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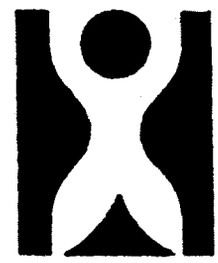

HOW CHILDREN BECOME FRIENDS

JOHN MORDECHAI GOTTMAN

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

WITH COMMENTARY BY

WILLIAM G. GRAZIANO

ABSTRACT

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The objective of this report is to describe how children become friends—that is, to pinpoint a set of social processes that account for variation in unacquainted children's progress toward friendship. The results of two studies of children's conversations with peers are presented. The first study involved 26 dyads from 3 to 6 years of age, playing in their homes, with either a best friend or a stranger, for one session. The second study involved 18 unacquainted dyads, aged 3–9 years, playing in their homes for three sessions. A behavioral criterion variable that indexed how well the children "hit it off" was generated and empirically tested by requiring it to discriminate between friends and strangers in the first study and to correlate with a mothers' questionnaire assessment of the children's progress toward friendship in the second study. An observational coding system and sequential analysis were employed for the identification of variables that indexed the following social processes: communication clarity and connectedness, information exchange, establishing a common-ground activity, the exploration of similarities and differences, conflict resolution, positive reciprocity, and self-disclosure. The social process variables were able to account for more than 80% of the variance in the criterion, and this result was robust to rival hypotheses of common-method variance. The relationships between process and criterion variables were not strongly related to the ages of the children or the sex composition of the dyad. The importance of some social processes changed over sessions; for example, self-disclosure in response to direct questions about feeling becomes important only in later sessions. Using these results, the data from the first study were recoded with a larger interaction unit and a more global coding category system designed to code the salient sequences that were empirically identified from the sequential and nonsequential data analysis using the first coding system. These results were

used to generate a model of how the social processes themselves are temporally related (e.g., the relationship between establishing a common-ground activity and information exchange). The results of these two coding systems present a coherent picture of the social events that relate to two unacquainted 3–9-year-old children's progress toward friendship.

INTRODUCTION

In the past decade there has been a growing body of literature assessing the effects of interventions designed to help socially isolated children (for a review, see Oden 1980). In most cases the objective of these interventions is to increase a child's acceptance by peers, as assessed by sociometric measures. Because there is reason to believe that sociometric measures are good high-risk indicators for predicting functioning in later childhood and in adulthood (for a review, see Putallaz & Gottman 1981), the design of effective intervention is an important concern. In many cases interventions designed to increase a child's acceptance by peers proceed by attempting to increase the quality of *dyadic* peer interaction, and in some cases they directly attempt to teach a child how to make a friend (see Oden & Asher 1977; Stocking et al. 1980). Hartup (1975) cautioned that the concomitants of peer acceptance may not be the same as the concomitants of friendship formation. There may thus be a need for the design of interventions to be informed by data on precisely how children go about the business of becoming friends. There is currently little known about how either adults or children become friends with a peer that is based on the observation of social interaction (e.g., see Newcomb 1961).

Aside from intrinsic interest in the question of how children become friends, there is now some social epidemiological evidence to suggest that having a close friend is of critical importance for the physical and psychological health of adults who undergo a variety of life crises. These results suggest the importance of having a close, reciprocal, confiding relationship to emotional and physical well-being and in reducing the probability of depression following a stressful event (Brown et al. 1975) and in reducing the probability of a variety of health problems, including complications with pregnancy, arthritis, death following an illness, depression, and suicide (Cobb 1976). (For reviews of this research, see Ginsberg [1980] and Miller &

Reprint requests should be sent to John M. Gottman, Department of Psychology, University of Illinois at Urbana-Champaign, 603 East Daniel Street, Champaign, Illinois 61820.

Ingham [1976].) Therefore, in addition to the importance of being accepted by one's peers, there is now some evidence to suggest the importance of being able to make a friend per se.

It may also be the case that the correlation between peer sociometric data and later functioning can be accounted for, to some extent, by the problems encountered by some children who go through childhood without any friends. Asher and Renshaw (1981) suggested that a convergence of rating and nomination sociometric measures be employed to subdivide children without friends. They proposed that nomination sociometric measures identify children without friends and that rating sociometric measures assess these children's acceptance by peers. They wrote:

> Asher and Renshaw (in preparation) have found that children who are low on both acceptance and friendship differ behaviorally, as measured by teacher ratings, from children who are low on friendship but are generally well-accepted by their classmates. In general, the former group demonstrated a lower level of social skillfulness than the latter group, although both groups appeared less skilled than children who were high on both measures. Finally, Oden and Asher (1977) found that coaching children in play skills led to increased acceptance as measured by the rating-scale sociometric technique but did not result in increased friendship nominations. [P. 275]

The Oden and Asher (1977) study is the one study in the literature that has demonstrated lasting effects of intervention on 1-year follow-up, so it is clearly important that this intervention affected measures of acceptance but not measures of friendship.

Part of the problem may be in how the interventions themselves are designed to assist children in making friends. Currently there is little information available that has the descriptive detail necessary for designing interventions to teach children how to make friends with a peer. For example, is it important to teach a child how to resolve conflict? If so, what should be taught? Does the age of the child make a difference in what will be taught? Currently the scant literature on these questions relies heavily on anecdotal observation, armchair speculation, and current clinical wisdom (e.g., see Rubin 1980). Naturalistic studies of social interaction in children have tended either to come from an ethological tradition that stresses evolutionary continuity (e.g., McGrew 1972) or from social learning theory (e.g., Hartup et al. 1967). Both research traditions have ignored the detailed study of conversation. For example, in McGrew's (1972) study of preschool interaction, only one of more than 100 categories, called "vocalize," recognized the fact that preschool children talk to each other. Indeed, as Schachter et al. (1974) pointed out, sociolinguists, not psychologists, have been studying conversation in naturalistic settings. Unfortunately, socio-

linguists have not addressed themselves to questions of friendship formation in children.

There is a body of social cognitive research related to friendship in children. This research explores the development of children's conceptions of friendship and friendship formation. Many researchers may automatically think of this body of literature as bearing on the issue of how children become friends and conceptualize friendship. There are, however, serious problems in using this work to draw conclusions about actual social processes. First, this research is based on interviews, problem situations, or story completion tasks (e.g., Selman 1980; Youniss 1980) or written essays (Bigelow & LaGaipa 1975). Such procedures clearly rely on a child's ability to reflect verbally about social processes. They therefore do not rule out the rival hypothesis that the development observed is actually development in verbal ability or a knowledge of normative, cultural expectations about friendship, such as reciprocity. Furthermore, as Robinson (1972), a sociolinguist, pointed out, interviews are questionable methods even for adults unless one is interested in discovering the well-worked-out rules involved in institutional rituals or games. One would be reluctant to rely on interview methods to discover the rules for less formal social events such as greeting rituals (Schefflen 1972) or the social events involved in friendship formation. Clearly, young children are likely to be at a greater disadvantage than older children in revealing their own abstract summaries and conclusions of the interaction processes involved in making friends.

The social-cognitive literature about children's friendship thus cannot be used to infer how young children do and do not think about the processes of friendship. My own experience with children's conversation bears this out. For example, Selman (1980) characterized "Stage Zero: close friendship as momentary physical interaction" as the conception of close friendship in young children. Selman (1980, p. 136) wrote that this conception is characterized by "the inability to define the friendship beyond the momentary or repeated incidents of interaction between two persons who come together to play." The children in Selman's Stage Zero examples were aged 5-1 and 6-2. Hence, this is a stage that extends through the preschool years. Yet Gottman and Parkhurst (1980) described a longitudinal study of a pair of 4-year-old cross-sex best friends who planned to marry and considered themselves engaged. During the study, one child's parents moved to a different state. The children discussed their impending separation and made plans to write and see each other periodically. They did both regularly in the subsequent 7 years. These contacts resulted totally from the children's efforts since their parents were not friends. We repeated this longitudinal study with another pair of 4-year-old best friends, and, serendipitously, one child of this pair moved during the period of the study. Once again the children spontaneously discussed their separation and made plans to see

each other and stay in contact; they have done so in the 3 years since their separation and still greatly enjoy one another's company.

Even some toddlers may not have Stage Zero conceptions of friendship. Vandell and Mueller (1980) reported a friendship formed between an 8-month-old boy and a 10-month-old boy. They wrote, "The boys actively chose one another as the preferred playmates; and in their play, the two boys showed the most sophisticated play of the play group game. *Years later when Robert moved away, he continually asked for Loren and Loren repeatedly for Robert*" (p. 189, emphasis added). While moving sociometrics of toddler interaction do not usually show much stability in mutual selection for play (Vandell 1978), recent innovations in the design of the preschool sociometric measures have found reasonable levels of test-retest stability (Asher et al. 1977).

Thus, there may be problems in using this social-cognitive research to infer how young children think about close friendship and friendship making; nor can this work be used confidently to make inferences about how children actually go about the business of making friends. An observational research methodology is clearly needed.

There is evidence that children's behavior changes dramatically as they become familiar with their peers. The play of toddlers is more connected with familiar than with unfamiliar peers (see Vandell & Mueller 1980). A review of research on play by Rubin and Fein (in press) concluded that as young children become acquainted their play is more likely to become nonliteral in the way objects are used, more complex, and more likely to include fantasy play. Research on newcomers in peer groups demonstrates a similar pattern of initial constraint and inhibition followed by higher activity levels and less inhibition as familiarity increases (Feldbaum et al. 1980; Jormakka 1976; McGrew 1972). This work on the effects of increasing familiarity is important. However, it cannot be applied directly to an understanding of how children become friends. Familiarity and the formation of friendships are not the same construct. As newcomers in a classroom become comfortable with their peers, they will exhibit a wider range of behaviors, including running and shouting, as well as more complex nonliteral play with objects; however, this does not imply that all children in the classroom progress toward friendship.

Investigations designed to describe how children become friends must also account for natural variation in the *success* of children's attempts at making friends. Not all such attempts are successful, particularly for young children (see Gottman & Parkhurst 1980). Thus there is a need to index the quality of the acquaintanceship and then to account for variation in this index by reference to appropriate social process variables.

A shortcoming to previous observational research is the failure to employ observational category systems of sufficient richness so that a reason-

ably complete set of social processes can be studied. Sociolinguistic category systems, while they are often rich in detail, are not addressed to understanding the social psychology of the friendship formation process. Thus there is a need to design a conversationally based coding system specifically for the task of describing how children make friends.

A second shortcoming of most previous observational research is the failure to analyze data sequentially. Most observational data are presented as rates or relative frequencies of specific code categories, and any sense of temporal pattern is lost. However, it is precisely in the study of temporal pattern that we can discover the implicit social rules in interaction. Sequential analysis can add precision to hypotheses about social interaction.

The relatively recent interest in the observational study of interacting systems, such as the parent-infant system, has led to the development of new techniques for sequential analysis (Allison & Liker 1982; Bakeman 1978; Gottman & Bakeman 1979; Gottman & Notarius 1978; Sackett 1977). Much of this work has its roots in ethological approaches, which employ the mathematics of information theory to define a communicative sequence. A communicative sequence occurs when the behavior of one organism reduces uncertainty in the behavior of another organism. Consider the social behavior of an organism for which we have no prior knowledge of which behaviors have communicative significance. For example, suppose we were studying spider crabs (Hazlett & Estabook 1974). We would notice that these crabs do not move very often; in fact, the unconditional base rate of crab B moving is about .03. To understand the communicative significance of a single chilepid raise of crab A, we may look at the conditional probability of crab B moving on those occasions following crab A's single chilepid raise. We find it is .03. The single chilepid raise of crab A has resulted in no reduction of uncertainty in crab B's behavior. But when we look at the forward chilepid extension of crab A, we find that the conditional probability of crab B's movement is .65. The forward chilepid extension has definite communicative value. Thus the detection of sequences involves the comparison of conditional and unconditional probabilities.

In this *Monograph*, the z score statistic initially proposed by Sackett (1977) and modified by Gottman (1980) and Allison and Liker (1982) was used to compare conditional and unconditional probabilities. Event sequential data were used (Bakeman 1978), so that no code can follow itself; this removes the need to be concerned with lag-one autocontingency in the data in computing the lag-one z score index of cross-contingency. Also, the z statistic is used here conservatively, as recommended by Bakeman (1978), as an index of sequential connection, not as a statistical test that is referred to a normal distribution.

There were several methodological decisions in the design of the research reported here. First, tape recordings of conversations were made

rather than having an adult observer present, as in Schachter et al. (1974). This decision was based on pilot experience, which demonstrated that the presence of an adult was highly intrusive; the decision to gather tape recordings was also based on the intrinsic value of having a verbatim record of the conversations.

Second, recordings were made in the home, not in a laboratory. This decision was based on pilot work that showed that a restricted range of conversation was obtained in the laboratory compared with the home. The home is an important setting for the study of children's interaction with peers. Newson and Newson (1978) reported on a sample of British 7-year-old children from Nottingham. Seventy-two percent of professional and managerial mothers reported that "most weeks" friends played at home. The percentage dropped as a function of decreasing income, apparently as a function of decreasing available space and privacy for the mother; nonetheless, even among unskilled workers (the lowest income group), 57% of mothers reported that "most weeks" friends played at home. Also, although little evidence exists to support the importance of the home setting for friendship making, an unpublished American survey reported by Lougee and Kenniston (1975) found that, of 6-, 7-, and 8-year-olds interviewed, 82% of the boys and 79% of the girls reported playing with their friends at home. For 9-, 10-, and 11-year-olds these figures were 55% of the boys and 90% of the girls; 33% of older boys reported playing with their friends in parks. Thus the home is an important setting for friends. No comparable data exist for settings in which *strangers* meet, but Gottman et al. (1975) found that, in role plays with children pretending to make friends with an adult experimenter, invitations to the stranger to visit in the home were extremely likely.

Third, the decision was made to collect audiotape, not videotape, recordings. This decision was based entirely on the obstrusiveness of video equipment; even an external microphone on the audio tape recorder disrupted the children's conversations. While it would be preferable to have videotapes, at present no adequate procedures exist for videotaping in the home that does not destroy the relatively more uninhibited nature of children's conversation at home.[1]

[1] We are currently evaluating the limitations of audiotapes in two studies. The first study collected videotapes in the laboratory and coded them by two groups of coders, one of which used verbatim transcripts, video and audio information. The second study collected audiotapes in the home and videotapes in the laboratory from the same subjects.

METHOD

PROCEDURES, DESIGNS, AND SUBJECTS

Study 1

The first study was conducted in Bloomington, Indiana, in 1975–76. Subjects were recruited through advertisements in newspapers and posted announcements. Subjects were not paid for their participation.

The first study involved 13 host children ranging in age from 2-11 to 6-1 (mean age = 4-8, SD = 10.7 months) with their best friends or with a stranger, each within a year of the host in age. The mean difference in age between friends was 8 months; the difference between the strangers was 7 months. Of the 26 dyads studied, 13 were female-female pairs, nine were female-male pairs, and four were male-male pairs. The design was a within-subjects design. All children were tape recorded in the home of the host child, playing with a stranger or with a child that the parents said was the child's best friend. (See Vandell and Mueller [1980] for a review of literature that supports the validity of the mother's identification of her child's best friends for young children.) Each dyad was audiotaped, using a cassette tape recorder and a 90-minute cassette. The parents of the host subject did the recording and made all arrangements for the other children to visit. Parents were asked to arrange that other children not be present and to leave the children alone as much as possible. Sections of the transcripts taken with mothers present were not coded. The recorder was placed where it was visible to the children; and the parents were asked to habituate their child before the first play session to the presence of the recorder. The children played in the room where the host usually played with friends in that household, and they had available to them whatever toys were normally present. Tapes were transcribed by at least two transcribers; the second transcriber checked and corrected the transcripts.

