Does Participation Affect Deception Success?
A Test of the Interactivity Principle

JUDEE K. BURGOON
University of Arizona
DAVID B. BULLER
AMC Cancer Research Center, Denver
KORY FLOYD
Arizona State University

Communication episodes may range from highly interactive to noninteractive. The principle of interactivity refers to the constellation of structural and experiential features associated with interactivity that systematically affect communication processes and outcomes. One such feature is degree of participation. In deceptive interchanges, senders may engage in dialogic (high participation, two-way) or monologic (low participation, one-way) communication. According to the principle of interactivity, dialogue should advantage deceivers relative to monologue due to increased mutuality between sender and receiver and greater opportunities for deceivers to improve their performance over time. An experiment in which friends or strangers alternated between deceiving and telling the truth to a partner under dialogue or monologue conditions tested this principle. All hypotheses received some support. Relative to monologue, dialogue created more mutuality among strangers. Dialogue also enabled deceivers to better manage their informational content, speech fluency, nonverbal demeanor, and image, resulting in less accurate deception detection by partners. These results support the interactivity principle and interpersonal deception theory, from which the principle emanated.

Communicators face many choices when constructing messages. Suppose, for instance, that their goal is to minimize disclosure of personal information, to be intentionally ambiguous about something, or to lie to another. In these and similar instances, one factor influencing communication choices may be the amount of interactivity afforded

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Judee Burgoon (Ed.D., West Virginia University, 1974) is a professor of Communication and Family Studies and the director for Human Communication Research, Center for the Management of Information, at the University of Arizona. *David Buller* (Ph.D., Michigan State University, 1984) is a senior scientist and chair of the Center for Health Communication at the AMC Cancer Research Center in Denver, Colorado. *Kory Floyd* (Ph.D., University of Arizona, 1998) is an assistant professor of Communication at Arizona State University. An earlier version of this paper was recognized as a Top Four paper, Interpersonal Communication Division, ICA, Jerusalem, Israel, 1998. This project, which received Human Subjects approval, was supported by the U.S. Army Research Institute (Contract #MDA903-90-K-0113) and the U.S. Army Research Office (Grant #30235-RT-AAS). The views, opinions, and findings in this report are those of the authors and should not be construed as an official Department of the Army position, policy, or decision. The authors wish to thank Rosyln Viprakasit, who made valuable contributions to an earlier version of this manuscript. Correspondence should be directed to the first author, Center for the Management of Information, McClelland Hall 418, University of Arizona, Tucson, AZ 85721; email: judee@email.arizona.edu

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between senders and receivers. For example, should senders deliver their message in uninterrupted monologic fashion, much like they might do when leaving a message on an answering machine, delivering a class lecture, or holding the conversational floor for an extended time during a group discussion? Or, should they engage in a dialogue, in which the receiver can ask questions, make comments, and share in directing the flow of conversation?

Although intuitively it might seem more beneficial to opt for the control afforded by a monologue, we present a case here for choosing dialogue as the most advantageous to senders when the goal is to deceive. Drawing upon the interactivity principle in Buller and Burgoon's (1996) interpersonal deception theory, we hypothesize that, relative to being in a less participatory mode, senders are more successful when they participate fully with their receivers, that is, participation in face-to-face (FtF) interaction advantages deceptive senders over receivers. Deceivers are posited to capitalize on intrinsic aspects of interpersonal interaction to produce more believable verbal and nonverbal performances and to improve those performances over time. These hypotheses are tested in an experiment comparing dialogue to monologue on senders' communication and receivers' accuracy in detecting deception.

INTERPERSONAL DECEPTION THEORY AND THE PRINCIPLE OF INTERACTIVITY

Interpersonal deception theory (IDT; Buller & Burgoon, 1994, 1996; Burgoon, 1989; Burgoon & Buller, 1994) is a propositional theory that specifies relationships among sender and receiver cognitions and behaviors prior to, during, and following deceptive interchanges. A guiding premise of the theory has been that interactive deception differs from noninteractive deception. Initially, this premise was treated as an assumption, but more recently it has been advanced as a testable proposition (i.e., a general statement of relationship that has empirical content). Stated formally, Proposition 1 posits that sender and receiver cognitions and behaviors vary systematically as deceptive communication contexts vary in properties related to interactivity (Buller & Burgoon, 1996). The current investigation was designed to demonstrate empirically that degree of interactivity indeed causes communication processes and outcomes to differ.

The concept of interactivity is at once familiar and hazy. When we speak of interactive email, for instance, we refer to exchanges of text messages in real time. An interactive television program is one in which audience members can call in to speak to guests while a program is airing.

An interactive computer game is one in which each new move is contingent upon the user's last move. But we can also refer to a highly interactive class discussion, by which we probably mean that the group is very talkative and engaged in a lot of give-and-take with the teacher. Thus, a number of properties are implicitly associated with interactivity.

One way to "unpack" these properties is according to the structural affordances that various communication formats and modalities provide communicators. These are features that are "built into" a given communication context and distinguish fully interactive contexts from non-interactive or less interactive ones. A number of scholars have explicated the concept of interactivity, although sometimes under different labels within the context of theories of social presence, media richness theory, media synchronicity, and interpersonal deception (e.g., Buller & Burgoon, 1996; Dennis & Valacich, 1999; Lombard & Ditton, 1997; Newhagen & Rafaeli, 1996; O'Conaill, Whittaker, & Wilbur, 1993; Rafaeli, 1988). Drawing upon and extending these earlier conceptualizations, Burgoon and colleagues (e.g., Bengtsson, Burgoon, Cederberg, Bonito, & Lundberg, 1999; Burgoon, Bonito, Ramirez, Dunbar, & Miczo, 1999–2000) have forwarded a constellation of affordances or properties that can distinguish the degree of interactivity present in a given communication context. These include (a) *contingency*—is each person's discourse dependent upon and responsive to the other's?; (b) *transformation*—is there interdependence among actors and presence of feedback that makes interactions dynamic and evolutionary?; (c) *participation*—are all actors both senders and receivers of verbal and nonverbal messages and feedback rather than senders transmitting one-way messages or receivers passively witnessing another's communication?; and (d) *synchronicity*—does interaction take place in real time (synchronous) or is it delayed (asynchronous)? Interactivity increases to the extent that a communication context or system affords contingent discourse, creates interdependencies and dynamically changing linkages between communicators, affords participation among all social actors, and permits immediate rather than delayed exchanges of messages.[1] Other features of communication systems that may also moderate the degree of interactivity include (a) *mediation*—are messages exchanged person-to-person or transmitted via some electronic or mechanical medium?; (b) *propinquity*—are interactants in the same place (co-located) or geographically dispersed?; (c) *modality- and information-richness*—do participants have full access to a wide range of environmental, visual, audio, and verbal context cues?; (d) *identification*—are interactants known to one another or do they have anonymous, enigmatic, or fictitious identities?; (e) *concurrency*—can messages be exchanged in parallel and simultaneously (as might occur in electronic brainstorming sessions) or are they exchanged serially?; (f) *anthropomor-*

phism—are the interacting agents human or humanlike?; and (g) *retrievability*—is the exchange recorded in some manner that permits retrieval and review?

A natural starting place for testing this interactivity principle is within the context of FtF interaction, which is unmediated, proximal, synchronous, contingent, transformative, modality-rich, identified, largely serial, and anthropomorphic (and nonretrievable in its normal form). This investigation focuses on one of the most central properties of interactivity—participation—that should affect communication processes and outcomes. In contrast to some prior investigations that have examined receiver participation, the current study focuses on sender participation.

THE NATURE OF PARTICIPATION

As previously stated, participation can be understood as an inherent structural property of communication, with different communicative formats having different affordances. Some formats, such as a two-person conversation or a videoconference on a local-area computer network, require or permit participation by all social actors. Such formats might be described as narrowcast and dialogic in that there are fewer participants, more opportunities for all parties to interact freely, and ready access to listener feedback. Other formats, such as a public speech or a media broadcast, do not readily permit participation by all social actors. These formats allocate the speech channel to the sender and cast message recipients at least temporarily in the role of passive audience or observer. Degree of participation also may vary within a given circumstance. For example, open-ended interviews may encourage much lengthier turns at talk by the interviewee than the interviewer, such that interviewees' replies may resemble "mini-monologues." Similarly, within videoconferencing, half-duplex audio may encourage lengthier conversational turns than full-duplex; leaderless group discussions may permit one person to dominate the conversational floor for extended periods moreso than groups with strong, directive leaders.

