INVITED ARTICLE: A PARALLEL PROCESS MODEL OF NONVERBAL COMMUNICATION

Miles L. Patterson

ABSTRACT: This article develops a parallel processing model of nonverbal communication that emphasizes the interdependence of behavioral and person perception processes from a functional perspective on social interaction. The form and outcome of the behavioral (encoding) and person perception (decoding) processes are a product of three related elements, including: (1) determinants, (2) the social environment, and (3) cognitive-affective mediators. In this model, the determinants (biology, culture, gender, and personality), in combination with the partner and setting, influence interpersonal expectancies, dispositions, goals, affect, and cognitive resources. In turn, these mediators constrain the attention and cognitive effort applied to behavior management and person perception. In general, fewer cognitive resources and decreased effort will have less effect on the outcome of automatic behavioral (e.g., scripts) and person perception (e.g., impressions based on appearance and nonverbal cues) processes than on more demanding ones. The utility of this theory in integrating behavioral and person perception processes into a single system is discussed.

The purpose of this article is to outline a broad, theoretical framework for understanding the dynamic processes involved in nonverbal communication. Although the specific role of language in interaction in communication is beyond the scope of this article, the attentional and processing demands of encoding and decoding language are directly relevant to the model. In this model, the term "nonverbal communication" will be used in its broadest sense, that is, in referring to the exchange of information and influence through physical characteristics, appearance cues, vocal cues, and a wide range of nonverbal behaviors.

The basic assumption of this model is that an understanding of non

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verbal communication requires attention to the simultaneous and interdependent encoding and decoding processes initiated in the service of various social functions (see also Patterson, 1994a). That is, an individual's nonverbal behavior (encoding) affects and is affected by concurrent judgments (decoding) in adapting to the social environment. Although most researchers either explicitly or implicitly accept such an assumption, the practice of both empirical research and theory construction typically ignores the interdependence of encoding and decoding. That is, for the sake of control, clarity, or simplicity, encoding and decoding processes are usually examined separately.

To set the context for this model, it may be useful first to review briefly the representative theoretical approaches to the encoding and decoding of nonverbal communication.

Encoding Emphasis

Characteristic of the encoding approach are the theories of nonverbal exchange. These theories attempt to explain the behavioral adjustments of one person in response to the initial behavioral input of a partner (e.g., Andersen & Andersen, 1984; Argyle & Dean, 1965; Burgoon, 1978; Cappella & Greene, 1982; Patterson, 1976). In different ways, each of these theories appeals to cognitive-affective mediators as critical processes directing behavioral adjustments to a partner's behavior.

Although these models propose different mediating mechanisms to explain nonverbal patterns in interaction, they all share two important characteristics. First, the models are all reactive in nature, that is, they seek to explain the nonverbal adjustments of one person, given initial changes in the partner's behavior. Consequently, they do not address the origin of specific exchanges in interaction, but only reactions to the partner's prior patterns of behavior. For example, such reactive mechanisms overlook the role of scripted sequences in interactions, like those involved in greetings and departures.

Second, all of the models are affect driven. That is, the proximate determinant of an individual's behavioral adjustment is the valence of the affect resulting from the partner's behavior. A common prediction in all of the models is that positive affect leads to the reciprocation of nonverbal involvement with a partner and negative affect leads to compensation. A simple affect-driven mediating process cannot, however, account for occasions when affect is inconsistent with overt behavior. For example, "acting friendly" (close approach, high level of gaze, and smiling) toward a disliked superior is a strategic pattern that does not reflect underlying affect.

Although these theories recognize the importance of cognitive processes,

including person perception, the cognitive mediators enlisted in the theories are discrete explanatory mechanisms precipitated by the behavioral input of a partner. Thus, the larger role of social cognitions as continuous processes that are simultaneous with, and even anticipatory to, interaction behavior has largely been ignored. The functional model of nonverbal exchange (Patterson, 1982a, 1983) addresses some of the deficiencies of earlier theories, but it also fails to integrate encoding and decoding processes adequately into a single system. Nevertheless, the functional theme is one that is also central to the present model.

Decoding Emphasis

In contrast to the encoding approach to nonverbal communication, the decoding approach focuses on the judgments and impressions formed in response to specific appearance cues or behavior patterns of a stimulus person. This approach is, of course, characteristic of the extensive research on person perception—only part of which focuses specifically on nonverbal components of impression formation.

Although the early work on person perception emphasized the utility of social cognition for action (e.g., Asch, 1946; James, 1890/1983), the dominant paradigm for many years assumed a passive perceiver. That is, the perceiver was not really an interactant, but a thinker, who simply attended to and processed social information (Swann, 1984). Fortunately, in the last several years, there has been a renewed appreciation of the pragmatic value of social cognition and its link to interactive behavior (Fiske, 1992). Nevertheless, current theories of person perception clearly emphasize the perceiver as a thinker, not as an actor who simultaneously forms impressions of others. The various theories of person perception might be categorized into three relatively distinct approaches on the bases of the kind of information they seek to explain and the type and extent of the processing of this information (Patterson, 1994a).

First, information processing models emphasize the alternative modes (primarily categorization and integration) of processing physical characteristics or appearance of a target in forming an overall impression (see for example Anderson, 1974, 1981; Brewer, 1988; Fiske & Neuberg, 1990; Smith & Zarate, 1992; Wyer & Srull, 1986). In these models, the extent of information processing is a product of the perceivers' motivation and the nature and consistency of information about the target.

