The Role of Nonverbal Communication in Interpersonal Relations

Robert Gifford

University of Victoria

Address correspondence to:

Robert Gifford, Ph.D.
Department of Psychology
University of Victoria
Victoria, BC V8W 3P5
CANADA

(250) 721-7532
(250) 721-8929 FAX

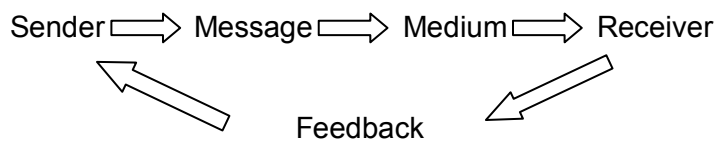rgifford@uvic.ca

December 12, 2009

Imagine, for a moment, interpersonal relations *without* nonverbal behavior. A first scenario might feature two immobile people who are conversing: no expressive movements. However, their frozen postures, clothing, and interpersonal distance would, nevertheless, be nonverbally communicative. To remove those cues, they could be placed in separate rooms, so that they communicate by phone only. However, their paraverbal behavior (style of speaking, such as vocal intensity, tone, rhythm, and pitch; Trager, 1958) would still convey messages beyond the content of the words they use. To expunge these paraverbal cues, the two people would have to be restricted to typing out messages.[1] Although this sort of interpersonal interaction exists, and in fact is increasingly frequent with the advent of computer-mediated communication (e.g., email, texting, and social networking), all our other interpersonal interactions are informationally rich from a myriad of gesture, posture, glance, gaze, expression, distance, tone, clothing, and grooming cues. Face-to-face nonverbal communication consists of complex sequences in which a huge number of events are constantly occurring and recurring (Agliati, Vescovo, & Anolli, 2006), and therefore poses an enormous challenge for behavioral scientists.

Nonverbal communication is an essential part of interpersonal psychology, perhaps more essential than is generally recognized. Although the following estimates apply only to the expression of emotion or liking rather than all interpersonal communication, researchers have reported that nonverbal and paraverbal messages are about 4 times more influential than verbal messages (Argyle et al., 1970; Hsee, Hatfield, & Carlson, & Chemtob, 1992), or that they account for 93% of inferred meaning (e.g., Mehrabian & Weiner, 1967). Even if these estimates are too high, nonverbal aspects of interpersonal communication clearly are crucial for

---

[1] In fact, even in these typing-only circumstances, senders often use emoticons (symbolic smiles, frowns, winks, etc.) to increase the odds that receivers correctly understand their meaning.

understanding interpersonal relations.

Nonverbal behavior communicates messages between persons. This communication includes dynamic movements, static appearance-related choices of clothing and grooming, and paraverbal acts by senders and impressions of those actions and choices formed by receivers. The sender's messages may be intended or not, received or not, and interpreted as having been intended or not. They are sent via numerous channels, forcefully or subtly. Some nonverbal messages are universal, or nearly so, and others are specific to particular cultures, subcultures, or intimates. Nonverbal communication is a very complex, essential part of interpersonal relations, and it serves a number of important psychological functions. However, a simple initial framework for thinking about it is depicted in the following diagram, which presents nonverbal communication as a special case of a classic communication model (Hovland & Janis, 1959), in which one person sends a message (intended or not) to another person via one medium or another (e.g., face-to-face or video), which stimulates a response from the receiver which reaches the sender, and the process continues.

Sender ⟹ Message ⟹ Medium ⟹ Receiver

Feedback

This chapter will begin with a brief history of research in the area, followed by a brief discussion of the original influence on nonverbal communication, evolution. Next, modern social psychological theories of it and research methods are described, with a special emphasis on current adaptations of Brunswik's (1956) lens model, a very useful framework for understanding the process. Nonverbal communication's complexity means that studying it has many pitfalls, and a section is devoted to cautionary notes for researchers and readers. We communicate nonverbally in a variety of contexts, including everyday interpersonal relations, but also where power and deception are involved and, increasingly, we must consider computer-mediated nonverbal communication. Finally, a brief review of nonverbal communication as a way to

predict the eventual outcomes of relationships is offered.

.

A Brief History

Although a number of fairly simple studies were conducted in the early part of the 20th century (e.g., Pintner, 1918), the first important scientific study that is pertinent here was that of Allport and Vernon (1933), who sought to find unity (or something close to it) *among* the expressive movements of their subjects. Their hypothesis, which appears to have been rooted in the Aristotelian proposition that one's whole body and personality are a kind of unity in which every aspect is mirrored in every other aspect. This view was championed by German psychologists such as William Stern (1935), who profoundly influenced Allport. Their results showed promise, in that two clusters of expressive movements, one "general" and one "specific," were found, albeit with lower-than-desirable reliability.

Allport and Vernon's book did not stimulate much new published research over the next three decades; only a few scattered studies may be found from the 1930s until the early 1960s. Perhaps the first modern study of interest was Exline's (1963) investigation of visual interaction in groups of men and groups of women who had been categorized in terms of their need for affiliation. He found that need for affiliation was related to mutual glances, but differently for men and women. Exline's study had the further distinction of recognizing that nonverbal behavior should be examined *within interacting groups*, rather than implicitly assuming that people express themselves nonverbally without reference to others, that is, always in the same way.

Evolutionary Bases of Nonverbal Communication

Darwin (1872/1998) proposed in *Expression of the Emotions in Man and Animals* that nonverbal expressive displays evolved to signal the sender's motivations and emotions to others. Although this idea is very plausible, particularly for other animals' displays, it has been challenged in the case of humans by Hauser (1996), who countered that senders who

communicate their true state are at an evolutionary *dis*advantage; Hauser suggested that true displays leave the sender vulnerable to exploitation by the receiver. This view, consistent with Dawkins' (1989) *selfish gene theory*, asserts that displays are designed to deceive and manipulate the receiver. In turn, the receiver, it is said, attempts to decode the sender's true motivational state, and thus social interaction proceeds as a kind of war of interpretation and impression management. Others have offered a more complex compromise: dishonest displays are more likely when the sender does not trust the receiver, and honest displays are more likely when the sender trusts the receiver (e.g., Boone & Buck, 2003).

Social Psychological Theories of Nonverbal Communication

Theoretical approaches from social psychologists began with simple *one-channel studies*. Fifty years ago Robert Sommer (1959) investigated interpersonal distance as a form of nonverbal communication, one that presumably balanced too-close with too-far, an idea also discussed by Hall (1959). A few years later, the very influential *equilibrium theory* expressed by Argyle and Dean (1965) proposed that people seek such a balance across several "channels" (physical distance, gaze, smiling, as well as a verbal dimension, topic intimacy), rather than any single channel. Their theory suggested, for example, that if two people were forced closer together than they would prefer (for example, in an elevator), that they would compensate by increasing interpersonal "distance" in another channel, such as by gazing less at one another.

Theory next developed, in the 1970s, to explain the bases for these equilibratory adjustments. Several of these formulations focused on *arousal* as the psychological basis for the adjustments (Andersen, 1985; Burgoon, 1978; Cappella & Greene, 1982). In Patterson's (1976) original version of this approach, *arousal-labeling theory*, a move "closer" to the other person (receiver) in any of the channels causes that person to label the arousal, for example, as positive if the receiver is attracted to the sender (which tends to lead to a reciprocation of the adjustment toward closer) or negative (which tends to lead to the receiver re-setting the distance to the equilibrium, or even increasing the distance). In a similar vein, Mehrabian and

Diamond (1971) viewed these nonverbal adjustments as ways to vary interpersonal *immediacy*.

In the next theoretical development, Patterson (1982) proposed his *functional perspective*. The essence of the functional approach is that nonverbal behavior serves a variety of social purposes. Nonverbal behavior was now seen as not merely reactive (to the sender's moves), but could also involve the initiation of movement or expression on the part of the sender to serve a social goal. Sometimes these actions do not reflect the sender's emotions and attitudes, but reflect a goal that is inconsistent with them, such as obtaining the compliance of receiver, or deceiving them, or creating a desired impression (Patterson, 1991). Nonverbal behavior can and often does serve to communicate one's social role in a social interaction, to manage one's presentation of self to others, to signal rapport or the lack of it, to express emotion, to reveal one's personality, and to indicate whether or not one is telling the truth. Some of these functions are more, and some less, under the sender's control (e.g., Choi et al., 2005).