Study 2

The second study was conducted in Champaign, Illinois, in 1978–79. Subjects were recruited through newspaper advertisements and posted

announcements. Each subject was paid $5.00 for his or her participation in the study. This change in the procedure was found to be necessary to recruit subjects for the study. For the second study, a wider age range was sampled and the sex composition of the dyads was varied systematically. There were 18 host children, who ranged in age from 3-0 to 9-0 (mean age = 6-0; SD = 2.1 years). The subjects formed three cells: six male-male dyads, six male-female dyads, and six female-female dyads. Within each dyad type, subjects' mean ages and standard deviations were 6-0 and 2-7, respectively, for the male-male dyads; 6-1 and 1-10 for the male-female dyads; and 5-11 and 2-3 for the female-female dyads. Subjects within dyads were within 1 year of one another in age. Within these constraints, the pairing was random. One child of each dyad was randomly designated as the host child. The children played together for three sessions in the host's home; sessions were within 2 weeks of one another. Subjects knew from the start they would be playing together for three sessions. The taping procedures were identical to those of study 1, except that a female research assistant accompanied the guest child for each session. The purpose of this change of procedure was to occupy the host's mother; there were too many instances of the mothers interrupting the children's play in study 1. Two months after the children participated, both mothers filled out a 21-item questionnaire designed to assess the extent to which the children had progressed toward a friendship. Information was obtained about whether the children spoke positively to the mother about one another, asked to see the other child again, telephoned, visited, and so on. For each dyad, the scores for the two mothers were averaged. There were 54 tapes for the second study.

The 80 tapes for the two studies took approximately 800 hours to transcribe and approximately 4,200 hours to code using the coding systems described in this report. An earlier, less detailed coding system was first used to code the data from study 1, and preliminary results were reported by Gottman and Parkhurst (1980). However, the preliminary analysis demonstrated the imprecision of the earlier version of the coding system. It is important to note that the study of many of the social processes of this research project are facilitated by sequential analysis of the data. Sequential analysis, in turn, requires tying reliability to specific units of a transcript instead of summing over time blocks. This kind of reliability, in turn, often requires an extremely precise coding system. The time and cost investment in this research, once the coding system had been developed, was in coding each transcript in detail, in its entirety, and maintaining high enough reliabilities for sequential analysis. Thus, although the data collection began in 1975, the final coding was completed in 1981.

CODING SYSTEM

Coders used both a verbatim transcript and the tape for coding. Coders were blind to the ages of the children in both studies, to friends or strangers in study 1, to the session number in study 2, and to the sex composition of the dyad in both studies. A detailed 85-page coding manual (Gottman et al. 1981) was used to train coders. The following discussions will outline the coding procedure and the procedure for reliability checking, briefly summarize the code categories, report the reliabilities for each code of each study, and describe the logical and empirical procedure for lumping codes into summary codes.

The Coding Unit

A wide variety of units have been used in previous research on conversation. The three most common units are as follows: the utterance, which is any speech separated by pauses; the phrase, which is separated by punctuation; and the sentence. Each unit has its shortcomings. People do not always express ideas without pausing, as in, "I'm going to make mine [pause] green." It does not seem very sensible to make this two units. People do not always complete their sentences, as in the following samples:

A: Something's broken. Right here! This is my rocking chair. My daddy for! Wanh! Going underwater! Going brah! Under there! Going bells! [Ringing bell]
B: Oh a lion, Gaah!
A: Toosh, tooksh, shooh.
B: Goochen, goochen, goo.

The sentence unit is clearly not manageable. In conversation, verbs are often discarded and fragments repeated, ideas intrude parenthetically during speech, and speech disturbances are common (Mahl 1956).

In research on the conversation of married couples, Gottman (1979b) used a unit called the "thought unit," which is one expressed idea or fragment. This unit can sometimes be one utterance or several, and it can be either a phrase or a sentence. In coding a sequence of thought units, Gottman employed Weiss et al.'s (1973) concept of a "behavior unit," which is defined by shifts in code categories; the concept has also been called "event sequence data" by Bakeman (1978). This makes it possible to use a flexible unit depending on the "meaning" of a set of utterances defined by the coding system itself. From the point of view of the conversation, this is a data-reduction technique; for example, a series of utterances that give instructions could be considered one code even though they are interrupted by pauses (e.g., "First you put this on this [pause] then you snap this on [pause] when you're finished . . ."), or two utterances that give reassurance could

be considered as one sympathy code (e.g., "Don't cry [pause] your daddy'll be back soon"). The thought unit also makes it possible to code as a function of context; for example, if a child says, "Here's mine [pause] here's yours," the thought unit involves assigning roles to both children, or sharing, whereas the utterances coded separately might be coded as two commands. On the other hand, this scheme has definite weaknesses. For example, the behavioral unit does not allow one to detect a sequence of similar codes within the same child. Clearly, the choice of a unit is an important issue, and it is not independent of the design of the coding system.

THE CODING PROCEDURE

A randomly selected section of seven consecutive pages from each tape transcript was independently checked by a reliability checker. For most codes, generalizability indexes in an earlier version of the coding system (reported in Gottman & Parkhurst 1980) did not vary very much when four or two pages were used as a reliability sample. Seven pages were selected to make it more likely that infrequent codes would also be coded by the reliability checker. One transcript was coded, and another transcript was divided up into thought units. The second transcript was given to the reliability checker, who selected seven consecutive pages at random to code. Meetings between the coder and the reliability checker were held periodically to control reliability drift and decay. These meetings consisted of reviewing coding and sections of the code manual to clarify confusion between code definitions. Gottman (1979b) used this procedure and reported reliability increment rather than decay over time. The reliability checker was varied throughout the study so that all coders served as reliability checkers at least once for each coder.

Reliability Index

The index of reliability used in this research is specific to the need to perform sequential analysis separately for each dyad. The index of interobserver agreement used should depend on the generalizability claim the investigation makes for the coding system (Cronbach et al. 1972). In the present research this claim is that variance between observers is small compared with variance across tapes. Cronbach α's are computed for each code as suggested by Wiggins (1973, p. 290). This approach to reliability assessment was first applied to observational data by Jones et al. (1975). They calculated total frequencies of a particular code for observer and independent reliability checker over subjects. The design is within-subjects analysis of variance, repeated over coders. However, this analysis is appropriate only if the data are not analyzed sequentially, because high reliability can be obtained in the analysis if both coders observe a similar number of a particu-

lar code, regardless of where in a transcript these occurrences are observed. Observers may thus not agree at all on specific utterances, and this analysis will yield a high coefficient of generalizability. This point was first made by Johnson and Bolstad (1973).

A more stringent procedure that is appropriate for sequential analysis is to tie agreement to specific coding units. A matrix of agreements and disagreements can be tallied for the two coders by proceeding through the transcript unit by unit. Suppose that there are two codes, A and B. If both coders categorized the first thought unit of a transcript as A, this would be a tally in the AA cell of the matrix; if coder 1 scored it A but coder 2 scored it B, this would be a tally in the AB cell of the matrix. Perfect reliability would imply no off-diagonal entries. For each code, for each transcript, two numbers can be computed—the total number of diagonal entries and the total number of diagonal plus off-diagonal entries. Perfect reliability would mean these two numbers are equal; hence, there is no variance in this facet—diagonal/diagonal-plus-off-diagonal. This facet is the repeated-measures facet for the design, tapes × this facet. The procedure suggested here represents a generalization of Jones et al.'s (1975) method for sequential analysis. It has been employed by Gottman (1979b), Gottman and Parkhurst (1980), and Putallaz and Gottman (1981).

Code Categories and Cronbach α's

There are six double codes that can co-occur to some extent with one another and with the 42 content codes (to be discussed later). The double codes are (1) fantasy, which is coded whenever a child spoke in role within the framework of a fantasy—for example, "Help, help, they're tying me up!" ($\alpha_1 = .998$, $\alpha_2 = .999$, for studies 1 and 2, respectively); (2) question, which is coded whenever a statement was made to sound like a question—for example, "Is that mine?" ($\alpha_1 = .959$, $\alpha_2 = .993$); (3) joke, which is coded whenever an utterance was accompanied by laughter, giggling, chuckling, or silliness—for example, jokes, bathroom humor, and puns ($\alpha_1 = .993$; $\alpha_2 = .976$); (4) squabble, which is coded for angry, annoyed, disgusted, aggressive statements, or other squabbling, which included insults, yelling, whining, sarcasm, verbal or physical aggression, threats, retaliation, or tattling ($\alpha_1 = .777$, $\alpha_2 = .856$); (5) gossip, which is a statement about other people, regardless of the content or evaluative nature of the comment—for example, "Her mother and father sleep naked"—and which, in combination with other codes, can become more specific ($\alpha_1 = .917$, $\alpha_2 = .997$); and (6) positive, which is coded for statements said with warm, approving, admiring, affectionate, loving, or enthusiastic tone of voice ($\alpha_1 = .651$, $\alpha_2 = .747$). Not all double code combinations are logically possible. Fantasy and gossip cannot logically co-occur, nor can squabbles and positive.

There are 42 content codes; these codes are mutually exclusive, but they can co-occur with any number of double codes. Table 1 is a list of these codes as they are grouped in the manual, with an example of each code and reliabilities for each study. Table 1 shows that nearly all of the codes were highly reliable. Low reliabilities were obtained only when codes occurred infrequently in the random reliability sample. When the codes were more frequent, reliabilities were high.

Lumping Scheme

Because many of the demand types were infrequent, for data analysis the various types of demands were combined into three larger categories. Cases with low reliabilities were also combined with related codes. This lumping scheme was derived using data from study 1 on both logical and empirical grounds. The three demand categories were called "we demands," "strong demands," and "weak demands." These categories will be discussed later. Based on a paper by Ervin-Tripp (1977), it was hypothesized that compliance to commands should be greater for friends than for strangers. To test this hypothesis, z scores were computed for commands by the host followed by agreement by the guest for each transcript that had a sufficient number of commands by the host; the analogous computation was made for commands by the guest followed by compliance by the host. Transcripts were eliminated from the analysis if the command occurred less than 15 times. This figure is arbitrary, but some cutoff is necessary to be able to have confidence in the z scores (see Gottman & Bakeman 1979).

A repeated-measures analysis of variance was performed on the eligible transcript pairs, with best friends/strangers as the repeated-measures factor. For the host's commands, there was no significant effect, $F(1,11) = .07$, but for the guest's commands there was a significant effect, $F(1,9) = 16.16$, $p < .01$; as predicted, hosts were more likely to comply to guests who were friends ($\bar{X} = 2.84$) than to guests who were strangers ($\bar{X} = .87$).

Had there been sufficient frequencies of the other demand types, this analysis would have continued, lumping all demand types with commands for which compliance was more likely among friends than among strangers. Instead, the following logical procedure was employed. The four demands for the pair ("hafta wanna," "let's," "let's in question form," and "roles to both") were combined into the category called "we demands" because all four extend inclusion to the other child in an attempt to initiate a joint activity. Thus they are functionally similar. The remaining demands were separated into two groups—"strong demands" and "weak demands." The theoretical work of Brown and Levinson (1978) of face saving and politeness was helpful in creating these two categories. Strong demands, like commands, are those that are direct and do not hedge their requests very much. This category consisted of "commands," "suggestions," "requirements for the

TABLE 1

THE CONTENT CODES

CODE	EXAMPLE	CRONBACH α Study 1	CRONBACH α Study 2
Demands for the other child:			
1. Command (COM)	"Gimme that."	.983	.944
2. Polite requests (PRE)	"That one, please."	1.000	1.000
3. Polite request in question form (QPRE)	"Would you gimme that?"	.983	.935
4. Suggestion (SUG)	"You could make that black."	.994	.949
5. Suggestion in question form (QSUG)	"Why don't you make that black?"	1.000	.965
6. Asking permission (QASK)	"Can I play with that now?"	1.000	.942
7. Demands in the form of an information statement (IND)	"I think my crayons are next to you."	.663	.862
8. Demands in the form of a question for information (QIND)	"Have you got any sixes?"	.000	.921
9. Wanna (WA)	"I wanna play house."	.961	.924
10. Question wanna (QWA)	"Do you wanna play house?"	.970	.819
11. Requirements for the other child (REQ)	"You should stay in the lines."	.906	.862
12. Asks help (AH)	"Would you tie this for me?"	1.000	1.000
We demands (demands for the pair):			
13. Hafta wanna (HWA)	"We have to take a nap."	1.000	.933
14. Let's (LTS)	"Let's play house."	.997	.978
15. Let's in question form (QLTS)	"How about drawing now?"	.872	.944
16. Roles to both (ROL)	"You be the cop and I'll be the robber."	.900	.791
You and me:			
17. We both (WE)	"We're both four."	.884	.871
18. Me too (TOO)	"So am I."	.992	.950
19. We against others (WEG)	"We hate Jason."	.697	.975
20. Joining in (JOI)	A: Brm brrm. B: Brrm brmm.	.943	.991
Self-focus statements:			
21. Me (ME)	"I finished it so fast."	.970	.969
22. Attention getters (ATT)	"You know what?"	.971	.974
Emotive statements:			
23. Feelings of the speaker (FE)	"I'm mad at Sally."	.951	.916
24. Questions about the other child's feelings (QFE)	"Are you tired?"	.990	.963
25. Feeling inferred (FI)	"That must have hurt."	.929	.981
26. Sympathy and comfort (SY)	"Don't worry."	.486	.000
27. Offers (OF)	"I made this for you."	.703	.107
28. Agreement and acknowledgment (AG)	"Right."	.991	.976
29. Question for agreement (tag question) (QAG)	"Right?"	.999	.982
30. Disagreement (DG)	"It is not."	.985	.991
31. Disagreement with rationale (DG/CM)	"No, cause I'm using it."	.958	.950
32. Clarified agreement (AG/CM)	"Yeah, or a dog maybe."	.952	.940
Social rules:			
33. Rule (RU)	"You have to take turns."	.864	.863
Information exchange and message clarification:			
34. Information (IN)	"White and red makes pink."	.955	.952
35. Question for information (QIN)	"What does this one do?"	.930	.981

TABLE 1 (*Continued*)

Code	Example	Cronbach α Study 1	Cronbach α Study 2
36. Information about the other child (YOU)	"You have big trucks."	.899	.895
37. Questions for information about the other child (QYOU)	"Do you read a lot?"	1.000	.990
38. Narration of other child's actions (INX)	"You're painting it blue."	.415	.715
39. Request for clarified message (QCM)	"Which one?"	.879	.847
40. Clarified message[a] (CM)	"The gray one with red on it."	.949	.922
41. Nonclarified message (NCM)	"*That* one"	.949	.934
42. Request for repetition (QRE)	"What?" ↗	.980	.977
Transcript markers:			
43. Inaudible (IA)	...	.991	1.000
44. Speaking to others (OTH)	"Mommy, where's my coat?"	.998	.996
45. Dummy code (segment break)[b] (DU)	...	1.000	1.000
46. Fragment (FR)	"It, uh . . ."	.986	.836

[a] Message clarification is also used after a disagreement code if a child gives a reason for the disagreement.

[b] Dummy codes index breaks in the action, such as when the children left the room and then returned. The dummy code was used to avoid joining codes from the end of one segment to the beginning of the next in the sequential analyses.

other child," "wanna," "asks help," and "offers." Both asks help and offers are coercive requests that demand immediate attention. Weak demands are more face saving. They hedge their request and appear to recognize the right of the other child to refuse. Weak demands consist of "polite requests," "polite requests in question form," "suggestions in question form," "question wanna," "asking for permission," "demands in the form of an information statement," and "demands in the form of a question for information."

Other lumping decisions were made on a logical basis and are summarized in table 2. The resulting 20 code categories form a mutually exclusive, exhaustive system. Positive, an infrequent double code, was absorbed by the agreement code. In the lumping scheme, questions was ignored unless it co-occurred with specific content codes (feeling, agreement, information, repetition, or clarification). Gossip, fantasy, jokes, and squabbles took precedence over all content codes and over one another, as specified in table 2. Clearly, other decision rules for lumping are possible. These decisions make sense for the present investigation. Table 2 shows that all the codes in the 20-code system have high reliabilities. These decisions for lumping data were also tested in considerable detail by Parkhurst (1982), who examined the frequency of usage and consequence of the requests and directives in study 1 as a function of the contextual variables: friend versus stranger. On these bases, Parkhurst (1982) found support for Brown and Levinson's (1978) work and for constructing four equivalence classes: (1) demanding

forms, (2) collective suggestions, (3) deferential forms, and (4) implied requests. Here the first class is called "strong demands," the second class is called "we demands," and the third and fourth classes are combined into the category "weak demands."

