INTERPERSONAL DECEPTION: XII. INFORMATION MANAGEMENT DIMENSIONS UNDERLYING DECEPTIVE AND TRUTHFUL MESSAGES

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Interpersonal Deception Theory (IDT) proposes that among the strategies deceivers use to create credible messages is information management. Delineated here are five fundamental dimensions along which verbal content and style can be altered to manage information: (1) completeness (informational and conversational), (2) veridicality (actual and apparent), (3) directness/relevance (semantic and syntactic/pragmatic), (4) clarity (semantic and syntactic/pragmatic), and (5) personalization. Two studies employing encoding and decoding methodologies are presented that assess the degree to which (1) senders can vary discourse on demand along these dimensions and (2) receivers (observers) can recognize such variations. Participants in the first experiment engaged in separate truthful and deceptive interviews; during the latter, they enacted one of three different forms of deception (falsification, equivocation, concealment) representing different combinations of the five dimensions. Participants in the second experiment gave truthful and deceptive answers during a single interview and again enacted different deception forms. Participants and observers then rated interviewee responses on the five dimensions. Results from both studies confirmed that deceptive communication is less complete, honest (veridical), direct/relevant, clear, and personalized (attributable to the speaker) than truthful communication. Falsifications were the least truthful but seen as most complete. Equivocations were the least clear and direct/relevant and seen as such. They were also seen as the most personalized. Findings are discussed in light of IDT, McCornack's Information Manipulation Theory, and Jacobs, Dawson, and Brashers' replication of McCornack's work.

Communicators deceive others by systematically altering the information in their messages, yet little is known about how senders accomplish this or whether receivers recognize such changes. Rather than focusing on verbal behaviors or on controlled (strategic) message activity, most deception research has centered on nonverbal behaviors associated with uncontrollable psychological processes, such as arousal, negative affect, and guilt (e.g., Ekman & Friesen, 1969; Zuckerman, DePaulo, & Rosenthal, 1981; Zuckerman & Driver, 1985). This problem has been compounded by an overemphasis on one form–lying.

Recognizing these shortcomings, several communication scholars (e.g., Bavelas, 1989; Metts, 1989; McCornack, 1988) have called for wider attention to the systematic alteration of message content and for a reorientation away from a categorical view of deception and toward a multidimensional conceptualization. The current investigation answers this call by examining the nature of the dimensions along which messages can be varied and judged from the perspective of Interper-

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sonal Deception Theory (Buller & Burgoon, in press; Burgoon & Buller, 1994). We first articulate our conceptual model of information management dimensions, which is derived from a merger of IDT principles with various deception typologies and prior models of conversational behavior. We then examine these dimensions empirically from both an encoding and decoding perspective. If the proposed dimensions capture important underlying features of messages, they should successfully distinguish truthful discourse from various deceptive discourse forms. Senders should exploit these dimensions when attempting to craft credible messages, and receivers should utilize them when interpreting messages and judging their credibility. Accordingly, we present results of two studies testing the ability of the proposed information dimensions to discriminate truthful from deceptive messages and varying deceptive forms from one another. Although this investigation originates in the deception arena, we envision our proposed information management dimensions as underlying all discourse.

DIMENSIONS CHARACTERIZING DECEPTIVE STRATEGIES

Dimensions Underlying Typologies of Deceptive Messages

Deception is commonly defined as a message knowingly transmitted by a sender to foster a false belief or conclusion by the receiver. Although it has often been equated with the falsification of information (Hopper & Bell, 1984; Kraut, 1980; Miller, Mongeau, & Sleight, 1986), several scholars (e.g., Bradac, 1983; Hopper & Bell, 1984; Metts & Chronis, 1986; Metts & Hippensteele, 1988; Miller et al., 1986; Turner, Edgley, & Olmstead, 1975) have noted that lying is only one of many deceptive forms of discourse. Of the numerous typologies available, two are illustrative.

Turner et al. (1975), using verbatim dyadic conversational records, identified the following categories: distortions, in the form of *lies* (e.g., contradictions) and *exaggerations* (more or modified information via superlatives), concealments, in the form of *secrets* (absent information) and *half-truths* (less or modified information); and *diversionary responses* (use of topic changes and irrelevant information, or what Bavelas [1983] calls equivocation). Among 870 statements analyzed, 35% reflected distortion tactics, 32% entailed concealment, and 32% were diversionary responses. Hopper and Bell (1984) identified six communicative forms by analyzing commonalities among English language terms used to label acts of deception. They distinguished *lies* (dishonesty, untruthfulness), *masks* (concealment, evasion), *unlies* (false implications, misleadings), *crimes, fictions,* and *playings* according to their evaluation, detectability, and premeditation.

While such typologies increase awareness of the options a communicator has when consciously altering information to deceive, their categories are rarely complete or mutually exclusive, and they fail to capture the subtleties and contextual complexity associated with managing information. In particular, typologies do not reflect *degrees* of message alteration. Close inspection of the above typologies suggests several key features that separate one deceptive form from another. Among these are the amount of information made available, the accuracy or fidelity of that information, the degree to which the information presented is unambiguous, and the degree to which it is pertinent to the topic at hand. This empirically driven approach to uncovering dimensions, while serviceable, however, overlooks important facets of information management.

A Dimensional Approach to Deceptive Messages

An alternative to typological analyses is to approach the issue theoretically by considering structural and functional conversational requirements that may give rise to various forms of discourse and that, in turn, guide receivers' processing of discourse. Three lines of relevant theorizing that developed more or less concurrently–our own IDT, McCornack's (1992) Information Manipulation Theory (IMT), and Bavelas and colleagues' (Bavelas, 1989; Bavelas, Black, Chovil, & Mullett, 1990) analysis of equivocation–while advancing different explanatory calculi, have identified similar dimensions that in our view represent a propitious degree of convergent validation.

McCornack's (1992) IMT is essentially Grice's (1975) theory of conversational implicature applied to deception. The key premise of Grice's theory is that interactants hold expectations about the discourse of others and, operating on a presumption of cooperation and good-faith behavior among participants, they assume that others' contributions will be sufficiently complete, truthful, clear, and relevant to satisfy the current conversational demands. Although initially proposing only two dimensions to deceptive discourse (see McCornack, 1988), McCornack (1992) subsequently expanded his framework to match Grice's four conversational maxims of quantity, quality, manner, and relation. He theorized that deceptive discourse represents a covert manipulation of information that violates one or more of these four maxims.

