CHAPTER NINE


OVERVIEW

During face-to-face social interaction, partners engage in a moment-to-moment exchange of behaviors. Each person’s smiles, vocalizations, gestures, emotions, and physiological states may vary in predictable ways over time, based on characteristic individual activity rhythms or social scripts. Behaviors may also change in response to changes in partner behaviors (Jones & Gerard, 1967). Global impressions of the quality of a social interaction such as judgments about responsiveness or rapport may be at least partly based on activity patterns and coordination (Bernieri, Reznick, & Rosenthal, 1988; Cappella, 1997). Furthermore, long-term “health” of relationships may depend upon how the partners communicate responsiveness and involvement through their behavioral engagement in everyday social interactions.

MICROANALYSIS OF SOCIAL BEHAVIOR

The Conceptual Terrain

The term microanalysis will be used here to refer to any study of social interaction that involves collection of detailed information about the behavior, affect, or physiology of social interaction participants over time. For example, a microanalytic study might involve coding on/off talk and silence patterns four times a second during a 10-minute

Address correspondence to Rebecca M. Warner, Department of Psychology, Concurrent Hall, 10 Library Way, University of New Hampshire, Durham, NH 03824. E-mail address: rmw@hopper.unh.edu.
conversation between two friends. Most microanalytic studies have
sampled behaviors at rates ranging from several times a second up to
once a minute. Microanalytic data are sometimes summarized in
simple ways, for example, by computing the proportion of time spent
in each behavioral state, or the overall mean level of physiological
arousal or affective involvement. Some of the studies reviewed here
used simple descriptive information derived from microanalytic obser-
vations, for instance, the ratio of number of positive to number of neg-
avative actions in a marital conversation, as a way of describing the social
interaction. Other studies used more complicated analyses (including
log linear or time series analysis or related methods) to describe pre-
dictable patterns in activity over time, or to describe the degree of
coordination between the behavior of the social interaction partners.
Although these more complex patterns are often of interest, many
microanalytic studies involve simple summary statistics (e.g., mean
heart rate during an argument).

Definitions of various types of behavioral coordination have been
a source of controversy and confusion. Researchers have lacked a
consistent vocabulary to describe social behavior patterns in social
interaction, and particularly the various ways partner behaviors are
coordinated or interdependent. Terms such as synchrony are defined
differently across studies, and researchers who use similar data analy-
sis methods sometimes apply different verbal labels to their results.
Burgoon, Stern, and Dillman (1995) have suggested standard defini-
tions for different types of behavioral coordination, such as matching,
mirroring, convergence, interactional synchrony, reciprocity, comple-
mentarity, divergence, and compensation. They noted that different
underlying processes may produce an appearance of coordination. For
example, partner behaviors might be related coincidentally, or through
entrainment of biological or behavioral rhythms. On the other hand,
coordination might arise because person B deliberately modifies his or
her behavior in order to match or respond to person A's behavior (and
this adaptation may be unilateral or mutual). This proposed terminol-
ogy links each term (such as convergence) to a specific type of coordi-
nation that can be detected through careful analysis of the time series
behavioral data.

There may be behavioral patterns or rhythms that indicate "better"
or "healthier" social functioning. Most researchers assume that com-
plete absence of any coordination between partner behaviors in social
interaction means that something is wrong – there is a lack of involve-
ment, engagement, responsiveness, or rapport. The social significance of highly interrelated behaviors is less clear; extremely high interdependence might indicate psychopathology or rigidity (as described in early work by Gottman, 1979). A few recent studies have yielded curvilinear or context-dependent relations between evaluations of social interaction and various indexes of "predictability of behavior" or partner coordination, such that moderately predictable or coordinated behaviors were evaluated most positively or were predictive of more positive later relationship outcomes. Jaffe, Beebe, Feldstein, Crown, and Jasnow (in press) found that mother-infant dyads with moderately coordinated behaviors had the most positive later attachment status; Warner, Malloy, Schneider, Knoth, and Wilder (1987) found that participants rated moderately rhythmic or predictable conversations most favorably.