TASKS OF THIS RESEARCH

The reviews of literature and the analysis of the data were determined by a specific set of tasks. The first task was the selection of criterion variables

TABLE 2

LUMPING SCHEME FOR FRIENDSHIP FORMATION STUDIES

Lumped Summary Code	Subcodes
1. Weak demands (WEA) $\alpha_1 = .969$ $\alpha_2 = .816$	Polite request, Polite request in question form, Suggestion in question form, Asking for permission, Demands in form of information statement, Demands in form of a question for information, Question wanna
2. Strong demands (STR) $\alpha_1 = .977$ $\alpha_2 = .959$	Command, Suggestion, Wanna, Requirements for the other child, Asks help, Offers
3. We demands (WEDE) $\alpha_1 = .996$ $\alpha_2 = .971$	Let's, Let's in question form, Hafta wanna, Roles to both
4. You and me (YM) $\alpha_1 = .939$ $\alpha_2 = .991$	We both, Me too, We against others, Joining in
5. Attention (ATT)	Attention
6. Me (ME)	Me
7. Feeling (FE)	Feeling
8. Question about feeling (QFE)	Question about feeling
9. Disagreement (DG)	Disagreement
10. Agreement (AG) $\alpha_1 = .990$ $\alpha_2 = .976$	Agreement, Sympathy, Positive double code co-occurring with any content code
11. Question for agreement (QAG)	Question for agreement
12. Clarifies message (CM) $\alpha_1 = .945$ $\alpha_2 = .930$	Clarifies message, Rule
13. Nonclarified message (NCM)	Nonclarified message
14. Information (IN) $\alpha_1 = .956$ $\alpha_2 = .950$	Information, Feelings inferred, Information about the other child, Narration of other child's actions
15. Questions (Q) $\alpha_1 = .935$ $\alpha_2 = .970$	Question for information, Question for repetition, Question for clarification
16. Gossip (G)	Gossip with any content code
17. Fantasy (F)	Fantasy with any content code
18. Jokes (J)	Jokes with any content code
19. Squabbles (S)	Squabbles with any content code
20. Blub (BL) $\alpha_1 = .995$ $\alpha_2 = .983$	Inaudible, Speaking to others, Dummy code, Fragment

NOTE.—Double code co-occurrence rules: fantasy and gossip cannot co-occur logically (code as gossip); both take precedence over jokes; jokes take precedence over squabbles and positive, which cannot co-occur; positive and squabbles take precedence over questions.

that can potentially index how well two unacquainted children "hit it off." Ten potential criterion variables were selected based on a review of diverse literature. The second task was the validation of these criterion variables—that is, the selection of a smaller subset of criterion variables that (1) discriminated friends from strangers in study 1 and (2) predicted progress toward friendship as assessed by the mother's questionnaire of study 2.

The third task was the selection of a minimal set of interesting process variables. This selection was informed by the literatures related to social interaction and social development, but it was also determined empirically. An explanation is in order. One is almost forced to select a set of social processes that provide an adequate summary description of how children actually talk. Suppose, for example, that a researcher decides to focus only on reciprocal self-disclosure in naturally occurring conversations. If one tried to write a script of a conversation that contained *only* reciprocal self-disclosure, it might sound like the following:

A: I was once in a mental hospital.
B: My mother is having an affair with the mailman.
A: Last summer I had an abortion.
B: My house was destroyed by a tornado.
A: I detest college.

It is difficult to write a reasonable script of purely reciprocal self-disclosure because so many other things happen in a natural conversation of this sort, including a social comparison, empathy, support, disagreement, and exploring feelings. In short, the transcripts of the children's conversations themselves influence the set of social processes one must include for study.

It is critical to note that the set of process variables one decides to study also depends to a great extent on the literatures the researcher is addressing. For example, sociolinguists are often (but not always) interested in how context affects language use. It makes a great deal of difference if one is primarily a linguist studying social interaction as a context for understanding how language is used in discourse or primarily a developmental social psychologist who uses language to understand relationships. This particular distinction was critical in selecting the process variables for investigation.

Consider several distinctions. Dore et al. (1978), in their analysis of nursery school conversation, have a category called "evaluations," which are personal judgments or attitudes (e.g., "That's good"). Thus, they lump agreement and disagreement into one summary code. No social psychologist since Bales (1950) would combine these two codes because one would then lose a great deal of power in being able to describe the affective climate of the interaction. On the other hand, the following are both examples of the tag question, which is a question that asks for some form of agreement: (1)

"He's coming home, right?" and (2) "He's coming home, isn't he?" The first statement represents a lower level of linguistic competence because it employs a universal tag instead of a specific transformation of the stem "He's coming home." This distinction on a dimension of linguistic competence would be of less interest to the social psychologist, who would see in both forms a request for agreement.

To summarize, the third task is the selection of the process variables, a task that must be affected by the objective of the research in studying conversation. In this research the objective was understanding the formation of friendship.

The fourth task was to test the extent to which the social process variables selected could account for variance in the criterion variables and the extent to which this might replicate from study 1 to study 2. Such replication is really a requirement because relatively low sample sizes must be employed in this subject-intensive research.

The fifth task is to describe the course of relationship development across the three sessions of study 2 by examining the process/criterion relationships separately for each session.

SELECTION OF THE CRITERION VARIABLES

Markman (1977, 1981) assessed the predictive validity of indices of positive interaction in the conversations of couples planning to marry to predict relationship satisfaction in a 5-year longitudinal study. He found that correlations between eventual relationship satisfaction and the positiveness measures were in the .60s, whereas the highest correlations previously obtained were in the .40s, and these previously obtained correlations were between two questionnaire measures of relationship satisfaction. There is also a great deal of evidence to suggest that the interactions of nondistressed families and married couples are more positive and less negative than the interactions of their distressed counterparts; furthermore, this is true regardless of the source of the distress (Birchler et al. 1975; Cheek 1964; Lennard & Bernstein 1969; Mishler & Waxler 1968). Excellent indices of these differences in interaction have been agreement and disagreement; this is true despite differences across studies in the way these constructs were defined. It is also true when agreement and disagreement were assessed only from written transcripts or when agreement and disagreement included only paralinguistic nonverbal cues. Furthermore, Riskin and Faunce (1972), in a review paper, concluded that agreement-to-disagreement ratios provide excellent discrimination across studies between distressed and nondistressed families and between pathological and normal families, despite disparate definitions of these terms across studies. These results were replicated across studies for the area of marital interaction by Gottman (1979b),

although nonverbal measures provided superior discrimination to measures obtained only from verbal interaction.

Although there is little evidence for unacquainted groups about the usefulness of these criterion measures of agreement, disagreement, and agreement-to-disagreement ratios, some evidence does exist. Among children, Putallaz and Gottman (1981) reviewed research evidence that showed that preschool and kindergarten children low in peer sociometric status are less positive to their acquainted peers than those high in sociometric status; this was also true for school-age children, both in situations of dyadic play and attempts at entry into a dyadic peer group. Putallaz and Gottman (1981) found this result specifically for agreement, disagreement, and agreement-to-disagreement ratios. In a subsequent study, Putallaz (1981) employed the entry procedure with unacquainted children. The experiment involved employing child actors as confederates who systematically varied their behavior. The subjects were children who were studied in the summer before their entry into school. Sociometric data were obtained 4 months later, once the subjects had entered school and had been in their classes for several months. She found that the proportion of disagreement correlated −.49 with the sociometric rating measure; the proportion of agreements minus the proportion of disagreements, which is similar to an agreement-to-disagreement ratio, correlated .50 with the sociometric rating measure.

These results suggest that the hosts' and the guests' proportions of agreement, disagreement, and agreement-to-disagreement ratios and the difference between agreement and disagreement proportions are excellent candidates as indexes of the extent to which two unacquainted children progress toward friendship.

THE SOCIAL PROCESSES

The following processes were selected for investigation: (1) connectedness and communication clarity; (2) information exchange; (3) establishing common ground; (4) the resolution of conflict; (5) positive reciprocity; and (6) self-disclosure. As will be reviewed later, these processes have been discussed to some degree in the literature. However, it should be pointed out that many of them have not been made systematically operational in the context of observing naturalistic social interaction. Thus there is often no precedent for selecting observational measures for these social processes. In the discussion that follows, literature will be reviewed and specific variables will be proposed to assess each social process. Two points need to be made. First, it is important at the outset to discuss the notion of *index* variables. A particular code or code sequence that is selected to index a complex social process need not "equal" that process, but merely index it in the sense that, *if that process occurs more or less often, the variable should correspondingly increase*

or decrease in the data. A particular sequence may thus represent an entire cluster of variables indexing a type of social event, without necessarily being an operational definition of the social event. Thus the variables selected need *not* be taken as operational definitions of the social processes but as indexes of these processes. Second, it is necessary to attempt to provide some validation, either internal or external, for the variables proposed to index the social processes selected. This was possible for several variables. Thus the following discussion may, unfortunately, be a bit tedious. Because there is little precedent for the specification of these variables in the context of children's conversation, the discussion will have to include a review of relevant literature, the proposal of appropriate index variables, and a test of internal or external validity. The social processes selected are neither exotic nor novel. However, a great deal of theoretical writing about these processes has either obscured or oversimplified them. Thus it is necessary to go to some pains to gain the precision required to proceed.

Connectedness and Communication Clarity

To index connectedness and communication clarity, sequences will be employed that represent a request for clarification of a message ("Which truck do you want?") followed by an appropriate clarification of the message ("The dumpster"). The following discussion will clarify the selection of these index variables. Perhaps the most basic dimension of social competence is the connectedness of the interaction. Piaget's (1926) characterization of the conversation of preschool children as collective monologue has been effectively challenged in a series of naturalistic studies (e.g., Garvey & Hogan 1973; Mueller 1972). Garvey and Hogan (1973) used acquainted preschool dyads, whereas Mueller used unacquainted preschool children. Garvey and Hogan reported that the children in their study were connected, or "in focus," an average of 66% of the time, a figure somewhat higher than Mueller's 62% of the time, although the two variables used to assess connectedness were not identical across the two studies. Mueller's sophisticated use of information theory to predict the partner's responding provided a powerful test of the connectedness hypothesis. Nonetheless, the connectedness of the interaction may be related to the degree of acquaintanceship. Research on toddler interaction reviewed by Vandell and Mueller (1980) suggests that, as toddlers become friends, their interaction becomes more connected.

Closely related to connectedness is the clarity of the children's communication. The clarity of communication in social interaction has been considered important in many fields. For example, a comprehensive review by Jacob (1975) concluded that the clarity of communication was the most consistent discriminator between interaction in normal families and

families with a schizophrenic member. Research on referential communication in children has focused on a speaker's ability to specify to a listener to what he or she is referring. Asher (1979, p. 175) wrote, "One way that referential communication might be studied would be to observe people in their everyday environment as they go about the task of describing, explaining, giving directions, and so on. A serious obstacle to this sort of method is the fact that it is not usually possible to determine from observation exactly what a speaker is intending to communicate."

In fact, research on referential communication in children has largely abandoned naturalistic observation in favor of experimental tasks that make it possible to program a speaker's intent and to assess the listener's reception of the message. The decision may have been made at great cost because it is not at all clear to what extent performance on these laboratory tasks can be generalized to social interaction (see Asher 1979). Asher (1979) pointed out that an advantage of structured laboratory tasks is that they make it possible to examine component processes in referential communication, but he added, "Still, it could be that highly unfamiliar laboratory tasks are creating an exaggerated picture of childhood incompetence" (p. 193).

Asher argued that a different picture of children's competence in referential communication might arise from a study of their everyday transactions. He suggested that, in adult-child interactions, adults may compensate for child's lack of clarity by modifying their messages, and he added that children often use pointing to specify a referent (Wellman & Lempers 1977; see also Vandell & Mueller 1980). In peer interaction, it would be valuable to study what we are calling communication clarity in situ.

A solution to the problem of the difficulty of using observational methods is to study *specific* sequences in which a speaker's intent is known. These sequences are provided in a speaker's request for clarification from the listener. Garvey (1977) brought these speech events to our attention in her suggestion that the "contingent query" is a basic "modular component of discourse" (p. 64). She was not interested in the same issue but in the use of the contingent query in the regulation of speech. However, an alternative to using laboratory tasks to assess the extent to which children communicate clearly, as well as how this varies with age and other contextual variables, is to perform sequential analyses of children's response to requests for clarification from their peers.

The argument is that we will know that children communicate clearly to the extent that we can detect predictable sequences between a request for clarification by one child and an appropriate clarification by the other child—for example: A: Hand me the truck./B: Which truck?/A: The red one. The last two utterances represent a sequence of a question for clari-

fication of a message followed by a clarification of the message (notation: Q → CM).[2]

The Relationship between Connectedness and Communication Clarity

It is important, whenever possible, to create internal or external validity checks on the variables selected to index the social processes. For connectedness and communication clarity, an independent coding system was designed and employed. To test the assumption that connectedness can be considered the same social process as communication clarity, the data from study 1 were coded with a system specifically designed to assess the degree of collective monologue in the children's conversation.

Coding collective monologue is not an easy task, in part because it is unclear exactly what Piaget (1926) himself meant by the term. For example, Piaget (1926, pp. 6–7) reported the following conversation among children drawing at the same table:

1. Pie: But the trams that are hooked on behind don't have any flags.
2. Pie: They don't have any carriages hooked on.
3. Pie: [to Béa] T'sa tram that hasn't got no carriages.
4. Pie: [to Hei] This tram hasn't got no carriages, Hei, look, it isn't red, d'you see.
5. Pie: A funny gentleman!
6. Pie: A funny gentleman. . . . I'm leaving the tram white.
7. Ez: I'm doing it yellow.
8. Pie: No, you mustn't do it yellow. I'm doing the stair-case, look.
9. Béa: I can't come this afternoon, I've got a Eurhythmic class.
10. Pie: What did you say?
11. Béa: I can't come this afternoon, I've got a Eurhythmic class.
12. Pie: What did you say?
13. Béa: [No answer]
14. Pie: [to Béa] Leave him alone.

[Teacher interrupts]

When analyzing this conversation, Piaget (1926, pp. 7–8) concluded that, in Pie's first several lines, "He is not speaking to any one. He is thinking aloud over his own drawing, just as the people of the working classes mutter to themselves over their work. . . . He cares very little who is listening to him. . . . He does not care whether the person he addresses has really

[2] As will be seen in table 1, observers are able to reliably make judgments of the appropriateness of the response to a clarification request. Although in other social contexts a request for clarification could have many functions other than its obvious intent, this can be checked by lag-sequence analysis by determining the extent to which a failure to clarify a message clarification request leads to another question by the child who made the first request for clarification. This turned out to be the case for the data reported here. Hence we can be reasonably confident in observers' judgments of the function of this sequence.

heard him or not." An alternative interpretation of these first few lines is that Pie's intent is to get *someone's* attention, and that is why he continues to rephrase his initial statement and address it to different people. Piaget referred to the sequence as an illustration of collective monologue. Béa's answer (line 9) to Pie in line 8 certainly does seem "devoid of any connexion with what he has just been saying" (Piaget 1926, p. 8). However, it is hard to agree with Piaget that "it is obvious that he [Pie] does not seek to understand," since lines 10 and 12 are requests by Pie for some kind of elaboration of repetition. Furthermore, Piaget considered lines 4–7 to be additional examples of collective monologue. Pie's line "I'm leaving the tram white" followed by Ez's line "I'm doing it yellow" is not different from a sequence we might overhear in the faculty lounge—"I got a $2,000 raise"/"I got an $800 raise." We would probably consider both a low form of dialogue, but dialogue nonetheless. There must have been a great deal of confusion between Piaget's adapted information code and collective monologue. The sequence "I'm coloring mine white"/"I'm coloring mine green" would be considered collective monologue, whereas the sequence "I shall have one tomorrow"/"I shall have mine this afternoon" would be considered adapted information. Thus Piaget's own examples would lead one to suspect his method of coding a sequence as collective monologue.

The concept of egocentrism is not useful in clearing up these problems with the collective monologue code. The problem with coding a child's utterance as "egocentric" can be illustrated dramatically with children's repetitions. Piaget considers all repetitions to be examples of egocentric speech. This position has aptly been criticized by Keenan (1977), who noted that 2-year-old children used repetition for a host of communicative functions and distinguished among these functions by varying their tone of voice. For example, repetition can be used to query ("Turn it around"/"Turn it around?"/"No, the other way"/"Other way?"), or to agree enthusiastically ("And we're going to have hot dogs"/"Hot dogs!"), or to comply ("Aren't I a good cook?"/"Yes, the greatest!"/"Yes, the greatest" [softly]/"That's right"/"The greatest!" [loudly]). Clearly, repetition can be an important aspect of early discourse and is not to be automatically discarded as "egocentric."