Second, behavior-based trait attribution models focus on the sequential processing of behavioral information about a target. This includes a relatively automatic behavior identification (e.g., friendly behavior) in the

first stage, followed by trait or dispositional inference (e.g., friendly person) in the second stage (Trope, 1986). Gilbert, Pelham, and Krull (1988) proposed that initial trait inferences might be modified in a third stage, if there were reason to question the initial inferences *and* sufficient cognitive resources were available.

The final approach, the ecological perspective (McArthur & Baron, 1983), assumes that the important social judgments do *not* take the form of trait inferences but, rather, involve how the perceiver might relate to the target. That is, people are typically more concerned about what the target can do for (or to) them, than in making abstract trait inferences. Presumably, the information necessary for making such judgments is available in basic appearance and behavioral characteristics that are processed more or less automatically (McArthur & Baron, 1983). For example, the babyface appearance of infants typically results in positive, friendly, and nurturant reactions from adults.

In general, these three approaches engage different processes for relatively distinct types of social judgments. As a result, the three perspectives are not so much competing explanations of person perception as they are complementary ones (Neisser, 1992). Although the work of Gilbert and his colleagues (e.g., Gilbert & Krull, 1988; Gilbert et al., 1988) does consider some of the effects of the perceiver's own behavior on the judgments of others, the different theories clearly emphasize the decoding side of interaction, not the encoding side. In the remainder of this article, the interdependence of encoding and decoding processes will be analyzed in the framework of a parallel process model of nonverbal communication.

Overview

The basic assumption underlying this parallel process model is that interactants simultaneously act with, and form impressions of, their partners. Thus, individuals are encoding information, feelings, intentions, scripts, or other reactions into behavioral expression while, at the same time, decoding the behavior of the partner and experiencing feedback from their own behavior. In turn, the attention, cognitive effort, and feedback involved in each process affect the development and outcome of the other process. Consistent with my earlier model (Patterson, 1982a, 1983), the functional basis for nonverbal communication is emphasized. That is, the development of an actor's concurrent patterns of encoding and decoding are adaptive reactions to the social environment.

Before addressing the specifics, it is useful to identify some of the

general parameters underlying this model. First, this approach is primarily an individualistic one. That is, it emphasizes the development of and relationship between encoding and decoding processes of one person in relating to a partner. Nevertheless, this approach also has relevance for the emergence of dyadic patterns, especially when common mediating influences (e.g., expectancies, affect, goals, and dispositions) are shared by interaction partners. An example of such a pattern would be the behavioral coordination that results from increased contact and attachment between partners (Bernieri & Rosenthal, 1991; Tickle-Degnen & Rosenthal, 1990).

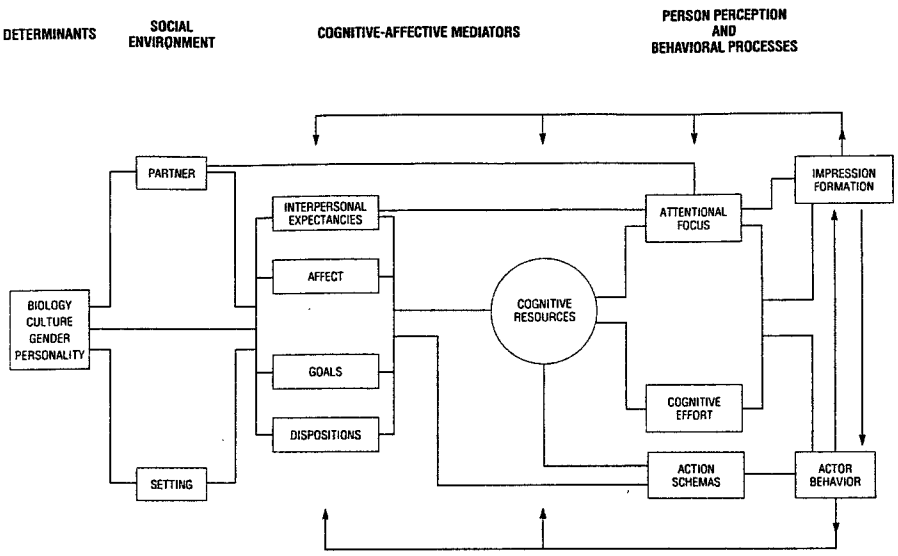
A second, related concern involves the level of analysis of specific behaviors. There are two issues that are relevant here: (1) individually-defined versus dyadically-defined behaviors; and (2) component behaviors versus patterns of behaviors. Some behaviors, like facial expression, gestures, or vocal cues, may be adequately described without specific reference to a partner's behavior. Other behaviors, like mutual gaze, interpersonal distance, or touch, necessarily engage the action, or at least the presence, of a partner. Although it is important to recognize the operational differences between these two types of behaviors, both types are interactive and an appropriate focus for the present model. That is, in interactions, specific expressions, gestures, and vocal changes are a product of the social context (especially the behavior of the partner), just as mutual gaze, distance, and touch are.

The issue of component cues and behaviors versus patterns of behavior is one that has been addressed frequently in the past (e.g., Argyle & Dean, 1965; Cappella, 1981; Mehrabian, 1969; Patterson, 1976, 1983). Specifically, although it is convenient to focus on individual behaviors in isolation, we are continuously encoding and decoding *patterns* of behavior in social settings, not isolated cues. Even when a single behavior seems especially salient, its meaning and impact are constrained by the overall behavioral context. Consequently, the emphasis in this article is on the encoding and decoding of patterns of behavior, especially in terms of nonverbal involvement (Patterson, 1982a, 1983) and behavioral coordination (Bernieri & Rosenthal, 1991) between interactants.