Bavelas's approach grew out of her early work as part of the Palo Alto group studying the pragmatics of communication and messages that "don't make sense." Of interest were parts of an utterance that are incongruent with other parts, producing *disqualification,* now called *equivocation.* For Bavelas et al. (1990), equivocation arises when one is faced with an avoid-avoid conflict, i.e., one in which neither truth nor falsification is desirable. Under such circumstances, people may opt to be intentionally vague, indirect, or evasive. Bavelas et al.'s analysis of equivocation in natural language use builds on several rule-based speech act theories and analyses (Grice included) and in many ways is compatible with IMT. However, it introduces some further useful distinctions. It differs, among other ways, from IMT and our own analysis, in that Bavelas does not consider equivocation to be deception but merely another way of manipulating discourse.

Our own approach to informational dimensions originated with our desire to flesh out the nature of strategic (as opposed to nonstrategic) activity during deception. As a counterpoint to the largely "nonstrategic" approach that had been taken to deception displays, a key principle of IDT is that deceptive performances include the deliberate (strategic) management of information, behavior, and image. Information management is most closely linked to verbal behavior. Our analysis of possible strategies and tactics for managing information, begun in the 1980s (see, e.g., Buller & Aune, 1987; Burgoon, 1989), led us to postulate several broad classes of strategic maneuvers that might be used apart from the obvious one of falsifying the information (Buller & Burgoon, 1991, 1994; Buller, Burgoon, Buslig, & Roiger, in press). Among these are *reticence, nonimmediacy,* and *withdrawal,* which together limit the amount of information made available by abbreviating interactions and inhibiting information-seeking; *uncertainty* and *vagueness,* which lessen the directness and clarity of messages as well as their apparent completeness; and *disassociation,* which distances senders from their utterance and thus severs their personal connection to,

or responsibility for, it. Because different strategies can lead to the same outcome (e.g., brevity), operationally, it seemed most efficient to array actual verbal behavior along continua, such as highly informative to highly uninformative or highly evasive to highly direct. Thus, for purposes of assessing information management in the most parsimonious fashion, we translated our strategic subclasses into five *nonexhaustive* and *nonindependent* but fundamental dimensions: (1) completeness, (2) directness/relevance, (3) clarity, (4) personalization, and (5) veridicality.

Veridicality. Any analysis of information dimensions must include this dimension, as it is the primary one along which deception has been conceptualized. Variously referred to as truthfulness, honesty, veracity, or message fidelity, this dimension is captured in Grice's (1975) maxim of *quality,* which states that speakers are expected to convey the truth as they see it. A successful deceptive communication must give the appearance of "truth." Thus, we need to distinguish actual from apparent veridicality. *Actual veridicality* refers to the objective truth value of the message, as reported by senders, and *apparent veridicality* refers to the believability of verbal responses relative to the social and relational context, as judged by receivers. McCornack's IMT does not distinguish among these because it ostensibly is a message production model and, thus, takes a sender rather than a receiver perspective. But for purposes of empirically testing whether receivers recognize information manipulation, the distinction may be critical. A deceiver's success lies not in the actual truthfulness of a message but in its plausibility. Hence, senders and receivers may apply different criteria in judging the adequacy of the same utterance.

Completeness. On the surface, the concept of completeness appears to be isomorphic with Grice's (1975) maxim of *quantity,* which states that speakers should provide as much information as is required by the conversational circumstance. We believe it is useful to distinguish two types of completeness that parallel the sender and receiver perspectives introduced for veridicality. *Informational completeness* refers to the delivery of all information germane to the given topic or question. *Conversational completeness* refers to the apparent sufficiency of an utterance in satisfying current conversational demands. The distinction might be seen as one between semantic completeness–the degree to which all pertinent information is revealed by the sender–and syntactic or pragmatic completeness–the degree to which a message is a well-formed utterance that meets the perceived conversational requirements for a response and thus satisfies the cooperative principle. Informational completeness can only be truly reported by the sender and reflects "reality" as the sender knows it, whereas conversational completeness is what receivers judge.

Directness/relevance. Directness, as a term, derives from Bavelas et al.'s (1990) and others' analysis of indirect speech acts. Relevance is also given as one of four subcomponents defining equivocal messages and refers to the degree to which an utterance is directly related to preceding ones. Relevance is the terminology preferred by McCornack and corresponds to Grice's maxim of *relation,* which states that speakers should produce a message that is relevant to the context and circumstances. Many of the tactics documented by Hopper and Bell (1984) and Turner et al. (1975) fit this dimension. As in the case of completeness, it may be productive to distinguish two types of directness or relevance, not for purposes of actually expanding the number of dimensions but for purposes of enumerating the array of specific linguistic devices available to create indirectness. Thus, a message may be

pragmatically or syntactically direct–appearing to be a grammatically coherent sequel to the previous utterance–and/or *semantically direct and relevant*–providing explicit content that is related to the previous utterance or the topic at hand. Some forms, such as hedges, may satisfy syntactic directness but not semantic relevance in that the utterance form is an appropriate sequel to the preceding one but the essential content is missing. Other forms like diversionary responses may be semantically relevant, in that the topic is the same but syntactically indirect, in that the utterance is not logically connected to the preceding one. Utterances that leave crucial information unstated may be semantically indirect but relevant, whereas nonsequiturs and topic switches may be both syntactically indirect and semantically irrelevant. Other indirect speech acts whose illocutionary force is different from their literal meaning might be similarly analyzed.

Clarity. McCornack's dimension of clarity originates with Grice's maxim of *manner;* that is, speakers should try to be clear, comprehensible, and concise. Bavelas et al. (1990) regard clarity as one of the subcomponents of equivocation and note Eisenberg's (1984) work on strategic ambiguity as supportive of the intentional nature of this discourse maneuver. Our own conceptualization of clarity was partly inspired by analyses of argumentative fallacies. Nolt and Rohatyn (1988), for example, identify a class of semantic fallacies that "occur when the language employed to express an argument has multiple meanings or is excessively vague in ways that interfere with assessment of the argument's cogency" (p. 175). Forms they include are *ambiguity,* or *equivocation,* in which words or phrases have multiple meanings; *amphiboly,* in which ambiguity results at the level of sentence structure and is due to the way words are assembled; *vagueness,* in which meaning is indistinct; *doublethink,* in which every sentence contradicts the meaning of its predecessor, and *accent,* in which improper emphasis on parts of an utterance mislead the receiver.