Piaget's conclusion about egocentrism in children's speech is partly a result of his failure to distinguish children's activity-based talk narrating play, which may be connected, from collective monologue. A separate analysis and careful redefinition of connected-activity talk and collective monologue would seem necessary. Toward this end a mutually exclusive and exhaustive four-code system was devised. The unit of analysis was a section of transcript of unbroken talk unified by its content. Coders used brief notes to summarize the themes of each block of transcript. The basic division made in the code manual was between connected and uncon-

nected speech. The manual stated, "Speech is unconnected when the children are talking independently on separate tracks and not responding to one another. This is called collective monologue." The four codes are defined as follows:

1. Collective monologue (COL).—A block of collective monologue is an unbroken stretch during which the children are talking about different things and during which statements are neither responses to previous statements by the other nor responded to. A COL block may be only one line long. Note that to be connected to a previous utterance by the other child only part of a unified sequence of talk need relate. Thus, for example, in the following *all* of B would be connected: A: "This one is too hard."/B: "Well, here's an easy one we can do. You do this part and I'll do her clothes. I'm gonna make them pink. Pink's my favorite color."

2. Activity-based talk (AT).—This kind of block may include argument, negotiation, discussion, comparison, explanation, and/or commentary related to the children's present activities or surroundings. This code does not apply to discussions of abstract or general topics, past or future events, or things and people who are absent; it has its focus on the concrete and immediate. It does not include fantasy play.

3. Fantasy (FA).—This consists of negotiations, directions, narrative, and role playing related to the development of a fantasy or role play. Some examples are playing house, pretending to be robots and constructing a sequence in which they replace each other's batteries, talking for tiny models of a skeleton and a dinosaur who are holding a conversation, pretending to be babies, pretending that "Mr. Nobody" has caused something to happen, enacting a sequence in which the children are playing themselves ("Let's play Eric and Naomi, and I come over to visit and ring your doorbell and you answer the door"), playing that some dolls (given roles) are taking a boat trip.

4. Conversations (CO).—This is coded for conversations that focus on events, things, or real people outside of the present situation or of an abstract or general nature. Conversations that focus on something (activity, plan, person, or thing) in the present situation are coded activity-based talk (AT).

Coders were blind to the ages and the levels of acquaintanceship of the children. The proportion of each of the four codes was calculated for each transcript. For each transcript, a second coder independently coded eight pages of transcript, and the correlations between the two coders' proportions for the sample were computed. The reliability correlations were: collective monologue, .62; activity talk, .92; fantasy, .94; and conversation, .81. All correlations were significantly different from zero, with the most frequent code confusions occurring between collective monologue and activity talk. In the following notation H represents the host and G the guest. The correlations between z scores for the sequences HQ → GCM

and GQ → HCM (request for clarification followed by message clarification) and the proportions of collective monologue were .004 and −.738 ($p < .01$) among strangers; they were .237 and −.211 among best friends. It is difficult to trust the correlations for best friends since the proportion of collective monologue was so low for best friends (.036) compared with strangers (.093), $F(1,11) = 8.01$, $p < .05$. These validity checks thus make most sense among strangers. Hence, among strangers there is some evidence that the two methods of assessment are veridical; the high negative correlation between the z scores for GQ → HCM and blocks of collective monologue is what would be predicted, since the high z score is evidence of *connected* discourse.[3]

To summarize, the Q → CM (request for message clarification followed by appropriate clarification of the message) is a reasonable index of both the connectedness of the discourse and the clarity of the communication. The next social process involves information exchange, which is likely to be the foundation of conversation.

Information Exchange

Garvey and Hogan (1973) discussed Schegloff's (1968) summons-answer routine as a characteristic method used for exchanging information by preschool children. This pattern is a sequence found in conversational openings. It is of the following form: (1) speaker A summons speaker B (example: "Hey, you know what?"); (2) speaker B answers (example: "No, what?"); (3) speaker A responds (example: "Sometime you can come to my house.").

Garvey and Hogan (1973) found 23 examples of this routine, but the examples were complex and displayed considerable variety, including jokes ("Hey, you know what?" "What?" "You're a nut.") and the "rhetorical gambit." There were so many variants of the summons-answer sequence in the present investigations (e.g., [1] A: Hey you know what? You're coloring that green; [2] A: Hey!/B: This crayon's the one you want, right?/A: Right.) that it made sense to *index* its occurrence with the relative

[3] Parenthetically, repeated measures analyses of covariance, with age as the covariate, were performed for study 1 for the additional variables discussed in this section. There was a significant effect for collective monologue, $F(1,12) = 8.55$, $p < .05$, with the best friends' mean proportion of .036 and strangers .093. There was a significant effect for fantasy, $F(1,12) = 8.52$, $p < .05$, with means of .297 and .164 for friends and strangers, respectively. There was a significant effect for the degree of extension of the fantasy, $F(1,12) = 21.68$, $p < .001$, with means of 1.677 and .831 for friends and strangers, respectively. There were no significant differences for the following: activity talk, $F(1,12) = .69$, N.S., with means of .610 for friends and .657 for strangers; conversation, $F(1,12) = 1.80$, N.S., with means of .056 for friends and .086 for strangers; and the slope of the fast half of the phase spectrum, $F(1,12) = .49$, N.S., with means of −.115 for friends and −.053 for strangers.

frequencies of the attention-getting and information codes, HATT, GATT, for attention getting by the host and guest, respectively, and HIN and GIN, for information given by the host and guest, respectively.

The success that children have in asking questions for information and eliciting relevant information (notation: Q → IN) can be indexed by the two z scores that relate to questioning and information exchange by the host and guest, respectively: z(HQ → GIN), for questions for information by the host followed by relevant information by the guest; and z(GQ → HIN), for questions for information by the guest followed by relevant information by the host. Note that the sequence provides greater precision than variables that collapse over time, such as the proportion of the guest's questions. The next set of social processes that will be discussed involves the exploration of similarities and differences.

In the area of mate selection (e.g., see Huston & Levinger 1978), there is evidence to suggest that stable, close relationships are formed by a sequential filtering process in which the couples who progress toward a permanent relationship are more similar on a variety of dimensions than those who do not. The formation of a friendship may, in part, be based on children learning, as they converse, that they are similar. The process suggested is establishing common ground.

Establishing Common Ground

There are two ways that children establish common ground as they converse: (1) they find something to do together; and (2) they explore their similarities and differences. A variable that is, on its face, counterindicative of establishing a common-ground activity is the proportion of ME statements by each child (HME and GME, which represents the host's and guest's proportions of ME statements, respectively). Recall that ME statements are narrations of one's own activity (e.g., "I'm coloring this red"). Thus, high proportions of ME statements may index the failure to establish a common-ground activity. On the other hand, compliance to we demands, which are demands or suggestions for joint activity ("hafta wanna," "roles to both," "let's," and "let's in question form"—see table 1) index the success of being able to establish a common-ground activity. The two relevant z scores are z(HWE → GAG), which represents agreement by the guest in response to a host's we demand, and z(GWE → HAG), which represents agreement by the host in response to a guest's we demand. Using the four-code system previously described, among strangers the proportion of ME codes by the host correlated .704 ($p < .01$) with the proportion of collective monologue; the proportion of the guest's ME codes were uncorrelated with the proportion of the collective monologue (−.050), but the proportion was negatively correlated with the proportion of activity talk (−.572, $p < .05$). The correlation of the host's ME codes and activity talk was −.215 (N.S.).

Thus, high proportions of ME codes are counterindicative of the establishment of common-ground activity.

The role of similarity and difference between people in interpersonal attraction has been extensively studied, though not by naturalistic observation of interaction in relationships as they form. Hinde's (1979) review of this literature concluded that similarity is attractive, that people who are initially more similar are more likely to progress toward a relationship, and that people who are in a satisfying relationship become more similar over time while people in an unsatisfying relationship become less similar over time. There is also some evidence that people find differences between them attractive, if they are assured of being liked (Walster & Walster 1963). Subjects in the Walster and Walster (1963) study who were assured of being liked said that they would prefer to interact with dissimilar rather than similar people. The exploration of both similarity and differences may be a critical social process in building common ground.

These social events can be indexed as follows. One index of building similarity is agreement to tag questions. The tag question is a question for an agreement. For example, "My dolly's going to sleep, right?"; the ending "right?" is a tag question. This tag-question/agreement sequence is represented by two z scores: z(HQAG $\rightarrow$ GAG), the host's question for agreement followed by agreement by the guest; and z(GQAG $\rightarrow$ HAG), the guest's question agreement followed by the host's agreement. A second index of building similarity is direct agreement with the partner's direct expression of feelings—the FE code. This is indexed by two z scores: z(HFE $\rightarrow$ GAG), the guest's agreement with the host's feelings; and the z(GFE $\rightarrow$ HAG), the host's agreement with the guest's feelings. The exploration of differences is indexed by disagreement with the partner's feelings—that is, with the two z scores z(HFE $\rightarrow$ GDG) and z(GFE $\rightarrow$ HDG). These are also expected to be *positively* correlated with the criterion.

Altman and Taylor's (1973) essay on the development of relationship suggested the importance of two additional social processes—the resolution of conflict and reciprocity.

Resolution of Conflict

Three sets of variables are of interest. First, Gottman and Parkhurst (1980) reported that giving a reason for disagreeing was related to the de-escalation of squabbling over time. This simple tactic appears to be an effective conflict-resolution strategy. These sequences are represented by two z scores: z(HDG $\rightarrow$ HCM), the host's rationale for disagreeing following his or her own disagreement (another way that the CM code is used); and z(GDG $\rightarrow$ GCM), the guest's rationale for disagreeing following his or her own disagreement.

A second strategy is suggested by Brown and Levinson's (1978) theoretical work on politeness and face saving. In the present investigation, the likelihood of compliance to weak demands ought to represent the effectiveness of politeness and the softening of demands as a conflict-reducing strategy. In the present investigation this is indexed by the following z scores: z(HWEA $\rightarrow$ GAG), the guest's compliance to weak demands by the host; and z(GWEA $\rightarrow$ HAG), the host's compliance to weak demands by the guest.

A third sequence of interest is the disagreement chain, which indexes the failure of adequate conflict resolution. An example of a disagreement chain is the following excerpt from a second-session conversation from study 2 of two young girls.

H: This is stretchy.
G: No, it's not.
H: Uh huh.
G: Yes.
H: Uh huh.
G: It's dirty.
H: Uh uh.
G: Uh huh.
H: Uh uh.
G: Uh huh.
H: Uh uh.
G: Uh huh.
H: Uh uh. It's not dirty.

This disagreement chain continues for some time and reappears in various forms throughout the conversation. It is indexed by two z scores: z(HDG $\rightarrow$ GDG), the host's disagreement followed by guest's disagreement; and z(GDG $\rightarrow$ HDG), the guest's disagreement followed by the host's disagreement. For long reciprocal disagreement chains, the two scores will be nearly equal; asymmetry is also possible.

Relation of Conflict Resolution Codes to the Escalation of Conflict

The internal validity of the variables selected to index conflict resolution was checked by correlating these variables with variables that index the escalation of conflict. These two sets of variables should be negatively correlated, while disagreement chains should be positively correlated with the escalation of conflict. These latter variables are (1) the proportion of squabbling (HS and GS) and (2) z scores of chains from disagreement to squabbling—z(HDG $\rightarrow$ HS), z(HDG $\rightarrow$ GS), z(GDG $\rightarrow$ GS), and z(GDG $\rightarrow$ HS). The six variables indexing conflict resolution were correlated with these six variables for the four groups (study 1, strangers; and study 2, each session). The variables behaved consistently across groups.

Disagreement chains were highly correlated with the escalation of conflict to squabbles and the proportions of squabbles, while giving a reason for disagreeing and weak demands were consistently negatively related to squabbles and the escalation to squabbles.[4]

Positive Reciprocity

There are many definitions of positive reciprocity in the literature on social interaction. A review of all these definitions would require a separate paper. For reviews specific to acquaintanceship, see Altman and Taylor (1973) and Foot, Chapman, and Smith (1980). In the theoretical literature on positive reciprocity it has often been assumed to be obvious and given that well-functioning relationships are characterized by positive reciprocity. However, a variety of operational definitions of positive reciprocity have emerged, and it has become clear that it is not an easy construct to define. For this reason alone some discussion of the construct is in order. For a review of definitions specific to marital interaction, see Gottman (1979b). However, a brief and specifically focused review is in order.

A common logical error in the assessment of temporal reciprocity should be mentioned—namely, assessing reciprocity as a correlation across subjects of rates or frequencies of a behavior between people in a dyad. (For a review of studies that have employed this assessment procedure, see Gottman [1979b].) This correlation merely means that people within a dyad are displaying similar rates or relative proportions of a behavior; they could be doing so entirely independently of one another in a temporal sense. The notion of temporal reciprocity *requires* the assessment of temporal contingency. Here reciprocity is defined as temporal reciprocity. This is a contingency-based definition, which means that, for example, if one child jokes this will increase the probability (over and above base rate) that the other child will joke.

Furthermore, the reciprocity of positive interaction need not necessarily characterize well-functioning close relationships. Murstein et al. (1977) found that adherence to a quid pro quo belief about relationships (i.e., that relationships function by positive reciprocity) was positively correlated with relationship satisfaction among roommates but negatively correlated with relationship satisfaction among married couples. Although Murstein et al.'s

[4] In the process of this analysis one serendipitous finding emerged. The use of jokes and the reciprocity of joking was also related to the escalation of conflict, but it was positively correlated. Thus, joking and reciprocity of joking is used as a conflict reduction technique *once conflict has escalated.* The reciprocity of fantasy, on the other hand, was consistently negatively correlated with the escalation of conflict. Fantasy chains thus prevent the escalation of conflict. The different kinds of reciprocity have different functions. Fantasy reciprocity, joking reciprocity, and gossip reciprocity are, however, correlated across the studies, so that reciprocity is a reasonable cluster.

study was not about acquaintanceship nor based on observational data, it does suggest the hypothesis that positive reciprocity may not always be characteristic of well-functioning close relationships. The hypothesis may be supported even in acquaintanceship if people think that there is an opportunity to form a close relationship. An experimental study by Clark and Mills (1979) supports the contention that, if unacquainted people desire a close relationship, positive temporal reciprocity reduces interpersonal attraction.

The case may be made stronger by considering the more specific notion of positive temporal reciprocity, which may be productive in the early stages of relationship formation but counterproductive later. This may be understood in the following way. Temporal reciprocity means that the interaction system is tightly linked in immediately mirroring one positive behavior with another of the same sort. Temporal linkage means constraint in information-theory terms; thus it means that less information is conveyed by a message because more redundancy exists by virtue of the temporal structure. Gottman (1979b) reported evidence that dissatisfied married couples could be distinguished from satisfied married couples by both more negative affect *and* more positive affect reciprocity. These findings are consistent with others in the family-interaction literature (e.g., Haley 1964) that show distressed families as more tightly and rigidly temporally linked than nondistressed families. Little is known about the functions of temporal reciprocity in relationship development.

Two potential functions of temporal reciprocity will be examined here—responsiveness and the degree of extension of a positive exchange. It may be the case that at first acquaintance positive temporal reciprocity communicates that the other person is responsive to his or her partner or that a reciprocal attention structure exists (see Chance & Larsen 1976). As relationships develop, however, temporal reciprocity may no longer serve this function. Thus, reciprocity is a complex concept that requires further validation. Reciprocity variables may also index the degree of *extension* of a particular behavior. Long chains of fantasy, for example, could produce high z scores for the reciprocity of fantasy. Here positive reciprocity will be indexed by the z scores for the reciprocity of joking, fantasy, and gossip—that is, $z(\mathrm{HJ} \rightarrow \mathrm{GJ})$, $z(\mathrm{GJ} \rightarrow \mathrm{HJ})$, $z(\mathrm{HF} \rightarrow \mathrm{GF})$, $z(\mathrm{GF} \rightarrow \mathrm{HF})$, $z(\text{H-Gossip} \rightarrow \text{G-Gossip})$, and $z(\text{G-Gossip} \rightarrow \text{H-Gossip})$.

