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## NONVERBAL AND VERBAL COMMUNICATION

### *Hand Gestures and Facial Displays as Part of Language Use in Face-to-Face Dialogue<sup>1</sup>*

◆ Janet Beavin Bavelas  
*University of Victoria*

◆ Nicole Chovil  
*Independent Researcher and Education Consultant*

Of the many different research perspectives on the fundamentals of nonverbal communication, one of the most taken for granted is the relationship between verbal communication and co-occurring nonverbal acts. Most researchers assume that conversational gestures (e.g., illustrators) and some facial actions (e.g., eyebrow emphasizeers or a quizzical expression) contribute to the talk-in-progress. This chapter is the

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next step in a developing model on the contribution of nonverbal communication to face-to-face dialogue (proposed originally in Bavelas & Chovil, 2000). In addition to drawing on the evidence so far, we will suggest new directions for research in this relatively neglected area. Specifically, we will propose four theoretical propositions regarding the subset of nonverbal acts that function as part of language use in face-to-face dialogue and will discuss the logical and empirical evidence for each. We hope that the reader will agree that this area of research and theory is at an exciting point, with enough evidence to be promising but with many more questions and possibilities still open for investigation.

### ♦ *Historical and Theoretical Context*

Researchers who focus on face-to-face dialogue have long noted that some nonverbal behaviors can work closely with words, prosody, and each other in ordinary conversation. In our view, the beginning of a systematic theory was in 1955, with the highly influential, although mostly unpublished, *Natural History of an Interview* project (cf. Leeds-Hurwitz, 1987; McQuowan, 1971). We can then trace a line of proponents of an integrated approach in many disciplines, including Birdwhistell (1966), Schefflen (1968), Ekman and Friesen (1969), Kendon (1972, 1980), Blurton-Jones (1972), Pike (1972), Weiner, Devoe, Rubinow, and Geller (1972), Slama-Cazacu (1976), Duncan and Fiske (1977), Poyatos (1980), Scherer (1980), Linell (1982), McNeill (1985), Goodwin and Goodwin (1986), Sanders (1987), Leeds-Hurwitz (1989), Chovil (1989), Bavelas, Black, Chovil, and Mullett (1990, chap. 6), Fridlund (1991a), Streeck and Knapp (1992), Clark (1996, chap. 6), and Jones and LeBaron (2002). These authors have used a variety of terms for verbal-nonverbal

combinations of words, prosody, hand gestures, facial displays, or gaze, including *mixed syntax* (Slama-Cazacu, 1976), *comprehensive communicative act* (Linell, 1982), *multichannel process* (Leeds-Hurwitz, 1989; Sanders, 1987; Scherer, 1980), *composite signal* (Clark, 1996; Engle & Clark, 1995), *integrated message* (Bavelas & Chovil, 2000), and, most recently, *multimodal communication* (e.g., Engle, 2000), although the last term often includes computers or objects as well as human actions.

The broader context of the approach discussed in this chapter is our interest in the unique features of face-to-face dialogue as a primary mode of language use. Changes in conceptions of language itself have been a boon for conversational hand gestures and facial displays. Historically, when linguists and psycholinguists conceptualized language as an abstract entity or idealized it as written text or formal monologues, all nonverbal acts were either irrelevant or a completely separate communication channel. Recent interest in how interlocutors ordinarily *use* language has led to an emphasis on conversation and, eventually, to face-to-face dialogue. Indeed, many authors (e.g., Bavelas, 1990; Bavelas, Hutchinson, Kenwood, & Matheson, 1997; Clark, 1996, pp. 8–10; Fillmore, 1981; Goodwin, 1981; Levinson, 1983; Linell, 1982) have proposed that face-to-face dialogue, rather than written text or formal monologue, is the fundamental or basic site of language use, for at least three reasons: (1) face-to-face dialogue is arguably the first format for human language in evolutionary terms; (2) in typical development, it is the individual's first language; and (3) it is the most common format for language use in everyday life.

More specifically, we have proposed (e.g., Bavelas, 1990; Bavelas & Chovil, 2000; Bavelas, Coates, & Johnson, 2002; Bavelas, Hutchinson, Kenwood, & Matheson, 1997) that there are two features of dialogue that, in combination, do not occur in other forms

of language use such as written text, public speaking, or e-mail. Face-to-face dialogue is, first of all, *dialogue* rather than monologue. It is a collaborative activity (Clark, 1996) with a high degree of reciprocity and mutual influence at a micro-social level (Bavelas, in press); that is, dialogue involves moment-by-moment or even simultaneous responses between the interlocutors. Second, once observed closely, face-to-face dialogue reveals the ubiquity and integral importance of *specific nonverbal acts* in the moment-by-moment interaction. Thus, in addition to rapid social reciprocity, the second key characteristic of face-to-face dialogue is the availability of elements other than words, such as hand gestures, facial displays, and some other nonverbal acts. We propose that these elements serve unique and essential roles in the dialogue.