Although these various forms of fallacy are all included under a semantic umbrella, it should be evident from the definitions that they intermix syntactic with semantic properties. Thus, embedded within this dimension are linguistic features related to the comprehensibility of what is said (*semantic clarity*) and how it is said (*syntactic clarity*). The former obfuscates by creating indeterminate, vague, or multiple meaning; the latter obfuscates by producing grammatically indecipherable utterances. When semantically ambiguous, deceivers may use abstract, nonspecific language that is open to multiple interpretations, technical jargon, sophisticated vocabularies that make their opinions inscrutable, or verbalisms that allow them to straddle both sides of an issue. When syntactically ambiguous, deceivers may use such devices as passive voice, indefinite referents, and verb forms that make the grammatical structure unclear.

Bavelas et al. (1990) confirmed that vague, ambiguous, and equivocal messages are used in avoid-avoid conflict situations. Equivocation functions to escape committing to one position or another. Other empirical evidence has also shown that deceivers often give unclear responses through the increased use of modifiers and qualifiers, more leveling terms, and less specific references (Buller et al., 1994; Buller, Burgoon, Buslig, & Roiger, in press; Cody, Marston, & Foster, 1984; DePaulo, Stone & Lassiter, 1985; Dulaney, 1982; Knapp, Hart, & Dennis, 1974; Wiener & Mehrabian, 1968; Zuckerman, DePaulo, & Rosenthal, 1986).

Personalization. A final dimension meriting separate status as an information management dimension is what elsewhere has been labeled as disassociation or

verbal nonimmediacy and what, for greater lucidity, we refer to as personalization. Personalization captures the extent to which the information presented conveys the speaker's own thoughts, opinions, and feelings. While not explicitly associated with a Gricean maxim, scholars have long noted that communicators can manage the degree of personalization or "ownership" of their utterances by employing specific verbal and nonverbal strategies that disassociate them from the information presented (Bavelas et al., 1990; Buller & Burgoon, 1991; Knapp et al., 1974).

The construct perhaps most closely linked to this message disassociation or personalization function and the one that has most guided our conceptualization is verbal nonimmediacy (Wiener & Mehrabian, 1968). Nonimmediacy refers to the implied relationship between a communicator and the act, object, person, or event being discussed, as evidenced through verbal qualities associated with space, time, intensity, and responsibility. Nonimmediate language attenuates or severs the relationship between speaker and message by shifting descriptions of events from the "here and now" to more distal times and places, by adding modifiers, by substituting generalizations for concrete details, or by obscuring the agent of the action, opinion, or belief (e.g., "People say"). The latter forms are most relevant to personalization. A number of studies have documented that communicators can and do alter verbal immediacy (e.g., Kuiken, 1981; Mehrabian, 1971; Wagner & Pease, 1977).

Bavelas et al. (1990) regard disassociation as a subcomponent of equivocation. While it may function similarly to other equivocal forms, we believe it represents a distinctive form in that ambiguity comes not from the utterance itself but from the relationship (or lack thereof) between sender and utterance. Message content itself can be quite clear–"You are required to pay the fine now"–without the sender's identity being evident. Though Grice may not have recognized personalization as one of the basic maxims of conversation, it seems to be an inherent presupposition of all discourse that, unless otherwise stated, utterances are presumed to belong to those who utter them. Violating this basic assumption can mislead receivers.

HYPOTHESES

One approach to determining how well these dimensions differentiate truthful from deceptive messages is to create exemplars that represent varying degrees of the information management attributes. The two experiments that follow compare truth with three distinctive deception forms chosen from among the many possibilities to create contrasting combinations of the information dimension qualities and to maximize the variance in the kinds of information manipulation that might be evidenced. During interviews, senders were instructed to answer some questions truthfully and to enact one of three deception types–falsification, concealment, or equivocation–while answering others. From an encoding perspective, if the proposed dimensions do differentiate among forms of discourse, messages intended to conceal, to equivocate, or to falsify should each have unique profiles defined by the five dimensions. Specifically, informational incompleteness should be the most prominent criterial attribute of concealment. Lack of actual veridicality should be the key characteristic underlying falsification. In other respects, falsification should appear to be clear, complete, direct/relevant, and personalized. Finally, ambiguity, indirectness or irrelevance, and depersonalization should be the underlying features

of equivocation. The first hypothesis related to whether senders' intended messages in fact reflect differences along the five information management dimensions:

H1: Senders modify deceptive messages along the dimensions of completeness, directness/relevance, clarity, personalization, and actual veridicality, such that
(a) completeness distinguishes concealment from falsification and equivocation, with concealment being the least complete;
(b) actual veridicality distinguishes falsification from equivocation and concealment, with falsification being the least truthful; and
(c) directness/relevance, clarity, and personalization distinguish equivocation from falsification and concealment, with equivocation being the least direct/relevant, clear, and personalized.

Although most research to date has ignored the receiver in deceptive interactions, the importance of recognizing the receiver's role in interactions is indisputable. The deceiver's main goal in a deceptive message is to influence the receiver's perception of what is true. Moreover, if the proposed dimensions are truly fundamental to information management and represent inherent expectations about conversational discourse, receivers should be attuned to them and be able recognize when various deceptions depart from the stereotypical qualities of truthful discourse.

Whether receivers are able to make accurate discriminations is in dispute (e.g., Levine & McCornack, 1989; McCornack & Parks, 1986). However, IDT posits, and experimental tests have confirmed, that receivers are able under many circumstances to detect deception when it is present (e.g., Burgoon, Buller, Ebesu, & Rockwell, 1994; DePaulo & Kirkendol, 1989). The clear implication is that receivers utilize available information to distinguish truthful from nontruthful discourse. To the extent that their judgments are influenced by message content and style, we should expect truthful discourse, on average, to be perceived as more complete, direct and relevant, clear, personalized, and veridical than deceptive messages. In support of this claim, Stiff and Miller (1986) reported that receivers relied heavily on judgments of plausibility, consistency, concreteness, clarity, and completeness of their partner's answers when assessing truthfulness. McCornack, Levine, Solowczur, Torres, and Campbell's (1992), and Jacobs et al.'s (this volume) studies revealed that messages were perceived as truthful to the extent that they included veridical, relevant, and clear information. Other research has suggested that receivers perceive as deceptive senders who become indirect in their responses (e.g., Kraut, 1978; Kraut & Poe, 1980), expand on irrelevant information (e.g., Zuckerman, DePaulo, & Rosenthal, 1981), or disassociate themselves from the information (Knapp et al., 1974). Hence,

H2: Receivers perceive truthful messages as more (a) conversationally complete, (b) veridical, (c) direct/relevant, (d) clear, and (e) personalized than deceptive messages.