To test the notion that positive reciprocity may index social responsiveness, a time-series analysis was performed on the data from study 1 to create an independent index of temporal responsiveness. For each child the turn was used as the unit of analysis. Each coded thought unit received a score from 1 to 3, and an average was computed for each turn. (See table 1 for a further explanation of the scoring.) A score of 1 was designed to reflect an orientation to self and was given to any ME code. A score of 2 was

designed to reflect exchange and interaction and was given to all demands for the other child, agreement and disagreement, information and message clarification, and rules. A score of 3 was designed to reflect inclusion, or a concern with the other child, and was given to all demands for the pair, inclusion codes, and emotive statements excluding agreement and disagreement (e.g., sympathy and offers). Double codes were ignored. Thus, each transcript was converted to two time series, with the turn as the unit of analysis. Increases in the dependent measure reflect motion away from a self-orientation and toward exchange or inclusion. While this provided a crude global measure of each child's behavior, time-series analysis makes it possible to assess precisely the degree of relatively immediate temporal responsiveness. The assessment was performed in this case by computing the slope of the fast half of the phase spectrum for each dyad. For a detailed discussion of this procedure, see Gottman (1979a, 1981). In this analysis a negative slope implies that the guest is more responsive to the host than the host is to the guest; a positive slope implies the converse. The correlations of the z scores for joking reciprocity with this measure for strangers was .461 ($p < .10$) for HJ $\rightarrow$ GJ and .047 (N.S.) for GJ $\rightarrow$ HJ. For fantasy the correlations for strangers were $-.111$ (N.S.) for HF $\rightarrow$ GF and .235 (N.S.) for GF $\rightarrow$ HF. For gossip reciprocity, however, the correlations were .674 ($p < .01$) for HG $\rightarrow$ GG and .620 ($p < .05$) for GG $\rightarrow$ HG. The positive correlation suggests that gossip reciprocity is related to a positive slope of the phase spectrum, which implies that the host is more responsive to the guest than the guest is to the host. This time-series analysis suggests that not all variables used to assess reciprocity also index responsiveness; in study 1 only gossip reciprocity and, to some extent, joking reciprocity do. Reciprocity may thus not be a tight construct in the sense of strong correlations between modalities (i.e., joking, gossip, and fantasy). To test this conclusion, correlations were computed among strangers between the variables selected to index reciprocity. These correlations suggest that reciprocity is a loose cluster of variables; in study 1, seven of the 15 correlations were significant at $p < .05$. Fantasy and joking reciprocity were correlated, and gossip and joking reciprocity were correlated.

To explore the interpretation of positive temporal reciprocity as an index of the extension of a positive exchange, fantasy was selected for further analysis. Each fantasy was coded in terms of its extension as either (1) initiated—one child suggests a fantasy or speaks in role, but the other child ignores or refuses to continue the fantasy; (2) brief—the other child agrees or responds briefly to the initiation of a fantasy, but it never goes beyond three lines; (3) developed—the fantasy is developed or continued for a period of time; or (4) extended—the fantasy goes on for more than about 45 lines of dialogue. For this coding scheme, the initiation of a fantasy was considered to be assignment or invention of roles or characters, suggestion

of a particular situation, scene, or action, or speaking within a role. Pretense or activity consistent with the fantasy, as well as fantasy-related negotiation beyond the point of initiation, were included in judging the length of the fantasy.

Each fantasy was weighted using a point system: 1 for an initiated fantasy, 2 for a brief fantasy, 3 for a developed fantasy, and 4 for an extended fantasy. The correlation between observers for this variable was .846. Among strangers in study 1, fantasy reciprocity was correlated with the degree of extension of the fantasy; the z scores for HF $\rightarrow$ GF correlated .383 (N.S.), and the z scores for GF $\rightarrow$ HF correlated .705 ($p < .01$). These results suggest that there is evidence that the reciprocity of fantasy does, to some degree, index its extension (see also n. 3).

Taken together, these two sets of analyses suggest that positive temporal reciprocity is a complex process and that its functions deserve further investigation. Thus, in discussing this process and its relationship with variables that index the extent to which two children have progressed toward friendship, extreme caution is required.

Self-Disclosure

Self-disclosure has rarely been investigated in the context of relationship formation using observational methods. Studies have tended to use self-report measures; the most widely used measure is Jourard's self-disclosure questionnaire (see Jourard & Lasakow 1955). In a review article, Cozby (1973) concluded that the JSDQ does not accurately predict self-disclosure; he was unable to find a relationship between the JSDQ and actual disclosure in a situation or with ratings of disclosure made by peers. Self-disclosure research that has been conducted using actual interaction has tended to be conducted between strangers who meet briefly in a laboratory and know they will never meet again. Ginsberg (1979, p. 12) noted,

> Contrary to expectations, even exceptionally high intimacy of disclosure from a confederate resulted in an increase in disclosure by the subject (Cozby 1972; Savicki 1972). This reciprocity of self-disclosure independent of intimacy of the topic does not appear to characterize the beginning stages of conversation in relationships that will have a history. A study by Murdoch, Chenoweth, and Rissman (1969) found that subjects who anticipated seeing each other again disclosed significantly less than subjects who expected the experiment to be over at the end of the session. Thus, laboratory-based conceptions of self-disclosure may not be readily generalized to naturally occurring relationships.

Self-disclosure in the present investigation can be indexed by the direct exploration of feelings through the following sequence: questions

about feelings by one child followed by the expression of feelings by the partner. Two z scores index this exchange: z(HQFE → GFE), the host's questions about feelings followed by the guest's expression of feelings; and the converse sequence, z(GQFE → HFE). It should be noted that this sequence only indexes the complex process of self-disclosure. As discussed earlier, many social events are naturally mixed with the expression and exploration of feelings. The sequences selected only index and do not equal this complex process.

PROBLEMS OF LOGICAL INDEPENDENCE OF CRITERION AND PROCESS VARIABLES

The z scores that assess the strength of sequential connection control for the unconditional base rate of the consequent code. Thus, these z scores should logically be independent of these base rates. For example, z(HWEA → GAG), which assesses the guest's compliance to the host's weak demands, should be logically independent of the amount of guest agreement in the interaction. They are not logically the same variable. Note that this could not be said of the conditional probability, p(GAG/HWEA), and the unconditional probability, p(GAG). The more guest agreement, the more likely it is to follow any code. For this reason the z score is superior to the conditional probability. To be conservative, however, analyses will also be presented that show the relationships between the criterion variables and process measures that do not involve criterion variables. Also, in study 2, correlations with the mother's questionnaire and the process measures will also be presented since these results are uncontaminated by common-method variance.

RESULTS AND DISCUSSION

THE CRITERION VARIABLES

There were two tests designed for selecting among the potential criterion variables. The first test was the discrimination between friends and strangers in study 1, and the second test was the correlation with the mothers' questionnaire in study 2, which assessed the children's progress toward friendship. Table 3 is a summary of the analyses of covariance for study 1 of the 10 potential criterion variables, with age as the covariate. Two variables emerge from these analyses—variables 3 and 4. Contrary to expectation, *both* agreement and disagreement variables are higher for friends than for strangers, which explains why their ratio does not discriminate between friends and strangers. The review of literature on criterion variables had suggested the pervasive importance of *both* types of variables. Table 4 illustrates that, while the agreement and disagreement proportions are statistically independent, they are also related to the *relative* climate of agreement variables (variables 5–10).

The second test of the 10 criterion variables is their correlation with the mother's questionnaire in study 2, which assessed the children's progress toward friendship. Table 5 is a summary of these partial correlations, controlling the hosts' age and the sex composition of the dyad (assessed by the number of males in the dyad). For each session the highest consistent correlations across sessions are with variable 3, guest agreement (GAG). To summarize the results of these analyses, there is very little loss of information in selecting criterion variable 3 as the best criterion variable. Across the two studies it provided the best discrimination between friends and strangers and the best relationship with the progress toward friendship variable. It was also strongly related in both studies to the relative climate of agreement variables. Henceforth variable 3 will be referred to as the criterion.

It is interesting to note how the criterion correlates with age, the sex composition of the dyad, and session number. In study 1, in the stranger group, the criterion was not correlated with age ($r = -.048$, N.S.). In study 2 the correlations between the criterion and age, the number of males in

TABLE 3

STUDY 1 ANALYSES OF COVARIANCE (Age as a Covariate) ON CRITERION VARIABLES

CRITERION VARIABLE	*F* RATIO	MEANS	
		Best Friends	Strangers
Agreement and disagreement proportions:			
1. Host agreement (HAG)	2.90	.036	.026
2. Host disagreement (HDG)	.46	.028	.025
3. Guest agreement (GAG)	6.65*	.038	.028
4. Guest disagreement (GDG)	5.56*	.024	.019
Relative climate of agreement:			
5. Host agreement/host disagreement ratio	.38	1.35	1.64
6. Guest agreement/guest disagreement ratio	.00	1.84	1.83
7. Average of 5 and 6	.22	1.60	1.74
8. Total[a] agreements/Total[a] disagreements ratio	.01	1.50	1.54
9. Host agreement minus host disagreement	.55	.008	.002
10. Guest agreement minus guest disagreement	1.05	.014	.009

NOTE.—Means are the uncorrected means—i.e., before covariation with age.

[a] Guest plus host.

* $p < .05$.

the dyad, and session number were not significant; they were .213, .041, and −.147, respectively. However, the .213 correlation with age approached significance ($p = .061$), so it is likely that, if a broader age range were sampled, one would conclude that children improve in getting along with strangers as they get older. Evidence to support this contention comes from the fact that in study 1 many of the correlations of other criterion variables with age were significant. In particular the significant correlations were as follows: host disagreement ($r = -.496, p < .001$); host agreement divided by host disagreement ($r = .418, p < .001$) guest agreement divided by guest disagreement ($r = .346, p < .01$); the average of the latter two variables ($r = .282, p < .01$); host agreement minus host disagreement ($r = .389, p < .01$); guest agreement minus guest disagreement ($r = .303, p < .05$); and total agreements divided by total disagreements ($r = .438, p < .001$). Since the criterion variables in study 2 form a reasonably consistent cluster, it is sensible to suggest that children probably improve in acquaintanceship as they become older. The overall effect is, however, not dramatic.

THE PROCESS/CRITERION RELATIONSHIP

Table 6 is a summary of the partial correlations between the criterion and the process variables. Recall that the first session of study 2 provides a replication and extension of the stranger group in study 1, although a wider sampling of age and systematic sampling of the sex composition of the dyad were added design features of study 2.

In the children's first meeting, the social processes were related to the

TABLE 4

PARTIAL CORRELATIONS BETWEEN THE CRITERION VARIABLES, CONTROLLING AGE—STUDY 1, STRANGERS

Variables	1	2	3	4	5	6	7	8	9
1. HAG	...								
2. HDG	−.105	...							
3. GAG	.075	−.057	...						
4. GDG	.120	.056	.143	...					
5. HAG/HDG	.046	−.889****	−.205	−.290	...				
6. GAG/GDG	.105	.174	.495*	−.488*	−.141	...			
7. AV (5, 6)	.103	−.693***	.108	−.548**	.812****	.463*	...		
8. TOT AG/TOT DG	.246	−.846****	.194	−.302	.885****	.186	.902****	...	
9. HAG-HDG	.578**	−.872****	.084	.013	.752***	−.091	.620**	.815****	...
10. GAG-GDG	−.010	−.095	.805****	−.471*	.005	.704***	.419*	.363	.073

NOTE.—H = host; G = guest; AG = agreement; and DG = disagreement.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

TABLE 5

PARTIAL CORRELATIONS OF THE TEN CRITERION VARIABLES WITH THE MOTHERS' QUESTIONNAIRE, ASSESSING PROGRESS TOWARD FRIENDSHIP

CRITERION VARIABLE	SESSION		
	1	2	3
Agreement and disagreement proportions:			
1. HAG	.495**	.398*	.383
2. HDG	−.434**	−.358	−.187
3. GAG	.527**	.594***	.473**
4. GDG	.094	−.381*	−.263
Relative climate of agreement:			
5. HAG/HDG	.442**	.569**	.422*
6. GAG/GDG	.334	.537**	.570**
7. AV (5, 6)	.401*	.555**	.577***
8. TOT AG/TOT DG	.547**	.554**	.546**
9. HAG-HDG	.613***	.443**	.377*
10. GAG-GDG	.323	.566**	.228

NOTE.—H = host, G = guest, AG = agreement, DG = disagreement.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

criterion variable across the two studies. Communication clarity was significantly related to the criterion in study 1 (GQ → HCM) and marginally related to the criterion in study 2 (HQ → GCM). Recall that the variables Q → CM refer to a question by one child for the clarification of a message followed by an appropriate clarification of the message by the other child. Information exchange variables correlated with the criterion in study 2 (HATT, HIN, HQ → GIN, and a marginally significant GIN), and they also correlated with the criterion in study 1 (HIN, HQ → GIN, and a marginally significant GQ → HIN). Recall that ATT is an attention-getting statement, the opening of the summons-answers sequence; IN is information; Q is a question for information in the Q → IN sequence, and the subsequent IN represents information appropriate to the question.

It was important for the proportion of ME statements to be low (HME in study 1, and GME in study 2 were negatively correlated with the criterion). This can be taken as evidence for the importance of establishing a common-ground activity. Recall that high proportions of ME statements reflect large amounts of collective monologue, while low proportions of ME statements reflect large amounts of activity talk, indicative of common-ground activity.

The establishment of similarity and the exploration of differences in the first meeting was not consistently related to the criterion. There was even some evidence (in study 1) that similarity sequences were negatively related to the criterion, although this is difficult to interpret.

Conflict resolution was related to the criterion across both studies,

TABLE 6

PARTIAL CORRELATIONS OF THE PROCESS VARIABLES WITH THE CRITERION—STUDY 1 AND STUDY 2, SESSION 1

Process Variable	Study 2, Session 1	Study 1, Strangers
Communication clarity:		
HQ→GCM	.374*	−.113
GQ→HCM	.293	.512**
Information exchange:		
HATT	.558**	−.111
GATT	−.221	.014
HIN	.552**	.665***
GIN	.397*	.206
HQ→GIN	.514**	.614**
GQ→HIN	.107	.422*
Common ground—activity:		
HWE→GAG	.193	−.203
GWE→HAG	−.188	.092
HME	.050	−.484*
GME	−.464**	.318
Common ground—similarities and differences:		
HQAG→GAG	.269	−.360
GQAG→HAG	.316	.334
HFE→GAG	.229	−.565**
GFE→HAG	−.204	−.016
HFE→GDG	−.241	−.034
GFE→HDG	.002	.173
Conflict resolution:		
HDG→HCM	.174	.140
GDG→GCM	.010	.552**
HDG→GDG	−.161	.056
GDG→HDG	−.187	.080
HWEA→GAG	.386*	.579**
GWEA→HAG	.548**	.823****
Reciprocity:		
HJ→GJ	.106	.556**
GJ→HJ	−.023	.613**
HG→GG	−.293	−.049
GG→HG	−.146	.103
HF→GF	.581***	.112
GF→HF	.442**	.197
Self-disclosure:		
HQFE→GFE	−.014	.467*
GQFE→HFE	.156	.092

NOTES.—For study 1 partial correlations control for age; for study 2 partial correlations control for age and number of males. In study 1 the sex composition of the dyad was not uniformly distributed. For strangers there were eight female-female dyads, three male-female dyads, and only one male-male dyad. For this reason partial correlations were not computed with respect to the number of males in the dyad for study 1, strangers. This variable was systematically varied in study 2. H = host; G = guest; Q = question, either for information or clarification, depending on the consequent code; CM = clarification of message, or giving a reason for disagreeing; ATT = attention getting; IN = information; WE = we demand; ME = narration of own play; QAG = question for agreement, tag question; AG = agreement; DG = disagreement; FE = feeling code; WEA = weak demand; J = jokes; G = gossip; F = fantasy; QIN = question for information; QCM = question for clarification; and QFE = question about feelings of the other child.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

particularly sequences that index compliance to weak demands, though there was some evidence (study 1) that giving a reason for disagreement was also related to the criterion.

Reciprocity was related to the criterion, but not in a consistent fashion across the two studies. The reciprocity of fantasy was related to the criterion in study 2, while the reciprocity of joking was related to the criterion in study 1 (see n. 4).

Self-disclosure was not consistently related to the criterion; only one correlation was marginally related to the criterion in study 1, (HQFE → GFE), a question about feelings followed by the expression of feelings.