In the context of deception, much prior noninteractive research has entailed deceivers presenting lies in uninterrupted, monologic fashion to a panel of judges or delivering recorded deceptive messages to an imagined receiver for later viewing, listening, or reading by receiver-judges (see, e.g., DePaulo, Kirkendol, Tang, & O'Brien, 1988; DePaulo, Lanier, & Davis, 1983; McCornack & Levine, 1990; Miller & Stiff, 1993). By contrast, recent interactive deception work has had deceptive senders converse with their receivers (e.g., Buller, Comstock, Aune, & Strzyzewski, 1989; Burgoon & Buller, 1994; Burgoon, Buller, Floyd, &

Grandpre, 1996; George & Carlson, 1999; White & Burgoon, 2001). These alternative means of testing deception point to one obvious way to operationalize high and low sender participation—as a comparison between dialogue and monologue. This is the operationalization we chose in the present investigation.

Our general hypothesis is that participation in the form of dialogic communication confers a net advantage to senders over receivers such that it increases senders' deception success, that is, it reduces receivers' detection of deceit. Our reasoning is based on the likely impact of participativeness on, among other things, (a) goal salience, (b) degree of mutuality between senders and receivers, and (c) senders' abilities to control their messages. We begin by considering the possible ramifications for senders.

THE IMPACT OF PARTICIPATION ON SENDERS' DECEIT

Goal Salience

FtF encounters make a multiplicity of goals salient. In addition to creating coherent and congruent messages, participants must control emotional expressions, produce appropriate relational messages, and often persuade others. In addition, they must monitor partner feedback and generate their own feedback to the partner. Additional goals are salient when the conversation is a two-way interaction. Because both participants are contributing to the conversation, they must regulate turn taking and topic management so that the interaction runs smoothly. They must also plan and produce their own verbal messages and process partner discourse, thus performing dual encoding and decoding roles.

Mutuality

Offsetting these potential difficulties are the benefits of the greater mutuality that is likely to develop under dialogue. Cognitively, mutuality takes the form of a perceived unit relationship between sender and receiver, that is, a sense of relational connectedness that leads people to perceive and behave toward one another differently than if they had not interacted. Participants may report a greater sense of rapport and similarity with one another. They may also exhibit positivity and truth-biases. For example, FtF participants have been found to evaluate each other more leniently and as more truthful than do observers or interactants in mediated contexts (e.g., Buller & Hunsaker, 1995; Burgoon & Newton, 1991; Nisbett, Caputo, Legant, & Maracek, 1973; Stiff, Kim, & Ramesh, 1989; Street, Mulac, & Wiemann, 1988; Swann, Silvera, & Proske,

1995; Weisband, Schneider, & Connolly, 1995).

Behaviorally, mutuality takes the form of responsive, coordinated, and synchronized communication during and across episodes. Communication by its very nature is a joint process requiring coordination of both content and process. This coordination and adaptation is accomplished by a number of linguistic and nonverbal devices, including entraining to one another's interaction rhythms, signaling understanding through backchannel cues such as head nods and "uh huh" expressions, and other indications such as postural similarity that signify people are "in sync" with one another (Burgoon, Stern, & Dillman, 1995; Cappella, 1993; Gregory, 1994; O'Conaill et al.,1993). Individuals are more inclined to adapt their conversational behaviors to those to whom they feel close or connected, and individuals demonstrating dyadic coordination are judged by naive observers as having greater rapport than those whose behaviors are not coordinated (Bernieri, Gillis, Davis, & Grahe, 1996; Burgoon, Stern, et al., 1995; Gregory & Webster, 1996; Tickle-Degnen & Rosenthal, 1990). This process of adaptation typically occurs below conscious awareness and in a semi-automatic fashion. Participants "fall into" a rhythmic, reciprocal, and routinized interaction pattern that requires less thought and effort. Such routinized interaction patterns typify stable interpersonal exchanges.

Greater interactivity in general should promote greater mutuality. Research on computer-mediated communication has demonstrated that when interactivity is restricted, communication coordination suffers (Galegher & Kraut, 1990; O'Conaill et al., 1993). Applied to the property of participation, if engaging in dialogue creates a greater sense of closeness and connection than does engaging in monologue, we should expect to see greater perceptions of rapport and interaction adaptation between sender and receiver under dialogue. Although some forms of adaptation, like gestural and vocal matching and smooth turn switches are precluded when a monologue format is used, message recipients can exhibit such forms of adaptation as postural mirroring, and senders and receivers can synchronize postural shifts, head movements, and other physical activity to the rhythms of the speaker's verbal-vocal stream. Stated as a first hypothesis:

H1: Mutuality is greater under dialogue than monologue.

Greater participation and the relational connectedness it engenders should reinforce the importance of self-presentational and relational goals (Goffman, 1959; Monahan, 1995), thereby encouraging senders to pay special heed to audience feedback and to adjust their performances to

good effect. At the same time, greater behavioral mutuality should evoke communication patterns that are comfortable, familiar, and nontaxing. In this way, mutuality may offset any detrimental effects arising from the increased effort of managing conversation and may ease any difficulties associated with deceiving by facilitating message controllability.

Message Controllability

Message controllability refers to the ability of communicators to engage in strategic behavior and to minimize nonstrategic behavior. In the context of deception, strategic sender activity refers to intentional or planned actions, specifically, the intentional management of information, behavior, and image, the objective being to increase deception success (Buller & Burgoon, 1994, 1996). Information management concerns such features as the central message's truthfulness, completeness, clarity, relevance, and personalism. Behavior and image management refer to efforts to control accompanying nonverbal and verbal behaviors so that indicators of nervousness are suppressed and a pleasant, poised, and normal-appearing demeanor is conveyed. Nonstrategic behaviors are those nondeliberate, inadvertent, or involuntary behaviors that senders are trying to control through behavior and image management. They include behaviors that are variously referred to as leakage or clues to deceit (Ekman & Friesen, 1969), are featured in Zuckerman et al.'s (1981) four-factor theory, and are often used by receivers to infer deceit (Feeley & deTurck, 1995; Vrij, 2000). These include indicators of arousal, negative or dampened affect, increased cognitive effort, or attempted control (e.g., nervous gestures, nonfluencies, rigid postures, and other performance impairments). To the extent that these are kept in check, they can be conceived as successful speech management, as they tend to relate to elements of oral performance.

Prior research has shown that deceivers do intentionally manipulate the information in their messages, their speech and accompanying nonverbal behaviors, and their overall image. In addition to reducing the truthfulness of their messages, deceivers' verbal messages often become less complete, clear, direct, relevant, and personal; they tend to abbreviate their answers and are slower to respond to questions; their speech becomes less fluent and synchronous; they suppress physical activity and gesturing; and they become less dominant while still approximating a normal and pleasant demeanor (Buller et al., 2001; Burgoon, Buller, Guerrero, Afifi, & Feldman, 1996; Rockwell, Buller, & Burgoon, 1997; Vrij et al., 1997). Such efforts can backfire if overdone. For example, if senders err in the direction of being too vague or cryptic with their messages or overcontrol their nonverbal demeanor to the point of appearing stiff

or unnatural, their performance may be regarded as suspicious and "fishy" (Bond et al., 1992; Burgoon, Buller, Guerrero, & Feldman, 1994; Burgoon, Buller, White, Afifi, & Buslig, 1999; DePaulo & Kirkendol, 1989).

The impact of participation on senders' ability to manage their messages is complex. On the one hand, the nature of FtF dialogue can be taxing in itself. Several scholars have noted that interactive situations are fraught with uncertainty, time-constrained information processing, real-time adaptation requirements, and multitasking, all of which place demands on finite cognitive resources (see, e.g., Berger, 1997; Buller & Hunsaker, 1995; Burgoon & Newton, 1991; Burgoon & White, 1997; Gilbert, Pelham, & Krull, 1988; Kellermann, 1984; Street, Mulac, & Wiemann, 1988; Waldron, 1997; but for a counter perspective, see McCornack, 1997). Because FtF dialogue occurs in real time (i.e., is synchronous rather than asynchronous), participants must accomplish multiple functions rapidly and continuously, with little time for planning and editing.