If receivers are capable of recognizing deception from truth, it follows that they should also be able to distinguish among substantially different forms of deception. Although all deception types are hypothesized to be less informationally complete than truth, concealment by its very nature should contain the least actual information. Accordingly, concealments should appear less conversationally complete than falsifications and equivocations. Similarly, equivocations, because they are hypothesized to contain less direct, clear, and personalized language, should appear to observers as more indirect, vague, and nonpersonalized than falsifications and concealments. Finally, to the extent that falsifications are truly characterized by

greater apparent completeness, clarity, directness, relevance, and personalization than other forms, falsifications should also appear to receivers as the most veridical (even though they may actually be the least truthful). These considerations led to the following hypothesis:

H3: Receivers recognize changes in the informational content of deceptive messages along the dimensions of completeness, directness/relevance, clarity, personalization, and apparent veridicality, such that
(a) conversational completeness is perceived to be more characteristic of falsifications than either equivocations or concealments;
(b) apparent veridicality is attributed more to falsifications than to equivocations and concealments; and
(c) directness/relevance, clarity, and personalization are perceived to be less characteristic of equivocations than either falsifications or concealments.

To explore how these various dimensions relate to one another in separating truth from deception, we also posed the following research question:

RQ1: How do the information management dimensions function jointly to discriminate among truthful and deceptive forms of discourse?

The hypotheses were tested by means of two experiments. The first, a pilot study, was designed to test senders' proficiency in encoding different deception types, to evaluate procedures, and to verify the reliability of the information management measures. It consisted of two interviews conducted by separate interviewers. During the first, interviewees responded truthfully. During the second, interviewees responded to the same questions by falsifying, equivocating, concealing, or deceiving in their own manner. The second experiment, which was intended to explore several deception-related issues, consisted of a single interview in which both truthful and deceptive answers were given to the same interviewer. In both experiments, information management was assessed via self-reports and observer ratings. The former assessed how interactants encode truth and deception (H1); the latter assessed how information management is decoded (H2 and H3).

STUDY ONE

Participants (Senders) and Observers (Receivers)

In exchange for communication and interview training, 40 adults (21 men and 19 women) from a metropolitan southwestern community volunteered to participate in an experiment related to interviewing skills. Participants came from the County Courthouse Jury Assembly Room, local Toastmaster's clubs (public speaking groups), and the city Job Core. All participants served as interviewees.

In interaction studies, receivers may be co-participants or observers, both of whom offer viable perspectives on interaction. We opted to employ observers–six undergraduate students–who could rate sender messages on a question-by-question basis from the videotaped interactions rather than participants, who would only be able to supply post hoc and global recollections. Relative to participant receivers, observers represent lesser interdependence with senders (Surra & Ridley, 1991). They offer a distinct perspective that is relatively free from the perceptual biases, cognitive load, spatial and temporal immediacy, relational engagement, and conversational demands associated with actual participation (Burgoon, 1994). As such, they afford a clear contrast to sender perceptions and potentially greater ability to make

fine discriminations than participant receivers occupied with their own conversational responsibilities.

Procedures and Instrumentation

Upon arrival at the research site (two adjoining apartment-like suites), participants were informed that the study was intended to address how accurately people portray themselves during interviews. After giving their consent to be interviewed in two brief videotaped interactions, participants were asked to be completely truthful during the first interview. This acclimated them to the experimental setting and provided a sample of truthful answers for comparison to deceptive answers to the same questions in the second interview.

Prior to the second interview, participants were told that it is not always in one's best interest to tell the whole truth and that they were to practice their skill at adapting to such situations. They were then asked to answer truthfully to the first two questions but, thereafter, to give (a) "completely untrue answers" (falsification; $n = 9$), (b) "vague and ambiguous" answers (equivocation; $n = 10$), (c) answers that "withhold, omit, or avoid relevant information" (concealment; $n = 11$), or (d) answers that fall short of the truth, whether by falsifying, being equivocal, or concealing (general deception; $n = 10$). This last condition examined which deception form would be enacted in response to a nonspecific deception induction. The questions in the second interview were identical to those in the first, except for one new question designed to elicit a spontaneous answer. Participants reviewed the questions before the interview commenced.

The two interviews were conducted by pairs of interviewers–either two males or two females–to maintain the same gender combination for truthful and deceptive interviews. The interviewers were trained to control the interview by asking questions in a preset order and giving equivalent levels of feedback across interviews. Interviews lasted eight minutes or until all questions were answered, whichever occurred first.

Sender ratings of information dimensions. Because having interviewees rate their own behavior after the truthful interview might sensitize them to the information management dimensions, we opted to have them rate their communication during the deceptive interview only. This meant their ratings could only be used to test differences among deception types and not the truth/deception difference.

Following the second interview, participants indicated how they managed the information in their answers to three questions selected to represent a mix of factual, opinion, planned and spontaneous deceptive answers. Ratings were made on nine 7-point scales (no information/a lot of information, incomplete/complete, sufficient/insufficient, unclear/clear, vague/specific, false/true, implausible/plausible, direct/indirect, relevant/irrelevant). The first two scales were combined to assess informational completeness (coefficient α reliability = .81), the fourth and fifth scales were combined into a clarity measure ($\alpha = .77$), and the last scales were averaged into a directness/relevance measure ($\alpha = .79$). Interviewees did not report on personalization because they would be unlikely to be aware of how often they referenced themselves.

Observer ratings of information dimensions. Three pairs of observers, all working independently, rated interviewees' answers on the same three questions earlier rated

TABLE 1

INFORMATION MANAGEMENT DIMENSIONS AND SCALE ITEMS

Informational Completeness
1. gave responses that were as informationally complete as possible.
2. gave responses that contained very little information.*
3. gave responses that contained very specific detail.
4. failed to provide specific details when answering the question.*

Conversational Completeness
1. gave responses that appeared to sufficiently answer the question.
2. provided an adequate level of depth in his/her responses.
3. gave responses that were complete enough to satisfy the conversational requirements.
4. did not answer the question as completely as most conversational partners would.*

Directness/Relevance
1. gave indirect responses to the question asked.*
2. gave answers that were irrelevant to the question asked.*
3. appeared to be hedging.*
4. would not commit to a definite answer.*
5. changed the topic instead of answering the question.*

Clarity
1. gave unclear responses to the question asked.*
2. was being evasive.*
3. gave vague responses to the question asked.*
4. used language that was very precise and concrete.