Thus, the tasks of the first meeting appear to be to interact with one another in a low conflict and connected fashion in order to exchange information and establish a common-ground activity. These relationships between the process variables and the criterion are not weak. Table 7 summarizes

TABLE 7

STEPWISE MULTIPLE REGRESSION ANALYSIS FOR STUDY 1, STRANGER, AND STUDY 2, SESSION 1, BETWEEN THE CRITERION AND PROCESS VARIABLES SIGNIFICANT AT $p < .10$

Study, Step, and Variable Entered at Each Step	Multiple R	R^2	F ratio
Study 1:			
1, GWEA→HAG.....	.675	.456	9.20*
2, HQFE→GFE.....	.848	.719	12.82**
3, HIN.....	.886	.785	10.93**
4, GQ→HIN.....	.912	.833	9.95**
Study 2, Session 1:			
1, HATT.....	.583	.340	8.23*
2, GWEA→HAG.....	.735	.540	8.80**
3, HF→GF.....	.821	.674	9.64***
4, GIN.....	.877	.769	10.80***
5, GME.....	.904	.818	10.76***
6, HWEA→GAG.....	.918	.842	9.77***
Study 1:[a]			
1, HIN.....	.644	.415	7.79*
2, HME.....	.772	.597	7.40*
3, GQ→HIN.....	.793	.629	5.09*
4, HJ→GJ.....	.839	.704	4.76*
Study 2, Session 1:[a]			
1, HATT.....	.583	.340	8.23*
2, HIN.....	.724	.525	8.29**
3, GF→HF.....	.826	.682	10.00**
4, HQ→GCM.....	.845	.713	8.08**
5, HQ→GIN.....	.858	.736	6.69**
6, GME.....	.876	.767	6.02**

NOTE.—H = host; G = guest; WEA = weak demand; AG = agreement; DG = disagreement; QFE = question about feelings; FE = feelings; QIN = question for information; ME = narration of own play; IN = information; ATT = attention getting; F = fantasy; J = jokes; and CM = clarification of message.

[a] Reanalysis without agreement and disagreement in process variable.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

the stepwise multiple regression analyses for study 1, strangers, and study 2, session 1, between the criterion and the process variables in each study whose correlations with the criterion were significant at $p < .10$. In assessing the strength of these relationships across groups with differing numbers of subjects, it is important to cut off the stepwise multiple regression at an equivalent number of variables. Here $N/3$ was chosen as a conservative cutoff, where N is the number of dyads in the group. Table 7 shows that the strength of the relationships was not an artifact of the relatively low N; even three process variables in each case account for most of the variance in the criterion. With four variables in study 1, it was possible to account for 83.3% of the variance in the criterion; with six variables in study 2, session 1, it was possible to account for 84.2% of the variance in the criterion. Thus the process variables were not collinear. To address the potential criticism that the strength of these relationships is an artifact of the logical relationship between guest agreement being the criterion variable and agreement or disagreement being included in a sequence to assess a social process, the stepwise analyses were repeated, eliminating process variables that included agreement or disagreement. Table 7 shows that relationships remain strong. Even without these sequences it is possible to account for 70.4% of the variance in the criterion in study 1 with four variables and 76.7% of the variance in the criterion in study 2, session 1, with six variables.

Table 8 is a summary of the relationships between the criterion and the process variables as the relationship develops over three sessions. Communication clarity becomes more important (in accounting for variance in the criterion) as the acquaintanceship proceeds; so do information exchange, the establishment of common-ground activity, the exploration of *both* similarity and differences, the resolution of conflict, and self-disclosure. Reciprocity is the one social process that becomes unimportant over time, which is consistent with the literature review on temporal reciprocity. Only fantasy reciprocity is initially important, which relates to both the avoidance of conflict and the degree of development of the fantasy (see n. 4).

Once again, a stepwise multiple regression analysis was performed to assess the strength of these relationships. Table 9 is a summary of the two analyses for study 2, sessions 2 and 3, using all variables that correlated with the criterion at $p < .10$. With six process variables ($N/3$) in each session, it was possible to account for 93.2% and 91.1% of the variance in sessions 2 and 3, respectively. Thus, the strength of the relationship between criterion and the process variables increased from session 1 to sessions 2 and 3. Reanalysis of the strength of these relationships excluding variables that include agreement and disagreement once again show that the strength of these relationships remains. In session 2 it is possible to account for 88.8% of the variance, and in session 3 it is possible to account for 81.5% of the variance in the criterion.

TABLE 8

THE RELATIONSHIP BETWEEN THE SOCIAL PROCESSES AND THE CRITERION AS A FUNCTION OF THE LENGTH OF ACQUAINTANCESHIP

PROCESS VARIABLE	SESSION		
	1	2	3
Communication clarity:			
HQ→GCM	.374*	.341*	.500**
GQ→HCM	.293	−.122	.441**
Information exchange:			
HATT	.558**	.697****	.705****
GATT	−.221	−.132	.017
HIN	.552**	.683***	.552**
GIN	.397*	.424*	.500**
HQ→GIN	.514**	.213	.420**
GQ→HIN	.107	.367*	.034
Common ground—activity:			
HWE→GAG	.193	.002	.471**
GWE→HAG	−.188	.141	−.012
HME	.050	.294	.057
GME	−.464**	−.130	.313
Common ground—similarities and differences:			
HQAG→GAG	.269	.730****	.660***
GQAG→HAG	.316	.351*	.156
HFE→GAG	.229	.306	−.041
GFE→HAG	−.204	.369*	.010
HFE→GDG	−.241	−.118	.183
GFE→HDG	.002	.647***	.459
Conflict resolution:			
HDG→HCM	.174	−.208	.140
GDG→GCM	.010	.324	.552**
HDG→GDG	−.161	−.292	−.263
GDG→HDG	−.187	−.340*	−.344*
HWEA→GAG	.386*	.154	.595***
GWEA→HAG	.548**	−.062	.131
Reciprocity:			
HJ→GJ	.106	.337*	.155
GJ→HJ	−.023	−.083	−.078
HG→GG	−.293	−.072	−.033
GG→HG	−.146	−.089	−.044
HF→GF	.581***	.227	.124
GF→HF	.442**	.075	.221
Self-disclosure:			
HQFE→GFE	−.014	.487**	.284
GQFE→HFE	.156	.318	.605***

NOTES.—Partial correlations are presented, controlling age and number of males in the dyad. H = host; G = guest; Q = question, either for information or clarification, depending on the consequent code; CM = clarification of message, or giving a reason for disagreement; ATT = attention getting; IN = information; WE = we demand; ME = narration of own play; QAG = question for agreement, tag question; AG = agreement; DG = disagreement; FE = feeling code; WEA = weak demand; J = jokes; G = gossip; F = fantasy; QIN = question for information; QCM = question for clarification; and QFE = question about feelings of the other child.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

An additional methodological check of the relationships between process and outcome variables can be provided by the data in study 2 if we examine the extent to which the process variables can account for variance in the mother's questionnaire data, which assessed the children's progress toward friendship. This check would contain none of the potential confound between process and criterion measures that could arise from common-method variance. Table 10 shows that the general pattern of relationships is essentially similar to the pattern in table 8. Communication clarity becomes more important across sessions. Essentially similar patterns were obtained across the two tables for common-ground activity (particu-

TABLE 9

STEPWISE MULTIPLE REGRESSION ANALYSES BETWEEN THE CRITERION AND PROCESS VARIABLES CORRELATING SIGNIFICANTLY WITH THE CRITERION ($p < .10$) IN STUDY 2, SESSIONS 2 AND 3

Session, Step, and Variable Entered at Each Step	Multiple R	R^2	F ratio
Session 2:			
1, HIN	.677	.459	13.57**
2, HQAG→GAG	.842	.709	18.28***
3, GIN	.907	.822	21.59***
4, GQ→HIN	.942	.887	25.40***
5, GFE→HAG	.961	.923	28.81***
6, HATT	.965	.932	25.11***
Session 3:			
1, HATT	.742	.550	19.55***
2, HWE→GAG	.840	.706	18.01**
3, HIN	.891	.794	18.03**
4, HQAG→GAG	.934	.872	22.19**
5, HQ→GIN	.944	.890	19.56**
6, GDG→HDG	.954	.911	18.76**
Session 2:[a]			
1, HIN	.677	.459	13.56**
2, GQ→HIN	.751	.563	9.68**
3, GIN	.865	.747	13.81**
4, HATT	.915	.837	16.72**
5, HQFE→GFE	.939	.882	17.88**
6, HJ→GJ	.942	.888	14.49***
Session 3:[a]			
1, HATT	.742	.550	19.55**
2, GQFE→HFE	.815	.665	14.89**
3, HQ→GIN	.847	.718	11.87**
4, GIN	.868	.754	9.96**
5, HQ→GCM	.884	.782	8.61**
6, GQ→HCM	.903	.815	8.06**

NOTE.—H = host; G = guest; WEA = weak demand; AG = agreement; DG = disagreement; QFE = question about feelings of the other child; FE = feelings; QIN = question for information; ME = narration of own play; IN = information; ATT = attention getting; F = fantasy; J = jokes; CM = clarification of message; WE = we demand; QAG = question for agreement, tag question; and QCM = question for clarification.

[a] Reanalysis without agreement and disagreement in process variable.

** $p < .01$.

*** $p < .001$.

TABLE 10

PARTIAL CORRELATIONS ON THE PROCESS VARIABLE WITH THE MOTHER'S QUESTIONNAIRE, STUDY 2, CONTROLLING AGE AND THE SEX COMPOSITION OF THE DYAD

PROCESS VARIABLE	SESSION		
	1	2	3
Communication clarity:			
HQ→GCM	.003	.197	−.024
GQ→HCM	.070	.261	.420**
Information exchange:			
HATT	.446**	.354*	.538**
GATT	−.221	−.016	.209
HIN	.051	.292	.221
GIN	.052	−.008	.241
HQ→GIN	.207	.533**	.231
GQ→HIN	.225	.552**	−.109
Common ground—activity:			
HWE→GAG	.449**	.072	.111
GWE→HAG	−.161	−.328	.016
HME	−.348*	−.129	−.077
GME	−.640***	−.043	.041
Common ground—similarities and differences:			
HQAG→GAG	.654***	.471**	.432**
GQAG→HAG	.549**	.043	.577***
HFE→GAG	.069	.008	−.079
GFE→HAG	−.158	.381*	.193
HFE→GDG	.450**	.227	.036
GFE→HDG	.489**	.242	.281
Conflict resolution:			
HDG→HCM	.150	−.114	−.098
GDG→GCM	.038	.370*	.229
HDG→GDG	−.133	.089	.210
GDG→HDG	−.448**	−.422*	.058
HWEA→GAG	−.095	.198	.488**
GWEA→HAG	.122	.300	−.090
Reciprocity:			
HJ→GJ	.103	.219	.552**
GJ→HJ	−.261	−.483**	−.147
HG→GG	.231	−.125	.037
GG→HG	.082	−.012	−.062
HF→GF	.318	.401*	.304
GF→HF	.092	.131	.187
Self-disclosure:			
HQFE→GFE	−.161	.339*	.471**
GQFE→HFE	−.228	.120	.024

NOTE.—H = host; G = guest; Q = question, either for information or clarification, depending on the consequent code; CM = clarification of message, or giving a reason for disagreement; ATT = attention getting; J = jokes; IN = information; G = gossip; WE = we demand; F = fantasy; ME = narration of own play; QIN = question for information; QAG = question for agreement, tag question; AG = agreement; DG = disagreement; QCM = question for clarification; FE = feeling code; WEA = weak demand; and QFE = question about feelings of the other child.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

larly for the first session), for the exploration of similarities and differences (particularly for the second and third sessions), for conflict resolution, for reciprocity, and for self-disclosure. The exception was that joking reciprocity was positively correlated with the mother's questionnaire in table 10 for the third session, while no significant correlation was obtained in table 8.

As was mentioned previously, perhaps a more important check is to determine the strength of the process/criterion relationships without the potential confound of common-method variance. Table 11 summarizes the strength of these relationships. Variables were included in the stepwise regression if they correlated at the significance level of at least $p < .10$ with the mothers' questionnaire; this is consistent with tables 7 and 9. The results of table 11 show that it is possible to account for sizable portions of the variance in the mothers' questionnaire; in fact, with six variables it is possible to account for 92.3% of the variance using session 2 process variables; using session 1 process variables it is possible to account for 65.7% of the variance in the mothers' questionnaire; the strength of these relationships did not hold for session 3 process variables; the stepwise regression adds no significant information beyond the second step, with a multiple R of .565. Nonetheless, the major point of the analysis holds: the relationship

TABLE 11

STEPWISE MULTIPLE REGRESSION ANALYSES BETWEEN THE PROCESS VARIABLES AND THE MOTHERS' QUESTIONNAIRE IN STUDY 2

Session, Step, and Variable Entered at Each End	Multiple R	R^2	F Ratio
Session 1:			
Step 1, GME	.629	.396	10.49***
Step 2, HWE→GAG	.701	.491	7.25***
Step 3, GFE→HDG	.718	.516	4.98**
Step 4, HQAG→GAG	.754	.568	4.28**
Step 5, HATT	.779	.606	3.69**
Step 6, HFE→GDG	.810	.657	3.51**
Session 2:			
Step 1, GQ→HIN	.584	.341	8.29**
Step 2, HQFE→GFE	.751	.564	9.69***
Step 3, GJ→HJ	.837	.700	10.88****
Step 4, HATT	.923	.851	18.63****
Step 5, HQAG→GAG	.954	.910	24.25****
Step 6, HF→GF	.961	.923	22.02****
Session 3:			
Step 1, HWEA→GAG	.474	.225	4.65**
Step 2, HJ→GJ	.565	.320	3.52*
Step 3, HATT	.598	.358	2.60
Step 4, GQAG→HAG	.621	.386	2.04
Step 5, GQ→HCM	.671	.450	1.96
Step 6, HQAG→GAG	.689	.475	1.66

* $p < .10$.
** $p < .05$.
*** $p < .01$.
**** $p < .001$.

between the process variables and the extent to which children hit it off and progress toward friendship is strong and robust to rival hypotheses of common-method variance between process and criterion variables.

To summarize, the most consistent results across studies are as follows. When two strangers first meet, they need to interact in a connected fashion, exchange information successfully, establish a common-ground activity, and manage conflict successfully. As the relationship proceeds, communication clarity becomes more important; so does information exchange, the establishment of common-ground activity, the exploration of similarity and differences, the resolution of conflict, and self-disclosure. Only reciprocity appears to become less important as the relationship proceeds. Based on the previous discussion of reciprocity, this is probably the case because, when children initially meet, reciprocity serves several functions: (1) responsiveness; (2) the management of conflict (see n. 3); and (3) the establishment of extended pretend play.

The relationship between the criterion and the process variables is strong. Even with a few process variables it is possible to account for more than 80% of the variance in the first meeting, more than 90% of the variance in the criterion in the second and third meetings. And using session 2 process variables, it is possible to account for 92.3% of the variance in the mothers' questionnaire.

EFFECTS OF AGE AND THE SEX COMPOSITION OF THE DYAD

To examine the effects of age and the sex composition of the dyad among strangers, correlations were computed with the process variables and the host's age and the number of males in the dyad (0, 1, 2). Table 12 is a summary of these correlations. Correlations within the brackets in table 12 are for those that were significantly correlated with the criterion ($p < .05$) or marginally correlated with the criterion ($p < .10$). To be more focused, only these correlations will be discussed.