For deceivers, these responsibilities are overlaid on the task of also creating a plausible deception, a task that some research has shown to be more complex and effortful than truthtelling (e.g., Anolli & Ciceri, 1997; Buller & Hunsaker, 1995; Buller, Strzyzewski, & Hunsaker, 1991; Monahan, 1995; Vrij, Akehurst, & Morris, 1997; Zuckerman, DePaulo, & Rosenthal, 1981). When coupled with the extra demands of planning, producing, coordinating, and monitoring plausible messages, the process of deceiving during a dialogue (i.e., when in a highly participative state) might reduce senders' successful encoding, at least initially, so that they deviate from a normal interaction style and manifest more impaired performances than truthtellers (Buller, Burgoon, Afifi, White, & Buslig, 1999). IDT acknowledges this possibility in its Proposition 3, which posits that initial deception displays contain nonstrategic as well as strategic behaviors.

On the other hand, the mutuality that is fostered by dialogue may permit senders to mimic a normal-appearing, anxiety-free, and pleasant demeanor more rapidly by shifting into a routinized interaction pattern. It may also permit deceivers to enlist receivers as unwitting accomplices in constructing plausible lies. Some research has already shown that senders may encourage receivers to take the lead in conversation and receivers accommodate by filling in gaps with plausible explanations (Buller et al., 2001). Moreover, by its nature, participation implies feedback. Thus, dialogue allows for greater access to verbal and nonverbal feedback from receivers and greater opportunities to adjust performances to such feedback in a timely and contingent fashion than does monologue. Dialogue should enable senders to improve their performances over time by bringing nonstrategic behaviors under greater control, by concentrating on strategic objectives aimed at producing a normal interaction style, and

by falling into routinized interaction patterns that actually manifest that style. By virtue of its dynamic nature, dialogue may also make senders more attentive to changes in receiver reactions and, given that receivers' suspicions often are made manifest, enable senders to utilize any signs of disbelief or skepticism to restore credibility (Buller, Strzyzewski, & Comstock, 1991; Burgoon, Buller, Dillman, & Walther, 1995). Thus, in keeping with IDT's Proposition 15, which posits that initial deception displays are transitory, deceptive performances should become indistinguishable from truthful ones for deceivers engaged in dialogue. Lacking the same level of engagement with, and feedback from, their receivers, deceivers engaged in monologue should show less improvement over time. The next hypotheses capture these interaction predictions.

H2: Senders' information and speech management is a function of participation, deception order, and time such that messages are more clear, complete, direct, personalized, and unimpaired (a) under dialogue than monologue and (b) under truth than deception; but (c) deceivers' speech and information management improve over time under dialogue.

H3: Senders' behavior and image management is a function of participation, deception order, and time such that senders display more nonverbal involvement, dominance, and pleasantness, and create better impressions (a) under dialogue than monologue and (b) under truth than deception; but (c) deceivers' behavior and image management improve over time under dialogue.

These effects should be evident in senders' own perceptions as well as those of receivers. Further, we should see these effects demonstrated behaviorally, as judged by trained coders.

THE IMPACT OF PARTICIPATION ON RECEIVERS' DETECTION OF DECEPTION

We next turn to consideration of how sender participation might affect receivers' detection ability during deceptive episodes. We have already noted that communicating under conditions of high interactivity requires participants to manage multiple conversational and self-presentational goals simultaneously, which can make communication more challenging than under conditions of low interactivity. In addition, high interactivity may contribute to greater perceptions of mutuality, which may lead to a stronger truth bias on the part of receivers. Together, these characteristics should impede receivers' ability or motivation to scrutinize incoming messages for possible deceit or lead them to discount any

duplicity they might suspect. Moreover, if receivers become suspicious, they are likely to telegraph those suspicions to senders, thereby prompting senders to adjust their performances toward greater believability (Burgoon, Buller, Ebesu, White, & Rockwell, 1996; White & Burgoon, 2001). And, as noted previously, they may even become unwitting accomplices in helping senders craft believable messages. The net result should be that conditions of high participativeness confer a greater advantage on senders than receivers.

H4: Deception detection accuracy is lower (a) under dialogue than monologue and (b) worsens over time under deceptive dialogue.

METHOD

Participants

Participants (N = 64) were equal numbers of male and female undergraduate students enrolled in communication and business courses at a large Southwestern (U.S.) university. They were recruited for a "study of how acquainted and unacquainted men and women discuss various conversational topics." Half of the participants agreed to bring with them a same-sex friend or acquaintance whom they had known for at least 6 months and with whom they interacted on a regular basis. The remaining participants were paired with same-sex unacquainted students from other courses. The decision to include friend as well as stranger dyads in the sample was based upon three considerations: (a) the IDT claim that relationship factors may moderate behavioral patterns, (b) results from prior deception research showing some differences based on degree of acquaintance (e.g., Buller, Strzyzewski, et al., 1991; Burgoon, Buller, Ebesu, & Rockwell, 1994; McCornack & Parks, 1986; Stiff et al., 1989), and (c) the desire to increase the generalizability of the findings, should relationship differences not emerge.

Procedure and Independent Variables

The experiment took place in the Communication Research Laboratory, a complex consisting of two converted apartment suites equipped with comfortable swivel chairs and lavalier microphones in the "living room," adjoining observation rooms with one-way windows through which unobtrusive videotaping is completed, and stations equipped with VCRs and monitors. Upon reporting to the site, participants were randomly assigned to sender (Person A) or receiver (Person B) roles. After consenting to participate and be videotaped, Persons A and B were sepa-

rated to receive experimental manipulations and to review a list of "potential topics for your conversation" in advance of the interaction.

The *deception induction* consisted of telling senders (Persons A) that, "sometimes situations arise where it is NOT in one's best interest to tell 'the truth, the whole truth, and nothing but the truth'—for instance, to present your best image, to protect another's feelings, to avoid unpleasant circumstances. A certain level of communication skill is necessary to be able to adapt to these situations." Senders were asked to practice these skills in the upcoming discussion and to allow us to determine how well others could detect deception. They were given cards with an unobtrusive colored number in the right hand corner. They were asked to be totally truthful when answering the questions on the cards with the black numbers. When encountering a card with a colored number, they were asked "to NOT tell 'the truth, the whole truth, and nothing but the truth.'" Instructions further stated,

> You have a number of different options for answering the question on the [colored] cards. You might give clear but completely untrue answers. You might be vague, indirect, unclear, and ambiguous, or you might withhold, omit, or avoid discussing relevant information. The primary aim is to use your own techniques and communication style to give answers which fall short of being the "truth, the whole truth, and nothing but the truth."

Because ordinary deception can run the gamut from job applicants overstating their qualifications to make a favorable impression, to friends equivocating about personal failures to avoid embarrassment, to politicians misrepresenting their actions to the media, deception needs to be operationalized in the broadest manner possible so as to approximate most closely the ways in which people routinely deceive (see DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1994; Turner, Edgley, & Olmstead, 1975). Moreover, past experiments have shown that participants are far more successful at complying with experimental instructions when permitted to deceive in a manner they find most familiar (e.g., Burgoon, Buller, & Guerrero, 1995; Burgoon, Buller, Guerrero, et al., 1996). Thus, Persons A were told that deception may consist of many different ways of departing from the "whole truth" and were instructed to use whatever form(s) of deception they wished to use, including outright lies, equivocations, evasions, omissions, and concealments.

The *participation induction* consisted of half of the senders conducting a dialogue and the other half conducting a monologue with the receiver. Under dialogue, each topic was read and both participants discussed their responses to it before moving on to the next topic. Participants in this condition were encouraged to have a normal conversation in which

they could ask questions of each other, interject their own opinions, and extend upon what each other was saying. Under monologue, participants were told that first Person A would read and respond to all topics without allowing for questions or verbal input from Person B, and then Person B would do the same. (In actuality, discussions were ended after Person A had responded to all topics.)