Veridicality
1. gave responses that appeared truthful.
2. gave false responses to the question asked.*
3. gave responses that seemed exaggerated.*

Personalization
1. gave responses that made it clear that the feelings, beliefs, or attitudes were his/her own.
2. avoided stating his/her own opinions.*
3. stated general opinions rather than personal ones.*
4. used language that distanced himself/herself from the opinions expressed.*

Note. The scale uses a Likert format ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Asterisked questions are reverse-coded.

by the interviewee. One pair judged conversational and informational completeness; another judged directness/relevance and clarity; and another judged apparent veridicality and personalization. The scale items appear in Table 1. Both truthful answers (interview 1) and the deceptive answers (interview 2) were rated, with interview order (truthful versus deceptive) randomized on tape. (Observers were blind to experimental conditions). Prior to making their ratings, observers received some instruction in interpreting item wordings and reviewed sample videotapes. Coefficient alpha reliabilities for the six respective dimensions ranged from .89 to .97. Consensus for observers, as measured via intraclass correlations, ranged from .41 to .64 (average $r_I = .53$).

Results

Hypothesis 1: sender ratings of deceptive messages. Hypotheses 1a through 1c tested the effects of deception type on interviewee self-report ratings during the deceptive interview. The hypotheses were analyzed through use of planned contrasts, with contrast codes varying according to hypothesized predictions. Only H1b, that falsification is less veridical than equivocation or concealment, was supported, $t(27) = 2.26$, $p < .05$, $\eta^2 = .16$ (falsification $M = 5.65$, $sd = 1.78$; equivocation $M = 3.80$, $sd = 2.14$; and concealment $M = 3.95$, $sd = 1.95$).[1]

TABLE 2

MAIN EFFECT MEANS (AND STANDARD DEVIATIONS) FOR OBSERVER RATINGS OF TRUTHFUL AND DECEPTIVE ANSWERS, STUDY ONE AND STUDY TWO

	Truthful Segment	Deceptive Segments
STUDY ONE		
Conversational Completeness	5.46 (.60)	4.47 (.90)
Directness/Relevance	5.86 (.66)	5.46 (.90)
Clarity	5.61 (.17)	5.08 (.45)
Personlization	5.38 (.57)	4.32 (.69)
Veridicality	5.74 (.44)	4.67 (.82)
STUDY TWO		
Conversational Completeness	5.49 (.84)	4.61 (.96)
Directness/Relevance	6.23 (.66)	5.53 (.82)
Clarity	5.62 (.38)	4.52 (.46)
Personalization	5.27 (.86)	4.23 (.95)
Veridicality	5.76 (.74)	5.17 (.80)

Note. The truthful and deceptive segments represent separate interviews in the first study and separate questions within the same interview in the second study.

Hypothesis 2: receiver ratings of truth versus deception. A 2 (truth/deception) × 4 (deception types) mixed model analysis, with truth/deception as a within-subjects factor and deception type as a between-subjects factor, was conducted for each dimension. The hypothesis was supported. The conversational completeness analysis (H2a) revealed that truthful messages are perceived as more conversationally complete than deceptive ones, $F(1,34) = 64.32$, $p < .001$, $\eta^2 = .67$ (see Table 2). The apparent veridicality analysis (H2b) produced an ordinal truth/deception × deception type interaction, $F(3,34) = 3.24$, $p < .01$, partial $\eta^2 = .22$, and a truth/deception main effect, $F(1,34) = 61.60$, $p < .001$, partial $\eta^2 = .65$. As shown in Table 3, the truthful interview was rated higher on veridicality than the deceptive interview across all conditions, and this difference was largest in the falsification condition. Because of multicollinearity among the three measures entailed in H2c (average $r = .45$ and a significant Bartlett's sphericity test, 18.82, $p < .001$), it was tested with a 2 × 4 MANOVA, which revealed a multivariate main effect for truth/deception, $F(3,29) = 26.32$, $p < .001$, Wilks $\Lambda = .27$. Accompanying univariate analyses indicated that all three dependent measures were implicated in the multivariate effect: directness/relevance $F(1,31) = 6.50$, $p < .05$, partial $\eta^2 = .17$; clarity $F(1,31) = 36.64$, $p < .001$, partial $\eta^2 = .54$; and personalization $F(1,31) = 65.27$, $p < .001$, partial $\eta^2 = .68$. As hypothesized, observers rated truthful interviews as more direct/relevant, clear, and personalized than deceptive interviews (see Table 2).[2]

Hypothesis 3: receiver ratings of deception types. The analyses for H3a through H3c mirrored those conducted for H1a through H1c, but with observer data. All analyses failed to support hypothesized differences among deception types.[3]

STUDY TWO

Study One showed that the proposed information management dimensions distinguished truth from deception. Truthful answers were seen by observers as more conversationally complete, direct/relevant, clear, personalized, and veridical than deceptive ones. However, except for sender ratings of veridicality, the dimensions did not successfully discriminate among deception types. To increase the

TABLE 3

MEANS AND (STANDARD DEVIATIONS) ASSOCIATED WITH THE DECEPTION/TRUTH × DECEPTION TYPE INTERACTION ON OBSERVER RATINGS OF VERIDICALITY, STUDY ONE

	Truthful Interview	Deceptive Interview
General Deception	5.78 (.25)	4.84 (.65)
Falsification	5.85 (.31)	4.13 (.93)
Equivocation	5.53 (.57)	5.02 (.88)
Concealment	5.79 (.52)	4.68 (.64)

ability to detect differences, we made several methodological modifications in Study Two: (a) a stronger deception type manipulation, (b) increased experimental control through a repeated measures design employing a single interview during which participants gave both truthful and deceptive answers to the same interviewer, (c) increased power through increased sample size, and (d) elimination of the general deception condition (which produced mostly falsified answers in the pilot study).[4]

Senders and Receivers

Senders ($N = 66$), paired with strangers ($n = 37$ dyads) or acquaintances ($n = 29$ dyads), included two samples: (a) "nonexpert" adults drawn from a metropolitan southwestern community, who were recruited to participate in an experiment on interviewing skills and (b) "experts" drawn from a military human intelligence school. Receivers were the same six observers as in Study One.

Procedures and Instrumentation

Nonexperts engaged in interviews in the same facility as in Study One. Experts were tested at a nearby military post in a facility used for interviewing and interrogation training. When participants arrived at either testing site, they were randomly assigned the interviewer or interviewee role for the upcoming interview; only data from the interviewees (senders) are relevant here.