As theory in the area matured further, these ideas were expanded into *interaction adaptation theory* (Burgoon et al., 1998). Functionality is seen in this approach as consisting of three sorts: required, expected, and desired. Required functionality refers to biological drives and imperatives that may operate outside of consciousness. Expected functionality reflects norms and typical behavior for the context and culture. Desired functionality reflects such idiosyncratic influences as personality, attitudes, and moods. Together, these are said to comprise the person's interaction position—the averaged or main thrust of the sender's nonverbal predisposition in a given situation and with a specific receiver. The dynamics of the interpersonal exchange are posited to be the result of sender's interaction position and the receiver's behavioral response to it. Like each succeeding approach, interaction adaptation theory presumably was intended to incorporate and supercede the previous equilibrium, arousal, and functional approaches.

The other contemporary development is *parallel processing theory* (Patterson, 1995), which proposes that nonverbal interaction is not merely about behavior, but requires

understanding the social cognitive judgment processes involved. The latter are often automatic or overlearned, but sometimes under control and in the service of a particular goal. Interactants not only send (encode), they receive (decode), and Patterson believes that decoding has been underemphasized in earlier theories. Plausible and seemingly complete as parallel processing theory is, it is complex (as is interaction adaptation theory) and both theories have become difficult to properly test. As theory in the area struggles to capture the multidimensional nature of nonverbal interaction in context, it tends to become more descriptive than testable.

Research Methods

Nonverbal researchers may focus on (a) the interpersonal, organizational, or cultural context of the interaction, (b) the personal qualities, strategies, or background of the sender, the receiver, or both, (c) the dynamic or static nonverbal cues displayed by the sender, (d) the receiver's interpretations of those cues, and (e) the receiver's dynamic or static responses. Of course, receivers become senders, and the process is a dynamic interaction that unfolds over time. Most studies focus on one slice or aspect of the full process, usually the receiver's impressions of the sender, who is presented in different *channels* (e.g., silent video versus video with sound, e.g., Hall & Schmid Mast, 2007), or with different alleged qualities (e.g., in a relationship or not, e.g., Parker & Burkley, 2009),

Studies of nonverbal communication in the interpersonal context typically have focused on liking or attraction, usually between strangers, to control for the influence of pre-existing interactions (e.g., Mehrabian & Weiner, 1971). Organizational contexts have often included job interviews (e.g., Gifford, Ng, & Wilkinson, 1985). Cultural studies have often investigated presumed similarities or universalities in the meaning of cues such as facial expressions (e.g., Ekman & Friesen, 1971) or the lack thereof. The qualities of the sender and receiver typically include attractiveness, intelligence, personality, culture, race, formal status, relationship status, social class, and stigma.

Presenting the sender. The typical ways that senders have been presented to receivers

include photographs, video clips, vocal clips, and *in vivo,* with or without role-playing. This choice must be made carefully, because no presentation technique is universally appropriate or infallible (Gray & Ambady, 2006). The sender has been presented in very brief "slices" of time (e.g., Ambady &Rosenthal, 1993) and at length.

Measuring the sender's cues. Much effort has been expended creating scoring systems for nonverbal behavior. Ekman and Friesen's (1978) Facial Action Coding System (FACS) is the best-known of these, although others exist [e.g., The Maximally Descriptive Facial Movement Coding System, Izard (1979) and the Pride Coding System, Tracy & Robins, (2007)]. Others have created systems that assess the whole body's dynamic movements and static cues (e.g., Birdwhistell, 1952) and the Seated Kinesic Activity Notation System (SKANS 5.2), in which 38 kinesic and facial behaviors are measured in one of three ways: frequency, duration, or time-sampling (Gifford, 1994b), and numerous other systems exist (see Riggio, 2006).

A framework for understanding the process. For experimental-theoretical and efficiency reasons, researchers usually focus on slices of the many possibilities. No study can include all the potential influences, but perhaps the best framework for including at least selected elements of the full process is that envisioned by Brunswik as early as the mid-1940s, but best described in the posthumous book assembled by his colleagues (Brunswik, 1956, pp. 26-29). His *lens model* is a seemingly simple overview of the whole nonverbal communication process but, once delved into emerges as one rich with possibility and complexity (e.g., Hammond, 1955; Hoffman, 1960; Wiggins, 1973; also see Leising & Borkenau, this volume). Those who have attempted to further develop and use the full lens model, that is, by measuring the sender's background and qualities, the sender's cues, the receiver's background and qualities, and the accuracy or lack of it on the receiver's part, find it rewarding (e.g., Bernieri & Gillis, 2001; Borkenau & Liebler, 1992; Gifford, 1994a; Gifford, Ng, & Wilkinson, 1985; Scherer, 1978). Because it may be the best (if labor-intensive) overall framework for investigating nonverbal communication, the lens model, its advantages and its challenges, will be described in more

detail, beginning with its main elements.

The paradigm's structure is an adaptation of Brunswik's (1956) lens model (Figure 1). Encoding (or what Brunswik called *ecological validity*) is represented by the lines connecting sender qualities to nonverbal behavior. Encoding occurs when reliable sender assessments significantly correlate with the sender's reliably-scored nonverbal behaviors. Decoding (or what Brunswik called *cue utilization*) is represented by the lines connecting nonverbal behavior and impression formation on the part of the observers; it occurs when reliable receiver assessments are correlated with reliably scored sender nonverbal behaviors. The curved line linking the ratings of the actors' dispositions with the observers' ratings of those dispositions represents what Brunswik (1956) called *achievement*, or what is sometimes called agreement or accuracy. The large oval signifies the social and cultural context in which the interaction process unfolds. Encoding and decoding are influenced by the context in which they occur. What transpires in a hallway conversation probably does not flow the same way as during a romantic evening, a business discussion, a criminal interrogation, or in interactions in different cultures.

A primary principle is that the personal qualities of senders should be investigated in contexts in which they may reasonably be expected to manifest themselves or to be salient. Sociability should be investigated in a context that permits or encourages it. Dominance should be investigated in a setting that permits or encourages it (but does not force it, because then nonverbal behaviors associated with it might involve self-conscious acting on the part of the sender, perhaps borrowed from some film or television show, that does not reflect the palette of natural dominance behavior.

The goal on the left half of the lens is to determine which nonverbal behaviors *actually* encode the sender's interpersonal-related quality of interest, and the goal on the right side of the lens is to determine which nonverbal behaviors are *believed* by receivers to be cues that reveal the quality. This distinction follows from Brunswik's original labels for the two sides of the lens model: ecological *validity* (left half) and cue *utilization* (right half). Thus, e*ncoding* is the

outward, objective, visible manifestation of a sender's personal quality that is presumed to be, or to relate to, some aspect or quality of interpersonal relations. The fundamental hypothesis of lens model researchers is that valid encoding does occur or, alternatively, that *predictable* failures of encoding occur (e.g., in studies of bias or stereotyping).

Decoding is the use by receivers of nonverbal behavior to infer these aspects of interpersonal relations in the sender. It certainly occurs; the two interesting questions concern (a) its accuracy, by different kinds of receivers for different aspects of interpersonal relations in different conditions, and (b) the nature of systematic errors in decoding, which may signal bias or stereotyping. Achievement is the degree of connection between encoding and decoding. How, and equally or even more importantly, why is the receiver correct or incorrect about the sender's true interpersonal feelings, intentions, or motivations?

The study of achievement is challenged in two important and related ways: (1) the validity of the measures of the sender's qualities (e.g., emotion, motivation, attraction, intention, personality) themselves, and (2) the accuracy of receivers as they employ nonverbal cues to decode these qualities in others. These measures usually are self-reported by the sender or rated by others who know the sender well. However, important problems with both sorts of measures have been identified (cf. Funder, 2003; Kenny, 1994). Nevertheless, many researchers seem to assume that sender measures are valid. Sometimes this presumption is defensible (e.g., that the sender is lying or not, because this is an experimental manipulation), and sometimes it is worthy of question (e.g., the sender's motivation or attractiveness). Because they can be multiple, and thus have a natural psychometric edge, ratings of the sender's qualities by several significant others may be the "least-worst" approach to the validity problem when the criterion does not have an objective or experimental-manipulation basis. The second main problem with achievement is, as its definition implies: That receivers may or may not accurately decode the (true) level of the sender's interpersonal qualities from the sender's nonverbal behavior.

However, even if accuracy is low for these reasons, or not examined at all, decoding can be important, depending on the study's purpose. Receivers' assessments have inherent value as their view of senders' qualities, whether correct or not, as explanations of receivers' subsequent actions or attitudes toward the sender (e.g., Carney, Hall, & LeBeau, 2005).

Achievement can be enhanced or compromised depending on the mode in which the sender is presented. For example, decoders in an interview study saw either a silent videotape of an interview with a manager (that is, only the nonverbal behavior), or read a transcript of the same interview (thus, no nonverbal behavior) (Motowidlo, Burnett, Maczynski, & Witkowski, 1996). Decoders agreed well among themselves in their assessments of two encoder dispositions within each mode of presentation, but the correlations between the assessments of the two dispositions across the two conditions were $r = .27$ and $r = .30$; that is, they shared about nine percent of their variance. Given this low level of agreement between the assessments made in the two conditions, the decodings cannot both have been accurate.