Social Context for Nonverbal Communication

This parallel process model is composed of four related components, including: (1) determinants; (2) the social environment; (3) cognitive-affective mediators; and (4) person perception and behavioral processes. The first three elements, identifying the social context for interaction, are dis-

Figure 1. A general schema for the parallel processing model of nonverbal communication.



cussed in this section. Because not all the elements of this model can be adequately covered in an article of this length, the emphasis here will be on the dynamic processes involved in the mediating mechanisms and in the parallel behavioral and person perception tracks (covered in the next section). Consequently, the role of the determinants and the social environment will only be described very briefly. An illustration of the relationships among component processes in the model can be seen in Figure 1.

Determinants

A number of factors combine to shape the activation of encoding and decoding in nonverbal communication. Among the factors that have received the greatest attention in research are biology, culture, gender, and personality. Each of these determinants has been the focus of extensive research. Although no attempt will be made to review this work, there are many sources that discuss the relationship of one or more of these factors to nonverbal behavior (e.g., Burgoon, Buller, & Woodall, 1989; Fridlund, 1994; E. T. Hall, 1966; J. A. Hall, 1984; Patterson, 1982b; Russell, 1994).

Although these determinants have some direct effects on encoding and decoding behavior, their influence is also mediated by the social envi-

ronment, i.e., the choice of partners and settings. For example, Snyder (1983) proposed that personality characteristics affect the choice of specific situations. In turn, different situations and different partners affect patterns of nonverbal communication.

Social Environment

This section of the model identifies the coordinated influence of the actor, the partner, and the setting in framing the social environment. In a complementary manner, of course, partner characteristics affect the partner's selection of the actor and the setting. For example, people seek out and prefer others who are relatively familiar to them (Zajonc, 1968) and those who have similar attitudes (Byrne, 1971).

Because the choice of settings is correlated with individual differences such as culture, gender, personality, socioeconomic class, and attitudes, people who gravitate toward the same setting are likely to be more similar than a random sampling of people across different settings. At the same time, settings may select people in terms of various characteristics and abilities. For example, status or income (an exclusive country club), age (nursery schools or retirement homes), or ability and performance (athletic teams or honors classes) all affect access to particular settings.

Other settings may appeal to specific segments of the population on the basis of similarity of race, gender, religion, political identification, or occupation. Thus, the initial self- and setting-selection processes increase the homogeneity among people in a given setting (Barker, 1968; Wicker, 1979). In turn, this similarity facilitates increased accuracy in forming impressions of one's partner (Funder, 1987; Swann, 1984).[1] In the next stage, the effects of the determinants and the social environment can be seen in the cognitive-affective mediators.

Cognitive-Affective Mediators

The cognitive and affective mediators develop from the combined influence of actor and partner characteristics as constrained by the setting. Included among the cognitive and affective mediators are dispositions, goals, affect, interpersonal expectancies, and cognitive resources. Each of these mediators can also affect the activation of the other mediators.

Dispositions. Dispositions refer to the states of an actor precipitated in a specific social environment, i.e., in interacting with a particular partner in a specific situation. The more obvious dispositions are related to the

actor's personality characteristics. Dispositions can be precipitated by specific circumstances, like the social environment, the partner, and the other mediators—goals, affect, and expectancies.

One of the dispositions that is particularly salient for communication is social anxiety (Leary, 1983; Schlenker & Leary, 1982). On the behavioral side, socially anxious individuals gaze less (Alden, 1987; Asendorf, 1987; Daly, 1978) and maintain greater interpersonal distances (Pilkonis, 1977). From a functional perspective, these self-defeating patterns may be difficult to understand; however, they apparently serve to minimize a negative impression and social disapproval (Leary, 1983). That is, the experience of anxiety motivates people to minimize losses in social approval, rather than maximizing gains.

These anxious behavior patterns not only create less favorable impressions, but they can also affect the actors' judgments of their partners. Specifically, increased distance and, especially, decreased gaze reduce the ease of gathering information about a partner. The result is an adverse effect on the quality of person perception.

The effects of social anxiety on cognitions and affect are even more dramatic than the behavioral effects. The experience of social anxiety is typically characterized by increased self-focus (Arnold & Cheek, 1986; Greene & Sparks, 1983), increased concern about the evaluations of others (Asendorf, 1987; Leary, 1986), negative affect (Alden, 1987; Pilkonis, 1977), more negative and fewer positive thoughts (Cacioppo, Glass, & Merluzzi, 1979; Ickes, Robertson, Tooke, & Teng, 1986), and a pessimistic view of the outcome of interactions (Leary & Atherton, 1986; Maddux, Norton, & Leary, 1988).

Thus, with increased social anxiety, the actor is less engaged in the interaction, the quality of partner information is reduced, and cognitive resources are shifted more toward the self and less toward the partner. A similar pattern of behavior (Rutter & Stephenson, 1972; Segrin, 1990) and cognitions (Ingram, Cruet, Johnson, & Wisnicki, 1988) is also characteristic of depressed individuals. Other dispositional characteristics, like introversion, low self-esteem, and loneliness, all moderately correlated with social anxiety (Patterson & Ritts, 1994), are likely to have similar effects on behavior and cognitions.

Goals. The importance of goals is obviously consistent with the functional perspective of this model. Earlier discussions of the functions of nonverbal communicaton have emphasized the behavioral encoding of different functions, but the complementary decoding of a partner's reactions is also critical for the monitoring and management of the actor's own behav-

ior. For example, person perception theories emphasize the importance of motivation for attention to and processing of partner information. In the present model, goals refer to the purposes, either conscious or unconscious, that shape an actor's encoding and decoding processes. More distal goals are also important earlier in the process of selecting partners and settings, but for the sake of simplicity, this discussion of goals will focus specifically on the interaction itself.

