet FtF. In contrast, the SIP approach assumes that discourse goals, such as conveying relational information, remain constant. The change in irony production observed in the CMC condition instead reflects a compensatory strategy to overcome the lack of nonverbal cues that are normally used to express relational information. Additional research will be required to distinguish

between these two types of explanations for the increased use of irony in the CMC condition.

A second question of interest was whether addressees in the CMC condition had more difficulty comprehending the irony. This was a particularly difficult issue to address in the present context. When participants failed to make a response to an ironic comment in spontaneous conversations, it was difficult to determine if the comment was interpreted correctly or incorrectly. Moreover, any comparison across the two communicative environments was further compromised by the much higher frequency of nonresponses in the CMC condition.

In spite of these measurement issues, two types of converging evidence suggest that comprehension was equivalent across the CMC and FtF conditions on those occasions when the addressee provided evidence, positive or negative, of comprehension. First, CMC addressees provided negative evidence of comprehension for the same proportion of ironic turns as did FtF addressees. This finding implies that misinterpretation rates were equivalent across the two settings and similar in magnitude to those reported in previous FtF research (Gibbs, 2000). Second, the sense-of-humor measures suggest that the increased use of irony in the CMC setting was adequately comprehended. Relative to FtF participants, participants in CMC rated their partners as more humorous, witty, and capable of understanding sarcasm, and these perceptions correlated with the coders' analysis of irony production. Taken together, these data suggest that addressees in the CMC condition did not have more difficulty understanding irony than their FtF counterparts.

Finally, the present data also reveal how speakers signaled their ironic intent in the two conditions. The cues used to mark the spontaneously produced ironies in the FtF condition are consistent with previous research that suggests that irony comprehension is facilitated by paralinguistic cues, such as prosody and laughter (Bryant & Fox Tree, 2002; Capelli et al., 1990; Cutler, 1974; Gibbs, 2000; Haiman, 1998; Milosky & Ford, 1997; Rockwell, 2000), and hyperbolic amplifying cues, such as "so" and "really" (Kreuz, 1996; Kreuz & Roberts, 1995). FtF speakers marked more than half of their ironic utterances with laughter and prosody, and used verbal amplifiers to mark approximately a fifth of their ironic utterances.

In the CMC condition, speakers used punctuation most frequently to mark their ironies. Perhaps punctuation can be considered the prosody of text. If that is the case, then the patterns of cues observed in the two conditions were similar, suggesting that consistent with previous research, prosody cues are important for spontaneously produced irony (e.g., Bryant & Fox Tree, 2002). It is also interesting to note that emoticons, which are often cited as an important signal for conveying irony or humor in mediated contexts (e.g., Godin, 1993; Rezabek & Cochenour, 1998), were very rarely used. Indeed, the infrequent use of

emoticons to signal ironic intent are consistent with previous research suggesting that emoticons do not enhance the perception of text-based messages as sarcastic (Walther & D'Addario, 2001). These observations may reflect the fact that verbal irony tends to be subtle, as suggested by Muecke's (1969) observation that irony is the art of being clear without being obvious. As such, using an emoticon to signal irony may be too obvious, which may explain why CMC speakers were much more likely to use ellipsis (" . . . ") to highlight that their statement may be ironically intended. In contrast, it is possible that the participants in the present study were simply not familiar with the emoticon convention.

Although additional research is required to further clarify these surprising findings, these data improve our understanding of the communicative setting's impact on discourse. Speakers do not necessarily decrease irony use when fewer cues are available, as suggested by the principle of inferability (Kreuz, 1996), and addressees do not appear to have more difficulty understanding irony in text-based communicative settings. Indeed, it appears that the participants commanded enough cues in this text-based environment to signal irony successfully, in contrast to prevailing wisdom in the irony literature. This knowledge becomes increasingly important as computer-mediated forms of communication become ubiquitous, not only in the workplace, but also in our day-to-day interactions with friends and family. These results also highlight the need for further research into the production of figurative language (see also Gibbs, 2000; Giora, 1998; Hancock, 2002; Kreuz, 2000). Factors known to influence comprehension, such as the availability of specific cues, do not necessarily predict how and when speakers chose to use irony.