Berger and Bradac (1982) suggested that less predictable behavior patterns may be preferred in long-term relationships such as marriage, because unpredictability can provide novelty in a routine that may have become rather boring. In interactions between strangers, however, predictable patterning may be preferred because it reduces the anxiety and uncertainty that many people feel in interactions with strangers. Preference for degree of predictability and coordination might also differ across cultures and individuals (cf. Cappella, 1986). It seems plausible that people need a certain level of contingency and predictability in their lives in order to feel that they have some degree of control (cf. Seligman, 1975). Our face-to-face interactions could potentially be a reassuring form of predictability.

Much of the stress of modern life may be due to the constant stream of novel, high-intensity, unpredictably sequenced information that people are exposed to when they watch television or live in crowded urban environments. Altman, Vinsel, and Brown (1984) theorized that people need to seek privacy after periods of intense social involvement. Perhaps there are several things that we need to balance in our lives: not just high and low intensity of stimulus input, but also high and low levels of predictability of input. Although individuals may differ in their basic preferences for amount or predictability of stimulation (for instance, extraverts may prefer higher levels of activity and sensory stimulation than introverts), these preferences also may be modulated by experiences.

Some types of pathology may be related to disruptions of normal or optimal patterns of predictability/rhythm/coordination. Depression
may sometimes be due, at least in part, to dissociations among behavioral, physiological, and social rhythms (Healy & Williams, 1988). The lower incidence of Sudden Infant Death Syndrome (SIDS) in countries where mothers sleep with their infants may be due to the way the mothers’ behavioral and physiological rhythms entrain and modulate the infants’ rhythms to maintain normal respiration (McKenna, Mosko, Dungy, & McAninch, 1990). Hofer (1984) proposed that grief and bereavement (in humans and in nonhuman animals) may be understood partly as a loss of social synchronizers that are important for normal biological functioning. A similar argument for the importance of behavior coordination and synchrony in healthy infant development was advanced by Field (1985). Theories that suggest rhythm and coordination are essential for good social system functioning were briefly reviewed in Warner (1988, 1991, 1996). It now seems that relationships between the degree of predictable patterning and coordination, and the “health” of a social system, may be quite complex. Moderately predictable and moderately coordinated behavior may be optimal in many social systems.

If we can identify normal versus pathological patterns in behavior and physiology, this may lead to interventions that can help to address potential relationship or developmental problems at an early stage of life. Many questions have yet to be addressed. To what extent is “coordination with a partner” a teachable or learnable skill? If it turns out that people who have difficulty in coordinating their behaviors or emotions with other people are at high risk for poor relationship outcomes, can we teach them to do better? Another related question has to do with “genuineness” versus intentionality of coordination. Some types of behavioral coordination can be done intentionally; a person may mimic the gestures, choices, and opinions of a partner as an ingratiating tactic. It is possible that this type of coordination leads to a feeling of rapport when it occurs naturally, but that it is not evaluated positively when it is perceived as a deliberate influence tactic (Manusov, 1992).

The role of everyday and routine behaviors in determining relationship outcomes and relationship quality may have been understudied and underemphasized (relative to the importance of major life events and crises). It may be that the most important factor in having a long term, happy, stable relationship is being able to have good-quality everyday conversations (Barnes & Duck, 1994) and being able to share and coordinate many different kinds of activities (as repre-
presented in the "Relationship Closeness Inventory," Berscheid, Snyder, & Omoto, 1989). The impact of major life events on relationship outcomes may be mediated by the way the life events influence everyday behaviors; for example, it may be less important to adolescents whether their parents are divorced than how this changes the day-to-day quality of the social interactions among the members of the family. If we can identify the problems that occur at this "micro" level, perhaps interventions can be designed that can mitigate the damaging effects of major life effects such as divorce by trying to minimize their impact on the day-to-day relationship patterns.