In the rest of this chapter, we outline four theoretical propositions about the subset of nonverbal acts that are part of language use in face-to-face dialogue, with an emphasis on features that researchers can test both logically and empirically. The first, primary distinguishing characteristic is their *synchrony with spontaneous speech*. Second, these are *symbolic acts* with referents. Third, they are tightly *integrated with words*, although not necessarily redundant with them. Fourth, the participants in dialogue use them *to create and convey shared meanings*. We will review data for hand gestures and facial displays, data that imply possible programs of research for other acts, such as gaze (Bavelas, Coates, & Johnson, 2002). Because of space and the intended readership of this chapter, we will focus primarily on experimental or quantitative data and will not review the rich qualitative work that still leads the way. In our experience, both traditions combine to produce a more refined appreciation of how skillfully and precisely participants communicate in face-to-face dialogue.

## Theoretical Propositions

### ♦ I. Synchrony With Spontaneous Speech in Face-to-Face Dialogue

As noted, our focus in this chapter is on a specific subset within the vast domain of nonverbal behaviors. We do not propose that all nonverbal behaviors function as part of language use. Instead, we propose sharp limits on the behaviors that might be part of integrated verbal and nonverbal messages; therefore, our model includes only certain behaviors when they occur in certain ways in certain settings. Somewhat similar physical behaviors might occur in other ways or in other settings, with no relationship to language use. And there are many, perhaps most, nonverbal behaviors that are unlikely to be related directly to language use. The nested criteria of *setting*, *timing*, and *meaning* are useful for making these distinctions, as elaborated in the following sections.

#### FACE-TO-FACE DIALOGUE

To be included in our model of language use, the setting in which the nonverbal acts occur must be spontaneous face-to-face dialogue. That is, both (or all) participants can see and hear each other and can interact freely as themselves.<sup>2</sup> This criterion puts many familiar research settings outside our focus of interest. For example, studies of individuals who are alone or of individuals who are looking at videos or photographs of other individuals do not yield data on face-to-face dialogue. When the speaker or the addressee is an experimenter or confederate, the dialogue is not reciprocally spontaneous; that is, one participant is following scripted guidelines rather than interacting freely.

Even within a dialogue, the nonverbal actions must be visible to the partner, which

precludes dialogues through a visual barrier. Similarly, participants may produce muscle movements or physiological patterns that instruments can measure, but if these are not visible to the other participant, then they are not part of the overt face-to-face dialogue as we conceptualize it. All of the above settings and conditions can provide important background information, especially in experimental designs that contrast them to face-to-face dialogue (e.g., manipulating the visual availability of the receiver; cf. Chovil, 1997; Cohen & Harrison, 1973). Indeed, such experiments demonstrate that other settings are not the same as face-to-face dialogue and that we cannot assume generalizability.

#### SYNCHRONY WITH WORDS

Within the setting of face-to-face dialogue, a further essential criterion for our model is *timing*. The nonverbal acts we are focusing on are synchronized with the words that they accompany, which means that their typical duration will be seconds or even less. Conversational hand gestures, unlike emblems or hand signals in non-speaking contexts, have a split-second relationship to words (e.g., McNeill, 1992, pp. 25–29). Similarly, although the face is capable of assuming precise stereotypic emotional configurations (e.g., Ekman, 1993), the face in dialogue can be highly mobile (Bavelas & Chovil, 1997), and many of its actions are synchronous with the words of the dialogue rather than the emotional state of a participant (Chovil, 1989, 1991/1992; Ekman, 1997).

The timing requirement also excludes many other nonverbal acts from our subset, including the following: involuntary or reflexive actions (e.g., blinking or breathing), static posture or appearance (e.g., arm or leg positions or cosmetic choices such as clothing or tattoos), and acts that have an

obvious noncommunicative function (e.g., hand movements to reach for or manipulate objects or facial adaptors such as licking dry lips or squinting in bright light). None of the above acts is likely to be synchronous with precise words or phrases. It is readily observable, however, that speakers can co-opt almost any physical action conversationally (e.g., when they *demonstrate* blinking, reaching, or gazing; Clark & Gerrig, 1990). Timing as well as form and context make it clear when ordinary actions are being used conversationally, because only the stylized, communicative form would be synchronous with and supplement speech. In short, we are neither claiming nor excluding broad physical categories of behaviors but rather making functional distinctions based on identifiable parameters. Our focus is on what the behavior is *doing*, not on what kind of behavior it is.