How Encoding and Decoding are Related

In a full lens model, the relations between encoding and decoding fall into two categories, each with two forms. First, *matched links* may be identified. One form of matched link occurs when a nonverbal behavior significantly encodes self assessments and is also used to a significant degree by receivers to decode or infer that self assessment. Another form of matched link occurs when a link is significant on *neither* side of the lens: Receivers are saying that a given behavior does not encode a given sender quality and, based on the self assessments, it does not.

Second, *mismatched links* may be identified. One form of mismatched link occurs when a nonverbal behavior does encode a self-assessed sender quality, but receivers do not utilize that cue. The other form of mismatched link occurs when receivers utilize a particular nonverbal cue to form their impression, but that cue does *not* encode that sender quality.

Achievement is greater, in general, when there are more matched links. The existence of

matched links, with their lines going from the sender quality to a behavior and from the behavior to the receiver's assessment clearly suggests that agreement increases when information "flows" via such matched links. Conversely, agreement is lower when many mismatched links occur. When information does *not* flow, either encoding has not occurred (no behaviors measured encode the sender quality) or the receiver has used cues other than those that the encoding analysis suggests are valid indicators of the sender's quality.

Depending on the magnitudes of these links, which are discussed below, the findings in lens model studies show exactly *how* information appears to flow from the sender to the receiver. Its beauty and utility are that it shows precisely how a quality of the sender is reflected (or not) in nonverbal behavior and how receivers infer (and mis-infer) that quality. Receivers may utilize "power codes" (Carney, Hall, & LeBeau, 2005; Schwartz, Tesser, & Powell, 1982), and postures may have shared meaning for receivers (Kudoh & Matsumoto, 1985). However, this does not necessarily mean that the sender's dominance is encoded by this same set of acts; it merely means that receivers believe that it is. In an early study, personnel managers were quite confident that job application photographs revealed the applicants' character (Viteles & Smith, 1932). Receivers' inferences may be reliable, which *suggests* accuracy, but they often correlate sporadically or not at all with senders' cues (e.g., Cleeton & Knight, 1924). Decoding studies report that "high-persuasive" nonverbal behavior patterns in senders (direct gaze, more gestures, fewer self-touches) are decoded as more assertive, forceful, powerful, and intelligent (Hart & Morry, 1997).

However, are these accurate assessments of sender qualities or mere "decoding errors" (Bull, 1983)? Observers appear to decode *confidently* and with greater consensus (Gifford, 1994a; Lippa & Dietz, 2000), but the evidence that they do so *accurately* is mixed or even discouraging, as shown for example by Cleeton and Knight's study. On the positive side, some research shows that, *if* one is willing to define accuracy as agreement between receiver assessments with sender self-assessments, then removing nonverbal behavior from a job

interview (by conducting it by telephone, as opposed to in person) reduces accuracy (Blackman, 2002). Thus, nonverbal behavior certainly *can* contribute to accurate judgments. Again, lens model studies would enhance understanding of the full nonverbal communication process, including claims about accuracy or achievement.

Let us consider a concrete example. Gifford (1994a) used the lens model to identify nonverbal behaviors that (a) were valid indicators of particular interpersonal dispositions and (b) were correctly utilized by receivers, thereby forming matched links. In his study, unacquainted students conversed with each other in groups of three. Often, however, encoding and decoding do not result in optimal communication. The encoding and decoding of ambitiousness-dominance, for example, seems to involve largely different nonverbal acts (Gifford, 1994a). In the sample of behaviors examined, it was encoded by 4 acts, but receivers appear to have believed in a "power code" that included 10 acts. Only two acts were used in both encoding and decoding. Achievement depends on the receivers' appropriate use of ecologically valid cues. For example, the receivers believed that 14 nonverbal cues were good indicators of sender cold-quarrelsomeness, but not one of the 14 cues encoded self-rated cold-quarrelsomeness (Gifford, 1994a). Thus, achievement depends heavily on the receiver's use of appropriate nonverbal cues (i.e., those that actually encode the sender's qualities). "Dis-agreement" occurs when observers use inappropriate cues.

The strength of encoding and decoding. The magnitude of encoding and decoding is computed as the multiple correlation and percent of variance in each quality accounted for by the nonverbal behaviors. One general tendency is that decoding is stronger than encoding. Many more significant decoding links than encoding links typically are found (e.g., Borkenau and Liebler, 1992; Hall, Coats, & LeBeau, 2005). Despite this, decoding by individuals actually may not be much stronger than encoding. Decoding is usually based on ratings by multiple raters because multiple ratings almost necessarily increase the reliability of ratings. When ratings are more reliable, correlations involving them are stronger because less error is

involved. Stronger correlations are more likely to be statistically significant. Analyses in one study that corrected for attenuation and estimated the reliability of single judges (Gifford, 1994a), showed that one typical decoding link shrank from $r = -.58$ to $-.35$. The matched encoding link for this decoding link was $r = -.29$, not much less than $r = -.35$. Thus, observers as a *group* decode strongly, but researchers who wish to generalize to typical *individual* observers, would conclude that decoding is not particularly reliable, and this would attenuate the seemingly large magnitude of decoding.

Whether researchers examine population or individual group decoding depends on the study's purpose. If it is to understand how observers (in general, nomothetically) decode, one would use the full observer sample; if it is to estimate the decoding skill of a single "typical" observer, the attenuation approach should be used, and if the goal is to understand how one particular observer decodes (for example, a clinician in training), one could study decoding with an *n* of 1. The question for the researcher is, do I wish to learn how and how well observers in general decode, how and how well a typical single observer (e.g., a typical human resource officer in a large organization) decodes, or how and how well *this* observer (for example, a person applying for a job as a human resource officer) decodes?

Potential outcomes of lens model studies. What are the generic potential outcomes of studies that use this paradigm? The first assumption is that all the judgments (e.g., self- and significant-other ratings, behavior scoring by independent raters, and receiver ratings) are reliable; any that are not cannot be used with any pretence of validity. In general, encoding, decoding, and achievement may be weak or strong for any sender quality, and the pattern of results probably will be different for each sender quality.

The first type of potential outcome occurs when, for a given quality, encoding, decoding, and achievement are all weak. In this case, (1) the sender's quality is not consistently reflected in his or her nonverbal behavior (at least not in the behaviors studied), (2) receivers do not use this set of behavior cues to arrive at their inferences, and (3) receiver inferences do not agree

with the self- or significant-other assessments of the sender.

Second, if decoding is strong but encoding is weak, receivers apparently are employing invalid stereotypes. Achievement should be weak in such a case, because there are no true relations between the sender's quality and nonverbal behavior for receivers to validly decode.

Third, if strong encoding but weak decoding is found, receivers are unable to deduce correctly which nonverbal cues reflect the sender's quality. The potential for strong agreement is present but unrealized.

Fourth, if achievement is strong but both encoding and decoding are weak, receivers must be using nonverbal behaviors for decoding that the researcher has not measured. Some nonverbal cue or other must have been providing valid information about the sender's quality, or strong achievement would not be possible. The researcher must explore the receiver's impression formation process, perhaps through interviews with them, to learn which unstudied nonverbal cues they might have been using to succeed in matching the assessments of the senders.

Fifth, if weak encoding and high agreement are found, receivers again must be using valid but unmeasured nonverbal cues, unless the receivers are clairvoyant (Reichenbach, 1938). As Wiggins (1973, p. 159) wryly noted, "(s)uch a possibility is assigned rather low priority as a contemporary scientific explanation." This is a case in which researchers must re-think their choice of cues, seeking other ones that *do* encode the sender's quality. Again, this might be accomplished by asking receivers to reflect on their inferences: what was it about the senders' actions that caused you to assess them as you did?

Finally, if strong encoding, strong decoding, *and* strong agreement are found, one may conclude that the whole process is working as researchers in this area dream, and they may be able to supply a satisfying account of the nonverbal inference process. A sober second thought, however, is that senders (or their intimates) and receivers *might* be agreeing on an inaccurate view of the sender's quality, something akin to a *folie à deux*. A more likely interpretation is that

the strong mediation of objective nonverbal behaviors, reliably assessed by independent raters, would be substantial evidence that the receivers' decoding is valid, given that they have been demonstrated to rely on the same objective (visible) aspects of reality as encoding.