Participants were reunited in the interaction room and were instructed to engage in discussion on five topics listed on a set of cards taken from a game designed to encourage self-disclosure and open communication. Following a brief, initial topic that was designed to acclimate participants to the setting and conversational task (Complete the sentence, "When I am in a large group, I . . ."), participants began discussion of the four experimental topics during which truth and deception were manipulated: "Tell about the most significant person in your life," "Tell about a mistake you made recently," "Describe the most unpleasant job you have ever had to do," and "Talk about responsibility." These four topics were split into blocks of two questions, with senders' truthfulness alternated across the blocks. Half of the senders followed a truth first, deception-second order (TD), providing truthful responses to the first and second target topics and deceptive responses to the third and fourth target topics. The remainder followed the reverse order (DT). Thus, *deception order* consisted of following a truth-first or deception-first sequence. Because topics followed a digram-balanced Latin square order within truth and within deception (see Keppel, 1991), all topics appeared within a given time period. *Time period* therefore refers to the sequencing of topics (first, second, third, or fourth), regardless of what topic was under discussion. Participants were asked to discuss each topic until they had exhausted it and felt they fully understood each other's responses. Receivers (Persons B) were blind to the deception manipulation and were told that their main goal was to keep the interaction flowing smoothly.

Following the interaction, participants reported to separate rooms to watch the videotape of two of the topics they discussed, one in which Person A gave a truthful response and one in which Person A gave a deceptive response. After watching each topic, participants completed written postmeasures. Upon completing both sets of postmeasures, participants were debriefed and excused. The sessions, including discussion and completion of measures, averaged an hour.

Postmeasures

Time constraints and potentials for fatigue and test sensitization argued against having respondents rate all four of the senders' deceptive and truthful performances. Therefore, two topics in each interaction were designated as the target topics in which the senders' intentions and ac-

tions were analyzed by senders and receivers. These were the second topic in the first block (which occurred during Time 2) and the first topic in the second block (which occurred during Time 3). These topics were adjacent to each other in the middle of the sequence of topics and represented both a truthful and a deceptive response.

Persons A and B completed a series of Likert-format rating scale items, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), that assessed senders' verbal and nonverbal performance. To address information management and speech (non)impairment, Persons A's answers were rated by both Persons A and B on the completeness, clarity, directness, relevance, and personalism of the content of their answers, and their speech was rated on its smoothness, absence of dysfluencies, composure, and skillful regulation of the conversation.[2] Behavior and image management were rated by Persons A and B on A's conversational involvement, dominance, and pleasantness.[3]

To measure deception success, Persons B rated the perceived truthfulness of Persons A's answers to each of the second, third, fourth, and fifth questions on 11-point Likert-type scales anchored at 0 with *not at all truthful* and at 10 with *completely truthful*. Accuracy was computed by taking the absolute value of the difference between A's and B's scores. Greater accuracy is therefore represented by lower scores. As a manipulation check, Persons A rated how truthful they were in their responses on the same four responses. Additional scale items that assessed the perceived veridicality of Persons A's answers served as a second manipulation check on Persons A's successful fulfillment of the deception manipulation.[4]

Subsequently, three trained coders rated Persons A's nonverbal behavior for each of the four topics on a series of 7-interval bipolar adjective scales employed in previous research to measure interactional adaptation, involvement, dominance, and pleasantness (e.g., Burgoon & Dunbar, 2000; Burgoon, Johnson, & Koch, 1998; Burgoon, Le Poire, & Rosenthal, 1995; Burgoon, Stern, et al., 1995; Coker & Burgoon, 1987).[5] Ratings were based on 1-minute intervals beginning 30 seconds into each topic. Scale items within dimensions were averaged for each topic. Interitem reliabilities based on Cronbach's coefficient alpha and interrater reliabilities based on Ebel's intraclass correlation appear in Table 1.

RESULTS

Preliminary Data Reduction

In light of the large number of dependent measures and the potential for inflation of Type I error due to multicollinearity, principal components factor analysis with varimax rotation was utilized to guide cre-

TABLE 1
Interitem (Cronbach Coefficient Alpha) and Interrater (Intraclass Correlation) Reliabilities

	Person A self-report		*Person B rating of A*	
Perceptual variables	*Time 2*	*Time 3*	*Time 2*	*Time 3*
Mutuality				
Rapport, similarity, and trust	.84	.82		
Information and speech management				
Veridicality	.89	.89		
Completeness, clarity, directness, relevance, and personalism	.88	.90	.85	.88
Nonimpaired speech	.88	.85	.82	.86
Behavior and image management				
Involvement and dominance	.89	.89	.86	.85
Pleasantness	.73	.78	.70	.75
Good impression	.79	.71	.70	.86
Coded variables	*Interitem reliability*		*Interrater reliability*	
Mutuality				
Interaction adaptation	.75		.91	
Behavior management				
Involvement and dominance	.95		.90	
Image management				
Pleasantness	.85		.66	

ation of composite measures within the sender, receiver, and coder ratings. Interpretability of factors, relevance of items to the conceptual dimensions of information, behavior and image management, and reliability analysis were also taken into account so as to yield composites that were relatively independent, stable, and conceptually meaningful. For analysis purposes, sender ratings were reduced to three composite measures: (a) the veridicality manipulation check measure; (b) information and speech management, which combined all verbal and paralinguistic aspects of performance, including unimpaired speech delivery and the clarity, directness, relevance, and personalism of the messages; and (c) behavior and image management, which combined involvement, dominance, and pleasantness. For receiver ratings, three measures resulted: (a) perceived mutuality, which combined rapport, similarity, and trust; (b) information and speech management (comparable to the same measure as for senders); and (c) behavior and image management (also comparable to the sender measure). For coder ratings, two measures were formed: (a) interaction adaptation, which represented a behavioral in-

TABLE 2
Means (and Standard Deviations) for Senders' Communication as Rated by Self, Partner and Trained Coder

	Dialogue		*Monologue*	
Sender (Person A) self-ratings	*Truth* (n = 32)	*Deception* (n = 32)	*Truth* (n = 32)	*Deception* (n = 32)
Information and speech management	5.14 (.81)	4.35 (.98)	4.75 (.96)	3.91 (.88)
Behavior management	5.07 (.74)	4.82 (.85)	4.66 (1.06)	4.54 (1.14)
Image management	5.26 (.91)	4.94 (1.04)	4.91 (1.26)	4.39 (1.53)
Receiver (Person B) ratings of sender				
Perceptual mutuality (rapport, similarity, and trust)	4.99 (1.11)	4.60 (1.35)	4.47 (1.18)	4.52 (1.23)
Information and speech management	5.27 (.73)	5.26 (.90)	5.03 (1.00)	4.57 (1.16)
Behavior management	4.80 (.82)	4.87 (.83)	4.84 (1.10)	4.65 (.96)
Image management	5.19 (.98)	5.21 (1.11)	5.25 (1.05)	4.88 (1.18)
Coder ratings of sender				
Behavioral mutuality (adaptation)	3.96 (1.30)	3.90 (1.34)	3.87 (1.52)	3.84 (1.47)
Behavior management				
Involvement	5.38 (.84)	5.17 (.73)	4.48 (1.09)	4.22 (1.08)
Dominance	4.61 (.85)	4.26 (.97)	4.25 (.91)	3.94 (.95)
Image management (pleasantness)	5.28 (.57)	5.02 (.60)	4.82 (.70)	4.78 (.71)

dex of mutuality, and (b) involvement, dominance, and pleasantness, which represented behavior and image management. For the sake of comparison to other research, mean ratings for sender, receiver, and coder ratings on behavior and image subscales are displayed separately in Table 2, where all the communication measure means and standard deviations are shown by participation and deception order.