#### CONVERSATIONAL MEANING

So far, we have described two aspects of synchrony between the verbal and nonverbal acts that are included in our model; the setting must be face-to-face dialogue, and the nonverbal acts must be tightly timed with speech. The third criterion is even more specific: The act must have meaning in its particular and immediate conversational context. Words and prosody are audible ways of creating meaning in conversation; we propose that certain nonverbal acts are *visible acts of meaning* (Bavelas & Chovil, 2000). Just like words, however, their meaning is not intrinsic to the isolated act but depends on the linguistic context (see Robinson, this volume). In contrast, emblematic hand gestures and facial expressions of emotion usually have stereotypic forms that are virtually independent of linguistic context. Similarly, the interpretation of many other nonverbal acts (such as those indicating intimacy or deception)

The context that determines the meaning of both audible and visible acts of meaning is multilayered and includes who the participants are, why they are talking, how they have been using the word or act so far, the particular topic in that phase of the conversation, the precise point in the utterance, and the simultaneous other elements of the integrated message of which it is a part at that moment. As an example of the importance of all of these layers of context for the meaning of words, the adjective *wide* has a couple dozen meanings in the *Random House Unabridged Dictionary* (1993). Like most words, it is

Similarly, in the following gestural example, the speaker is describing a picture of a dress with an unusually wide hipline, which extends about a meter on either side of the waist (cf. Bavelas, Kenwood, Johnson, & Phillips, 2002, Figure 1). The underlining indicates where gestures occurred in relation to the words; the brackets contain an italicized description of each gesture; and S = speaker, A = addressee. (For readers who do not usually watch conversational actions frame by frame, the best way to understand a written example is to act it out oneself.)

S: "OK. Ah, like a huge skirt that goes out like this?" \_\_\_\_\_  
*[both hands move from waist to full out]    [holds width]*

By moving her hands out and especially by holding them in place at the farthest extent, the speaker indicated, among other things, that the skirt was “wide.” The addressee confirmed his understanding by replicating both movements.

is usually inseparable from its linguistic and micro-social contexts.

Contextual specificity does not apply only to hand gestures. In the first systematic description of a conversational facial display, Ekman (1979) showed that the same physical eyebrow actions can have several different meanings (e.g., as a baton or a question mark), depending on conversational context. Chovil (1989) found that even stereotypic expressions can have varied meanings. The classic nose-wrinkle of disgust can also convey rejection of other kinds, which have nothing to do with smell (e.g., a disliked movie, an unpleasant chore), and an angry expression may not indicate concomitant anger. In the following example from Chovil's data, the speaker was humorously describing a past argument with her sister about whether she should cut her hair.

**Example 2.**

S: “I’m goin’ like, ‘I wanna cut my hair!’” \_\_\_\_\_  
 [exaggerated, stylized anger display] [smiles]

Exactly as she was describing her own part in the argument, she configured her eyes, brows, and mouth in a classic anger display. As soon as the relevant phrase was over, she smiled along with the addressee at her own humor. She was not angry when she made the display; indeed, she may not have been nearly as angry at the time of the argument as the current display indicated. She was exaggerating for effect, as confirmed by her immediate smile, which the addressee shared. We propose that, just as with words, the addressees seldom have difficulty selecting the correct meaning, largely because of the contextual redundancy that supports it.

## ♦ II. Symbolic Acts

In proposing that a hand gesture or facial display in dialogue is a *symbol*, we intend the simplest sense of the term: Symbols have referents; they are something that stands for something else (Quine, 1987, p. 763). Put in other terms, symbols are encoded acts, although the encoding is ordinarily analogic or iconic (see Bavelas & Chovil, 2000). The case for the proposition that some nonverbal acts are symbolic involves somewhat different issues for hand gestures and for facial displays, which will be treated separately in the following.

### HAND GESTURES AS SYMBOLS

McNeill (1992) pointed out that “gestures are not just movements and can never be fully explained in purely kinesic terms. They are not just the arms waving in the air but symbols that exhibit meaning in their own right” (p. 105). Kendon (1985), Clark

and Gerrig (1990), and Streeck and Knapp (1992) have also noted that hand gestures can depict, demonstrate, or reenact. There is a difference between a *hand action*, which has a practical function in the material world (e.g., turning on a light switch or holding a telephone) and a *hand gesture*, which has a communicative function in the social world (e.g., as part of telling someone to switch on the light or that you will call them later). Practical and material considerations shape the hand action, but social and communicative considerations shape the hand gesture. Because of these considerations, the hand action and gesture should look different in predictable ways (Gerwing & Bavelas, 2004). Very few studies have even recorded the difference between hand actions and hand gestures; an exception is LeBaron and Streeck’s (2000) comparison of instrumental actions to later gestures for the same actions.