Ten Troublesome Complexities

Many studies have not adequately dealt with all the difficulties inherent in this area of research; to learn how nonverbal behavior truly illuminates the nature of interpersonal interaction, researchers must grapple with at least ten design and analysis complexities (Gifford, 2006). By "complexity" is meant a Type I or Type II error in interpreting the relations between nonverbal behavior and the target aspect of interpersonal interaction that may occur if the study fails to take into account one or more of the accuracy or agreement issues.

Some of these complexities are familiar and some less so; some are easier to manage than others. They are that (1) true encoding can be obscured through the use of unreliable measures, (2) encoding should be studied in a context in which the dimension of interpersonal interaction of interest is salient, (3) others involved in the interaction might influence an individual's encoding, (4) encoding might occur differently when a person is engaged in different activities or purposes, (5) encoding may depend on who (e.g., self or significant others) assesses the dimension of interpersonal interaction of interest, (6) nonverbal behavior may encode combinations of these dimensions without encoding that combination's constituent dimensions, (7) combinations of nonverbal behaviors may encode a dimension of interpersonal interaction of interest without the individual behaviors doing so, (8) encoding may depend on the gender composition of the group, (9) encoding sometimes differs for male and female individuals, and (10) cultural groups vary in their encoding patterns.

The lens model to the rescue. The lens model paradigm deals with the crucial accuracy problems in the most useful way. Its essential feature is that encoding and decoding both are included in the same study. Most studies examine either encoding or decoding, which disallows the possibility of understanding the relations between the two processes, or compare sender

and receiver ratings without investigating the intervening nonverbal behavior. For example, one study showed that self and acquainted observer ratings were more highly correlated than self and unacquainted observer ratings, but the behavioral cues on which the ratings were based were not measured (Funder & Colvin, 1988). Watson (1989) noticed this gap and called for studies of judgments that also include behavioral cues. Nevertheless, "cueless" studies are still reported. For example, "sociable" actors were found to be more legible (that is, easier to "read" or accurately decode) than less-sociable actors, based on actor-observer agreement, but the pathways or mediating behaviors underlying this phenomenon were not examined (e.g., Ambady, Hallahan, & Rosenthal, 1995). A few years later, these results were replicated, and many potential mediating cues were investigated. Extraverts used more energetic gestures, kept their hands farther from their bodies, and changed their facial expression more than introverts (Lippa, 1998).

The full lens model paradigm includes the following elements: reliably-measured sender qualities that are investigated within the context to which they apply, and three independent groups of raters are used: (1) senders' self-rated qualities or raters who know the sender well, (2) raters trained in a carefully developed nonverbal behavior scoring system, and (3) observer-raters, who are unacquainted typically with the actors, so that their ratings are not influenced by previous personal experience with the actor. A full lens study investigates all three processes, and the relative strengths of encoding, decoding, and agreement, and to take the context into account in order to provide some understanding of *how* nonverbal behavior communicates (and mis-communicates). Some notable exceptions include those by Borkenau and Liebler (1992) and Lippa (1998).

Which receivers? The paradigm can be employed to understand the cue-utilization policies either of individual or aggregate receivers. Some early studies focused on individual abilities, such as those of clinicians (e.g., Hoffman, 1960) and found that their judgments, as revealed through their use of cues, does not match well with their own impressions of how they

use those cues. Later, the individual-level focused on the differential sensitivity of individual receivers (e.g., Rosenthal, 1979). When the researcher has more aggregate, nomothetic goals ("How does this *receiver population* decode?), the ratings of a sample of receivers are used on the decoding side—if those ratings show adequate inter-rater reliability. If rater agreement is low, it will be inappropriate to correlate their ratings with the nonverbal behavior scores (decoding correlations) or with the targets' self-ratings (achievement correlations). Thus, studies with any sort of nomothetic goals depend on, and therefore must hypothesize, that a group of observers will reliably agree on actors' dispositions. If a specified group of observers do not agree, then conclusions about their cue-utilization policies cannot be stated, probably because members of that group do not use the same cues.

In one study that fulfilled most of the goals of the proposed paradigm, behavioral cues were examined as mediators of the encoding-decoding process (Borkenau & Liebler, 1992). The same judges served as raters of the physical cues and as decoders, however, which compromised the independence of the behavior scores and trait ratings. Perhaps the first study that examined nonverbal behavioral mediators and used behavior scorers who were independent of both targets and observers was conducted by Gifford, Ng, and Wilkinson (1985). It identified nonverbal cues exhibited by job applicants that mediated (and failed to mediate) agreement between job applicant and personnel officer assessments of the applicant's social skill and motivation to work.

Influences on Nonverbal Communication

The relations between nonverbal communication and interpersonal relations are complex, and a complete description of them is not possible here; the interested reader is referred to Manusov and Patterson (2006). This part of the chapter offers sample findings for the influences of personality, gender, culture, decoding skill, and decodability.

Personality. An example of relatively straightforward encoding results comes from a study of interacting female dyads (Berry & Hansen, 2000). More agreeable women gestured

more, used more open body postures, visually attended to their interaction partner more, used fewer visual dominance behaviors, and displayed fewer negative facial expressions than did less-agreeable women. Women who were more open to experience visually attended to their interaction partners more than those who were less open to experience.

More extraverted persons seem to use more animated, expressive, and animated gestures, that is, faster and more energetic gestures using the hands farther from the body (Lippa, 1998) than more introverted persons. Children with more internal, rather than external, locus of control tendencies smile more and engage in fewer off-task activities (Carton & Carton, 1998). Individuals with avoidant attachment styles tend to choose larger interpersonal distance(Kaitz, Bar-Haim, Lehrer, & Grossman, 2004), as do those with greater trait anxiety (e.g., Patterson, 1973) and weaker affiliative tendencies (e.g., Mehrabian & Diamond, 1971). Senders who speak in a tight-lipped manner or who turn their heads while speaking may be judged as "uptight," those who speak with a hand over their mouths or smile with a closed mouth as shy, and those who smile less as too serious (Ferrari & Swinkels, 1996). The encoded nonverbal behaviors of conversing senders as a function of eight interpersonal circle dispositions (Wiggins, 1979) was reported by Gifford (1994a), and nonverbal behaviors clearly map onto the interpersonal circle (Gifford, 1991; Gifford & O'Connor, 1987). Personality and gender, the next topic, often interact. For example, using most of one's body when gesturing validly signals extraversion for women, but not for men (Lippa, 1998).

Gender. Differences in nonverbal behavior for males and females are relatively small in magnitude, but they do exist and can have important consequences (Hall, 2006). On average, males generally choose larger interpersonal distances and females tend to orient themselves more directly to their interaction partner. Women usually are nonverbally more animated and warm, that is, they smile and laugh more, stand closer, look at and touch others more. These tendencies will vary or even reverse under different circumstances (Gifford, 2007). As one example, girls with depressive symptoms look less at their peers than boys with depressive

symptoms (van Beek, van Dolderen, & Dubas, 2006).

Women both decode more accurately and are more decodable (legible) to others of both genders, on average. In a particularly unfortunate instance of what might be called male decoding deficit, several studies show that men are likely to misinterpret women's nonverbal encoding of friendliness as sexual interest, but new work suggests that men also misinterpret women's encoded sexual interest as friendliness (Farris, Treat, Viken, & McFall, 2008). Perhaps this is why at least 9-15-year old girls perceive more anger and negativity in facial expressions than boys (van Beek & Dubas, 2008). This is not always the case. When women and men are told that the task is incongruent with stereotypical goals, men were more accurate when they thought the task involved military interrogation, and women were more accurate when they thought the task involved social worker skills (Horgan & Smith, 2006).

Culture. A primary goal and issue in the study of nonverbal behavior across cultures has been universality versus specificity. One general conclusion is that facial expressions for the main emotions are universal, but the rules for how and when to use them, as well as how to decode them in others. For example, Americans and Russians express anger and contempt more than do Japanese (Matsumoto, Yoo, Hirayama, & Petrova, 2005), and Asians decode emotions as having lower intensity than do Americans (Ekman et al., 1987).

The expression of other nonverbal actions varies considerably across cultures; perhaps the primary example is preferred interpersonal distance, which roughly increases with latitude in Western societies (apart from Australia and New Zealand), but is more finely tuned than such a generalization implies. For example, Colombians choose smaller distances than Costa Ricans (Shuter, 1976). Among many possible examples, Arabs tend to gaze longer and more directly at their partners than do Americans (Hall, 1963). Newly immigrated Jews and Italians in New York City had traditional gesturing patterns, but assimilation attenuated them (Efron, 1941).