After completing pretests, interviewees were told that it is not always in one's best interest to tell the whole truth and that they were to practice their skill at adapting to such situations. They were shown the 15 questions to be asked during the interview and told to give deceptive answers to all but the first three. Deception type was manipulated by instructing them either to give (a) "false answers that contradict or exaggerate what you would have said if you were being 100% honest" (falsification, $n = 23$), (b) "hard to pin down" or vague, ambiguous answers (equivocation, $n = 21$), or (c) answers that "conceal and withhold relevant facts, feelings, and information" (concealment, $n = 22$). Interviewees reviewed examples of the deception type to be enacted and practiced responding to one of the questions (which was replaced during the actual interview with a new question to elicit a spontaneous response).

All interviews were videotaped with consent. Nonexpert interviews lasted until all questions were asked or until 15 minutes had transpired; expert interviews continued until all questions were asked. Participants were separated to complete post-measures and be debriefed.

Sender ratings of information dimensions. Procedures for sender evaluations of the information dimensions were identical to those used in the first study. Because low reliabilities obtained on the two-item directness/relevance ($\alpha = .26$) and informational completeness ($\alpha = .47$) scales, single-item measures were used for directness,

TABLE 4

MEANS AND (STANDARD DEVIATIONS) ASSOCIATED WITH CONTRAST EFFECTS ON RATINGS OF DECEPTIVE ANSWERS, STUDY TWO

Dimensions	Coefficients	Falsification	Equivocation	Concealment
SENDER RATINGS				
Informational				
Completeness	1 1 −2	3.57 (1.68)	2.92 (1.30)	2.85 (1.27)
Clarity	1 −2 1	4.42 (1.15)	3.12 (.94)	3.60 (1.22)
Directness	1 −2 1	4.49 (1.46)	2.83 (1.16)	3.97 (1.22)
Veridicality	−2 1 1	1.98 (.90)	3.87 (1.69)	4.57 (1.77)
OBSERVER RATINGS				
Conversational				
Completeness	1 −1 0	5.15 (.87)	4.12 (.85)	4.55 (.90)
Directness/Relevance	1 −2 1	5.91 (.63)	5.02 (.92)	5.63 (.67)
Clarity	1 −2 1	4.81 (.51)	4.27 (.28)	4.47 (.41)
Personalization	1 −2 1	4.75 (.77)	3.64 (.90)	4.27 (.88)

Note. Contrast coefficients are listed in the following order: Falsification, Equivocation, Concealment.

relevance, and informational completeness (for sender ratings only). Clarity yielded acceptable reliability (Cronbach's $\alpha = .77$).

Observer ratings of information completeness. Procedures paralleled those from the first study except that ratings were completed on one truthful and three deceptive answers taken from the single interview. Interitem reliabilities ranged from .77 (clarity) to .97 (conversational completeness) and averaged .90. Consensus among observers, measured by intraclass correlations, ranged from .58 (clarity) to .76 (informational and conversational completeness) and averaged .66.

Results

Hypothesis 1: sender ratings of deceptive messages. The analysis design mirrored that of the first study. Planned contrasts on the completeness measures failed to support Hypothesis 1a, that concealment is less informationally complete than falsification and equivocation, $t(61) = 1.08$, $p > .05$. The planned contrast for actual veridicality supported H1b, that falsifications are least truthful, $t(61) = 5.78$, $p < .001$, $\eta^2 = .35$. Due to multicollinearity among the self-reported measures of clarity, directness, and relevance (average $r = .34$, Bartlett's sphericity test = 27.05, $p < .001$), H1c was again tested with a MANOVA. The multivariate contrast largely supported the hypothesis that equivocation is less direct/relevant and clear than falsification and concealment, $F(3,59) = 5.62$, $p < .01$, $\Lambda = .78$. Univariate contrasts were significant for directness, $t(61) = 4.04$, $p < .001$, $\eta^2 = .21$, and clarity, $t(61) = 3.04$, $p < .001$, $\eta^2 = .13$, but not for relevance, $t(61) = .94$, $p > .05$ (see Table 4 for contrast coefficients, means, and standard deviations).

Hypothesis 2: receiver ratings of truth versus deception. As in Study One, mixed model 2 (truth/deception) × 3 (deception types) ANOVAs and a MANOVA tested H2, that observers see truthful responses as more complete, honest (veridical), direct/relevant, clear, and personalized than deceptive ones. In this case, the truthful responses came from an individual question at the beginning of the interview rather than from an entire interview.

Results supported H2. Univariate main effects for truth/deception were significant on conversational completeness (H2a), $F(1,55) = 38.44$, $p < .001$, $\eta^2 = .41$, and

apparent veridicality (H2c), $F(1,58) = 25.67$, $p < .001$, partial $\eta^2 = .31$. A MANOVA for the remaining intercorrelated variables (average $r = .37$, Bartlett's sphericity test = 14.15, $p < .01$) also revealed a main effect for truth/deception, $F(3,51) = 71.77$, $p < .001$, Wilks $\Lambda = .19$. Accompanying univariate analyses indicated that all three dependent measures were implicated in the multivariate effect: directness/relevance, $F(1,53) = 24.81$, $p < .001$, partial $\eta^2 = .32$; clarity, $F(1,53) = 214.85$, $p < .001$, partial $\eta^2 = .80$; and personalization, $F(1,53) = 61.53$, $p < .001$, partial $\eta^2 = .54$. Truthful communication was perceived as more complete, truthful, direct/relevant, clear, and personalized than deceptive communication (see Table 2). In addition to the truth/deception main effects, these analyses revealed deception type main effects (but no interactions). Because inclusion of the truthful question may have unduly contributed to these deception type effects, the more appropriate tests of the deception type hypothesis (H3) are reported next.

Hypothesis 3: receiver ratings of deceptive messages. The univariate contrast testing H3a failed to support the prediction that concealment is less complete than falsification and equivocation, $t(60) = 0.21$, $p > .05$. Similarly, the contrast testing H3b, that falsification is perceived as more veridical than equivocation and concealment, was not significant, $t(60) = .21$, $p > .05$. The multivariate contrast for H3c (performed due to multicollinearity among the three measures, average $r = .41$, Bartlett's sphericity test = 6.08, $p = .11$) was significant, $F(3,52) = 7.61$, $p < .001$, Wilks $\Lambda = .31$, as were all three accompanying univariate contrast effects: directness/relevance, $t(54) = 3.60$, $p < .01$, $\eta^2 = .19$; clarity, $t(54) = 3.22$, $p < .01$, $\eta^2 = .16$; and personalization, $t(54) = 3.51$, $p < .01$, $\eta^2 = .19$. The means, shown in Table 4, revealed that equivocation was perceived as least direct/relevant, clear, and personalized, as hypothesized.