Overview of Design for Hypothesis Tests

For sender- and receiver-reported data, hypotheses were tested within a 2 (participation: dialogue versus monologue) x 2 (relationship: friend versus stranger) x 2 (deception: truth-first versus deception-first order) x 2 (time: topic 2, topic 3) mixed model repeated measures analysis of variance, with the last two factors repeated.[6] For coder data, the same analyses were utilized except that the time factor was expanded to the four discussion periods. Mauchly's test was employed to test for violations of compound symmetry assumptions, and the Huynh-Feldt correction to degrees of freedom was applied where violations occurred. Box's *M* test indicated homoscedasticity in all between-subjects comparisons.

It should be noted in advance that by employing a counterbalanced design with two different orders for truth and deception, a deception main effect is actually reflected by a deception order by time interaction. Confederates in the truth-first order gave two truthful and then two deceptive responses, whereas those in the deception-first order gave two deceptive then two truthful responses, resulting in deception being present at times 1 and 2 in the deception-first order but at times 3 and 4 in the truth-first order. Consequently, the deception order by time interaction represents the comparison of the deceptive time periods to the truthful ones.

Manipulation Check

The deception manipulation check was successful, as evidenced by a significant deception order by time interaction in the omnibus test, $F(3, 174) = 133.21$, $p < .001$, partial $\eta^2 = .70$, and a focused contrast that averaged the truthful and deceptive responses in the respective truth-first and deception-first orders, $t(59) = 13.40$, $p < .0001$, partial $\eta^2 = .75$. Persons A were far more truthful when they were instructed to be so ($M = 9.62$) than when they were instructed to be deceptive ($M = 2.35$).The analysis on senders' reported veridicality likewise produced a significant deception order by time interaction, $F(1, 60) = 85.10$, $p < .001$, partial $\eta^2 = .59$, with truthful answers being rated as more honest ($M = 5.86$) than deceptive ones ($M = 2.72$). There were no main effects due to participation condition or relationship. However, a time by relationship interaction revealed that friends reported becoming more truthful and forthcoming over time (regardless of deception condition), whereas strangers reported becoming less so.

Hypothesis 1: Mutuality

Hypothesis 1, which predicted that participation in the form of dia-

logue produces greater mutuality than monologue, operationalized mutuality as (a) coder-rated interaction adaptation and (b) receiver perceptions of rapport, similarity, and trust. The analysis of variance on coded adaptation produced a significant main effect for participation, $F(1, 60) = 10.09$, $p = .002$, partial $\eta^2 = .14$, but it was qualified by a participation by relationship interaction, $F(1, 60) = 8.90$, $p = .004$, partial $\eta^2 = .13$. In support of H1a, mutuality in the form of matching and mirroring was higher under dialogue ($M = 4.58$) than monologue ($M = 4.03$). (This pattern occurred irrespective of whether senders were deceiving or telling the truth.) However, as shown in Figure 1, this effect only held for strangers; for friends, differences between dialogue and monologue were negligible. In support of H1b, the analysis of perceived mutuality produced a significant participation by relationship by time interaction, $F(1, 58) = 7.90$, $p = .007$, partial $\eta^2 = .12$, and a main effect for relationship, $F(1, 58) = 4.38$, $p = .041$, parital $\eta^2 = .07$. Interactions with friends were perceived as creating more rapport, trust, and similarity ($M = 4.91$) than were interactions with strangers ($M = 4.37$). Within each relationship type, dialogue produced more perceived mutuality than did monologue. Dialogues by friends ($M = 5.14$) were rated as creating more rapport, similarity, and trust than were monologues by friends ($M = 4.68$). Among strangers, the same relationship emerged at time 2 (dialogue $M = 4.41$, monologue $M = 4.14$) but differences evaporated at time 3 (dialogue $M = 4.42$, monologue $M = 4.51$).

Together, these results offer qualified support for Hypothesis 1. Participation affected behavioral and perceptual mutuality but in different ways depending on the relationship. If senders interacted with friends, perceptual mutuality was higher under dialogue than monologue, but behavioral mutuality (adaptation) did not vary, perhaps because friends' interaction patterns were too stable and ingrained to be responsive to a relatively brief experimentally manipulated interaction. If senders interacted with strangers, behavioral and perceptual mutuality were higher initially under dialogue than monologue, and the behavioral advantage was sustained over time.

Hypothesis 2: Information and Speech Management

Hypothesis 2 predicted better information and speech management on average under (a) dialogue and (b) truth but (c) improvements over time under deceptive dialogue. It was tested utilizing the separate sender and receiver composite measures of speech and information management (which incorporated ratings of content completeness, clarity, directness, and personalism and speech nonimpairment for Persons A's responses to the two target questions). Persons A's self-reports yielded significant within-subject effects for the deception order by time interac-

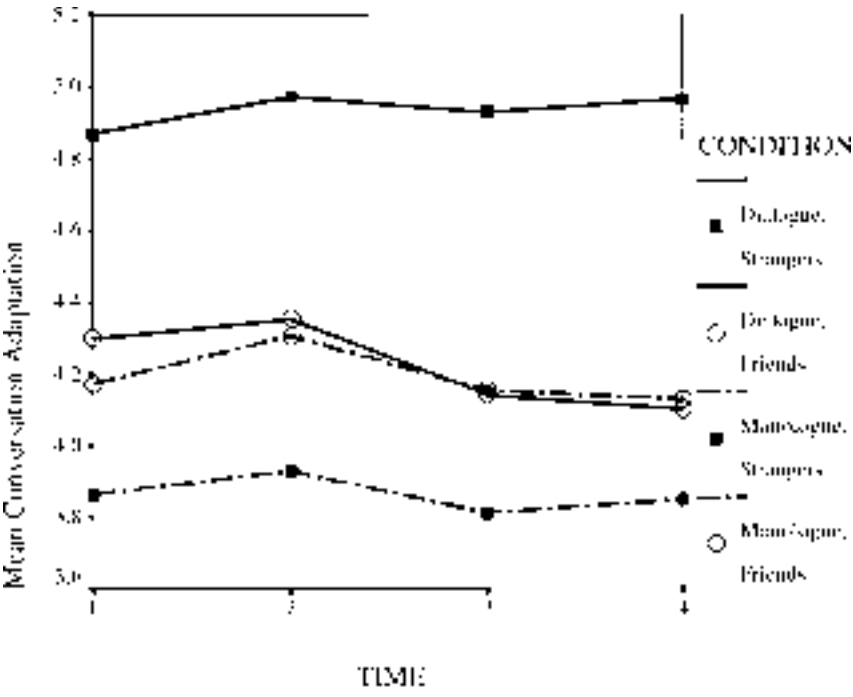

Figure 1: Participation and Relationship Effects on Conversation Adaptation, by Time (Coder Ratings)

tion, $F(1, 55) = 71.64$ $p < .001$, partial $\eta^2 = .57$; participation by time by relationship interaction, $F(1, 55) = 12.29$, $p = .001$, partial $\eta^2 = .18$; participation by deception order by relationship by time interaction, $F(1, 55) = 6.91$, $p = .011$, partial $\eta^2 = .11$; and time, $F(1, 55) = 4.77$, $p < .033$, partial $\eta^2 = .08$; and a between-subjects main effect for participation, $F(1, 55) = 3.98$, $p = .05$, partial $\eta^2 = .07$. Consistent with H2a and H2b, senders reported better information and speech management when dialoguing ($M = 4.75$) than monologuing ($M = 4.34$) and when truthful than deceptive (time 2 truth $M = 5.03$, deception $M = 4.25$; time 3 truth $M = 4.86$, deception $M = 4.03$). However, relationship moderated the predicted over-time effects (H2c). Friends engaged in dialogue reported essentially the same mean level of information and speech management from time 2 to time 3, whereas strangers reported declines. Comparatively, friends under monologue thought their information and speech management declined from time 2 to time 3, whereas strangers perceived they stayed relatively the same across time 2 and 3.