Decoding ability. A variant on the study of decoding is the study of decoding *ability*, sometimes called nonverbal sensitivity (e.g., Riggio, 2006; Rosenthal, 1979). Decoding as a skill

related to the receiver's own experience and background has often been applied to decoding the sender's emotions (e.g., Mullins & Duke, 2004). Apparently, more intelligent judges are more accurate (Lippa & Dietz, 2000), at least for some qualities: more intelligent university-student receivers assessed dispositional extraversion and an omnibus (across-dispositions) measure more accurately than less-intelligent university-student receivers.

Decodability. On the other side of the lens, which qualities are easiest to decode from nonverbal behavior? Several studies (e.g., Ambady, Hallahan, & Rosenthal, 1995; Borkenau & Liebler, 1992; Gifford, 1994a; Lippa & Dietz, 2000) report that sociability or extraversion is the most legible or accurately discernable disposition. However, this may be a function of context: Most studies use conversations as the activity, and extraversion is particularly salient in conversations. As noted earlier, women are, on average, more legible than men.

Contexts of Nonverbal Communication

Nonverbal communication is part of every face-to-face interaction, and even many electronically-mediated interactions. Some interaction contexts are more common or more important, and this section focuses on close relationships, power relationships, deception, and computer-mediated interactions, although many more could be included:

Close relationships. Positively-valenced nonverbal behavior is essential to the development and maintenance of close relationships, or what has been called, in reference to the interpersonal circle (Leary, 1957; Wiggins, 1979), the horizontal dimension of social interaction. Among these are touch, smiling, mutual gaze, forward lean, and interpersonal distance, which together have been called *immediacy* (Mehrabian, 1967) or *positive involvement behavior* (Prager, 2000). Each of these behavioral elements helps to distinguish an intimate relationship from a casual one (Andersen, Guerrero, & Jones, 2006).

Involvement is said to be encoded in terms of five dimensions (Burgoon & Newton, 1991): immediacy in terms of touch, expressiveness of the face, attention paid to the other, smooth and coordinated conversational turn-taking, and few vocal pauses. Perhaps less

obviously, because it is not a nonverbal behavior in the sense of what occurs *during* an interaction, is simply the amount of time spent together, a nonverbal behavior of another sort. In fact, in one study this was the most powerful of 20 nonverbal behaviors in predicting relational satisfaction (Egland, Stelzner, Andersen, & Spitzberg, 1997).

Decoding is also important in close relationships: The accurate decoding of the other's emotions is important for relationship satisfaction (Gottman & Porterfield, 1981). People in satisfying relationships generally decode one another more accurately, an outcome in which the causal arrows probably run in both directions.   However, this is not always easy: nonverbal behavior can be ambiguous, both in terms of encoding and decoding. Ambiguity leads to misinterpretation which, particularly in developing and in close relationships, can have serious consequences. For example, faces can convey different dispositional impressions to receivers depending on the sender's emotional state (Montepare & Dobish, 2003). Intimate partners are more likely to notice negative nonverbal cues than positive ones (Manusov, Floyd, Kerssen-Griep (1997). Other studies suggest that the accuracy of emotional decoding in couples is almost impossibly complex: it depends on the positive or negative valence of the emotion, whether the emotion is related to the relationship itself or not, and on the sender's and receiver's degree of relationship satisfaction (Koerner & Fitzpatrick, 2002).

Apart from encoding and decoding, a number of nonverbal trends in relationships have been found. For example, unhappy couples display more negative nonverbal behavior (Burgoon, Buller, & Woodall, 1996). and men tend to nonverbally withdraw (less gaze, turning their head down and away) (Noller, Feeney, Roberts, & Christensen, 2005).

Power and dominance. An important aspect of interpersonal interaction is dominance or power, sometimes called the vertical dimension of social relations. If one focuses on beliefs about cues that define sender power ("power codes"), without considering sender encoding, receivers apparently believe that as many as 35 cues reveal sender power (Carney, Hall, & LeBeau, 2005). Among the strongest of these are manifesting a self-assured expression,

successfully interrupting others, and initiating hand-shaking. As for most qualities, however, decoding is much stronger than encoding (Hall, Coats, & LeBeau, 2005). When beliefs are stronger than reality, the potential for misunderstanding is great.

Decoding depends to some extent on power relations. Subordinates in one study were more accurate at decoding superiors than superiors were at decoding subordinates, probably because subordinates send less clear messages to superiors than superiors sent to subordinates (Hall et al., 2006).

Deception. Unfortunately (in most cases), people lie to one another (DePaulo et al., 1996). A long tradition in nonverbal communication research investigates this phenomenon, usually with the goal of distinguishing between instances of lying and truth-telling. In an illustration of usually faulty decoding, most police and parents think that they can distinguish the difference, but most people are poor at detecting lies (e.g., Bond & DePaulo, 2005). Part of the problem for decoders is that liars do not always use different nonverbal behavior than when they are telling the truth (Strömwall, Hartwig, & Granhag, 2006; Vrig, 2006).

When people do lie, one perspective asserts that it often is reflected in nonverbal behaviors associated with (a) fear, guilt, or delight emotions, (b) the complexity of the content, that is, having to think hard to create a story, and (c) attempts at behavior control, that is, controlling actions that liars believe might reveal that they are indeed lying (Zuckerman, DePaulo, & Rosenthal, 1981). Others have suggested that truth-tellers sometimes are subject to these same influences (DePaulo et al., 2003), for example, when convincing others that something is very important. Thus, distinguishing between lying and truth-telling can be difficult, but the distinction may be apparent if the liar presents the story unconvincingly or too deliberately.

Another perspective recognizes that liars are senders, but someone else is receiving the message, and that person influences the sender with his or her own actions (Buller & Burgoon, 1996) or knowledge. For example, knowing or thinking that a sender is lying influences what

receivers perceive in the sender's behavior (Levine, Asada, & Park, 2006). As in any nonverbal interaction, one person's gazing, smiling, nodding, and posture may influence the other's. Obviously, then, particularly if receivers do not take this into account, they may influence the actions of the sender, and then begin to interpret the sender's lying or truth-telling in terms of some nonverbal pattern that they themselves influenced.

No single cue is an extremely valid cue to lying, but some are more reliable than others. In a comprehensive meta-analysis, De Paulo et al. (2003) found the largest effect sizes for a lack of vocal and verbal immediacy and certainty, increased pupil dilation, less time spent talking, discrepant or ambivalent actions, and nervousness. Even larger effect sizes were found for number of foot movements, changes in pupil size, false smiles, and an indifferent or unconcerned appearance, but these effect sizes are based on a smaller number of studies and thus are less well established. Obviously they deserve more research attention. Other studies report that fewer movements, for example of the hands, signals deception, at least among senders with higher levels of public self-consciousness (Vrij, Akehurst, & Morris, 1997).

Can receivers be trained to detect deception? The evidence is mixed, but leans toward slight or moderate improvement in detection rates, depending on the type of message. Interestingly, even bogus training can improve detection rates, because "trained" receivers increase their attention to nonverbal cues as they process cues more critically (Levine, Feeley, McCornack, Hughes, & Harms, 2005).

Computer-mediated communication. The last several decades have seen an enormous increase in communication via computers. One might think this is outside the realm of nonverbal communication because for the most part, sender and receiver simply type messages. However, senders seem to want to embellish their words with more-than-verbal meaning, and so emoticons and avatars were invented.

Emoticons (combinations of punctuation marks or small graphic depictions of emotion-indicating faces have been used since the early 1980s, and come in many type-symbolic forms, such as :) or ☺. Despite, or perhaps because of, their simplicity, emoticons are actually more reliably recognized than human facial expressions (Walther, 2006). Females use them more often than males, and that the frown emoticon ☹ seems to be the only one that that can actually change the meaning of a verbal statement, as opposed to reinforcing a statement (Walther, 2006).

Avatars, cartoon-like full-body graphic images, up the nonverbal ante, because senders choose a virtual body to represent themselves, one that is not stuck in a sentence and restricted to keyboard symbols, but can move around in a virtual world. Thus, avatars open up the possibility of studying senders' chosen "interpersonal" distances (Krikorian, Lee, & Chock, 2000) and appearance (Nowak & Biocca, 2003) as they interact with (virtual) others.

Chronemics refers to the temporal aspect of computer-mediated communication, that is, the study of the time it takes for a recipient to reply to a sender. Is it important that someone replies to your email in five minutes versus five days? Apparently it is (Hesse, Werner, & Altman, 1988; Rice, 1990). When responses are slower, receivers tend toward making personal rather than situational attributions about senders (Cramton, 2001). Waiting longer than expected for a reply in instant-message conversations understandably leads to frustration or even hostility (Rintel & Pittam, 1997). Task-oriented messages sent late in the evening (as opposed to those sent in the morning) lead to attributions of dominance on the part of the sender by the receiver (Walther & Tidwell, 1995). Expectations of a fast email reply appear to be relaxed when the sender and receiver are in an established social relationship (Walther, 2006).