Research question 1. To assess the predictive validity of the information management dimensions *as a set,* a multiple discriminant analysis was performed using the receiver judgments of the deceptive messages' conversational completeness, directness/relevance, clarity, personalization, and veridicality as predictor variables and deception type as the grouping variable. The analysis produced one significant function, χ^2 (8, $N = 57$) = 32.67, $p < .001$, Wilk's $\Lambda = 0.54$, defined by clarity ($\beta = .38$), personalization ($\beta = .99$), veridicality ($\beta = -.79$), and directness ($\beta = .48$). It accounted for 46% of the between-groups variability and correctly classified 63% of the cases. The group centroids indicated that falsifying (1.09) and equivocating (-1.03) answers were most different from one another (concealment centroid = .05). Stepwise analysis entered clarity as the first predictor, followed by personalization, then veridicality, then directness/relevance. Relevant to Jacobs et al. (this volume), the ordering suggests that veridicality adds nonredundant information beyond the other dimensions and, although important in distinguishing among deceptive messages, may play a secondary role when compared to other dimensions (specifically, clarity and personalization). This conclusion was further bolstered by examination of the zero-order correlations among observer ratings, which revealed that veridicality was correlated with personalization, $r(63) = .67$, $p < .001$, and directness/relevance, $r(59) = .35$, $p < .01$, but only weakly related to clarity, $r(61) = .20$, $p > .05$, and conversational completeness, $r(59) = .21$, $p > .05$. The remaining correlations among information dimensions ranged from .33 to .54 (average $r = .42$).

DISCUSSION

According to Interpersonal Deception Theory (Buller & Burgoon, in press), individuals make strategic choices when engaging in deceptive communication. One overarching strategy is information management, which may entail managing message content and style along at least five fundamental dimensions: (a) completeness (consisting of both conversational and informational completeness), (b) directness/relevance (consisting of both syntactic and semantic directness/relevance), (c) clarity (also consisting of syntactic and semantic forms), (d) personalization, and (e) veridicality (consisting of actual and apparent veridicality). These dimensions are highly compatible with, but more comprehensive than, McCornack's Information Manipulation Theory (IMT) (1992), in that they distinguish sender versus receiver perspectives (in the form of actual versus apparent completeness and veridicality) and incorporate semantic, syntactic, and pragmatic features. These distinctions also imply a broader range of operationalizations by which forms of information management may be ascertained linguistically. By contrast, Jacobs et al. (this volume) have argued that many of the information management dimensions deemed important in IMT (and by implication, our own formulation) have negligible salience when compared to judgments of message veridicality.

The two empirical studies reported here shed light on this issue by demonstrating that (a) senders, when instructed to create disparate forms of deception, do manipulate multiple message features corresponding to the proposed dimensions, (b) senders recognize alterations in their own encoding along some of these dimensions, and (c) the proposed dimensions distinguish truthful messages from deceptive ones. These findings imply that communicators can strategically (or nonstrategically) manipulate varying degrees of these information management dimensions to produce a wide array of deceptive messages appropriate to the situation or partner at hand and that receivers, whether participants or observers, recognize message variability along these same dimensions.

Information Management Dimensions and Message Encoding

From an encoding perspective, the two experiments essentially tested whether senders could, on demand, alter message content and style accordingly, Bavelas et al.'s (1990) previous work having already established that senders make some of these adjustments spontaneously in response to situational demands. Results were supportive of variability in message production being attributable to information management. Senders reported that falsified answers were far less truthful than equivocal or concealing ones, and they rated equivocal answers as less clear and direct (but not less relevant) than the other two deception forms.

The differing results for directness and relevance suggest that when equivocating, communicators may reduce directness and clarity but try to appear relevant by at least addressing the issue at hand, albeit vaguely. Consequently, it may be advisable to separate directness from relevance to reflect distinct syntactic and semantic features. Directness would reference the degree to which an utterance or message is a grammatically coherent sequel to a co-interactant's turn at talk. Relevance would reference the degree to which an utterance or message provides content that is related meaningfully to the conversation at hand.

One possible criticism of utilizing sender ratings to validate the information dimensions is that they are merely manipulation checks; i.e., senders were instructed

to make false answers untruthful and to make equivocal ones indirect and unclear. In one respect, this is probably true. Had senders not reported making these kinds of systematic alterations, we might question whether we had successfully manipulated deception type. And yet, the three separate groups of senders could just as easily have produced deceptive messages with similar informational properties. Moreover, even had they created distinctly different message forms, those differences might not have been evidenced in self-reports. Research shows that people are often inaccurate informants about their own behavior, especially if the behavior is something that people seldom monitor (Bernard, Killworth, Kronenfeld, & Sailer, 1984). Thus, in retrospect, sender self-ratings ran the risk of producing negligible differences. That significant results emerged on three dimensions should, therefore, be taken as support for senders' ability to recognize and alter information multidimensionally in their messages.[5]

Information Management Dimensions and Message Decoding: Truthful versus Deceptive Conditions

The decoding results are even more supportive than the encoding results. Observers employed all five dimensions to discern truthful from nontruthful discourse. Truthful communication was seen as more complete, direct, relevant, clear, personalized, and veridical than deceptive communication. Moreover, effect sizes were large and accounted for 31 percent (on veridicality) to 80 percent (on clarity) of the within-subject variance. Such large effects underscore the centrality of these dimensions to receiver judgments of discourse.

The fact that observers were able to discern truthful from deceptive messages deserves special comment in that it appears to contradict the common claim that detection accuracy rates are usually only slightly better than chance (Knapp & Comadena, 1979; Kraut & Poe, 1980; Miller & Burgoon, 1982; Zuckerman et al., 1981). One possible reason is that observers in the present study witnessed both truthful and deceptive interaction. Baseline (i.e., truthful) information can improve detection somewhat (Ekman & Friesen, 1974; Knapp & Comadena, 1979; Zuckerman et al., 1981). Another reason is that receiver judgments were made on continuous rather than dichotomous measures, which appear to be more sensitive to differences between truthful and deceptive performances (see, e.g., Burgoon et al., 1994; DePaulo & Kirkendol, 1989).

Information Management Dimensions and Message Decoding: Comparisons across Deception Types

Distinguishing among alternate forms of messages within the same general class (deception) requires greater discrimination ability than does comparing truthful messages to deceptive ones, yet here again, observers employed the information management dimensions to separate three sample deception forms–falsifications, equivocations, and concealments–from one another.