The importance of goals for the behavioral side of interaction is evident from the earlier discussions of the functions of nonverbal behavior (e.g., Argyle & Dean, 1965; Ekman & Friesen, 1969; Harrison, 1973; Patterson, 1983). In a more recent discussion of the functional model of nonverbal exchange, I proposed the following functions: (1) providing information; (2) regulating interaction; (3) expressing intimacy; (4) managing affect; (5) exercising social control; (6) presenting images and identities; and (7) facilitating service and task goals (Patterson, 1991).[2]

An important distinction among these functions, and one that is especially relevant for the present model, is the extent to which a behavior pattern is relatively spontaneous versus more deliberate and managed. Just as more deliberate and demanding behavior patterns engage greater cognitive resources for effective management, so do more deliberate and demanding person perception processes engage greater cognitive resources for their completion. In both of these cases, different goals are likely to require different levels of cognitive resources.

Because earlier discussions of functions of nonverbal communication have already emphasized the behavioral side of interactions, attention will be directed here to the decoding side. For example, if actors become suspicious about the candor of a partner, the type of information they seek from their partner and the depth of processing this information are likely to change. In such a case, an individual is likely to look for inconsistencies within and between the verbal and nonverbal components of a partner's behavior, leading to a greater investment of cognitive resources in decoding processes. There is also evidence that when perceivers are specifically motivated to form accurate impressions, the effect of initial expectancy biases can be reduced (Neuberg, 1989). In order to overcome such biases, a greater investment of cognitive resources in attention and processing activities is required.

Sometimes perceivers selectively seek information and then carefully weigh the implications of this evidence to make as strong a case as possible for a preordained judgment (Baumeister & Newman, 1994). That is, in some instances, perceivers act as "intuitive lawyers" seeking information and drawing predetermined conclusions and not simply as "intuitive scien-

tists" who desire accurate conclusions (Baumeister & Newman, 1994). To the extent that an individual operates as an intuitive lawyer, greater cognitive resources may be required for the selectivity in attention to and processing of partner information.

Thus, specific goals affect not only the general distribution of cognitive resources, but also the type of information noticed and the depth of processing this information. Sometimes investment in particular behavioral goals also produces a related shift of attention in person perception processes. For example, when a person is particularly concerned about making a good impression in a difficult situation, attention and effort are not only required for behavior management, but also for evaluating the effectiveness of the impression management. That is, attention will be more practical and limited than in trying to form a global impression of the partner (Swann, 1984).

Affect. Affect in interactions is assumed to be a product of the individual's momentary dispositions and goals, relationship to the partner, and the setting constraints. Of course, affect is also directly influenced by the behavior of the partner. The considerable research on nonverbal exchange emphasizes the importance of affect in mediating reactive adjustments in nonverbal involvement (e.g., Argyle & Dean. 1965; Burgoon, 1978; Cappella & Greene, 1982; Patterson, 1976). Research on nonverbal exchange generally suggests that positive affect is related to patterns of reciprocation and negative affect to patterns of compensation (see a recent critical analysis of reciprocation and compensation by Burgoon, Dillman, and Stern, 1993).

On the decoding side, affect is also important in forming judgments of others (e.g., Higgins & Sorrentino, 1990; Isen, 1984). Reviews by Watson and Clark (1984) and Alloy and Abramson (1988) suggest that negative affect is related to increased accuracy in social judgments, including person perception but, more recently, Campbell and Fehr (1990) found no support for this "depressive realism" effect. In fact, negative affect might actually lead to low-effort attributional processing, characterized by more dispositional than situational attributions (Sullivan & Conway, 1989).

Interpersonal expectancies. The effects of expectancies are particularly salient for emphasizing the close relationship between behavioral and person perception processes. An actor's expectancies about a partner's behavior are important in two expectancy-based models of nonverbal exchange (Burgoon, 1978; Cappella & Greene, 1982). In these models, the first stage in an actor's behavioral reaction is a more or less automatic comparison

between the expected and actual levels of a partner's involvement. Although the dynamics of the two theories differ considerably, both predict more distinct reactions (compensation or reciprocation) when the partner's actual behavior is increasingly discrepant from the expected behavior.

Next, evaluative cognitions on the part of the perceiver often precede and even determine, indirectly, the very behavior that the perceiver later judges, that is, a self-fulfilling prophecy. For example, the actor may initiate, or reciprocate, the friendliness that he or she anticipates of the partner. In turn, the actor's friendly behavior increases the likelihood that the partner will reciprocate this pattern and confirm the expectancy (Rosenthal, 1966, 1974; Snyder & Swann, 1978).