Using Nonverbal Behavior to Predict Interpersonal Outcomes

Whether through very brief presentations of a sender or longer and involved interactions such as marriage (e.g., Gottman & Porterfield, 1981), nonverbal communication researchers concerned with the future impact of current interactions have tried to predict the future from the present. The classic example is a study which demonstrated that evaluations of 30-second silent clips of instructors by college students were strongly predictive of those instructors' end-of–term ratings by students in their classes (Ambady & Rosenthal, 1993). Many other studies have supported the idea that fairly accurate evaluations occur with quite brief exposures to senders (e.g., Curhan & Pentland, 2007).

Implications for Everyday Interpersonal Interactions

One important implication of the findings is that when sender and receiver believe that different behaviors signify a given sender quality (or that a given behavior signifies different sender qualities), misinterpretation and conflict can result. For example, if a receiver believes that a sender is open to the development of a deeper relationship—or not—he or she may well behave toward the sender in accordance with this perception. The sender consequently may then be pleasantly *or* unpleasantly moved by these actions and may then respond accordingly (or not). The receiver may then react to the sender's reaction negatively if the inference was incorrect, and so on. In this way, the innocent use of, and consequent mis-inference from, certain nonverbal behaviors can seriously damage the development of social relations. A very general problem is the overly strong and often incorrect inference of sender qualities by receivers. This can, and probably is, the root of many interpersonal problems.

Conclusion

Nonverbal communication clearly is a very important part of interpersonal interaction, yet pinning down the specific ways in which its behavioral dimensions are encoded and decoded, and how social judgment processes influence and are influenced by it, remain as challenges. These challenges are partially illuminated by the process model portrayed in Table 1 (Gifford, 2006), which is an expanded form of the simple model offered at the beginning of the chapter; it

is intended to describe the research possibilities for communication in the nonverbal context. The model was adapted from Craik's (1968) framework for understanding environmental perception, and it aims to present a comprehensive overview of the different kinds of senders, transmission media (e.g., face-to-face, telephone, computer, television), and types of judgments, criteria, receivers, and analyses that nonverbal communication research could include.

[Insert Table 1 about here]

The process model is both daunting, in that it suggests the huge number of possibilities in this research area in contrast to what can be included in any one study, and heuristic, in that it can serve as an agenda for future researchers. A workable form of the framework, evolved from Brunswik's (1956) lens model, will be described at some length later in this chapter

The possibilities, contrasted with the challenges, help to account for the variations in researchers' optimism and enthusiasm from the 1930s until now. Researchers have been both aided and daunted by advances in theory and technology, and they face important methodological complexities. However, if researchers are, at minimum, careful to describe how their studies deal with the complexities, understanding will grow. This will be a step toward a fuller understanding of both social judgment and the delicate behavioral dance involved in nonverbal communication.

References

Agliati, A., Vescovo, A., & Anolli, L. (2006). A new methodological approach to nonverbal behavior analysis in cultural perspective. *Behavior Research Methods, 38,* 364-371.

Ambady, N., Hallahan, M., & Rosenthal, R. (1995). On judging and being judged accurately in zero-acquaintance situations. *Journal of Personality and Social Psychology, 69,* 518-529.

Ambady, N., & Rosenthal, R. (1993). Half a minute: Predicting teacher evaluations from thin slices of nonverbal behavior and physical attractiveness. *Journal of Personality and Social Psychology, 64*, 431-441.

Allport, G., & Vernon, P. (1933). *Studies in expressive movement.* New York: MacMillan.

Andersen, P. A. (1985). Nonverbal immediacy in interpersonal communication. In A. W.

Siegman & S. Feldstein (Eds.). *Multichannel integrations of nonverbal behavior.* (pp. 1-36).

Hillsdale, NJ: Erlbaum.

Andersen, P. A., Guerrero, L. K., & Jones, S. M. (2006). Nonverbal behavior in intimate

interactions and intimate relationships. In V. Manusov & M. L. Patterson (Eds.), *The Sage*

handbook of nonverbal communication. (pp. 259-278). Thousand Oaks, CA: Sage.

Argyle, M., et al. (1970). The communication of inferior and superior attitudes by verbal and

non-verbal signals. *British Journal of Social and Clinical Psychology, 9,* 222-231.

Argyle, M., & Dean, J. (1965). Eye contact, distance, and affiliation. *Sociometry, 28,* 289-304.

Bernieri, F. J., & Gillis, J. S. (2001). Judging rapport : Employing Brunswik's lens model to study

interpersonal sensitivity. In J. A. Hall & F. J. Bernieri (Eds.), *Interpersonal sensitivity: Theory*

and measurement (pp. 3-20). Mahwah, NJ: Erlbaum.

Berry, D. S., & Hansen, J. S. (2000). Personality, nonverbal behavior, and interaction quality in

female dyads. *Personality and Social Psychology Bulletin, 26,* 278-292.

Birdwhistell, R. L. (1952). *An introduction to kinesics: An annotation system for analysis of body*

motion and gesture. Washington, DC: U.S. Department of State Foreign Service Institute.

Blackman, M. C. (2002). The employment interview via the telephone: Are we sacrificing

accurate personality judgments for cost efficiency? *Journal of Research in Personality, 36,*

208-233.

Boone, R. T., & Buck, R. (2003). Emotional expressivity and trustworthiness: The role of

nonverbal behavior in the evolution of cooperation. Journal *of Nonverbal Behavior, 27,* 163-

182.

Bond, C. F., & De Paulo, B. M. (2005). *Accuracy of deception judgments.* Unpublished

manuscript.

Borkenau, P., & Liebler, A. (1992). Trait inferences: Sources of validity at zero acquaintance.

Journal of Personality and Social Psychology, 62, 645-657.

Brunswik, E. (1956). *Perception and the representative design of psychological experiments.* Berkeley, CA: University of California Press.

Bull, P. (1983). *Body movement and interpersonal communication*. New York: Wiley.

Buller, D. B., & Burgoon, J. K. (1996). Interpersonal deception theory. *Communication Theory, 6,* 203-242.

Burgoon, J. K. (1978). A communication model of personal space violations: Explication and an initial test. *Human Communication Research, 4,* 129-142.

Burgoon, J. K., Buller, D. B., & Woodall, W. G. (1996). *Nonverbal communication: The unspoken dialogue* (2nd ed.). New York: McGraw-Hill.

Burgoon, J. K., & Newton, D. A. (1991). Applying social meaning model to relational message interpretations of conversational involvement: Comparing observer and participant perspectives. *Southern Communication Journal, 56*, 96-113.

Burgoon, J. K., Ebesu, A. H., White, C. H., Koch, P., Alvaro, E. M., & Kikuchi, T. (1998). The many faces of interaction adaptation. In M. T. Palmer & G. A. Barnett (Eds.), Progress in Communication Sciences (Vol. 14, pp. 191-220). Stamford, CT: Ablex.

Campbell, A., & Rushton, J. P. (1978). Bodily communication and personality. *British Journal of Social and Clinical Psychology, 17,* 31-36.

Cappella, J. N., & Greene, J. O. (1982). A discrepancy-arousal explanation of mutual influence on expressive behavior for adult and infant-adult interaction. *Communication Monographs, 49,* 89-114.

Carney, D. R., Hall, J. A., & LeBeau, L. S. (2005). Beliefs about the nonverbal expression of power. *Journal of Nonverbal Behavior, 29,* 105-123.

Carton, J. S., & Carton, E. E. R. (1998). Nonverbal maternal warmth and children's locus of control of reinforcement. *Journal of Nonverbal Behavior, 22,* 77-86.

Choi, V. S., Gray, H. M., & Ambady, N. (2005). The glimpsed world: Unintended communication

and unintended perception. In R. R. Hassin, J. S. Uleman, & J. A. Bargh (Eds.), *The new unconscious.* (pp. 309-333). New York: Oxford.

Cleeton, G. U., & Knight, F. B. (1924). Validity of character judgments based on external criteria. *Journal of Applied Psychology, 8,* 215-231.

Craik, K. H. (1968). The comprehension of the everyday physical environment. *Journal of the American Institute of Planners, 34,* 29-37.

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science, 12,* 346-371.

Curhan, J. R., & Pentland, A. (2007). Thin slices of negotiation: Predicting outcomes from conversational dynamics within the first 5 minutes. *Journal of Applied Psychology, 92,* 802-811.

Darwin, C. (1872/1998). The expression of the emotions in man and animals. New York: Oxford.

Dawkins, R. (1989). *The selfish gene: New edition.* New York: Oxford.