Communications clarity is unrelated to age; none of the five bracketed correlations was significant. Information exchange improves with increasing age; three of the 15 bracketed correlations (20%) are significant at at least $p < .10$, and all are positive. Establishing a common-ground activity improves with age; one of three bracketed correlations (33%) is significant, and it is positive. There is no relationship between age and the exploration of similarity, but there is a relationship between age and the exploration of differences. Older children were more likely to explore their differences than younger children in session 2—that is, not when they first meet; one of two bracketed correlations is significant and positive. Conflict resolution improves with age; disagreement chains are less likely (two of two bracketed correlations are significant and negative), and weak demands are more

TABLE 12

CORRELATIONS OF THE PROCESS VARIABLES WITH AGE AND THE SEX COMPOSITION OF THE DYAD ACROSS STUDIES

VARIABLE	CORRELATIONS WITH AGE				CORRELATIONS WITH NUMBER OF MALES IN DYAD			
		Study 2 Session				Study 2 Session		
	Study 1	1	2	3	Study 1	1	2	3
Criterion	.048	.223	.155	.295	−.267	−.018	−.084	.256
Communication clarity:								
HQ→GCM	−.063	[.242]	[.145]	[.295]	−.294	[−.330*]	[.287]	[.058]
GQ→HCM	[−.252]	−.108	.303	[−.042]	[−.278]	.336*	.110	[.599***]
Information exchange:								
HATT	−.235	[.457**]	[.260]	[.276]	.118	[.081]	[.419**]	[.204]
GATT	.390*	−.185	.171	.160	.203	.151	−.128	−.126
HIN	[.184]	[.303]	[.058]	[−.013]	[−.309]	[−.036]	[.028]	[.075]
GIN	.530**	[.283]	[.407**]	[.129]	−.359	[−.195]	[−.284]	[−.314]
HQ→GIN	[.367]	[.113]	.446**	[.218]	[−.427*]	[−.077]	−.114	[.046]
GQ→HIN	[.830****]	.055	[−.196]	.100	[−.387*]	.172	[−.224]	−.254
Common ground—activity:								
HWE→GAG	.252	.160	.383*	[.330*]	−.349	−.111	.135	[−.021]
GWE→HAG	.383*	.373*	−.054	.184	−.234	−.076	.134	.146
HME	[−.169]	.338*	.143	.090	[.065]	.021	.436**	.033
GME	.231	[−.085]	−.020	−.411**	−.269	[.136]	−.199	−.100
Common ground—similarities/differences:								
GQAG→GAG	.212	.221	[−.235]	[.155]	−.534**	.278**	[.119]	[.155]
GQAG→HAG	.178	.146	[−.135]	−.478**	−.393*	.162	[−.266]	.146
HFE→GAG	[.348]	.197	.089	.004	[.018]	−.238	−.209	−.075
GFE→HAG	−.417*	−.290	[.179]	.299	.523**	.174	[−.171]	−.070
HFE→GDG	.437*	−.314	.143	.212	.065	.101	.396*	−.389*
GFE→HDG	−.178	.282	[.419**]	[−.148]	−.269	.453**	[.042]	[.251]

NOTES.—Bracketed correlations represent those variables in study 1 and in each session of study 2 that correlated with the criterion at $p < .10$. H = host; G = guest; F = fantasy; ME = narration of own play; FE = feeling code; WEA = weak demand; Q = question, either for information or clarification, depending on the consequent code; CM = clarification of message, or giving a reason for disagreement; ATT = attention giving; J = jokes; IN = information; G = gossip; WE = we demand; QIN = question for information; QAG = question for agreement, tag question; QCM = question for clarification; AG = agreement; DG = disagreement; and QFE = question about feelings of the other child.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

TABLE 12 (*Continued*)

Variable	Correlations with Age				Correlations with Number of Males in Dyad			
		Study 2 Session				Study 2 Session		
	Study 1	1	2	3	Study 1	1	2	3
Conflict resolution:								
HDG→HCM	.363	−.336*	.038	−.045	−.207	−.551***	−.410**	−.144
GDG→GCM	[.144]	−.020	.449**	[−.042]	[−.023]	−.248	−.219	[−.277]
HDG→GDG	−.522**	−.174	.028	−.412**	−.249	.014	.147	.244
GDG→HDG	.022	−.035	[−.323*]	[−.341*]	−.191	−.107	[.301]	[.272]
HWEA→GAG	[.206]	[.013]	.404**	[.054]	[−.328]	[.241]	−.138	[−.075]
GWEA→HAG	[.525**]	[−.228]	.059	−.234	[−.378]	[−.009]	.401**	.175
Reciprocity:								
HJ→GJ	[.569**]	−.029	[−.439**]	−.086	−.494**	−.203	.014	.199
GJ→HJ	[.657**]	−.059	−.408**	−.336*	−.387*	.303	−.345*	−.108
HG→GG	.181	.291	.621***	.358*	−.468*	.336*	.135	−.324*
GG→HG	.213	−.015	−.207	.224	−.325	.191	.135	−.196
HF→GF	−.012	[−.312]	−.205	−.122	−.188	[.344*]	−.107	.077
GF→HF	.223	[−.682****]	−.262	−.134	−.044	[−.085]	−.087	−.023
Self-disclosure:								
HQFE→GFE	[−.321]	.253	[.228]	−.606***	[.089]	.380*	[−.058]	.067
GQFE→HFE	.211	−.229	.045	[−.222]	.211	.405**	−.442**	[.080]

NOTES.—Bracketed correlations represent those variables in study 1 and in each session of study 2 that correlated with the criterion at $p < .10$. H = host; G = guest; F = fantasy; ME = narration of own play; FE = feeling code; WEA = weak demand; Q = question, either for information or clarification, depending on the consequent code; CM = clarification of message, or giving a reason for disagreement; ATT = attention giving; J = jokes; IN = information; G = gossip; WE = we demand; QIN = question for information; QAG = question for agreement, tag question; QCM = question for clarification; AG = agreement; DG = disagreement; and QFE = question about feelings of the other child.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

likely (one of five, or 20%, of the correlations is significant and positive) with increasing age. The results on reciprocity are unclear. Study 1's data suggest that joking reciprocity increases with age, while study 2's data suggest that it decreases with age. A broader age range was sampled in study 2; but the data are not curvilinear in study 2, so the relationships are inconsistent. Study 2's data show that the reciprocity of fantasy declines with age. There was no relationship between self-disclosure and age for the bracketed correlations; however, it is difficult to ignore the .606 correlation ($p < .01$) between age and self-disclosure (HQFE $\rightarrow$ GFE) in session 3, particularly since self-disclosure becomes more important in accounting for variance in the criterion as the acquaintanceship proceeds.

The effects were minimal for the sex composition of the dyad. There appears to be some positive relationship between communication clarity and the number of males in the dyad. The results on information exchange are unclear; some correlations are positive, and some are negative. There is some evidence that the number of males in the dyad is positively related to the reciprocation of fantasy by the guest.

To continue examining the effects of session number, the sex composition of the dyad, age, and interaction of these variables on the process variables, a series of 2 $\times$ 3 $\times$ 3 repeated-measures analyses of variances, were performed—two levels of age, three levels of sex composition of the dyad (female-female, female-male, male-male), and three sessions. These analyses are summarized in table 13. Because so many comparisons are involved, all post hoc comparisons were conducted using Scheffé's conservative test, with $\alpha = .05$. There was only one significant main effect for age, for the reciprocity of gossip; older dyads reciprocated gossip significantly more than younger, with a mean z score of 4.74 for older dyads and 1.56 for younger dyads. This was a strong effect.

There were only two main effects for the sex composition of the dyad—for the clarification of a message by the host in response to a clarification request by the guest (GQ $\rightarrow$ HCM), and for the reciprocation of fantasy by the guest in response to its initiation by the host (HF $\rightarrow$ GF). Message clarification was most likely for boys, next most likely for cross-sex dyads, and least likely for girls (the z scores were 4.12, 2.56, and 1.84, respectively). However, only the two types of same-sex dyads were significantly different by the Scheffé test at $\alpha = .05$. Thus, message clarification in response to a clarification request is more common among boys than among girls. These results suggest no easy interpretation.

The reciprocation of fantasy was most common among same-sex dyads (the mean z scores were 7.86 for girls and 9.73 for boys, while the mean z score for male-female dyads was 4.71). However, these differences were not significant using the Scheffé test. A similar pattern occurred for the marginally significant effect on the exploration of similarity (GQAG $\rightarrow$

TABLE 13

MAIN EFFECTS AND INTERACTIONS FOR STUDY 2

VARIABLES	MAIN EFFECT			INTERACTIONS
	Age (A)	Sex Composition of the Dyad (M)	Session No. (S)	
Communication clarity:				
HQ→GCM	2.67	.59	1.96	
GQ→HCM	.17	5.19**	.38	AMS: 3.85**
Information exchange:				
HATT	1.33	.52	3.02*	
GATT	.16	.05	2.54	
HIN	1.25	1.02	7.87***	
GIN	.60	1.20	.46	
HQ→GIN	.02	.15	3.27*	
GQ→HIN	.13	.36	1.28	
Common ground—activity:				
HWE→GAG	2.31	.67	2.28	
GWE→HAG	1.19	.21	1.40	
HME	.09	.18	1.96	
GME	.27	.56	.11	
Common ground—similarities/differences:				
HQAG→GAG	.04	1.35	1.14	
GQAG→HAG	1.69	3.56*	1.22	
HFE→GAG	.03	.88	2.58*	
GFE→HAG	.26	.01	2.33	AMS: 5.57***
HFE→GDG	.72	2.08	.66	
GFE→HDG	3.67*	3.36*	.38	
Conflict resolution:				
HDG→HCM	.07	1.79	2.20	
GDG→GCM	1.43	1.89	2.24	
HDG→GDG	2.53	.30	.37	
GDG→HDG	2.69	.84	.42	
HWEA→GAG	1.14	.45	1.39	
GWEA→HAG	.01	2.32	1.85	
Reciprocity:				
HJ→GJ	1.38	.11	3.04*	
GJ→HJ	1.08	.13	4.16**	MS: 3.04**
HG→GG	21.22****	2.21	.59	
GG→HG	1.82	1.08	.31	
HF→GF	1.22	4.65**	.27	
GF→HF	1.29	.79	1.10	
Self-disclosure:				
HQFE→GFE	3.48*	.32	.32	
GQFE→HFE	.53	.02	.77	
Criterion	.79	.72	2.93*	

NOTE.—H = host; G = guest; Q = question, either for information or clarification, depending on the consequent code; CM = clarification of message, or giving a reason for disagreement; ATT = attention getting; J = jokes; IN = information; G = gossip; WE = we demand; F = fantasy; ME = narration of own play; QIN = question for information; QAG = question for agreement, tag question; AG = agreement; DG = disagreement; QCM = question for clarification; FE = feeling code; QFE = question about feelings of the other child; and WEA = weak demand.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

HAG); the mean z scores were 5.14 for girls and 5.91 for boys, with 2.98 for mixed-sex dyads. These differences were not significant using the Scheffé test. There is some evidence here to support that acquaintanceship may be easier in same-sex dyads. However, the effect was not at all strong in these data.

It is well known that school-age children tend to select same-sex peers in sociometric tests (see, e.g., Hartup, in press); using measures of social interaction, the effect of sex segregation is not consistent for preschool children. Bianchi and Bakeman (1978) found that same-sex groupings were more common in a traditional preschool, while mixed-sex groupings were more common in an open preschool. In an unpublished report, Bianchi and Bakeman (1980) found a weak sex-segregation effect for age in the open preschool. There is little research on interaction differences in same- and mixed-sex dyads, and the results are not consistent. Jacklin and Maccoby (1978) found higher rates of social actions of all kinds for same-sex dyads than for mixed-sex dyads; the effect was greater for girls than for boys. The children were unacquainted 33-month-olds who dressed so as to minimize sex differences. Jacklin and Maccoby's interaction situation was the following: a toy was presented for 4 minutes, removed, and replaced with another toy; this was repeated six times; both mothers were present. There was no rationale given for this intrusive procedure, and it is unclear whether the results would generalize to other social settings. There is no comparable study with unacquainted children in other situations that are more typical of free play. However, with acquainted children the results are not clear. Garvey and BenDebba (1974) reported no effects of the sex composition of the dyad on the children's speech (children were 43–67 months of age); they measured the average number of words per utterance and the number of utterances. These measures resemble Jacklin and Maccoby's (1978) rate-of-interaction variable. On the other hand, Langlois et al. (1973) studied acquainted 3–5-year-olds and reported that 5-year-olds showed more aggression, smiling, talking, body contact, and nonword vocalizations in same-sex pairs than in opposite-sex pairs. Three-year-old boys, however, were more sociable with girls than with boys. In general, it must be concluded that results on the differences between same- and cross-sex interaction are neither clear nor consistent. The interaction data that are currently available are certainly inadequate to explain the robust sex-segregation effect in the sociometric test literature.

There were two significant main effects for session number—one for information by the host (HIN) and one for the reciprocation of joking initiated by the host (GJ $\rightarrow$ HJ). The proportion of information given by the host declined across sessions (.077, .058, and .048, respectively). Using the Scheffé test, only session 1 and either session 2 or 3 were significantly different; sessions 2 and 3 were equivalent. Joking reciprocity (see n. 4)

declined in the third session; z scores for sessions 1 and 2 were 5.35 and 6.05, while the z score for session 3 was 4.02; sessions 1 and 2 were not significantly different.

Only three interactions were significant. The two-way M × S interaction (see table 13) revealed that during the first session, in dyads with a boy, hosts were most likely to reciprocate joking than in all-girl dyads, whereas in the second session, in dyads with a girl, hosts were more likely to reciprocate joking than in all-boy dyads. There were no significant differences in the third session; for session 1 the means were 6.47, 6.02, and 3.61 for cross-sex dyads, boys, and girls, respectively; for session 2 these means were 6.83, 4.32, and 7.04, respectively. There were two significant A × M × S interactions (see table 13). Post hoc comparisons of interaction for message clarification by the guest in response to the host's clarification request (HQ → GCM) revealed only that in the second session the sequence is more common for older cross-sex pairs (7.47) than for younger cross-sex pairs (0.80). Post hoc comparisons on exploring similarity (GFE → HAG) revealed that in the first session younger male-male dyads are more likely to engage in this sequence (4.23) than older male-male dyads (−.35).

To summarize, the major conclusion that emerges from these analyses is that the relationships between the criterion variable and the process variables do not need to be qualified very much by referring either to the ages of the children or the sex composition of the dyad. This must be the first observation drawn from these analyses.

A second conclusion is that there is some evidence to suggest that children improve in the salient social processes as they get older. It is interesting that this was *not* the case for the social process Piaget (1926) identified—namely, communication clarity. Perhaps this is the case because connected discourse and clear communication are so fundamental that all other social processes are based on them. They must develop early for interaction with peers to be able to proceed to greater levels of complexity. It is, however, the case that other processes improve with age: information exchange, establishing a common-ground activity, the exploration of differences (though not when first meeting), conflict resolution, and perhaps self-disclosure. The reciprocity of gossip increases greatly with age. In the present investigation this variable was not related to the criterion. However, the developmental effect is so strong that it may very well be related to the criterion for children older than those studied here. A dissertation under way in my laboratory by Mettetal suggests that this may indeed be the case for children 11–17 years old.

A TEMPORAL MODEL OF FRIENDSHIP FORMATION

The social processes selected as candidates to account for variance in the criterion were by no means exotic processes. All of them have been

extensively discussed either in the literature on social development or the literature on relationship formation. However, these literatures did not suggest specific observational measures for assessing these processes in naturalistic conversation; this is true of the literature on relationship formation among adults as well as the literature on social development. The criterion variable selected to index the extent to which children "hit it off" met two stringent tests of validity. Thus we can have faith in the criterion in this interaction situation. It might have been the case that the process measures selected did not relate to the criterion. However, this was certainly not the case. The importance of the variables that index these processes, and hence the importance of the processes themselves, has been demonstrated. The process/criterion relationships showed that the extent to which children were able to exchange information, establish a common-ground activity, explore their similarities and differences, resolve conflict, reciprocate joking, gossip, and fantasy, and engage in self-disclosure were related to the extent to which the children "hit it off" and progressed toward friendship.

However, many important unanswered questions remain. First, although the variables selected to measure each social process were sensible variables, they did not define processes they measured; instead, they indexed these processes. What, precisely, is the content and structure of information exchange or establishing a common-ground activity? What events define rather than index these processes? We do not know, and that is a serious limitation of the present analysis. In other words, this analysis has pointed toward the importance of a set of social processes whose complete nature is yet to be fully explored.

A second limitation of the present analysis is that the model presented relating the six social processes to the criterion is in one sense not a dynamic model. Although we know that some processes become more important over sessions (e.g., self-disclosure) and some become less important (e.g., reciprocity), we have no idea of the temporal relationships between the processes within the session. Do children begin an interaction with information exchange? What happens when they fail to establish a common-ground activity? Do they return to information exchange, which suggests that this is an easier exchange to maintain? These and other questions remain unanswered. The answers to these questions require a different level of analysis. The coding system described in tables 1 and 2 employed the thought unit as the smallest code unit, with the proviso that the data were transformed to event sequence data for analysis. However, by employing sequence analysis, the variables that indexed the social processes often involved larger units such as sequences within one child (e.g., disagreement followed by a reason for disagreeing) and sequences between children (e.g., gossip reciprocity). When the variables were relative frequencies of codes

(e.g., host information), they alluded to a family of sequences too varied to specify except in general morphology.

In part what is required is a reorganization of the data using a larger unit of analysis. To build a temporal model relating the six social processes, the appropriate minimal unit may be the two-turn unit—that is, all of one child's talk before the floor is yielded, then all of the next child's talk before the floor is yielded. The units of coding would then be as follows: (1) turn 1 (child 1)/turn 1 (child 2), (2) turn 1 (child 2)/turn 2 (child 1), (3) turn 2 (child 1)/turn 2 (child 2), and so on in this interlaced fashion.