NOTE

1. The complete irony coding system is available from the author.

REFERENCES

Anolli, L., Ciceri, R., & Infantino, M. G. (2000). Irony as a game of implicitness: Acoustic profiles of ironic communication. *Journal of Psycholinguistic Research*, *29*, 275-311.

Austin, J. L. (1962). *How to do things with words*. London: Oxford University Press.

Baym, N. K. (1995). The performance of humor in computer-mediated communication. *Journal of Computer-Mediated Communication*, *1*. Retrieved September 19, 2003, from http://jcmc.huji.ac.il/vol1/issue2/baym.html

Bryant, G. A., & Fox Tree, J. E. (2002). Recognizing verbal irony in speech. *Metaphor and Symbol*, *17*, 99-117.

Capelli, C. A., Nakagawa, N., & Madden, C. M. (1990). How children understand sarcasm: The role of context and intonation. *Child Development*, *61*, 1824-1841.

Clark, H. H. (1996). *Using language*. Cambridge, UK: Cambridge University Press.

Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. In L. B. Resnick, J. M. Levine, & S. D. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 127-149). Washington, DC: American Psychological Association.

Coates, L. J. (1991). *A collaborative theory of inversion: Irony in dialogue*. Unpublished master's thesis, University of Victoria, Victoria, British Columbia, Canada.

Colston, H. L., & O'Brien, J. (2000a). Contrast and pragmatics in figurative language: Anything understatement can do, irony can do better. *Journal of Pragmatics*, *32*, 1557-1583.

Colston, H. L., & O'Brien, J. (2000b). Contrast of kind versus contrast of magnitude: The pragmatic accomplishments of irony and hyperbole. *Discourse Processes*, *30*, 179-199.

Cutler, A. (1974). On saying what you mean without meaning what you say. In *Papers from the Tenth Regional Meeting, Chicago Linguistics Society*. Chicago: University of Chicago.

Danet, B., Ruedenberg-Wright, L., & Rosenbaum-Tamari, Y. (1997). "HMMM...WHERE'S THAT SMOKE COMING FROM?" Writing, play and performance on Internet Relay Chat. *Journal of Computer-Mediated Communication*, *2*(4). Retrieved June 15, 2000, from http://207.201.161.120/jcmc/vol2/issue4/danet.html

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill.

Gerrig, R. J., & Goldvarg, Y. (2000). Additive effects in the perception of sarcasm: Situational disparity and echoic mention. *Metaphor & Symbol*, *15*, 197-208.

Gibbs, R. W., Jr. (2000). Irony in talk among friends. *Metaphor & Symbol*, *15*, 5-27.

Giora, R. (1998). Irony. In J. Verschueren, J.-O. Östman, J. Blommaert, & C. Bulcaen (Eds.), *Handbook of pragmatics* (pp. 1-21). Amsterdam: John Benjamins.

Godin, S. (1993). *The smiley dictionary*. Berkeley, CA: Peachpit Press.

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics: Speech acts* (pp. 41-58). New York: Academic Press.

Grice, H. P. (1978). Further notes on logic and conversation. In P. Cole (Ed.), *Syntax and semantics: Pragmatics* (pp. 113-128). New York: Academic Press.

Grice, H. P. (1989). *Studies in the way of words*. Cambridge, MA: Harvard University Press.

Haiman, J. (1998). *Talk is cheap: Sarcasm, alienation, and the evolution of language*. New York: Oxford University Press.

Hancock, J. T. (2002). *The production and use of verbal irony: An examination of expectations and the asymmetry of affect*. Unpublished doctoral dissertation, Dalhousie University, Halifax, Nova Scotia, Canada.