Several recent experiments have demonstrated a key part of our proposal, namely, if social and communicative factors shape hand gestures, then these factors should cause variation in gestures for the same referent. Ozyurek (2000, 2002) showed that speakers made a gesture depicting the same motion differently depending on their spatial relationship to their addressees. Other experiments have also demonstrated that the referent is not the sole determinant of the form of a gesture. Rather, linguistic principles unique to dialogue can influence the shape of gestures: When the participants shared common ground about an object, they made sketchier gestures to depict it than when the information was new to one of them (Gerwing & Bavelas, 2004). Similarly, within a dialogue, later gestures for familiar (“given”) information were shorter than

those for new information (Woods, 2005). These effects are identical to the effects of given-versus-new information on verbal communication, such as the length of verbal reference (e.g., Fowler, 1988). The results also accord with Grice's (1967/1989) maxims of manner and quantity: The sketchier or shorter gestures were sufficient for their purpose but no more than that.

#### FACIAL DISPLAYS AS SYMBOLIC

The distinction between symbol and referent is even more subtle and important for faces, because there is a strong tendency to equate a facial expression with an emotional expression. In this view, facial expressions of emotion are nonsymbolic, involuntary acts that reveal information about the individual's intrapsychic state. Ekman, the pioneer in the study of face and emotion, anticipated other functions of the face in his early work, however (e.g., Ekman, 1979). More recently, he also made several distinctions between facial expressions of emotion and facial actions that are conversational signals:

Most importantly, the *conversational signals* [italics added] are part of the structure of the conversation, part of the flow of talk, and governed by the rules which govern the production of speech. While *facial expressions of emotion* [italics added] often occur during conversation, their location in the speech flow is related not to the structure of talk but to the semantics, revealing an emotional reaction to what is being said or not being said. (Ekman, 1997, p. 340)

Thus, Ekman's first criterion, synchrony with speech, is the same as ours. Kraut and Johnston (1979) also proposed a distinction between the facial expression of emotion and a socially oriented *facial display* (which is the term we use in this chapter).

Because of the vastly greater research interest in emotional expression, there is remarkably little scholarship on the use of the face for communication (for a more general discussion of emotional communication, however, see Fridlund & Russell, this volume). We know of three systematic descriptions: Ekman's (1979) above-mentioned description of eyebrow movements, Brunner's (1979) analysis of smiles as back-channels, and Chovil's systematic identification of conversational facial displays other than smiles (1989, 1991/1992). The latter study documented the wide variety of syntactic and semantic functions of participants' facial displays in spontaneous face-to-face dialogue. For example, speakers facially portrayed themselves as they might have appeared at another time, in another situation (see Example 2, earlier in this chapter); they also portrayed others' reactions (e.g., a disapproving relative), and they marked syntactic emphasis, questions, and other narrative features, usually with eyebrow movements.

One limitation of the research just discussed is that it has been almost entirely descriptive, documenting the nonemotional role of facial displays in face-to-face dialogue but not offering an alternative theoretical conception of them. We (Bavelas & Chovil, 1997) found a promising theory in Clark's (1996; Clark & Gerrig, 1990) concept of *demonstration* as a distinct method of signaling (adapted from Peirce, cited in Buchler, 1940). Clark and Gerrig (1990) proposed that many conversational actions, such as quoting what someone else said, are demonstrations rather than descriptions or indications (the other two methods of signaling). In addition, "people can demonstrate a cough, the rhythm of a part of a Chopin prelude, the sound of a car engine, . . . or the appearance of a chimpanzee" (Clark & Gerrig, 1990, pp. 766–767). The speaker need not actually have a cough or be playing a Chopin prelude (and is

certainly not a car engine or a chimpanzee), nor is he or she making such a claim, because a demonstration is not literal (it is “non-serious”; Goffman, 1974). The principle of demonstration means that speakers do not necessarily or even usually use their facial displays to portray the way they *feel* at that moment; rather, the speaker is *illustrating* some aspect of the conversational topic of the moment.

When demonstrating, the speaker does not simply reproduce the literal expression; a demonstration is *selective*, deleting irrelevant features and retaining or even exaggerating the relevant ones. For example, squinting one’s eyes to indicate skepticism or disbelief may demonstrate looking more closely at something, but it is likely to be a highly stylized and different in form (e.g., quicker) than literally squinting to read fine print. In support of this, Gilbert, Fridlund, and Sabini (1987) showed that individuals who were demonstrating facial displays to various odors produced facial configurations that were clearer to observers than when they were actually smelling the odor and having the same reaction spontaneously. Arguably, these results illustrate the selective nature of demonstration. We proposed at the beginning of this section that if conversational hand gestures and facial displays are symbols, then social and communicative considerations would shape them. What we know about the principles of this selective process is encouraging but far too little; the determinants of the form of symbolic nonverbal acts are an important area for further research.