An ability to share or coordinate behavioral, physiological and/or emotional responses with a partner may be essential in order to be fully involved in a relationship, and may be the basis for empathy, rapport, "emotional contagion," and other aspects of sharing in relationships (Hatfield, Cacioppo, & Rapson, 1992; Levenson & Ruef, 1992). A methodology has also been developed to assess a more "cognitive" sort of empathy, the ability to guess thoughts of a partner while reviewing a videotape of an interaction (Ickes, 1983). Microanalysis of self-reported thoughts that occur during a social interaction (as in Vangelisti, Corbin, Lucchetti, & Sprague, 1999) can add another dimension to future studies of social interaction, which have primarily examined publicly observable behaviors.

Because many of the behaviors examined in microanalytic studies are nonverbal, microanalysis provides a useful way of comparing social interactions across different cultures, different species, or humans before versus after the development of language (Jaffe, Stern, & Peery, 1973). So far, it appears that the similarities in rhythmic patterning across cultures and across age levels in humans are more striking than the differences, although some culture- and age-related differences have been reported (Feldstein & Crown, 1990; Welkowitz, Bond, & Feldstein, 1984). Lomax (1977, 1982) has suggested that cross-cultural differences in temporal patterning of speech, like cross-cultural differences in style of folk song and dance, may be correlated with other characteristics of cultural organization. An anthropology or social psychology of time experience has been emerging, examining the different ways that time is perceived and allocated in different cultures, and the way that negotiations over timing are conducted in different cultural settings (e.g., Breyer, 1979; Hall, 1989; Hiebert, 1976; Levine, 1990, 1997). Some cultures may value the predictable, the cyclic, and the routine in ways that are more conducive to the maintenance of
long-term relationships. Other cultures may place such a high value on novelty and stimulation that long-term relationships may be devalued as boring. The loss of family routines such as regular shared mealtimes and holiday celebrations may contribute to the deterioration of families; questions such as this deserve systematic study.

As human interactions with computers become a larger portion of many people’s lives, and as some people become involved in communications and even relationships that are computer mediated, issues of “timing” specific to interactions with computers arise (Hesse, Werner, & Altman, 1988). In a human–computer interaction, such as video games or programming, the computer’s responses tend to be nearly instantaneous and sometimes highly predictable. A child whose life does not provide much stability or predictability might enjoy computer or video games simply because they provide instant gratification, and a highly predictable result, that gives the child a sense of control and competence. A computer game is an unusual type of social interaction partner – available on demand; immediately responsive; fairly predictable; often a source of rewards; and it can be put on hold when the game player is not interested. It adapts to the tempo set by the human user. Unfortunately, if game players or programmers begin to expect this kind of response from human social interaction partners, they are likely to be disappointed or frustrated. Coordination between human social interaction partners generally requires both partners to make some adaptations in the amount and timing of their behaviors. It is conceivable that some attitudes and skills that are adaptive in working with computers are quite nonadaptive in face-to-face relationships with humans.

Controversies

One of the most popular variables in microanalytic research has been partner influence (which can take such specific forms as matching, mirroring, reciprocity, complementarity, adaptation, and so forth; Burgoon et al., 1995). There is controversy about the most appropriate way to describe coordination, contingency, or dependence between a pair of time series, and there is considerable difference in the choice of statistics across studies. Many researchers have advocated a “causal modeling approach” to the assessment of partner influence, arguing, in effect, that you cannot isolate the partner influence unless you statistically control for or partial out the predictability within each behavior stream.
(e.g., Allison & Liker, 1982; Gottman, 1981). In a related vein, Cappella (1996) has argued that partner influence may involve several different types of adaptation between persons in combination (e.g., there may be both a shared trend in behavior and closely related moment-to-moment changes in behavior), and that the time-series analysis should separate these components. Other researchers have not taken a causal modeling approach in assessing partner influence. Instead, they have used simple descriptive statistics to summarize overall amount of rhythmicity or coordination (Warner, 1992b). Application of the terminology proposed by Burgoon and her colleagues would help to clarify the situation; both types of analysis may be useful, but it needs to be made clear that different statistical indices capture different aspects of coordination. I have argued elsewhere (Warner, 1992a) that both causal modeling and purely descriptive statistical analyses are useful, provided that the differences between these approaches and the limitations of each approach are understood.