DePaulo, B. M., Kashy, D. A., Kirkendol, S. E., Wyer, M. M., Epstein, J. A. (1996). Lying in everyday life. *Journal of Personality and Social Psychology, 70,* 979-995.

DePaulo, B. M., Lindsay, J. L., Malone, B. E., Muhlenbruck, L., Charlton, K., & Cooper, H. (2003). Cues to deception. *Psychological Bulletin, 129,* 74-118.

Efron, D. (1941). *Gesture and environment.* Oxford, UK: King's Crown Press.

Egland, K. I., Stelzner, M. A., Andersen, P. A., & Spitzberg, B. S. (1997). Perceived understanding, nonverbal communication, and relational satisfaction. In J. E. Aitken & L. J. Shedletsky (Eds.). *Intrapersonal communication processes* (pp. 386-396). Annandale, VA: Speech Communication Association.

Ekman, P., & Friesen, W. V. (1971). Constants across culture in the face and emotion. *Journal of Personality and Social Psychology, 17,* 124-129.

Ekman, P., Friesen, W. V., O'Sullivan, M., Chan, A., Diacpoyanni-Tarlatzis, I., Heider, K., et al. (1987). *Journal of Personality and Social Psychology, 53,* 712-717.

Exline, R. V. (1963). Explorations in the process of person perception: Visual interaction in relation to competition, sex, and need for affiliation. *Journal of Personality, 31,* 1-20.

Farris, C., Treat, T. A., Viken, R. J., & McFall, R. M. (2008). Perceptual mechanisms that characterize gender differences in decoding women's sexual intent. *Psychological Science, 19,* 348-354.

Ferrari, J. R., & Swinkels, A. (1996). Classic cover-ups and misguided messages: Examining face-trait associations in stereotyped perceptions of nonverbal behavior. *Journal of Social Behavior and Personality, 11,* 27-42.

Funder, D. C. (2003). Toward a social psychology of person judgments: Implications for person perception accuracy and self-knowledge**.** In Forgas, J. P., & Williams, K. D. (Eds.) *Social judgments: Implicit and explicit processes.* (pp. 115-133). New York: Cambridge.

Funder, D. C., & Colvin, C. R. (1988). Friends and strangers: Acquaintanceship, agreement, and the accuracy of personality judgment. *Journal of Personality and Social Psychology, 55,* 149-158.

Gifford, R. (1991). Mapping nonverbal behavior on the interpersonal circle. *Journal of Personality and Social Psychology, 61,* 279-288.

Gifford, R. (1994a). A lens-mapping framework for understanding the encoding and decoding of interpersonal dispositions in nonverbal behavior. *Journal of Personality and Social Psychology, 66,* 398-412.

Gifford, R. (1994b). *SKANS 5.2: The seated kinesic activity notation system*. Technical report. Victoria, BC: University of Victoria. (Available from the author.)

Gifford, R. (2006). Personality and nonverbal behavior. In V. Manusov & M. L. Patterson (Eds.), *The Sage handbook of nonverbal communication.* (pp. 201-218). Thousand Oaks, CA: Sage.

Gifford, R. (2007). Environmental *psychology: Principles and practice.* Colville, WA: Optimal Books.

Gifford, R., Ng, C. F., & Wilkinson, M. (1985). Nonverbal cues in the employment interview: Links between applicant qualities and interviewer judgments. *Journal of Applied Psychology, 70,* 729-736.

Gifford, R., & O'Connor, B. (1987). The interpersonal circumplex as a behavior map. *Journal of Personality and Social Psychology, 52,* 1019-1026.

Gottman, J. M., & Porterfield, A. L. (1981). Communicative competence in the nonverbal behavior of married couples. *Journal of Marriage and the Family, 43,* 817-824.

Gray, H. M., & Ambady, N. (2006). Methods for the study of nonverbal communication. In V. Manusov & M. L. Patterson (Eds.), *The Sage handbook of nonverbal communication*. (pp. 41-58). Thousand Oaks, CA: Sage.

Hall, E. T. (1959). *The silent language.* Garden City, NY: Doubleday.

Hall, J. A. (2006). Women's and men's nonverbal communication: Similarities, differences, stereotypes, and origins. In V. Manusov & M. L. Patterson (Eds.), *The Sage handbook of nonverbal communication*. (pp. 201-218). Thousand Oaks, CA: Sage.

Hall, J. A., Rosip, J. C., Smith LeBeau, L., Horgan, T. G., & Carter, J. D. (2006). Attributing the sources of accuracy in unequal-power dyadic communication: Who is better and why? *Journal of Experimental Social Psychology, 42,* 18-27.

Hall, J. A., & Schmid Mast, M. (2007). Sources of accuracy in the empathic accuracy paradigm. *Emotion, 7*, 438-446.

Hammond, K. R. (1955). Probabalistic functioning and the clinical method. *Psychological Review, 62,* 255-262.

Hauser, M. D. (1996). The evolution of communication. Cambridge, MA: Cambridge University Press.

Heslin, R., & Patterson, M. L. (1982)*. Nonverbal behavior and social psychology.* New York: Plenum.

Hesse, B. W., Werner, C. M., Altman, I. (1988). Temporal aspects of computer-mediated

communication. *Computers in Human Behavior, 4,* 147-165.

Hoffman, P. J. (1960). The paramorphic representation of clinical judgment. *Psychological Bulletin, 57,* 116-131.

Horgan, T. G., & Smith, J. L. (2006). Interpersonal reasons for interpersonal perceptions: Gender-incongruent purpose goals and nonverbal judgment accuracy. *Journal of Nonverbal Behavior, 30,*127-140*.*

Hovland, C. I., & Janis, I. L. (1959). *Personality and persuasibility.* New Haven, CT: Yale University Press.

Hsee, C. K., Hatfield, E., Carlson, J. G., & Chemtob, C. (1992). Assessments of the emotional state of others—conscious judgments versus emotional contagion. *Journal of Social and Clinical Psychology, 11,* 119-128.

Izard, C. E. (1979). *The maximally discriminative facial movement coding system (MAX).* Newark, NJ: The University of Delaware Information Technologies and University Media Services.

Kaitz, M., Bar-Haim, Y., Lehrer, M., & Grossman, E. (2004). Adult attachment style and interpersonal distance. *Attachment and Human Development, 6,* 285-304.

Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. New York: Guilford.

Koerner, A. F., & Fitzpatrick, M. A. (2002). Nonverbal communication and marital adjustment and satisfaction: The role of decoding of relationship relevant and relationship irrelevant affect. *Communication Monographs,* 69, 33-51.

Krikorian, D. H., Lee, J., & Chock, T. M. (2000). Isn't that spatial? Distance and communication in a 2D virtual environment. *Journal of Computer-Mediated Communication, 5.* (Retrieved August 25, 2009 from http://jcmc.indiana.edu/vol5/issue4/krikorian.html)

Kudoh, T., & Matsumoto, D. (1985). Cross-cultural examination of the semantic dimensions of body postures. *Journal of Personality and Social Psychology, 48,* 1440-1446.

Leary, T. (1957). *Interpersonal diagnosis of personality.* New York: Ronald.

Levine, T. R., Asada, K. J. K., & Park, H. S. (2006). The lying chicken and the gaze-avoidant egg: Eye contact, deception, and causal order. *Southern Communication Journal, 71,* 401-411.

Levine, T. R., Feeley, T. H., McCornack, S. A., Hughes, M., & Harms, C. M. (2005). Testing the effects of nonverbal behavior training on accuracy in deception detection with the inclusion of a bogus training control group. *Western Journal of Communication, 69,* 203-217.

Lippa, R. (1998). The nonverbal display and judgment of extraversion, masculinity, femininity, and gender diagnosticity: A lens model analysis. *Journal of Research in Personality, 32,* 80-107.

Lippa, R., & Dietz, J. K. (2000). The relation of gender, personality, and intelligence to judges' accuracy in judging strangers' personality from brief video segments. *Journal of Nonverbal Behavior, 24,* 25-43.

Manusov, V., Floyd, K., & Kerssen-Griep, J. (1997). Yours, mine, and ours: Mutual attributions for nonverbal behaviors in couples' interactions. *Communication Research, 24,* 234-260.

Manusov, V., & Patterson, M. L. (Eds.), *The Sage handbook of nonverbal communication*. Thousand Oaks, CA: Sage.

Matsumoto, D., Yoo, S. H., Hirayama, S., & Petrova, G. (2005). Validation of an individual-level measure of display rules: The display rule assessment inventory (DRAI). *Emotion, 5,* 23-40.

Mehrabian, A. (1967). Orientation behaviors and nonverbal attitude in communicators. *Journal of Communication, 17,* 324-332.