Receiver ratings produced similar patterns. The analysis of Person B's ratings of Person A's information and speech management produced sig-

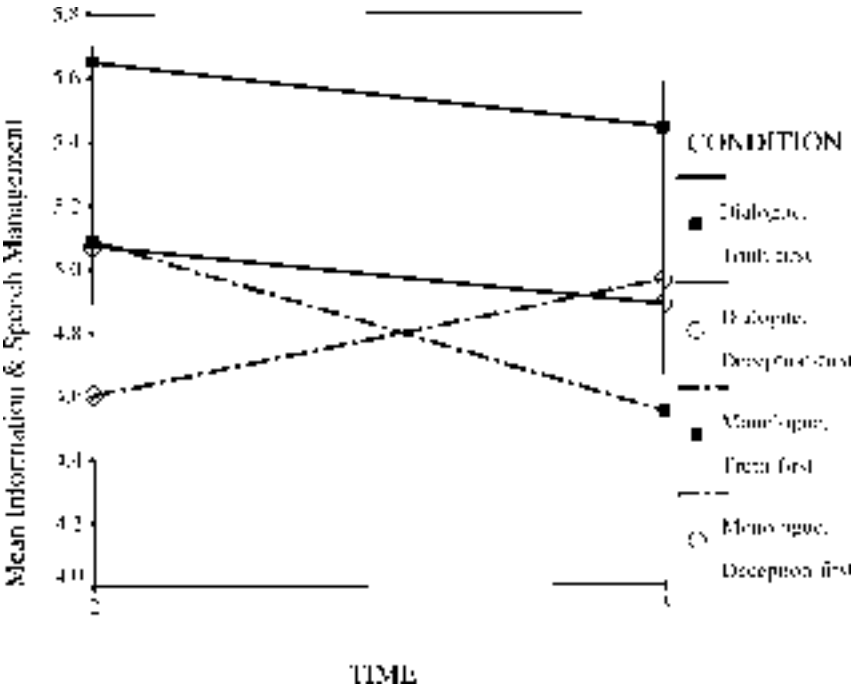

Figure 2: Participation and Deception Order Effects on Information and Speech Management, by Time (Receiver Ratings)

nificant effects for deception order by time by participation, $F(1, 56) = 4.06$, $p = .049$, partial $\eta^2 = .07$; deception order by time, $F(1, 56) = 4.50$, $p = .038$, partial $\eta^2 = .07$; relationship by time, $F(1, 56) = 4.33$, $p = .040$, partial $\eta^2 = .07$; participation by relationship by time, $F(1, 56) = 5.42$, $p = .023$, partial $\eta^2 = .09$; and participation, $F(1, 56) = 4.45$, $p = .039$, partial $\eta^2 = .07$. These complex patterns can be summarized as follows. Supporting H2a, mean scores were higher in dialogue ($M = 5.26$) than in monologue ($M = 4.80$) and this advantage was sustained over time. Supporting H2b, truth received higher ratings than deception within dialogue and within monologue. Supporting H2c, deceivers benefited by engaging in dialogue, in that they were seen as better able to manage message content and speech performance under deception than truth during the third time period, a pattern that was particularly marked for friends. This was not the case under monologue, where truthtellers received higher ratings than deceivers at both time 2 and time 3, and friends' performances were seen as deteriorating from time 2 to time 3 (see Figures 2 and 3).

In sum, these results support Hypothesis 2. From both senders' and receivers' perspectives, information and speech management were bet-

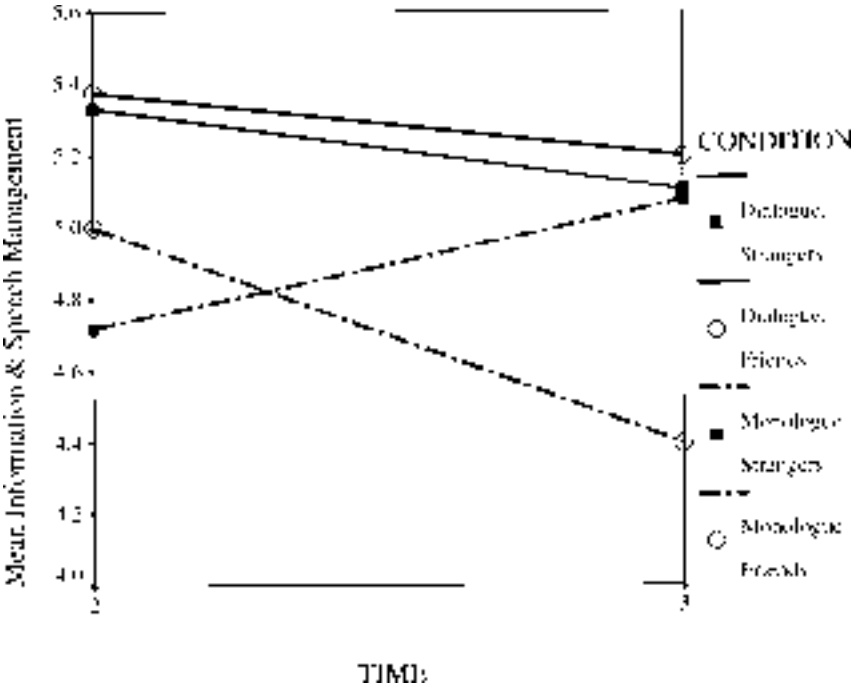

Figure 3: Participation and Relationship Effects on Information and Speech Management, by Time (Receiver Ratings)

ter under dialogue than monologue and generally under truth than deception, but deceivers performed better over time when their deceit occurred under dialogue than monologue. Monologue particularly disadvantaged friends over time.

Hypothesis 3: Behavior and Image Management

Like Hypothesis 2, Hypothesis 3 predicted better behavior and image management on average under (a) dialogue and (b) truth but (c) with improvements in deceptive dialogue over time. Senders' ratings of their own involvement, dominance, and pleasantness produced significant effects for deception order by time, $F(1, 58) = 10.65$, $p = .002$, partial $\eta^2 = .16$, participation by relationship by time, $F(1, 58) = 5.09$, $p = .028$, partial $\eta^2 = .08$, and participation, $t(58) = 1.67$, $p < .05$, one-tailed, partial $\eta^2 = .05$. Consistent with H3a, senders saw themselves as more dominant, involved, and pleasant under dialogue than monologue, and, consistent with H3b, under truth than deception. Temporal changes (H3c) were qualified by relationship differences. When deceiving as well as when telling the truth, dialoguing friends rated their behavior and image man-

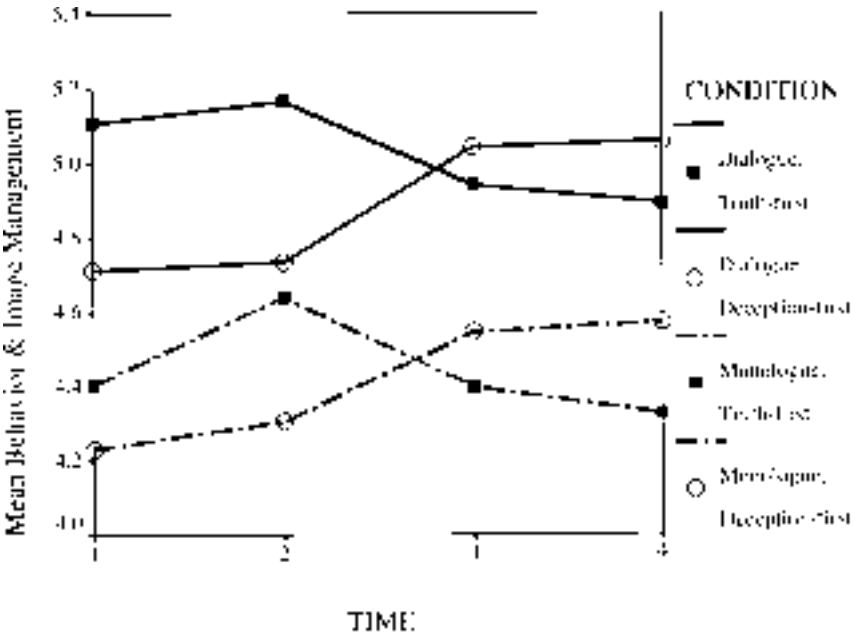

Figure 4: Participation and Deception Order Effects on Behavior and Image Management, by Time (Coder Ratings)

agement higher at both time 2 (M= 5.20) and time 3 (M= 5.18) than all other groups. Comparatively, monologuing friends thought their performance declined over time (time 2 M = 4.65, time 3 M = 4.40), as did dialoguing strangers (time 2 M = 4.94, time 3 M = 4.56), whereas monologuing strangers reported little change (time 2 M = 4.60, time 3 M = 4.70). So, H3c received at best modest support from senders' ratings: The proposed benefits of dialogue pertained to friends' but not strangers' perceptions of their own performances and applied to truth as well as deception.