### ♦ III. *Integrated (but Not Necessarily Redundant) With Words*

One of our defining criteria for nonverbal acts that are part of language use in face-to-face dialogue was that they must be tightly

synchronized with words in both timing and meaning. In this section, we propose that these two synchronies of timing and meaning work together to produce an *integrated but often complex whole*. Most of the available research relevant to this proposal has focused on gestures; at present, we have to rely on anecdotal observation for facial displays.

What may be the best evidence of the precise integration of audible and visible acts is easy to demonstrate: Speakers usually coordinate their hand gestures and facial displays to verbal syntax. McNeill (1985) found that “gestures synchronize with parallel linguistic units [and] almost never cross clause boundaries” (pp. 160–161). Ekman (1997) made the same general point about facial displays:

Take for example, a person who says he had been afraid of what he would learn from a biopsy report, and was so relieved when it turned out to be negative. When the word “afraid” is said, the person stretches back his lips horizontally, referring facially to fear. (p. 340)

Ekman went on to point out that the above facial action, used to “refer to a fear not felt now,” would not only be a transformed version of the emotional expression of fear but “would be likely to be made very quickly, much more quickly than the actual expression of emotion would be” (p. 340). Presumably, the display would be quicker in order to synchronize with the word “afraid.” One important facility of the facial muscles is that they can track the speed of words or phrases. In Example 2, presented earlier in this chapter, the speaker’s face changed rapidly from an angry expression to a smile exactly when her phrase ended.

We can illustrate the precise integration of all three elements (hand gestures, facial displays, and words) with a brief example from our data (Bavelas, 2000). The speaker was telling the addressee about a close call he once had, when he fell into a river and nearly drowned:



**Example 3.**

S: "So, my-my-my head is in the water like this,  
       *[head back, eyes shut, impassive face]*  
 and basically it's, water's going over my head.  
       *[head to vertical] [hands sweep beside head]*  
 And it's str-I grew really, really calm."  
       *[puzzled ] [serious face, looking at A]*

During each underlined phrase, the speaker depicted some aspect of his dilemma gesturally or facially. In the first two lines, he demonstrated that "like this" meant a particular position of his head in the water and also his closed eyes and impassive facial display; then he returned his head to vertical and demonstrated that "water's going over my head" meant that the water (represented by his hands) was sweeping past the sides of his head. Altogether, this first sentence said and showed that he was on his back with the water flowing around, but not over, his face. At the same time, he illustrated his helplessness facially, with his eyes closed and an impassive expression, both also synchronous with the verbal description of his dilemma. Accomplishing these depictions required a high degree of coordination and integration. For example, in order to show how "water's going over my head," he had to return his head to vertical and lift his hands up to the sides of his head (the preparatory phase) before he started to say the phrase.

His impassive expression foreshadowed the latter part of his next sentence ("I grew really, really calm"), but first he interrupted his narration to insert a metacommunicative comment on his own reaction: He said a shortened version of "And it's strange," while making a very brief but clear facial display of puzzlement, as if still unable to understand what he was describing as his strange calmness in the situation. He then returned to the main narrative line by depicting, verbally, prosodically, and facially, the calmness he now found

puzzling. Each phrase of this example demonstrates precise coordination of words, hand (and head) gestures, and facial displays, all serving the immediate narrative purpose.

Coordination seems to be an important factor in creating the meaning of these speech-related nonverbal acts. Engle (2000; see also Engle, 1998; Engle & Clark, 1995) conducted an intensive analysis of multimodal signals (speech, gestures, diagrams, and object demonstrations), which yielded several lines of evidence for the temporal and linguistic integration of iconic and indexical conversational gestures with speech. For example, the gesture and the immediately accompanying speech segment were *co-expressive*, referring to the same underlying referent:

For all but one of the 108 [communicative] nonverbal signals, a co-expressive speech segment could be found within [a] two intonation unit time window. . . . In stark contrast to communicative nonverbal signals, in 14 of [the] 17 non-communicative cases, no co-expressive speech was present. (Engle, 1998, pp. 323–324)

One implication of Engle's findings is that timing is a metacommunicative tool that speakers use to signal what is in the same integrated unit of meaning (Engle, 2000). Bavelas, Holt, and Allison (2000) analyzed over 1,700 gestures to learn how they were connected to co-occurring speech.

The data revealed that, whereas speakers sometimes used linguistic markers (e.g., a deictic expression or a dummy noun phrase), the most common link was simply timing (70% of the gestures). Unfortunately, we do not have comparable information for facial displays. There are to our knowledge no systematic studies of the precise temporal and linguistic relationship of facial displays to words, although advances in digital analysis make such frame-by-frame analysis possible, albeit still labor-intensive.