MAJOR METHODOLOGICAL CHOICES AND CAVEATS

Sampling Choices

Types of Participants or Dyads

Most microanalytic studies have examined parent–infant, peer, or marital dyads. The following studies are representative examples (this is not an exhaustive list). Because the studies have varied in terms of methodology, data analysis, and results, little can be said to summarize results across studies, but where possible, some tentative generalizations about the findings will be given.

Parent–infant and particularly mother–infant dyads have been studied by Bakeman and Brown (1977); Cohn and Campbell (1992); Cohn, Campbell, Matias, and Hopkins (1990); Feldman, Greenbaum, Yirmiya, and Mayes (1996); Field, Healy, Goldstein, and Guthertz (1990); Isabella (1989, 1991); Lester, Hoffman, and Brazelton (1985); Leyendecker, Lamb, Fracasso, Sholmerich, and Larson (1997); Lutkenau, Grossman, and Grossman (1985); Martin (1981); Tronick and Cohn (1989); and Zlochower and Cohn (1996). Numerous quantitative indexes of pattern and coordination of physiology and behavior in mother–infant dyads have been found to be meaningfully related to clinical diagnostic categories (premature versus full-term birth; depressed versus nondepressed mother) and to relationship outcomes.
(such as later attachment status). Statistics that describe maternal responsiveness to infant behavior have been found to differ for the mothers of male versus female infants, and for depressed versus non-depressed mothers. Most researchers in this area have argued that at least some degree of contingency between infant and caregiver behavior is desirable in order for the infant to develop well; a complete lack of contingency, or intrusive and insensitive patterns of caregiver response, may result in insecure, anxious, or avoidant attachment.

A few studies have examined social interactions of children; examples include Field et al. (1992); Goldstein, Field, and Healy (1989); Gottman and Parker (1986); Welkowitz et al. (1984); Wade, Ellis, and Bohrer (1973); and Welkowitz, Carifte, and Feldstein (1976). Some of these, such as Welkowitz et al. (1976) suggest that the ability to coordinate certain behaviors with social partners may increase with maturity; however, a great deal of coordination has been seen even between the behavior of newborns and their caregivers (cf. Jaffe et al., 1973).

Some studies have examined social interactions between adult friends (e.g., Crown, 1991; Ickes, 1983), or in getting-acquainted conversations (e.g., Faraoe & Hurtig, 1985; Warner, Malloy, Schneider, Knoth, & Wilder, 1987). Dating, engaged, or cohabiting couples also have been studied, as in Hayes and Cobb (1979); and Talmadge and Dabbs (1990). A variety of outcomes have been reported, and it seems possible that all these can be subsumed under a general model which suggests that moderately rhythmic and coordinated interactions may be preferred (Crown, 1991; Warner, 1996). In addition, factors such as length of relationship may influence the preference for predictability, with a general tendency for strangers to prefer more predictability in their interactions with each other, and for intimate partners to enjoy less predictability.

Numerous researchers have examined marital interactions, including Bradbury and Fincham (1991); Carrere and Gottman (1999a,b); Cook et al. (1995); Feeney, Noller, and Ward (1997); Fitzpatrick (1988); Gottman (1979, 1994, 1998); Gottman and Krokoff (1989); Gottman and Levenson (1992, 1999a); Levenson and Gottman (1985); and Markman and Notarius (1987). Changes in marital satisfaction, and even divorce, can be predicted from microanalysis of small samples of social interaction behavior (sessions as brief as 5 to 15 minutes) within married couples (Gottman, Coan, Carrere, & Swanson, 1998). High levels of physiological arousal, particularly for husbands; high frequencies of
behaviors indicating contempt or withdrawal; and low ratios of positive to negative actions seem to be particularly diagnostic of future marital difficulties, according to Gottman and his colleagues. Additional studies suggest that children's future social interaction outcomes may be influenced by the kinds of day-to-day social interactions experienced within the family (Katz & Gottman, 1995).