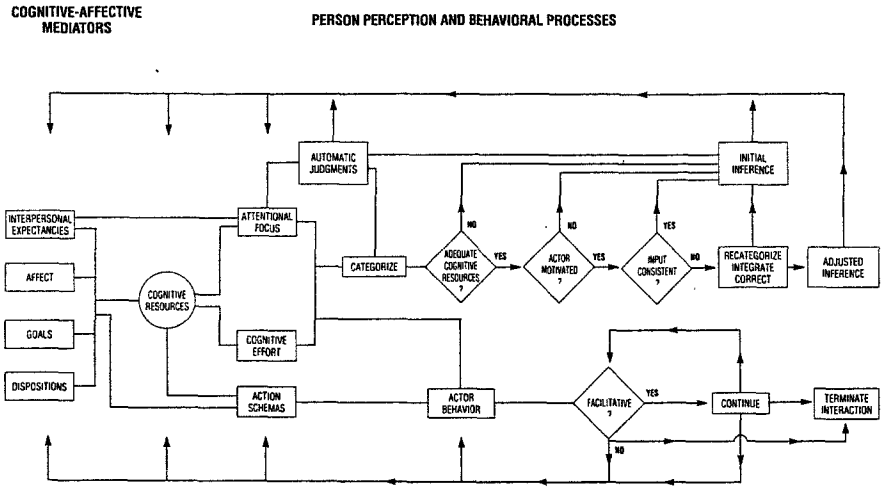
Although reciprocation or behavioral confirmation may be common, a contrasting expectancy effect is also possible. That is, actors may enlist a compensatory strategy that serves to avert the negative consequences of an unfavorable expectancy. Thus, when I expect to meet an unfriendly person I might try to be especially friendly, if I feel that my friendliness can make the interaction more comfortable.

When self-fulfilling prophecies result in the behavior expected of the partner, actors are typically unaware of the influence of their own behavior on their partner (see Gilbert & Jones, 1986) and, consequently, are more likely to make correspondent dispositional inferences about their partners, i.e., fundamental attribution error. In contrast, people enlisting a compensatory strategy may be more aware of their own role in influencing their partners (Bond, 1972; Ickes, Patterson, Rajecki, & Tanford, 1982; Swann & Snyder, 1980). Thus, if actors have a negative expectancy, but are successful in inducing friendly behavior in their partners, correspondent inferences might be less likely.

Even though expectancies have important effects on both encoding and decoding processes, Jussim (1991) suggests that some effects that look like self-fulfilling prophecies are really accurate perceptions of social reality. That is, when subtle appearance or behavioral cues reflect underlying dispositions, the perception of such cues represents accuracy in judgment, not a self-fulfilling prophecy (see also Ambady & Rosenthal, 1992). This issue will be revisited in the discussion of automatic judgments in the decoding track of this model.

Cognitive resources. Cognitive resources refer to the total cognitive capacity available for attending to, processing, and managing encoding and decoding operations in social situations. Although increased motivation can temporarily increase cognitive resources, over time a cost is likely

Figure 2. Parallel person perception and behavioral processes.



to be exacted (Humphrey & Revelle, 1984). Even when resources are concentrated on the immediate social situation, they can be variously distributed toward the self, the partner, the setting, or the topic of conversation. Nevertheless, it is *not* the case that directing more resources toward a particular process necessarily improves the encoding or decoding outcome. In the following sections, the specific effects of the cognitive-affective mediators on the development of behavioral and person perception processes are discussed.

Parallel Processes in Nonverbal Communication

The behavioral and person perception components of interaction are parallel processes shaped by both the social environment and the cognitive-affective mediators. The particular course of these processes is influenced first by the attentional focus and cognitive effort committed toward each process. The linkages among attentional focus and cognitive effort and the outcome of behavioral and person perception processes are illustrated in Figure 2.

On the basis of the particular functions served, finite cognitive resources are divided between attentional and processing (i.e., cognitive effort) demands for both the behavioral and person perception sides of interaction. Nevertheless, automatic processes in both the encoding (action

schemas) and decoding (automatic judgments) tracks increase efficiency by minimizing the claim on cognitive resources. Furthermore, because some behavioral and person perception processes operate effectively on automatic, the investment of more cognitive resources will not necessarily improve the outcome of these processes. The parallel processes shown in the right side of Figure 2 are discussed and analyzed next.

Behavioral Processes

The cognitive demands on initiating and monitoring interactive behavior, like the demands on person perception, can vary from being minimal to extensive. For example, behavior that is primarily a product of interpersonal affect is likely to be relatively spontaneous and, consequently, requires little attention and effort for behavior management. Characteristic of such a linkage is the relationship between affect and nonverbal involvement in the intimacy function (Patterson, 1983). Similarly, overlearned patterns of behavior involved in turn taking in interactions would require little in the way of cognitive resources.

In contrast, when individuals engage strategic behavior in attempting to influence others, a considerable expenditure of cognitive resources may be required (Patterson, 1994b). Nevertheless, when behavioral routines, even strategic ones, are well practiced, the cognitive demands of behavior management can be minimized. The role of such patterns, in the form of action schemas, is important in understanding automaticity on the encoding side of interaction.

Action schemas. The cognitive representations of behavior patterns in action schemas provide a means for actors to understand their own behavior and to anticipate and monitor the sequence of events in an interaction. First, action identification theory proposes that actions can be identified in a variety of ways from low-level descriptions of how the action is performed to high-level descriptions of the purpose of the action (Vallacher & Wegner, 1987). In general, actions will tend to be identified at a higher level as long as the action can be maintained.

For example, an actor might be concerned about "making a good impression" in meeting someone for the first time. Such an act identity might subsume more specific behavioral components, such as approaching the partner at a moderately close distance, maintaining a high level of gaze, smiling and nodding in response to the partner's comments, and directing the conversation to the partner's interests. If these are all components of a well-learned "make a good impression" act identity, then there is greater

cognitive efficiency in identifying the action in terms of its higher level identity than in terms of its lower level identity (i.e., the components themselves).

Sometimes individuals are particularly concerned about *not* committing a "faux pas" and their action schema might actually be an avoidance schema. If they try too hard to avoid an undesirable action by suppressing thoughts about the behavior, such a tactic may actually backfire and increase the likelihood of engaging in the behavior (Wegner, 1994). Even if such thought suppression were successful, such avoidance strategies exact a cost in cognitive resources that might be used for other encoding and decoding purposes.