Receivers' ratings of senders' behavior and image management produced a significant participation by relationship by time interaction, $F(1, 58) = 5.06$, $p = .029$, partial $\eta^2 = .09$; and a relationship by time interaction, $F(1, 58) = 4.01$, $p = .050$, partial $\eta^2 = .07$. In this case, the deception manipulation had no impact (contrary to H3b) and relationship moderated the impact of participation (H3a). Again, dialoguing friends were seen as maintaining the best performance across time, whereas monologuing friends were seen as performing less well over time. Stranger performances showed little variance across the two time periods. As with senders' reports, then, receiver reports indicated that the predicted benefits over time under dialogue (H3c) were applicable to

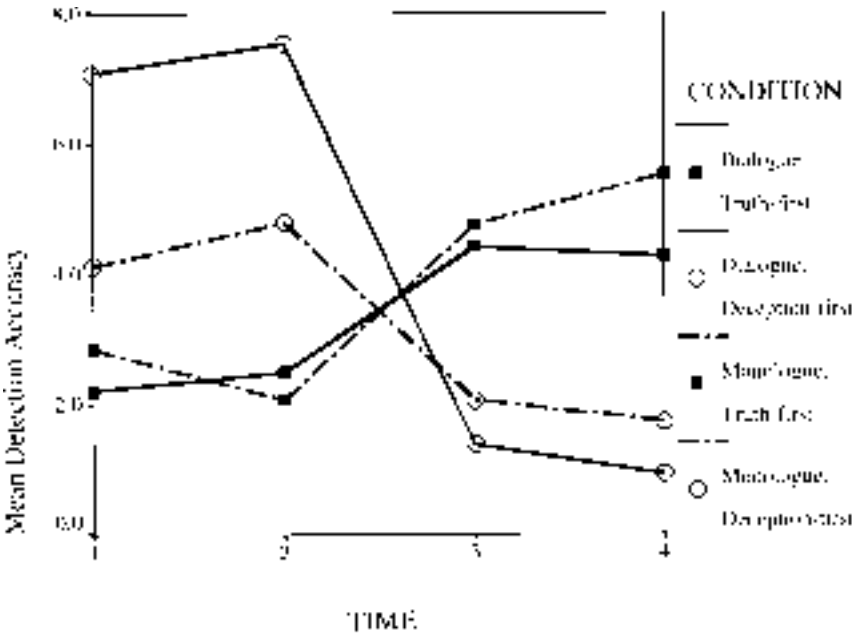

Figure 5: Participation and Deception Order Effects on Detection Accuracy, by Time (Coder Ratings)

friends only and regardless of whether they deceived or not.

For purposes of parallelism, coder ratings of senders' nonverbal involvement, dominance, and pleasantness were averaged to form a composite measure of behavior and image management. A reduced model produced a significant deception order by time interaction (employing Huynh-Feldt-corrected degrees of freedom due to violation of compound symmetry assumptions), $F(2.57, 154.56) = 11.02$, $p < .001$, partial $\eta^2 = .15$, and a main effect for participation, $F(1, 60) = 10.66$, $p = .002$, parital $\eta^2 = .15$. Consistent with H3a and H3b, senders showed greater involvement, dominance, and pleasantness in dialogue than in monologue and when telling the truth than when deceiving (see Table 2 for means for the separate coded measures). Consistent with H3c, dialoguing senders who began with deception achieved the highest ratings among any of the four conditions when they shifted to deception in times 3 and 4. Dialoguing senders who began with deception also sustained nearly the same level of involvement, dominance, and pleasantness when they shifted to truth in times 3 and 4, and both dialoguing groups maintained a substantial advantage in managing their behavior and image relative to their counterparts in monologue (see Figure 5). Thus, these results support all parts

of Hypothesis 3.[7]

Hypothesis 4: Accuracy

The fourth hypothesis predicted that receivers achieve less accuracy when judging deception (a) under dialogue than monologue and (b) that their deception detection ability worsens over time under dialogue. The accuracy score represents the absolute discrepancy between receivers' ratings of the truthfulness of senders' answers and senders' own reports of their truthfulness. Therefore, greater accuracy is represented by lower scores. The analysis produced a near-significant participation by deception order interaction, $F(1, 51) = 3.27$, $p = .077$, parital $\eta^2 = .06$, and two significant interactions employing Huynh-Feldt-corrected degrees of freedom for participation by time, $F(2.41, 123.06) = 2.31$, $p = .093$, partial $\eta^2 = .04$; and deception order by time, $F(2.41, 123.06) = 21.85$, $p < .001$, partial $\eta^2 = .30$. The combined interactions were consistent with H4a: Detection accuracy was lowest initially when judging deception under dialogue. When senders began with truth, receivers' accuracy was highest during the first two topics (time 1 $M = 2.46$, time 2 $M = 2.30$) and decreased for the latter two topics (time 3 $M = 4.59$, time 4 $M = 4.89$); when senders began with deception, receivers' accuracy was lowest during the first two topics (time 1 $M = 5.50$, time 2 $M = 5.97$) and improved for the latter two topics (time 3 $M = 1.72$, time 4 $M = 1.36$). Over time, both deceptive dialogue and deceptive monologue yielded less accuracy than truthful responses (see Figure 5), which implies that dialogue failed to confer a unique benefit over time (H4b). However, because accuracy scores are computed as the discrepancy between sender and receiver truth estimates, we examined the sender reports to see if these effects might be partly influenced by differences in deceitfulness. Results revealed that differences between deceptive and truthful responses were smaller for those engaged in dialogue ($M = 6.05$) than those engaged in monologue ($M = 7.65$). Although a t-test fell short of conventional significance levels ($p = .12$, two-tailed), the magnitude of the discrepancy between truthtelling and deceit for the two conditions could account for the negligible difference in receiver accuracy over time. Still, the results are equivocal as to whether dialogue achieved a marked benefit over time. The general reduction in accuracy does suggest that senders were able to improve their performances over time (a finding evident in prior interactive deception studies).

DISCUSSION

According to the interactivity principle, greater participation by senders should systematically alter communication processes and outcomes. When the goal is to deceive, participation should confer a net advantage

on senders over receivers. Even though conducting a dialogue might be more demanding than conducting a monologue because of the multiple goals that must be juggled, participation is posited to confer a net advantage on senders by engendering mutuality between sender and receiver and enabling greater message control. Perceptually, mutuality should be instantiated as feelings of connectedness, rapport, similarity, and trust that promote positivity biases and promulgate an aura of credibility. Behaviorally, mutuality should be instantiated as a more coordinated, smooth interaction that facilitates sender performance. Too, the contingent nature of dialogue may yield the feedback needed to make timely message repairs. Thus, dialoguing senders should craft messages characterized by better information, speech, behavior, and image management relative to monologuing senders, resulting in less accuracy by receivers in judging deceit perpetrated by dialoguing senders.

The current results support both this conclusion and the reasoning behind it. Consistent with the interactivity principle, participation generated greater perceptual mutuality among both friends and strangers (at least initially) and greater behavioral mutuality among friends. Participation also enabled greater message control. Despite deception generally producing less completeness, clarity, directness, and relevance and more impaired speech, engaging in dialogue nullified the detrimental effects on information and speech management. The same was true of behavior and image management. Despite deception producing less involvement, dominance, and pleasantness than truth, dialogue elicited a nonverbal demeanor more in line with normal, truthful communication. The end result? As predicted, receivers were less accurate on average at detecting deception under dialogue than under monologue, especially during the first half of the discussions and when senders began with deception (rather than truth).

These combined findings argue in favor of deceivers opting to choose a communication format that maximizes participation between sender and receiver when their objective is successful deception. To use a practical example, an employee might interject a deceptive message into a two-way conversation with her supervisor in hopes that the demands of conversational participation will prevent her supervisor from fully processing and scrutinizing the message. Were she to deliver the message in a monologic format (e.g., while reporting on a list of items), it might be more subject to scrutiny inasmuch as the employer would be relatively free from conversational obligations, whereas the employee would lose the benefits of mutuality and message control.