A handful of studies have examined other types of social situations. McGrath and his colleagues have applied microanalytic methods to small group interactions (e.g., Futoran, Kelly, & McGrath, 1989). A few studies also have been done applying various types of microanalytic methods to psychotherapy sessions (Badalamenti & Lang, 1991; Tracey, 1987). Even computer-mediated communications can be assessed microanalytically in an attempt to see continuities and differences between these and face-to-face interactions (Hesse et al., 1988). At this point, given the small numbers of studies in these areas, it seems premature to generalize or draw conclusions.

**Tasks, Situations, Social Contexts**

It is difficult to observe naturally occurring social interaction in non-laboratory settings (due to instrumentation requirements, issues of invasion of privacy, and problems in screening out background noise and interruptions). Most studies therefore have taken place in lab settings and dyads have been prompted to interact “on demand.” What instructions or tasks would produce the most natural and representative behavior, under such admittedly artificial conditions? For mother-infant dyads, feeding or play situations have been most typical. Sometimes the researcher provides toys or games to structure the interaction. With young adults, it may be easier to obtain a “standardized” social interaction that is comparable across dyads by looking at getting acquainted conversations between strangers; Kellermann, Broetzmann, Lim, and Kitao (1989) found that there is a remarkably consistent “getting acquainted” script. (Conversations in the lab between adult friends who are asked to converse or engage in a cooperative task sometimes seem remarkably awkward.) Married couples are often asked to “Have your usual argument about …” some shared concern, such as money, or to engage in cooperative tasks. Ideally, the task or situation should provide a representative slice of behavior. Ambady and Rosenthal (1992) have shown that for research on expressive behaviors, remarkably brief observation sessions (on the order of 5 minutes) may be sufficient. Ongoing research is beginning to provide
more information about which tasks produce the most diagnostically useful information about various types of relationships.

**Behavioral, Physiological, Cognitive, Mood Measures**

The choice of behaviors or other responses to measure may be driven by theory, as in research on married couples, where the coding systems used to describe behavior are at least to some extent theoretically derived; or it may be influenced by cost and convenience factors. For many variables (such as degree of positive versus negative affect), the judgments of human observers are required. However, some aspects of behavior can be obtained from automated systems (such as the presence or absence of talk within each 1/4-second time interval by the Automatic Vocal Transaction Analysis, or AVTA, system, Jaffe & Feldstein, 1970). The use of automated systems is attractive because of the relatively low cost. However, even for automated systems, reliability and validity should be assessed, and not merely assumed. Useful reviews of issues in observational research and behavior coding systems are found in Bakeman and Gottman (1987), Markman and Notarius (1987), and Sackett (1978).

Various microanalytic studies, cited in previous sections, have employed a wide range of measures: mood or affective states; physiological states such as heart rate; self-reported cognitions that occur during social interactions; observer-coded types of behaviors (positive, negative); amount and types of body movement; on/off patterns of vocalization; and gaze direction (toward/away from the partner). Some researchers (e.g., Cappella, 1996) have employed multiple measures, used correlational methods to assess the degree to which these various behaviors are interrelated over time, and devised composite measures that combine several types of behavioral information.

**Level of Measurement: Categorical or Quantitative**

Some researchers have found it convenient to use categorical codes for behavior states; categorical time series data can most easily be analyzed using lagged conditional probabilities (as in Markov chain analysis, cf. Jaffe & Feldstein); or by using log linear analysis to model serial dependence (Gottman & Roy, 1990). It is possible to create “continuous” data from binary time series. When talk is coded as present or absent once per second, the data can be aggregated into time blocks to create a quantitative variable such as proportion of time spent talking in each 10-second time window. Other data (such as mood ratings on multiple
point scales) naturally come in a continuous form. Continuous time-series data can be analyzed using time-series regression methods or spectral analysis (see Gottman, 1981; Warner, 1998). In spite of the superficial differences between these various analyses, there is an underlying mathematical equivalence in the aspects of pattern in data that these allow us to assess. Serial dependence and interdependence between time series can be assessed using any of the analytic methods named here, although the details of reporting and interpretation will differ according to the type of analysis.