Next, the cognitive representation of action sequences in scripts (Abelson, 1981; Schank & Abelson, 1977) provides another means by which action may be initiated and regulated with a minimum of self-focused attention. The memory organization packet (MOP) is a similar construct that facilitates cognitive efficiency. MOP's provide a hierarchical structure of routines involved in a social setting (Kellerman & Lim, 1990; Schank, 1982). Again, to the extent that behavioral options become routine and relatively automatic, less attention needs to be directed toward the actor's own behavior. In fact, the circumstance in which behavioral options are not critically evaluated and automatic reactions dominate has been described as "mindlessness" (Langer, 1989).

Actor behavior. Action schemas such as high-level action identification, scripts, and MOP's provide an efficient way of directing an actor's behavior, thereby freeing cognitive resources for attention to and processing of information about the partner and setting. If the schemas employed are not adequate, that is, the behavior routine or action identification does not work, then increased attention is directed back towards the actor and the actor's behavior. Such an outcome is represented in Figure 2 by the "no" track in evaluating whether or not the actor's behavior was facilitative.

The behavior of the actor in interactions is, of course, influenced by more than just action schemas. Dispositions, goals, affect, and expectancies can all influence both managed and more spontaneous behavior. For example, some dispositions (e.g., social anxiety or depression) are related to decreased behavioral involvement with the partner. In turn, decreased involvement can limit attention to and opportunity for information from the partner, especially decreased gaze.

Second, goals and expectancies shape the actor's view of the purpose or function of interaction. If the actor and partner have similar perceptions

of the interaction, there is a greater likelihood of a more stable and predictable interaction (Patterson, 1982a, 1991), leading to increased behavioral coordination (Bernieri & Rosenthal, 1991). In terms of Figure 2, such behavior would be evaluated as facilitative. Behavior that is not facilitative, because it does not serve the goals of the actor, can lead to termination of the interaction or to increased cognitive and behavioral adjustments. Furthermore, assessment of "facilitativeness" is a product, not only of the actor's evaluation of the partner's reactions, but also the actor's own self-perception (see Kenny & DePaulo, 1993).

Third, affect can be an important determinant of interpersonal behavior. Research on nonverbal exchange shows that reactive adjustments to a partner's increased involvement are typically differentiated by the valence of the intervening affect. Specifically, positive affect is related to reciprocation and negative affect is related to compensation (e.g., Burgoon, 1978; Cappella & Greene, 1982; Patterson, 1976). In addition, the affective experience of rapport is reflected in greater behavioral coordination between interactants (Tickle-Degnen & Rosenthal, 1990).

Person Perception Processes

Attentional focus. A basic assumption in the person perception track is that there are real limits in the amount of information to which an actor may attend at any point in time. Thus, attention directed toward one target typically reduces the attentional resources available for other targets. The focus of the actor's attention may be classified into the following general categories: (1) partner; (2) situation; (3) self (i.e., the actor); (4) the message; and (5) miscellaneous concerns. Not surprisingly, when attention is directed toward oneself rather than one's partner, accuracy in judging the partner's reactions decreases (Tromsdorff & John, 1992).

In addition, not all attention toward the partner is equivalent. Partner-focused attention may be directed toward (1) physical features and appearance, (2) nonverbal and vocal behavior, and (3) verbal behavior. This distinction is important because processing verbal behavior is usually more demanding than processing appearance cues, nonverbal behavior, and vocal behavior (Gilbert & Krull, 1988).

Among the factors that determine attention are the salience and vividness of the stimulus (i.e., the partner or situation) and accessibility of categories to interpret new information (see Fiske & Taylor, 1991, pp. 245-266 for a review of this work). Smith and Zarate (1992) suggest that social, motivational, and situational factors will determine the stimulus characteristics to which the actor pays greater attention. Finally, expectancies

also provide category accessibility for partner impressions. This is reflected in the direct link between expectancies and focus of attention in Figure 2.

Cognitive effort. The amount of effort initiated to process information about a partner is a function of several factors, including: (1) the available cognitive resources, (2) the nature of partner or situation information, (3) dispositions directly affecting cognitive effort, (4) valence of the affect experienced during interaction, and (5) the specific goals of the actor.

First, as cognitive resources are invested in concerns other than the immediate interaction, fewer resources are available to attend and process information about the partner. Second, the distinctions among the different types of partner information are especially important in determining the cognitive effort expended in processing information. Physical features and appearance characteristics, such as physical attractiveness (Locher, Unger, Sociedade, & Wahl, 1993), facial babyishness (Berry & McArthur, 1985, 1986), and facial dominance (Keating, 1985) are apparently processed automatically and require little or no cognitive effort. Reactions to such characteristics seem to be universal and may have evolved because of their adaptive value.

Third, dispositions can temporarily affect processing efforts. For example, a high level of alertness, suspicion, or curiosity can lead to increased processing resources. A more stable dispositional factor related to increased processing effort is the need for cognition (Cacioppo & Petty, 1982). Fourth, negative affect may reduce the effort expended in processing information (Sullivan & Conway, 1989).

Fifth, the activation of specific goals can motivate individuals to enlist a more thorough search and processing of information. When the actor has a great deal at stake in an interaction (e.g., making an important sale), greater attention and effort may be necessary in the person perception to judge the success of one's behavior. Note that the goals in such instances direct the actor's attention to very specific and practical judgments about the partner (e.g., "does he believe me?") and not to more global personality judgments (Swann, 1984; Wright & Dawson, 1988).