On *veridicality,* senders reported falsifications as being less truthful than equivocations or concealments. Observers, however, failed to see the three types as differentially truthful. This result, while emphasizing the importance of considering both sender and receiver perspectives, might imply that receivers fail to use truthfulness as a criterion for making subtle distinctions among similar message forms. This would be a faulty conclusion because veridicality did enter the multiple discriminant

analysis as one of the predictors of receiver judgments. Instead, the juxtaposition of the sender and receiver results amplifies why detection accuracy is often poor: Receivers may be less able or willing to attribute outright lying to senders than to attribute vagueness and indirectness to them. Rather than being oblivious to differences in veridicality, they may rely on other judgmental dimensions first when evaluating another's discourse. The emergence of veridicality as a significant discriminant predictor also underscores the value of examining how dimensions work in concert. Univariate mean comparisons and bivariate correlations are insufficient to form a complete picture of judgmental processes, which clearly entail multiple considerations.

Completeness separated deception types in a different manner than hypothesized. Equivocations, not concealments, were seen as the least complete and falsifications as the most complete (although deceptive answers on the whole were rated as less complete than truthful answers). In retrospect, it is sensible to expect individuals engaged in fabrication to construct detailed accounts to increase plausibility and thereby gave receivers the impression of completeness. By comparison, the vague and indirect nature of equivocal answers may necessarily result in impoverished detail, or the cognitive difficulty of encoding equivocation may lead to abbreviated answers. In everyday discourse, concealments should also omit relevant detail, but the interview format in the current studies may have mitigated against that happening. Interviewees were obligated to offer some type of response to the questions and probably included some concrete information. In noninterview situations, we might expect concealments to be enacted by simply "not bringing up" or volunteering any information unless asked and thus to appear the least complete.

The most separation among deception types occurred on *directness, relevance, clarity, and personalization.* Like senders, observers rated equivocation as the least direct, relevant, clear, and personalized when compared to falsification and concealment. This is consistent with literature defining equivocation in terms of lack of clarity and directness (Bavelas, 1983; Bavelas et al., 1990) and replicates Bavelas et al.'s (1990) finding that personalization (disassociation) reliably discriminates between equivocation and other deceptive message types. Combining these data with those on completeness, equivocation emerged as lowest and falsification, the highest on the information management dimensions.

Theoretical Implications

These two studies represent a formative attempt at conceptually and empirically verifying information management dimensions that underlie deceptive messages. The inclusion of five fundamental dimensions in IDT–completeness, directness/relevance, clarity, personalization, and veridicality–rather than the four proposed in IMT may provide more precision in testing predictions based upon message features. Within the context of IDT, knowledge of which information dimensions are most likely to be adjusted strategically and which ones, successfully should have implications for how closely deceivers monitor their verbal and nonverbal communication, how skillfully and effortlessly they make adjustments, and which tactics are linked to which information functions. A broader understanding of information management functions may also draw attention to how and why message content and style vary along such communication factors as mode of interaction (e.g., face-to-face, telephone, computer) and relational familiarity.

Relevance to Information Manipulation Theory

The present research also offers insights into the dispute between McCornack (1992) and Jacobs et al. (this volume) on the multidimensional nature of information management. Jacobs et al. report that the information dimensions do not operate orthogonally in deceptive messages and that "it is the quality rating that is most strongly correlated with perceptions of honesty/deception." They conclude that veridicality is the only judgment that receivers use to differentiate truthful from deceptive messages.

Our findings do not corroborate Jacobs et al.'s conclusions. First, although we agree that the dimensions are not completely orthogonal (as McCornack et al. acknowledged in advance), we did find that several dimensions contribute uniquely to senders' and/or receivers' assessments of deceptive messages. Degree of redundancy among dimensions is varied and in many cases fairly small. Second, we found veridicality to explain the least amount of variance and, in comparisons among the three deception types, judgments of message clarity and personalization were more important than veridicality.

An explanation for why our conclusions differ from Jacobs et al. may lie in the design of our respective studies. The magnitude of the intercorrelations found in Jacobs et al.'s replication may be a function of the kinds of scenarios used in McCornack's original message manipulations and their replication of them, rather than in some inherent quality of the dimensions. The real discourse samples used here may have produced a greater range of differences than would have occurred in experimentally created scenarios. In addition, the immediacy inherent in judging face-to-face interaction (as our study included) may have resulted in different message interpretations, albeit more representative of real interpretations, than would reading the same message exchanges on paper. Thus, we urge further analysis and empirical testing of a multidimensional conceptualization of information management in verbal discourse.

ENDNOTES

[1]The contrast coefficients were −2, 1, and 1 for concealment, falsification, and equivocation, respectively, for H1a; 1, −2, and 1 for H1b; and 1, 1, and −2 for H1c. The H1a contrast was nonsignificant $t(27) = 1.30, p > .05$. Due to significant intercorrelation among the dependent measures ($r = .84$) and significant Bartlett's test of sphericity (41.90, $p < .001$), H1c was tested by means of multivariate analysis of variance. The multivariate contrast was nonsignificant, $F(2,26) = .82, p > .05$, as were the univariate contrasts. Failure to find support for H1a and H1c was potentially attributable to low power. Cohen's (1977) a priori power estimates were .07 to detect small effects, .24 to detect medium effects, and .59 to detect large effects.

[2]For H2b, the main effect for deception type was not significant, $F(3,34) = .83, p > .05$. For H2c, the multivariate main effect for deception type, $F(9,71) = 1.53, p > .05$, and the multivariate deception/truth × deception type interaction, $F(9, 71) = .93, p > .05$, were nonsignificant.

[3]Completeness $t(27) = 1.42, p > .05$; veridicality $t(27) = 1.43, p > .05$; directness/relevance, clarity, and personalization multivariate $F(3,25) = .78, p > .05$.

[4]To meet other research objectives, trained interviewers were replaced with participant interviewers, and relational familiarity, interviewer expertise, and interviewer suspicion were added as variables in the research design. Results related to these other factors, to specific nonverbal and verbal behaviors displayed by participants, and to deception detection accuracy are reported in Buller et al. (in press), Burgoon et al. (in press), Burgoon, Buller, Ebesu, White, and Rockwell (in press), and Buller, Burgoon, White, and Ebesu (1994).

[5]Further support is derivable from the numerous significant effects that emerged for deception type on specific nonverbal and verbal behaviors (as reported in Buller et al., 1994, in press). Had senders not actually produced three distinct types of deception (falsification, equivocation, and concealment), no such differences would emerged. The deception type effects are therefore directly attributable to senders systematically altering multiple information dimensions.

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