#### REDUNDANCY AND NONREDUNDANCY

Engle's (2000) data also confirmed that, although the gestures were virtually always consistent with the co-expressive speech, they were sometimes complementary rather than duplicating the speech. This observation contradicts the possibility that hand gestures are simply a redundant mode of expression. Examples 1 and 3 each illustrated that gestures can convey important information that is not in the speaker's words (e.g., the width of the dress and the way his head was in the water). Sometimes the simultaneous audible and visible elements of a message, taken separately, might appear to contradict each other. As Sanders (1987) pointed out, however, receivers integrate these apparent contradictions at the level of overall meaning (rather than at the level of components or physical source). For example, Bugental, Kaswan, and Love (1970; cited in Sanders, 1987) found

positively valued utterances paired with a negatively valued facial expression and vocal qualities were judged by respondents to be *sarcastic*. Negatively valued utterances paired with positively valued nonverbal displays were judged to involve *joking*. Thus, these inconsistent pairs of utterances and nonverbal displays

received a *single unitary interpretation distinct from the interpretation of either constituent*, not a preference for one rather than the other of two discrete messages. (Sanders, 1987, p. 142; italics added)

These interpretations are consistent with Engle's (1998) proposal that, following Grice's (1967/1989) "cooperative principle," both speaker and addressee assume that "all signals in a particular composite signal are intended to be treated from the start as contributing to a single, unified interpretation" (Engle, 1998, p. 321).

But what is the internal nature of a multimodal message that produces a single, unified interpretation? We propose that, primarily because of synchronous timing, multimodal elements can range from completely redundant to highly nonredundant and still remain unified. Our research group has examined the degree or rate of redundancy in hand gestures with different functions. Bavelas, Chovil, Lawrie, and Wade (1992), for example, examined the degree of redundancy of a gesture with its accompanying phonemic clause and found that, across several different descriptive tasks, gestures depicting features of the task topic were much more redundant with the words than were gestures that referred to the interlocutor or to the interaction itself. The latter (which we called *interactive gestures*) were usually completely nonredundant, although they depended on and contributed to the meaning of the clause.

An example from our data (Bavelas, Sutton, Gerwing, & Johnson, 2002) illustrates a nonredundant interactive gesture. At the beginning of their getting-acquainted conversation, one participant had answered the other's inquiry by saying that he was a Political Science major. A minute later, after they had been discussing another topic, the same speaker returned to his academic standing:

**Example 4.**

S: "This is my last term, and, ah, Political Science. I was a double major . . ."

[flicks hand to A]

Because his addressee already knew what his major was, naming it again was not new but given (i.e., shared) information. The speaker's words ("and, ah, Political Science") were cryptic and did not fit the syntax of his sentence; they also contained no reference to the addressee's prior knowledge. In our view, it was the hand flick at the addressee that made the socially necessary reference; we interpret this gesture to mean "as you already know," that is, as citing or acknowledging that the addressee obviously still remembered what the speaker's major was. The effective sentence would be, in words, "This is my last term and, as you know, I'm in Political Science. I was a double major . . ."

One limitation of our analysis in Bavelas et al. (1992) was that it did not distinguish among different experimental conditions and therefore included some conditions in which there was no addressee or in which the speaker and addressee were interacting through a partition. More recently, Bavelas, Gerwing, Sutton, and Prevost (2002, 2005) examined gestural redundancy as a function of the presence and visual availability of the addressee. When speaker and addressee were face to face, fewer than 20% of the speaker's gestures conveyed only information that was also in their words; over 80% also included some nonredundant information. In contrast, when the speakers were on the telephone or talking into a tape recorder to no one, their gestures were significantly more redundant; almost 60% of their gestures were entirely redundant with their words.

Likewise, Chovil (1989, 1991/1992; see also Bavelas & Chovil, 1997) reported redundancy data on 880 conversational facial displays. She found that 243 of the 405 *semantic* displays by speakers (e.g.,

portraying a past or present personal reaction) were redundant with speech; the other 162 semantic displays by speakers were nonredundant. The 315 *syntactic* facial displays by speakers (e.g., grammatical markers such as emphasis or question markers) were virtually always nonredundant with words, although not necessarily with prosody. Finally, the 160 facial displays by *listeners* were, by definition, nonredundant with speech, because the listener was the person who was not speaking at the moment. Thus, over 70% of all displays conveyed information that was not in the words. We speculate that the smiles by either speaker or listener, which were not analyzed in this study, would follow a similar pattern.

In sum, the third defining criterion of the nonverbal acts of interest in this chapter is that they form an integrated whole, with words and each other. Integration does not necessarily or even usually mean duplication, as there is at least some evidence that the various modalities can convey different (nonredundant) information from each other. When and how these diverse but unified elements operate is an important question for future research.