Person Perception Outcomes

Automatic judgments. The primary focus of research on impression formation deals with *direct perception* judgments of a target person's dispositions, motives, abilties, or other characteristics. Some of these judgments are the result of automatic processes whereas others involve social inference. For example, impressions resulting from physical attractiveness

develop quite rapidly, with little or no cognitive effort. These automatic judgments can be seen in Figure 2 as the direct result of attention only, without expending cognitive effort. In terms of Bargh's (1989) analysis, these impressions would probably reflect preconscious automaticity, i.e., such processes require only the triggering characteristic and occur prior to awareness of the characteristic.

There are, however, different perspectives on the nature of these automatic impressions. McArthur and Baron (1983), in their ecological approach to person perception, use the term "affordances" to describe these immediate, relational, and evaluative judgments about the partner based on physical appearance, movement patterns, and vocal cues. For example, facial babyishness of infants (along with their diminutive stature) suggests approachability, dependence, and a need for nurturance (Berry & McArthur, 1985, 1986). In contrast, individuals with mature-looking faces and a large physical stature are likely to be seen as dominant and independent (Keating, 1985). These basic impressions deal primarily with fundamental and adaptive interpersonal judgments. That is, appearance characteristics or expressive behaviors facilitate the judgments of intention that lead to approaching or avoiding a partner (see also Fridlund, 1991, 1994).

In contrast to the ecological approach, a social cognition explanation focuses on the learning of specific, conditional rules as determinants of automatic judgments. For example, Smith (1990) suggests that automatic judgments are the result of cumulative experience in the processing of social information. That is, we learn that if a particular cue or behavior is present, then we make a particular judgment. Often these "if-then" conditional judgments occur outside of awareness (Smith, 1990).

Consensus in automatic judgments. The present model assumes that some characteristics of the partner's appearance and behavior lead to a direct and automatic judgments without enlisting processing resources. Furthermore, such automatic judgments, based on minimal visual information about a target, may be very accurate (Albright, Kenny, & Malloy, 1987; DiPilato, 1989, cited in Kenny, Horner, Kashy, & Chu, 1992; Norman & Goldberg, 1966; Watson, 1989). In fact, a meta-analytic review of the research on the accuracy of such first impressions showed that judgments based on observation intervals of less than 30 seconds were just as accurate as those of much longer intervals (Ambady & Rosenthal, 1992).

Because these automatic judgments based on physical appearance can occur so rapidly, all that mediates such judgments is some degree of attention to the partner. Furthermore, parallel processes in impression formation may be operating simultaneously with more demanding social in-

ference processes and with the initiation of the behavioral side of interaction.

This distinction between the automatic and social inference processes is similar to the one proposed by Neisser (1992) between ecological (i.e., automatic) and representational (i.e., social inference) perspectives on object perception. In fact, Neisser suggested that the two processes are really complementary, not opposing, means of forming impressions of those around us. The next section considers the development of the complementary social inference process.

Social inference. The impression formation processes identified in the lower half or the person perception track in Figure 2 are basically a combination of the categorization and integration processes characteristic of the information processing approach to person perception (e.g., Anderson, 1974, 1981; Brewer, 1988; Fiske & Neuberg, 1990; Smith & Zarate, 1992; Wyer & Srull, 1986) and Gilbert's three-stage trait attribution model (Gilbert & Krull, 1988; Gilbert et al., 1988).

As the actor encounters a partner, categorization occurs relatively automatically with respect to both physical characteristics and behavior. Thus, an actor might immediately categorize the partner in terms of basic distinctions like gender, age, attractiveness, and even some behavioral patterns (e.g., a smiling, relaxed approach versus a rapid, threatening approach) that are immediately apparent. In turn, these categories facilitate the elaboration of specific inferences.

The course of developing inferences depends on at least three factors identified in Figure 2: (1) availability of adequate cognitive resources, (2) the motivation of the actor, and (3) consistency of the information. If adequate cognitive resources are not available, a quick initial inference is made that engages very little in the way of cognitive resources. Such inferences may be very basic stereotypic judgments, such as "attractive = good or talented." Typically, such initial inferences take the form of characterizations or trait attributions. These low effort inferences may also help to explain the common fundamental attribution error, i.e., overattributing the importance of dispositional causes (Gilbert et al., 1988).

Nevertheless, the tendency to make dispositional or trait attributions (versus situational or external attributions) may be more characteristic of Western (individualistic) cultures than many non-Western (collectivistic) cultures (Smith & Bond, 1994, pp. 104-106). For example, Miller (1984) found that subjects from India were less likely to make dispositional inferences than were American subjects. In addition, Krull (1993) has shown

that the demands of different inferential goals can change the nature of these rapid initial inferences from dispositional to situational.

Additional processing beyond the initial categorizing is likely only when (1) sufficient resources are available, (2) the actor is motivated to initiate additional processing, and (3) there is some input inconsistent with the initial inference (Brewer, 1988; Fiske & Neuberg, 1990). In Figure 2, this added processing may take the form of recategorizing, integrating, or correcting initial judgments (Brewer, 1988; Fiske & Neuberg, 1990; Gilbert et al., 1988). This extended processing is, however, much more cognitively demanding than is the formation of the initial (low effort) inferences. The outcome of this extended processing may either lead to reinforcing the initial inference (e.g., a dispositional inference) or to changing the inference (e.g., a situational inference).