Hancock, J. T., & Dunham, P. J. (2001a). Impression formation in computer-mediated communication revisited: An analysis of the breadth and intensity of impressions. *Communication Research*, *28*, 325-347.

Hancock, J. T., & Dunham, P. J. (2001b). Language use in computer-mediated communication: The role of coordination devices. *Discourse Processes*, *31*, 91-110.

Hancock, J. T., & Dunham, P. J. (2002, November). *Contextual and cognitive factors in the asymmetry of verbal irony production*. Poster session at the annual meeting of the Psychonomic Society, Orlando, FL.

Hancock, J. T., Purdy, K., & Dunham, P. J. (2000). Children's comprehension of critical and complimentary forms of verbal irony. *Journal of Cognition and Development*, *1*, 227-248.

Holcomb, C. (1997). A class of clowns: Spontaneous joking in computer-assisted discussions. *Computers and Composition 14*, 3-18.

Hubler, M. T., & Bell, D. C. (2003). Computer-mediated humor and ethos: Exploring threads of constitutive laughter in online communities. *Computers and Composition*, *20*, 277-294.

Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology*, *31*, 177-192.

Kreuz, R. (1996). The use of verbal irony: Cues and constraints. In J. S. Mio & A. N. Katz (Eds.), *Metaphor: Implications and applications* (pp. 23-38). Mahwah, NJ: Lawrence Erlbaum.

Kreuz, R. (2000). The production and processing of verbal irony. *Metaphor & Symbol*, *15*, 99-107.

Kreuz, R. J., Long, D. J., & Church, M. B. (1991). On being ironic: Pragmatic and mnemonic implications. *Metaphor & Symbolic Activity, 6*, 149-162.

Kreuz, R. J., & Roberts, R. M. (1995). Two cues for verbal irony: Hyperbole and the ironic tone of voice. *Metaphor & Symbolic Activity*, *10*, 21-31.

Kumon-Nakamura, S., Glucksberg, S., & Brown, M. (1995). How about another piece of pie: The allusional pretense theory of discourse irony. *Journal of Experimental Psychology: General*, *124*, 3-21.

Matheson, K., & Zanna, M. P. (1988). The impact of computer-mediated communication on self-awareness. *Computers in Human Behavior*, *4*, 221-233.

Milosky, L. M., & Ford, J. A. (1997). The role of prosody in children's inferences of ironic intent. *Discourse Processes*, *23*,47-61.

Morkes, J., Kernal, H. K., & Nass, C. (1999). Effects of humor in task-oriented human-computer interaction and computer-mediated communication: A direct test of SRCT theory. *Human-Computer Interaction*, *14*, 395-435.

Muecke, D. C. (1969). *The compass of irony*. London: Methuen.

Rezabek, L. L., & Cochenour, J. J. (1998). Visual cues in computer-mediated communication: Supplementing text with emoticons. *Journal of Visual Literacy*, *18*, 210-215.

Roberts, R. M., & Kreuz, R. J. (1994). Why do people use figurative language? *Psychological Science*, *5*, 159-163.

Rockwell, P. (2000). Lower, slower, louder: Vocal cues of sarcasm. *Journal of Psycholinguistic Research*, *29*, 483-495.

Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, *19*, 52-90.

Walther, J. B. (1993). Impression development in computer-mediated interaction. *Western Journal of Communication*, *57*, 381-398.

Walther, J. B. (1994). Anticipated ongoing interaction versus channel effects on relational communication in computer mediated interaction. *Human Communication Research*, *20*, 473-501.

Walther, J. B., & Burgoon, J. K. (1992). Relational communication in computer-mediated interaction. *Human Communication Research*, *19*, 50-88.

Walther, J. B., & D'Addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social Science Computer Review*, *19*, 323-345.

Jeffrey T. Hancock (Ph.D., Dalhousie University, Halifax) is an assistant professor in the Departments of Communication and Information Science at Cornell University in New York. His research interests include figurative language, deception, impression formation, and the impact of technology on language use.