Sampling Frequency (in Relation to Cycles, Reaction Time, Response Latency) and Session Length

The decisions about how often to sample behavior, and how long to make the overall observation session, are quite crucial. Hayes, Meltzer, and Wolf (1970) have pointed out that, like different levels of magnification in a microscope, different sampling frequencies can bring different kinds of structure in behavior into view. For example, speech is organized at multiple temporal levels. When speech samples are taken at a rate of thousands of cycles per second, one can examine fundamental frequency (or pitch), and the phonemic structure of speech sounds. On the order of four samples per second, one can look for on/off patterns of vocalization versus silence, or speech “turns.” On the order of 5 seconds per sampling interval, one can look for cycles in amount of talk over the course of a conversation. On the order of 10 minutes per sample, one can look at variations in the amount of conversational speech that occur throughout the course of the day (Hayes and Cobb, 1979).

A researcher needs to know what kind of structure is expected in the time-series data in order to choose the most appropriate sampling frequency. If there may be cycles in the data, then the absolute minimum requirement for sampling frequency is two samples per cycle, but it would be better to have a larger number of observations in order to specify the shape of the cycle waveform. Another issue in choice of sampling frequency is typical response latency. If a mother’s response typically occurs within 1 second, then her behavior should be observed at least once per second (or more often, if you want your estimates of individual response latencies to be precise). When using variables that have been employed in past studies, it may be advisable to use the same sampling frequency that has been found satisfactory in past research. In general, when in doubt about the optimum sampling
frequency, it is better to sample observations at the highest frequency that is practical. For most studies, observing four times per second, or perhaps one time per second, should be adequate. Observations can always be aggregated into larger time blocks later if that proves to be convenient.

In general, the longer the observation session is, the better (within the limits of practicality). In most time-series analyses the degrees of freedom depend upon the number of observations in the time series. For this reason, if for no other, the number of observations in the time series should be reasonably large (preferably \( N > 50 \)). Of course, there are often practical reasons for keeping sessions brief, such as the difficulty of keeping a very young infant alert and involved in an activity. For research that concerns expressive face-to-face behavior such as talking or nonverbal behavior, Ambady and Rosenthal’s (1992) review, and recent work by Gottman and his colleagues, suggest that microanalysis of behavior samples as brief as 5 minutes may be sufficient.

If there are cycles in behavior, the session should be long enough to contain more than one complete cycle, and ideally it should contain at least five to ten repetitions of a cycle. For instance, when Larsen and Kasimatis (1991) assessed 7-day cycles in mood, they collected mood observations on 84 days (12 weeks). It is more convenient for data analysis if the data record contains an integer number of repetitions of the cycle of interest (Warner, 1995).

Other Design Choices

Many early microanalytic studies simply assessed behavior for a dyad at one age level or relationship stage. To address questions about stability or change in dyadic interaction patterns across the life span, and to assess whether microanalytic features of behavior can predict important later relationship outcomes, it is necessary to do longitudinal studies. Such studies might involve assessment of microanalytic features of social interaction, and also assessment of relationship status and perceived communication quality, at two or more age levels or stages in the development of a relationship. While cross-sectional studies may shed some light on possible developmental changes in the structure of social interaction, these have well-known limitations that seriously restrict the kinds of inferences that can be drawn. Ideally, we will want to have multiple time-point longitudinal studies, in which both microanalysis of social interaction and other assessments of rela-
Relationships across the Life Span

...tionship quality are done on the same set of dyads at many points in time across the life span. These data would provide information about stability and change in the microanalytic structure of social interaction (both for individuals and for dyads). It would also help us to assess the ways in which day-to-day behaviors in social interaction predict, and perhaps even determine, long-term relationship outcomes.