A particularly important determinant of the course of these inference processes is the nature of the partner information being processed. In addition to physical characteristics like gender, race, age, or height, various nonverbal behaviors such as facial expression, distance, posture, vocal (paralinguistic) cues, and gaze patterns are also processed very quickly. In contrast to the ease of processing appearance, vocal, and nonverbal cues, the processing of verbal content is usually much more demanding (Gilbert & Krull, 1988; McArthur & Baron, 1983). Thus, a reduction in cognitive resources available for the person perception track will have less effect on processing the appearance, vocal, and nonverbal cues than on processing the verbal cues.

Metaperception and self-perception. The impression formation processes described thus far apply explicitly to direct perception. In other words, what does this information tell me about my partner's motives, disposition, or personality? It seems likely, however, that focus of attention and cognitive effort would also be critical in mediating other kinds of social judgments, including metaperception and self-perception. Metaperspective judgments refer to the actor's perception of the target's impression of the actor, i.e., the actor's reading of what the target thinks of the actor.

Results from our laboratory suggest that metaperception may be affected by the application of cognitive resources, just as direct perception can be (Patterson, Churchill, Farag, & Borden, 1991/1992). Specifically, we found that subjects engaged in a more demanding impression management task (compared to those in a less demanding task) showed less agreement between their judgments of how they thought their partners rated

them and how their partners actually rated them. Presumably, subjects' attention to managing their own behavior decreased attention and/or effort in judging their partners.

In addition to meta-perspective judgments, self-perception judgments may also be affected by focus of attention and cognitive effort. The issue of self-perception is, of course, different from both direct perception and meta-perception because actors rarely have the opportunity to view much of themselves or their own behavior. That is, an actor may "know" she is smiling, but she cannot see herself smiling, as she might see her partner smiling. Nevertheless, the actor's own behavior can affect self-judgments either through central (e.g., inferential) or peripheral (e.g., facial feedback) input on self-perception. To the extent that self-perception is the product of inferential processes as Bem (1972) suggests, then self-perception should be affected by cognitive resources and effort, just as direct and meta-judgments about others are.

In fact, self-perception and meta-perception may be closely linked to one another. In a review of meta-perception, Kenny and DePaulo (1993) concluded that metaperspective accuracy seems to be mediated by self-perception. According to Kenny and DePaulo, accuracy may be the product of either a self-judgment or a direct observation process. The self-judgment process posits that individuals "observe" their own behavior, develop self-perceptions, and then assume that others view them as they view themselves. The direct observation process simply assumes that people "observe" their own behavior and then try to judge how others are likely to view them on the basis of that behavior (Kenny & DePaulo, 1993).

To the extent that an actor's behavior is primary in determining the outcome of meta-preception, there is even more reason to stress the interdependence of the behavioral and person perception processes. This interdependence and the related distribution of cognitive resources in the service of social functions is at the core of this parallel process model.

Conclusions

The model presented here provides one means for integrating behavioral and person perception processes into a common, functionally based system of communication. Historically, empirical and theoretical analyses of the behavioral and person perception components of interaction have employed different paradigms that isolate the two processes. In contrast, in the present perspective, the individual is an interactant simultaneously en-

gaged in adaptive behavioral (encoding) and person perception (decoding) processes.

Because behavioral and person perception processes typically complement one another, a change in expectancies, affect, goals, or dispositions can lead to a new balance in the attention and cognitive effort invested in these parallel processes. For example, if an actor becomes concerned about making a good impression on a partner, successful self-presentation requires an investment of cognitive resources in both behavior management and metaperspective judgments of the partner. That is, the metaperspective judgments constitute the means to evaluate the efficacy of the impression management attempt. Paradoxically, such metaperspective judgments may actually depend more on the actor's own behavior than on the partner's reaction (Kenny & DePaulo, 1993).

In this model the distribution of cognitive resources for behavioral and person perception processes is especially important. Behavior that is (1) more automatic (e.g., guided by action schemas) and (2) shaped by more positive, partner-focused dispositions (e.g., extraversion, low social anxiousness) typically engages a smaller claim on cognitive resources. In contrast, behavior that is (1) less automatic and (2) shaped by more negative, self-focused dispositions (e.g., high social anxiousness, introversion) typically engages a larger claim on cognitive resources. On the person perception side, automatic judgments produced by appearance, nonverbal, and vocal cues require a minimum of cognitive resources. In contrast, the processing of verbal input and the necessity of adjusting initial inferences require a larger investment of cognitive resources (Gilbert et al., 1988).

Although the behavioral and person perception processes draw on a common pool of cognitive resources, the effects of limited resources are selective and not necessarily negative. In fact, it is likely that increased attention to automatic or scripted behavioral sequences reduces their effectiveness (Vallacher & Wegner, 1987). Similarly, as Gilbert and Krull (1988) report, the application of cognitive resources to otherwise effective automatic judgments can reduce accuracy (see also Wilson & Schooler, 1991).

Finally, it should be emphasized that neither social behavior nor social cognition can be adequately understood in isolation. The present theory of nonverbal communication provides one way of conceptualizing this interdependence. The merit of the specific processes outlined here will be determined by future research, but the general approach advanced here is one that should facilitate the study of both social interaction and social cognition.

Notes

1. The issue of accuracy in person perception is one that has a long and complex history. Kenny and his associates (DePaulo, Kenny, Hoover, Webb, & Oliver, 1987; Kenny, 1991; Kenny & Albright, 1987; Kenny & DePaulo, 1993) have demonstrated how different components of accuracy may be derived from consensus measures between perceivers and various criterion judges. The meaning and utility of different accuracy measures have, however, been questioned by Kruglanski (1989).
2. Because this particular classification of functions was designed to describe the encoded patterns of behavior, some modification will be needed to reflect better the parallel processing nature of nonverbal communication in the present model. This is, however, beyond the scope of this article.

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