Mehrabian, A., & Diamond, S. G. (1971). Seating arrangement and conversation. *Sociometry, 34,* 281-289.

Mehrabian, A., & Weiner, M. (1967). Decoding of inconsistent communications. *Journal of Personality and Social Psychology, 6,* 108-114.

Montepare, J. M., & Dobish, H. (2003). The contribution of emotion perceptions and their overgeneralizations to trait impressions. *Journal of Nonverbal Behavior, 27,* 237-254.

Motowidlo, S. J., Burnett, J. R., Maczynski, J., & Witkowski, S. (1996). Predicting managerial job performance from personality ratings based on a structured interview: An international replication. *Polish Psychological Bulletin, 27*, 139-151.

Mullins, D. T., & Duke, M. P. (2004). Effects of social anxiety on nonverbal accuracy and response time I: Facial expressions. *Journal of Nonverbal Behavior, 28*, 3-33.

Noller, P. (2006). Nonverbal communication in close relationships. In V. Manusov & M. L. Patterson (Eds.), *The Sage handbook of nonverbal communication.* (pp. 403-420). Thousand Oaks, CA: Sage.

Noller, P., Feeney, J. A., Roberts, N., & Christensen, A. (2005). Withdrawal in couple interactions: Exploring the causes and consequences. In R. E. Riggio & R. S. Feldman (Eds.), *Applications of nonverbal communication* (pp. 195-213). Mahwah, NJ: Erlbaum.

Nowak, K. L., & Biocca, F. (2003). The effect of the agency and anthropomorphism on users' sense of telepresence, co-presence, social presence in virtual environments. *Presence, 12,* 481-494.

Parker, J., & Burkley, M. (2009). Who's chasing whom? The impact of gender and relationship status on mate poaching. *Journal of Experimental Social Psychology, 45,* 1016-1019.

Patterson, M. L. (1973). Stability of nonverbal immediacy behaviors. *Journal of Experimental Social Psychology, 9,* 97-109.

Patterson, M. L. (1976). An arousal model of interpersonal intimacy. *Psychological Review, 83,* 235-245.

Patterson, M. L. (1982). A sequential functional model of nonverbal exchange. *Psychological Review, 89,* 231-249.

Patterson, M. L. (1991). A functional approach to nonverbal exchange. In R. S. Feldman, & B. Rime (Eds.). *Fundamentals of nonverbal behavior* (pp. 458-495). Cambridge, UK: Cambridge.

Patterson, M. L. (1995). A parallel process model of nonverbal communication. *Journal of*

Nonverbal Behavior, 19, 3-29.

Peabody, D., & Goldberg, L. R. (1989). Some determinants of factor structures from personality-

    trait descriptors. *Journal of Personality and Social Psychology, 57,* 552-567.

Pintner, R. (1918). Intelligence estimated from photographs. *Psychological Review, 25,* 286-

    296.

Prager, K. J. (2000). Intimacy in personal relationships. In C. Hendrick & S. S. Hendrick (Eds.),

    Close relationships: A sourcebook (pp. 229-242). Thousand Oaks, CA: Sage.

Reichenbach, H. (1938). Experience and prediction. Chicago: University of Chicago Press.

Rice, R. E. (1990). Computer-mediated communication system network data: Theoretical

    concerns and empirical examples. *International Journal of Man-Machine Studies, 32,* 627-

    647.

Riggio, R. E. (2006). Nonverbal skills and abilities. In V. Manusov & M. L. Patterson (Eds.), *The*

    Sage handbook of nonverbal communication. (pp. 79-95). Thousand Oaks, CA: Sage.

Rintel, E. S., & Pittam, J. (1997). Strangers in a strange land: Interaction management on

    Internet Relay Chat. *Human Communication Research, 23,* 507-534.

Rosenthal, R. (Ed.) (1979). Skill in nonverbal communication: Individual differences. Cambridge,

    MA: Oelgeschlager, Gunn & Hain.

Scherer, K. R. (1978). Personality inference from voice quality: The loud voice of extroversion.

    European Journal of Social Psychology, 8, 467-487.

Schwartz, B., Tesser, A., & Powell, E. (1982). Dominance cues in nonverbal behavior. *Social*

    Psychology Quarterly, 45, 114-120.

Shuter, R. (1976). Proxemics and tactility in Latin America. *Journal of Communication, 26,* 46-

    52.

Sommer, R. (1959). Studies in personal space. *Sociometry, 22,* 247-260.

Stern, W. (1935). *Allgemeine psycholgie auf personalistischer grundlage*. The Hague: Nijhoff.

Strömwall, L. A., Hartwig, M., & Granhag, P. A. (2006). To act truthfully: nonverbal behavior and

strategies during a police interrogation. *Psychology, Crime, and Law, 12,* 207-219.

Tracy, J. L., & Robins, R. W. (2007). The prototypical pride expression: Development of a

nonverbal behavior coding system. *Emotion, 7,* 789-801.

Trager, G. L. (1958). Paralanguage: A first approximation, *Studies in Linguistics, 13*, 1-12.

van Beek, Y., van Dolderen, M. S. M., & Dubas, J. J. S. D. (2006). Gender-specific development

of nonverbal behaviors and mild depression in adolescence. *Journal of Child Psychology*

and Psychiatry, 47, 1272-1283.

van Beek, Y, & Dubas, J. S. (2008). Age and gender differences in decoding basic and non-

basic facial expressions in late childhood and early adolescence. *Journal of Nonverbal*

Behavior, 31, 32-52.

Viteles, M. S., & Smith, K. R. (1932). The prediction of vocational aptitude and success from

photographs. *Journal of Experimental Psychology, 15,* 615-629.

Vrij, A. (2006). Nonverbal communication and deception. In V. Manusov & M. L. Patterson

(Eds.), *The Sage handbook of nonverbal communication*. (pp. 341-359). Thousand Oaks,

CA: Sage.

Vrij, A., Akehurst, L. & Morris, P. (1997). Individual differences in hand movements during

deception. *Journal of Nonverbal Behavior, 21,* 87-102.

Walther, J B. (2006). Nonverbal dynamics in computer-mediated communication. In V. Manusov

& M. L. Patterson (Eds.), *The Sage handbook of nonverbal communication*. (pp. 461-479).

Thousand Oaks, CA: Sage.

Walther, J. B., & Tidwell, L. C. (1995). Nonverbal cues in computer-mediated communication,

and the effect of chronemics on relational communication. *Journal of Organizational*

Computing, 5, 355-378.

Watson, D. (1989). Strangers' ratings of the five robust personality factors: Evidence of a

surprising convergence with self-report. *Journal of Personality and Social Psychology, 57,*

120-128.

Wiggins, J. S. (1973). *Personality and prediction: Principles of personality assessment.*
Reading, MA: Addison-Wesley.

Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal
domain. *Journal of Personality and Social Psychology, 37,* 395-412.

Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1981). Verbal and nonverbal communication
of deception. In L. Berkowitz (Ed.)., *Advances in experimental social psychology* (Vol. 14,
pp. 1-57). New York: Academic Press.

Table 1. A Process and Research Model for Understanding Nonverbal Communication

Sender (S)						Receiver (R)			
Role	Personal Quality	Message	Medium	Measure (I)	Context	Role	Personal Quality	Feedback	Question (I)
Child	Personality	Factual	In Vivo	Self-report (S)	Conversation	Child	Personality	Factual	Encoding
Student	Status/Class	Persuasive	Video	Rating (R)	Personnel Selection	Student	Status/Class	Agreement	Decoding
Partner	Gender	Supportive	Audio	Rating (I)	Deception	Partner	Gender	Disagreement	Accuracy
Friend	Age	Threatening	Transcript	Scored Behavior:	Clinical	Friend	Age	Incomprehension	
Peer	Education	Emotional	Drawing	Single	Attraction	Peer	Education	Emotional	
Other Culture	Ethnicity		Computer	Pattern	Environment	Other Culture	Ethnicity	None	
Employee	Attractiveness					Employee	Attractiveness		
Employer						Employer			
Stranger						Stranger			
Enemy						Enemy			

Note. Nonverbal communication in interpersonal relationships is complex. Senders (S) with various personal qualities who may hold a variety of roles may send a variety of message types using many nonverbal cues (not depicted in this table) within a variety of social contexts. These may be measured by researchers (I) using a variety of tools. The sender's messages are directed to receivers (R) with their own set of personal qualities who may be hold different roles and respond to the sender in different nonverbal ways. Researchers may be interested in encoding, decoding, accuracy, or in other relations between elements of these columns. The elements in all columns are examples rather than complete lists.

Figure 1. The lens model (Brunswik, 1956), updated.