Research results cited in previous sections indicate that microanalysis of relatively brief caregiver–infant and marital interaction sessions can provide enough information to predict later relationship outcomes. Moderately coordinated behavior in mother–infant dyads predicts secure attachment, while extremely high or low levels of coordination, or inappropriate responses by caregivers, seem to predict attachment problems. The sheer amount of physiological arousal and of negative affect in brief marital interactions, but also the strength of the tendency to reciprocate negative affect, predicts poor marital outcomes. Most of the studies involving interactions between peers (friendship or stranger pairs) have not included the follow-ups necessary to assess whether brief interaction in these types of dyads are diagnostic of later relationship development. One study that did assess later relationship outcomes was done by Van Lear (1991); he reported that cycling between high and low levels of self-disclosure in a series of conversations predicted relationship dissolution.

Research Questions for Future Microanalytic Life Span Studies

When a life span perspective is taken, many questions naturally arise. Microanalytic assessments of coordination in social interaction may be done at one or multiple points in time. Other information about relationship quality or relationship outcomes also may be obtained at one or multiple points in time. One set of questions concerns the development over the life span of the behaviors that are examined within the microanalytic paradigm: Does behavioral synchrony between mother and infant develop gradually during infancy, with the infant slowly becoming more responsive to mother’s behaviors? Does this coordination change as the infant becomes a toddler, a child, an adolescent? Is there carry over in an individual’s life in the temporal organization of behavior, such that an adolescent’s ability to coordinate behavior and emotion with a friend develops out of the coordination experienced in early infancy? So far, not many researchers have collected repeated microanalytic data. A few instances of this include Welkowitz et al.
(1976), who found that congruence of switching pause duration tended to increase with age in children; and Gottman and Levenson (1999b), who found stability in the expression of negative and positive affect in marital interactions across four years. It seems likely that both stability and change will be found in future studies of behavioral coordination and social interaction process across the life span.

A second set of questions has to do with prediction. To what extent can the information from a microanalytic assessment of social interaction predict future relationship satisfaction and relationship outcomes? Do infants who experience poorly coordinated interactions with a parent have developmental difficulties and/or difficulties in later life relationships? Do married couples who exhibit too high a ratio of negative to positive behaviors, or too strong a tendency to reciprocate negative behaviors, have a higher risk of divorce? Studies cited in earlier sections have yielded intriguing results for both parent-infant and marital dyads, suggesting that for infants, their future cognitive development and attachment status may be predictable from the patterning of mother-infant interaction; and that married couples' future satisfaction and risk of divorce may be predictable from small samples of their face-to-face behaviors, affect, and physiological reactions during social interactions.

A third set of questions that has not been addressed involves possible interventions. If pathological patterns in face-to-face social interaction can be detected early in a relationship, a question that naturally arises is whether these can be modified, and whether changing these patterns leads to better relationship outcomes. However, current research is still at the stage of assessing the diagnostic usefulness of behavior patterns; development of interventions will require a better understanding of relationship process.

**DIRECTIONS FOR THE FUTURE**

What can microanalysis tell us about relationships as they develop and change over the life span? We can use microanalysis to assess what (quantitative) behavior patterns give rise to our "qualitative" impressions (of responsiveness, for example). This may enhance our theoretical understanding of relationship processes and help to answer many of the questions raised in preceding sections of this chapter. Relationships may come to be understood (on one level) as complex systems that involve temporal coordination of behavior, physiology, emotion,
and cognition among participants. This perspective may complement other perspectives on relationships, including more qualitative and content-oriented descriptions; it will not replace other perspectives on relationships.

Microanalysis may be used to obtain “diagnostic” information from relatively brief social interactions that may predict later relationship or individual outcomes. This could be quite useful in clinical psychology and counseling, as one means of identifying individuals or dyads whose everyday social interactions may be contributing to the development of longer-term problems.

Microanalysis may be used to identify aspects of “social interaction process,” that is, specific behaviors or temporal behavior patterns that may be accessible to clinical interventions. If sensitive responding can be taught, perhaps individuals who do not seem to have this skill naturally might be helped to develop it.

All of this may ultimately lead, as Gottman (1982) once suggested, to the development of a “temporal language” for understanding relationship processes. At this point, many intriguing questions are unanswered, but microanalysis provides new ways of looking at the development of relationships over time.

REFERENCES


(1999b). Predicting divorce among newlyweds from the first three minutes of a marital conflict discussion. Family Process, 38, 293–301.