An exception to this conclusion might be argued as regards interaction over a length of time. The accuracy results seem to offer hints of

receivers improving their accuracy over time and under dialogue when senders begin by being truthful and then shift to deception. However, in this case, receivers were actually the beneficiaries of senders themselves being somewhat less deceptive in their deceptive answers than were their counterparts in monologue. In other words, dialogue may have elicited more truthful details from senders when they were giving their deceptive answers, or senders may have intentionally peppered those answers with more truthful elements to increase believability. In either case, the higher accuracy scores are partially an artifact of senders not being as extreme in their deceptions under dialogue rather than receivers becoming more astute interpreters of the truth. A cleaner test of whether dialogue yields greater advantages over time than monologue would require controlling sender deceit (such as through use of confederates) and perhaps examining a lengthier interaction to determine if receivers gained sufficient familiarity and sensitivity to deception cues to offset the dynamic adjustments in performance by senders.

Of note is the fact that most of our measures tapped into both partners' perceptions (i.e., senders' self-ratings and receivers' ratings of senders), and, in the case of Hypothesis 3, additionally reflected observers' perceptions in the form of coded nonverbal behaviors. Results demonstrated similar patterns across the multiple forms of strategic behaviors we addressed and among the various perspectives we tapped. That is, there was congruence among sender, receiver, and coder reports in the benefits of interactivity for sender success. In particular, senders were able to capitalize on participation to maintain high levels of performance when shifting from truth to deception or vice versa, presumably because dialogue fostered more mutuality and message control than monologue. Senders were afforded the benefits of interaction routines to "smooth out" their own performance and to adapt to the partner's verbal and nonverbal feedback.

Separate from the benefits conferred on deceivers, the main effects that emerged for participation, irrespective of whether senders were telling the truth or deceiving, imply that interactivity in the form of participation may accord more general benefits in terms of creating greater rapport, perceived similarity, and trust. The mere fact of two people engaging one another in dialogue may evoke a sense of common ground and relational oneness that is attenuated or severed once interaction moves into a unidirectional or monologic form, something that is an inevitability once individuals shift to an observer role or interaction becomes asynchronous.

A marked finding in the current results for which we did not advance specific hypotheses was the impact of relationship on results. Patterns

frequently differed for friends versus strangers. For example, acquainted partners felt more rapport, similarity, and believability when engaged in dialogue than monologue but, unlike strangers, did not manifest differences in behavioral mutuality. Yet it was friends who experienced especially deleterious effects on their ability to regulate speech patterns and message content under monologue. It is possible that friends felt especially "exposed" and vulnerable when forced to talk at length without benefit of diagnostic feedback and well-established interaction routines upon which to draw. Strangers, by comparison, would have been less equipped to take full advantage of partner feedback or familiar interaction routines, not having any prior experience with their partner's interaction style. With more time, both strangers and friends might have taken advantage of the sense of relational connectedness created through dialogue and suffered from the greater self-consciousness, restricted feedback, and limited opportunity to make fine-tuned repairs under monologue. Thus, we might project less pronounced relationship differences over extended interactions and multiple episodes. However, it should be noted that even within this relatively brief interaction, relational familiarity proved to be neither help nor hindrance in detecting deceit. Behavioral or perceptual differences between friends and strangers, then, did not translate into differential detection accuracy.

It should be remembered that the difference between dialogue and monologue is only one way to conceptualize degrees of interactivity. The same hypothesized effect of participation can be tested by comparing perceptions of conversational participants to those of nonparticipant, naive observers (see Ramirez, Dunbar, & Burgoon, 2000, for such a comparison from the experiment reported here). Moreover, a full test of the interactivity principle requires extending the research to examine other affordances such as media richness, synchronicity, contingency, mediation, and identification for their impact on interaction processes and capacity to detect deceit. To the extent that these various affordances of interactivity yield similar effects, we will have isolated intrinsic properties of communication that systematically account for observed differences between face-to-face and alternative means of communicating.

CONCLUSION

Considered collectively, the current results add considerably to our understanding of deceptive interchanges by illustrating how varying levels of participation and engagement in the interaction affect detection

accuracy and deceptive success. A fundamental premise of interpersonal deception theory is that the degree of interactivity present in an interaction will influence how deceivers approach their task and how easily receivers can detect deception when it is present. As the first direct test of this principle applied to the sender half of the dyad, the current results indicate that high interactivity, in the form of two-way conversation, enables senders to engage in a more strategic, adaptive, and nonimpaired performance and reduces receivers' ability to detect deception. How persistent this gain is over an extended period of time remains to be seen. But the results imply that if accuracy has been poor under noninteractive conditions, it may worsen under interactive ones.

NOTES

1. Interactivity should be understood as something that may vary both within and between communication contexts or formats, depending on the extent to which its associated properties are present in full force. So, for example, within the format of televised broadcasts, most presentations would be viewed as largely noninteractive because there is little dependency between a subsequent message and its prior, but the call-in talk show would constitute an exception where greater interactivity is achieved (Walther, 1996). Interactivity can also be understood according to how social actors experience it. See Burgoon et al. (1999) for a discussion of such "process-related" experiences as *mutuality, involvement,* and *individuation* that are directly linked to the structural affordances of the communication format and may represent the explanatory mechanisms accounting for the effects of interactivity on interaction outcomes.

2. The 26 items, preceded by "I" or "my partner," included "gave responses that were as informationally complete as possible," "gave vague and unclear responses" (reverse-scored), "failed to provide specific details" (reverse-scored), "said things that could be interpreted in more than one way" (reverse-scored), "would not commit to a definite answer" (reverse-scored), "gave superficial rather than in-depth responses" (reverse-scored), "used language that was very precise and concrete," "was skillful in managing the conversation," "had a hesitant and halting speaking style" (reverse-scored), "looked nervous and flustered" (reverse-scored), "was not very smooth verbally" (reverse-scored), and "was restless and uncomposed" (reverse-scored).

3. The 16 items included "gazed a lot at the other person," "communicated warmth rather than coldness," "was very expressive facially and gesturally," "faced the [partner] directly throughout the discussion," "had an air of confidence," " had a lively communication style," "was energetic and dynamic while talking," "showed a lot of poise," and "used a lot of laughter and humor."

4. The 5 items were: "gave information that wasn't true" (reverse-scored), "made statements that were exaggerated" (reverse-scored), "made it clear that the feelings, beliefs, or attitudes [I/he/she] was expressing were [my/his/her] own," "gave believable responses," and "gave false responses to the discussion topic" (reverse-scored).

5. Adaptation was measured with "mirrored/did not mirror partner's posture" and "matched/did not match partner's gestures." For the remaining measures, the adjective

pairs (each preceded by "very") were pleasant/unpleasant, friendly/unfriendly, and warm/cold for pleasantness; involved/uninvolved, engaged/detached, expressive/inexpressive, attentive/inattentive, appropriate/inappropriate relaxation level, immediate/nonimmediate, and fluent/disfluent for involvement; dominant/submissive, dynamic/passive, talkative/silent, controlling/noncontrolling of conversation, decisive/hesitant, poised/awkward, and confident/unconfident for dominance.

6. An exception was Hypothesis 1, in which the deception factor was omitted because it was not relevant. Also, where doing so produced a smaller error term, nonsignificant interactions were pooled in the error term, and reduced rather than saturated models were tested.

7. As an additional measure of image management, Persons A rated the positivity of Persons B's feedback, supportiveness, and communication effectiveness (time 1 $\alpha = .72$, time 2 $\alpha = .80$). The scores produced within-subjects effects for time x truth/deception order, $F(1, 57) = 7.84$, $p = .007$, partial $\eta^2 = .12$; time x truth/deception order x relationship, $F(1, 57) = 2.94$, $p = .09$, partial $\eta^2 = .05$; and time x participation x relationship, $F(1, 57) = 5.30$, $p = .025$, partial $\eta^2 = .09$. The pattern of means was very similar to that for Persons A's self-rated perceptions of making a good impression.

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