#### ♦ IV. Communication in Dialogue

This final section examines evidence that the speakers and addressees use hand gestures and facial displays to communicate. To do so, it is first necessary to discuss methodology, because there are three different methods for examining these issues. The first two focus on speaker and addressee separately: An *encoding* design tests the conditions

under which speakers do or do not produce hand gestures or facial displays; they should be more likely to do so in face-to-face dialogue than in other conditions. A *decoding* design seeks evidence that those who see such acts also understand their meaning. We have reviewed most of these studies in other places (Bavelas & Chovil, 2000; Bavelas, Gerwing, Sutton, et al., 2005; Chovil, 1997; see also Kendon, 1994; Gray & Ambady, this volume) and will only summarize the pattern here. The vast majority of studies show evidence for communication, in that (1) individuals tend to produce more gestures or facial displays when someone would see them and (2) observers can garner accurate information from these acts. Indeed, these studies have been so successful that we can now begin to see their limitations. Therefore, we will point out here what, in retrospect, appear as deficiencies in studies of isolated individuals (including some of our own experiments) and will suggest a third method, one that examines the speaker and addressee together, within their interaction.

#### ENCODING AND DECODING DESIGNS

The typical encoding design varies whether or not the speaker has a visually available recipient, for example, whether the speaker is alone or in the presence of another person. The main limitation of the existing encoding designs is that they seldom include a spontaneous face-to-face dialogue, which should be the baseline condition. For example, most studies of facial displays have instead used mere presence, eye contact, or social context instead of face-to-face dialogue (e.g., Bavelas, Black, Lemery, & Mullett, 1986; Fernandez-Dols & Ruis-Belda, 1995; Fridlund, 1991b; Jones, Collins, & Hong, 1991; Jones & Hong, 2001; Jones & Raag, 1989; Kraut &

Johnston, 1979; Schneider & Josephs, 1991). Only Chovil's (1989, 1991) experiment on addressees' facial displays involved a conversational dialogue.

In contrast, and for obvious reasons, encoding studies of conversational gestures have involved conversations, but virtually none of them have been spontaneous dialogues. In most of these gesture studies, the addressees were nonreactive confederates or the experimenter, or even an imagined other (e.g., Alibali, Heath, & Myers, 2001; Bavelas, Kenwood, et al., 2002; Beattie & Aboudan, 1994; Cohen, 1977; Cohen & Harrison, 1973; Emmorey & Casey, 2001; Krauss, Dushay, Chen, & Rauscher, 1995). Only three studies, to our knowledge, involved spontaneous dialogues between two participants (Bavelas et al., 1992; Bavelas, Gerwing, Sutton, et al., 2005; Rimé, 1982).

As shown in Bavelas and Chovil (2000), there are still far fewer decoding than encoding studies, and virtually all of them involve a similar design, one that tests whether outsiders to the interaction who later view the gesture or facial display can ascertain or at least agree on its meaning (e.g., Bavelas et al., 1986; Bavelas et al., 1990; Rosenfeld, Shea, & Greenbaum, 1979; Shea & Rosenfeld, 1976).<sup>3</sup> In one study, Graham and Argyle (1975) showed that the addressees were more accurate at drawing figures when the speaker who described them had been able to gesture, but there was little or no interaction involved between speakers and addressees.

Although these studies are encouraging for demonstrating some decoding of gestures or facial displays, the viewers were rarely the original addressees, a methodological choice that raises at least two problems. First, most decoder studies do not present the entire conversation, so that the decoding outsider has a fraction of the context that the addressee had. Our unpublished pilot studies with these designs showed

that, in highly controlled presentations, decoders imagined contexts in order to make sense of a gesture, thereby escaping experimental control. Second, Schober and Clark's (1989) experiments on verbal dialogue showed that, even when outsiders had access to the entire conversation between speaker and addressee, they had a significantly poorer understanding because they were not part of the dialogue and could not participate in grounding, that is, in the interactive process of establishing mutual understanding (see also Roberts & Bavelas, 1996). The same effect may also apply to gestures or facial displays.

#### DIALOGUE DESIGNS

The above criticisms lead us to propose that the best studies of whether hand gestures or facial displays communicate are ones that focus on *the original speaker and addressee in dialogue*. There are two design alternatives: Because of the requirement of unscripted interaction between the participants, such studies often involve micro-analysis of events occurring spontaneously within the interaction rather than the effects of experimental manipulation. As shown below, however, there are also true experiments, which use controlled tasks and systematic quantitative analysis; the independent variable applies to the dyad rather than to an individual. In any case, the best method is the one that goes where the phenomenon is happening.

Two early studies used nonexperimental designs. Camras (1977) created a situation in which two children would both want the same object. She showed that, when the child with the object made an aggressive facial display, the other child would stop trying to take it and would wait longer before trying again than when not met with an aggressive facial display. Brunner (1979) conducted a statistical analysis showing that listeners' smiles followed the

same pattern of relationships to speaker turn signals as did responses such as "mhm" or nodding. He concluded that these smiles also acted as back-channel responses.

More recently, we (Bavelas, Chovil, Coates, & Roe, 1995) used a similar statistical approach to examine the momentary effects of interactive gestures (which, as described above, are social gestures aimed at the addressee and are usually nonredundant with speech). The analysis required independently identifying (1) the perlocutionary meaning of each gesture in a large sample of interactive gestures and (2) the immediately following response of the addressee. In almost all cases, there was a significant relationship between the predictions based on the meaning of the gesture and the addressee's response to the gesture, even though the meaning did not appear in words.

Furuyama (2000) demonstrated that, when one person taught another how to make an origami figure without paper available, the teachers of course used gestures to demonstrate. The learners frequently joined in their teacher's gesture, acting in and on the same gesture space; for example, they pointed to or even touched the teacher's gesture as part of their dialogue about the figure. Furuyama called these "collaborative gestures." Clark and Krych (2004) analyzed one person teaching another how to build a Lego structure. The learner would often check with the teacher, for example, by pointing at a particular block, by picking it up and exhibiting it to the teacher, or by poising it over where it might go. These actions were not ones that actually placed the blocks; instead, they were arguably gestural demonstrations of intention or inquiry. The teachers seemed to use them as such, as evidenced by their responding immediately to them, even interrupting themselves to change what they were saying in response to what the learner was communicating with the gesture.

There is also an increasing number of true experiments involving two participants (i.e., neither experimenter nor confederate) in a spontaneous dialogue. For example, several studies described in an earlier section of this chapter showed that speakers in dialogue change the form of their gestures because of their addressee's location (Ozyurek, 2000, 2002) or current knowledge (Gerwing & Bavelas, 2004; Woods, 2005). Bavelas et al. (2002, 2005) found that speakers who were describing a picture of an unusual dress in face-to-face dialogue (compared with talking on the telephone or to a tape recorder) made significantly larger, life-sized gestures that were also less redundant with speech and more likely to be marked with a deictic expression.

Bangerter (2004) found that, when one person was identifying targets for another to choose, the speakers relied more on pointing than on words when their distance from the target object was short. At greater distances, pointing would be more ambiguous, and the speakers used words to describe the object. Finally, Bavelas, Gerwing, Allison, and Sutton (2005) asked two participants to design a floor plan across a table from each other, with no paper to draw on, which elicited a large proportion of nonredundant gestures. The experimental variable was the width of the table. When the table was narrow enough, they worked in the same space. When it was too wide, they had to work in different spaces, but they reached out significantly farther (toward each other), presumably so that the other person could see their gestures.

Thus, there are several examples each of experimental and nonexperimental studies that examine gestures between speakers and addressees in dialogue. It is worth noting that, in these more recent studies, the

research question seems to have shifted from *whether* participants use gestures to communicate, using standard rate measures, to *how* they use gestures to communicate, using more subtle and varied measures.

## ♦ Conclusion

Some nonverbal acts are an intrinsic part of language use in face-to-face dialogue. In this chapter, we have focused on conversational hand gestures and facial displays because there is research support for their use in dialogue. The data so far suggest the outline of a model for how these acts function in dialogue: First, there are independent criteria for identifying this subset of nonverbal acts, all of which focus on their synchrony with speech. Second, these are analogically encoded symbolic acts, functionally distinguishable from the actions or objects they may represent. Third, they form integrated messages with the words they accompany, although they may frequently convey information that is not merely redundant with those words. Finally, there is a growing body of such evidence that the participants in a dialogue use gestures to communicate with each other; at present, there are only a few such studies for faces. New directions for research could include expanding and refining the evidence presented in any of these four areas; exploring other nonverbal acts, such as gaze, that might be added to gestures and facial displays; and beginning to reassemble the parts into the integrated messages that participants create, in order to understand how they function as a whole.

## ♦ Notes

1. The present chapter is an extension of the model proposed in Bavelas and Chovil (2000). It

includes a few sections adapted from that article, with the permission of the *Journal of Language and Social Psychology* and Sage Publications.

2. Clark (1996, chap. 1) has outlined in fuller detail the characteristics of face-to-face conversation as a fundamental setting for language use.

3. We are not including any method that isolates gestures from their verbal context (e.g., by using only the video without a sound track), because such procedures treat conversational gestures as if they were emblems.

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