However, employing a larger coding unit introduces problems of its own if the coding system remains reasonably detailed. One problem that must be encountered is that the data may be so sparse that they will not be possible to analyze parametrically with the dyad as the unit of analysis. This may make it necessary to collapse data across subjects and employ nonparametric statistics. Collapsing data across subjects makes the assumption of homogeneity of sequential structure across subjects; nonparametric statistics also tend to be less powerful than parametric statistics. A test is possible for the assumption of homogeneity of sequential structure. Randomly divide all subjects within each cell of the design into two groups and perform nonparametric tests on this factor. If it is not significant, this provides some evidence that the observed sequential structure is probably homogeneous within groups. The analysis can be performed for each row of the Markov transition matrix, so that heterogeneity for a particular sequence or set of sequences can be detected.

The purposes of this section are twofold: (1) to speculate about the answers to questions about the internal structure (i.e., how variables relate within a social process) of the processes that we have indexed up to now; and (2) to speculate about the answers to questions about the temporal relationship between the social processes indexed up to now.

At first it seemed reasonable to reorganize the data in this fashion by constructing some logical definitions and extensions of each social process. It would also be necessary to construct a hierarchical decision rule in the event that two or more processes occurred within the two-turn unit. This is not difficult. However, it soon became clear that human judgment was needed rather than a computer program that automatically reorganized the coded data. This was true because once one specifies the objective of building a temporal model relating the six social processes, new social events become apparent that (1) further define each process and (2) play the role of interstitial processes.

For all these reasons a "macro-coding system" was devised. Table 14 summarizes this coding system and describes its relationship to the first coding system. The categories of the macro system are dyadic states; they characterize the dyad in a two-turn unit, not each individual.

TABLE 14

THE MACRO-CODING SYSTEM AND ITS RELATIONSHIP TO THE FIRST CODING SYSTEM

Category	Definition and Relationship to Other Coding System	Example
Information exchange:		
Success.....	1. HQIN→GIN 2. GQIN→HIN 3. HATT 4. GATT 5. HIN 6. GIN 7. HATT→HIN or GAG 8. GATT→GIN or HAG	A: What's this? B: This is my room right here. This is my farm here. Look how very, very large.
Failure.....	1. HQIN→GNCM 2. GQIN→HNCM 3. HATT→GNCM 4. GATT→HNCM	A: How come we can't get this off? B: You know, I'm gonna get the rolling pin so we can roll this.
Common-ground activity:		
Success.....	There is a hierarchy of successful conversation in common-ground activities, organized in terms of the responsiveness demand.	
	1. Parallel play, collective monologue. Unconnected ME codes.	A: I'm making this blue. B: Staying in the lines, there, there.
	2. Parallel play, connected dialogue: ME→ME chains of connected statements.	A: I'm making mine blue. B: I'm making mine brown.
	3. Narration of the other child's play: INX statements.	A: You're using blue to color that.
	4. Asymmetrical exchange, in which at least one child affects the other's activity, with demands, compliance, and noncompliance.	A: I'm putting pink in the blue. B: Pass the blue. A: I think I'll pass the blue.
	5. Symmetrical exchange in which both children affect each other.	A: And you make those for after we get in together, OK? B: 'Kay. A: Have to make those. B: Pretend like those little roll cookies too, OK? Flat cookies, I mean. A: And make, um, make a, um, pancake too. B: Oh, rats, this is a little pancake.
	6. A joint activity is successfully initiated (HWE→GAG, GWE→HAG).	A: Yeah, let's play house. B: OK, play house.
Failure.....	Initiation is ignored, or disagreed with. Activity does not develop for even one two-turn unit.	A: Let's play house. B: Nope, nope, nope, nope, nope, nope. A: Because you're coloring that brick wall? B: Yep.

NOTE.—H = host; G = guest; QIN = question for information; IN = information; ATT = attention; AG = agreement; NCM = failure to clarify message; DG = disagreement; CM = message clarification or reason for disagreeing; WEA = weaker form of demand; G = gossip; QFE = question about feelings; FE = feelings; WEG = we against others; JOI = joining in; and J = joking.

TABLE 14 (*Continued*)

Category	Definition and Relationship to Other Coding System	Example
Escalation:		
Success.....	An attempt is made to escalate the responsiveness demand of the common-ground activity and it results in a new play.	A: Guess what color I'm going to put between those. B: What? A: You have to guess. B: Brown.
Failure.....	The attempt to escalate is ignored or rejected. Rejection also occurs if the previous activity continues unchanged.	A: I'm the mommy. B: Who am I? A: Um, the baby. B: Daddy. A: Sister. B: I want to be the daddy. A: You're the sister. B: Daddy! A: You're the big sister. B: Don't play house. I don't want to play house.
Deescalation....	Is similar to escalation except that the attempt is to reduce the amount of responsiveness required. This code also has two states, success and failure, depending on the response.	A: You can play your own game and I can play mine. OK?
Conflict.....	Squabbles codes, or disagreement chains.	A: This is stretchy. B: No it isn't. A: Uh huh. B: Uh uh.
Conflict resolution..	HDG→HCM; GDG→GCM; HWEA; GWEA; reciprocated joking in the service of conflict reduction.	A: Is it OK if I unbutton her?
Message clarification:		
Success.....	HQCM→GCM; GQCM→HCM (includes request for repetition followed by repetition)	A: Which one? B: The blue one.
Failure.....	HQCM→GNCM; HQCM→GNCM	A: What's a dumb straw? B: Your dumb straw.
Gossip reciprocity:		
Success.....	HG→GG or GG→HG	A: Why does he come here all the time? B: Because he does, because my mommy asks him.
Failure.....	Unreciprocated gossip	A: Well, my dad gave those to me. B: Well, what are these?
Similarity.....	WE, WEG, TOO, JOI	A: Mine's almost finished. B: Mine's too.

NOTE.—H = host; G = guest; QIN = question for information; IN = information; ATT = attention; AG = agreement; NCM = failure to clarify message; DG = disagreement; CM = message clarification or reason for disagreeing; WEA = weaker form of demand; G = gossip; QFE = question about feelings; FE = feelings; WEG = we against others; JOI = joining in; and J = joking.

TABLE 14 (*Continued*)

Category	Definition and relationship to other coding system	Example
Contrast.....	Children note that they are not the same.	A: I'm gonna be five at, in my birthday. B: Well, I'm five now.
Self-disclosure...	1. HQFE→GFE 2. GQFE→HFE 3. HFE→GFE 4. GFE→HFE 5. Any personal statement about one's feelings that is intimate. This excludes low-intimacy statements (e.g., "I love chocolate"), even if they are strongly stated.	A: She didn't say anything about the dress. She said leave me alone. B: Why'd she say that? A: She doesn't love me.
Amity.....	1. Validation or approval of the other person 2. Affirmation of the relationship 3. Sympathy (SY) 4. Offers (OF) 5. Affection 6. Wit (J) 7. Hilarity (HJ→GJ; GJ→HJ) 8. Shared deviance	A: [kisses B] B: Oh gosh. A: What? B: You just kissed me on the cheek. Thank you. A: I'll kiss you on the forehead. B: I'll kiss you.

New Codes

Escalation and deescalation of common-ground activity were included as categories because it appeared that the children often initially established a relatively simple common-ground activity (such as coloring side by side) that made low demands of each child for social responsiveness. For example, in coloring side by side, each child would narrate his or her own activity (e.g., "I'm coloring mine green"). This involved extensive use of the ME codes. Piaget (1930) described this as collective monologue, though such conversation is clearly an acceptable form of dialogue. However, in the present investigation the common-ground activity was usually escalated after a while. This anecdotal observation is consistent with Bakeman and Brownlee's (1980) recent report that parallel play among preschool children is usually the temporal precursor of group play. However, the extent of this process of escalation was far greater than Bakeman and Brownlee (1980) imagined. An example of this escalation is the following: Both children begin narrating their own activity; then one child may introduce INX codes (narration of the other child's activity—e.g., "You're coloring in the lines"); next, a child may begin giving suggestions or other commands to the other child (e.g., "Use blue. That'd be nice"). The activity escalates in each case in terms of the responsiveness demand it places on the children. A joint activity is then suggested, and the complexity of this activity will be escalated from time to time.

This escalation process was sometimes smooth, but sometimes it introduced conflict. When it did introduce conflict, the children often deescalated the activity, either returning to a previous activity that they had been able to maintain or moving to information exchange. While many investigators have called attention to individual differences in the complexity of children's dialogue during play (e.g., Garvey 1974; Garvey & Berndt 1977), the anecdotal observation here is that a dyad will escalate the complexity of the play (with complexity defined in terms of the responsiveness demand) and manage this complexity as the play proceeds. I had not noticed this complex process until I designed this coding system. However, I do not mean to suggest that these processes are subtle or hard to notice, but only that they have until now been overlooked. An example will help clarify this point. D, the host, is 4-0; J, the guest, is 4-2. They begin playing in parallel, but note that their dialogue is connected.[5]

18. J: I got a fruit cutter plate.
19. D: Mine's white.
20. J: You got white Play-Doh and this color and that color.
21. D: Every color. That's the colors we got.

They continue playing, escalating the responsiveness demand by using strong forms of demands.

29. D: I'm putting pink in the blue.
30. J: Mix pink.
31. D: Pass the blue.
32. J: I think I'll pass the blue.

They next move toward doing the same thing together (common-ground activity).

35. D: And you make those for after we get it together, OK?
36. J: 'Kay.
37. D: Have to make these.
38. J: Pretend like those little roll cookies, too, OK?
39. D: And make, um, make a, um, pancake, too.
40. J: Oh rats. This is a little pancake.
41. D: OK. Make, make me, um, make two flat cookies. Cause I'm, I'm cutting any, I'm cutting this. My snake.

The next escalation includes offers.

54. J: You want all my blue?
55. D: Yes. To make cookies. Just to make cookies, but we can't mess the cookies all up.
56. J: Nope.

[5] Numbers preceding lines of dialogue refer to consecutive turns at speaking. Each transcript begins with the number 1 and moves forward to the end of the transcript.

They then introduce a joint activity and begin using "we" terms in describing what the activity is:

57. D: Put this the right way, OK? *We're* making supper, huh?
58. J: *We're* making supper. Maybe *we* could use, if you get white, *we* could use that, too, maybe.
59. D: I don't have any white. Yes, *we*, yes I do.
60. J: If you got some white, *we* could have some, y'know.

As they continue the play, they employ occasional contextual reminders that this is a joint activity:

72. D: Oh, we've got to have our dinner. Trying to make some.

D then tries to escalate the play by introducing some fantasy. This escalation is not successful. J is first allocated a low-status role (baby), then a higher-status role (sister), then a higher-status (but still not an equal status) role (big sister).

76. D: I'm the mommy.
77. J: Who am I?
78. D: Um, the baby.
79. J: Daddy.
80. D: Sister.
81. J: I wanna be the daddy.
82. D: You're the sister.
83. J: Daddy.
84. D: You're the *big* sister!
85. J: Don't play house. I don't want to play house.

The escalation failure leads to a deescalation.

87. J: Just play eat-eat. We can play eat-eat. We have to play that way.

However, in this case, the successful deescalation was not accomplished without some conflict:

89. J: Look hungry!
90. D: Huh?
91. J: I said look hungry!
92. D: Look hungry? This is dumb.
93. J: Look hungry!
94. D: No!

The children then successfully returned to the previous level of common-ground activity, preparing a meal together. Thus, common-ground activity is viewed in this coding system as a hierarchy in terms of the responsiveness it demands of each child and the fun it promises.

The "amity" code was designed to describe this fun and the following

types of events of strong positive affective experience: (1) strong validation and approval exchanges (e.g., A: "How do you like this?"/B: "That's pretty"); (2) the expression of sympathy ("Don't worry about that, it'll come off. It was on before, and it came off before. Just don't worry about it, 'cause I'm not worried") and support (e.g., the "We against others" code in table 1); (3) affection (e.g., A: [kisses B]/B: "Oh, gosh"/A: "What?"/B: "You just kissed me on the cheek. Thank you"/A: "I'll kiss you on the forehead"/B: "I'll kiss you"); (4) wit enjoyed by both (A: "How do you do this stupid thing?"/B: "You do it in a stupid way") and hilarity (also called "glee" by McGhee [1979]), in which both children are convulsed by their own wit.

Self-disclosure was directly examined in this coding system. Instead of indexing the process with a question about feelings followed by an expression of feelings, the definition was extended to include any high-intimacy self-disclosure. All examples given in table 14 came from transcripts. Furthermore, it is important to point out that these self-disclosures did not just come from older children. For example, here is a sample of self-disclosure from two unacquainted girls, A (5-0) and K (4-3). A is the host child. They are coloring.

55. A: Like if Jimmy, he's a little boy and playing with us, he would take that brown if he need it, right?
56. K: Huh?
57. A: He would take that brown, wouldn't he?
58. K: Jimmy who?
59. A: That big man downstairs.
60. K: Your brother?
61. A: He's not my brother. He's a friend of ours.
62. K: Why does he come over all the time?
63. A: Because he does. Because my mommy asks him.
64. K: All the time?
65. A: She even goes out, he even goes places without *me.*
66. K: Where do you stay?
67. A: Home.
68. K: Why? You're afraid?
69. A: No. Why?
70. K: I'm afraid, 'less I stayed with you.
71. A: Are you afraid to stay with me?
72. K: Uh uh. I said I was afraid of my mommy, if she leaves me.

Note that gossip here has led to the expression of affect by A (line 65) and to self-disclosure by K (line 72). Later in A and K's interaction they try to understand why A's mother and Jimmy are always taking naps.

764. A: She said, "Never come in here with me and Jimmy."
765. K: That's what she said?

766. A: Her and Jimmy are sleeping.
767. K: Huh?
768. A: Her and Jimmy are sleeping.
769. K: You aren't, are you?
770. A: We're not asleep.
771. K: But he is.
772. A: My mom is not asleep.

They were convinced of their superiority in requiring less sleep than this adult who always visits A's mother. They then immediately returned to a guessing game they had invented about coloring.

773. K: What color do I have?
774. A: Brown.
775. K: Huh?
776. A: Brown.
777. K: No.
778. A: Red.
779. K: Yeah, I didn't want you to see.

Earlier in the tape, A had directly expressed her feelings of being neglected by her mother. The children were playing dress-up and using her mother's clothes.

499. A: This one is too . . . this one. I don't know what she says. I don't know what she says. I don't know what she says. She doesn't say. Oh, I guess I'll put it on.
500. K: Did she not say, did she not say, did she not say?
501. A: She didn't say anything about the dress. She said, "Leave me and Jimmy alone."
502. K: Why'd she say that?
503. A: She doesn't love me.
504. K: Why?
505. A: 'Cause I get near you . . . my mom and Jimmy. Look how long these things are.
506. K: Oh gosh.

A coding manual was designed to train coders (Gottman 1982) in the use of this macro-coding system. This coding system is considerably more efficient than the system described in table 1. Instead of 30 hours to code 1 hour of tape, the macro-coding system requires only 2 hours; 1 hour is spent listening to the tape in real time without coding and 1 hour is spent coding. This is a considerable savings in time.

All of the stranger tapes of study 1 were recoded using this coding system. The use of a larger coding unit had several methodological implications. The data could not be analyzed parametrically, dyad by dyad, as in the previous analyses, because many of the codes were too infrequent. To have confidence in the stability of conditional probabilities, data had

to be combined across dyads for the nonparametric analyses. The stranger tapes of study 1 were divided into two groups—those that were above or below the mean on the criterion; seven tapes were above the mean, and six were below, $t(11) = 5.18$, $p < .01$; $\bar{X}_1 = .035$, $\bar{X}_2 = .019$. The children who hit it off interacted for more turns than those who did not, $t(11) = 2.62$, $p < .01$; $\bar{X}_1 = 462.86$, $\bar{X}_2 = 304.50$). To control for this sampling difference in a conservative fashion, it was necessary to adjust the frequencies downward of the codes in the group of children who hit it off before performing the nonparametric analyses. This conservative procedure is currently recommended by monographs on discrete multivariate analysis (e.g., Bishop et al. 1975); it also assures that statistically significant χ^2s do not reflect differences in sampling.

The previously recommended test of the assumption of the homogeneity of sequential structure was performed as follows. Dyads within the group of strangers who hit it off and the group who did not were each randomly divided into two subgroups, arbitrarily denoted A and B. Frequencies within each row of the transition matrices were adjusted downward to control for differences in marginal totals (i.e., sampling rates of the antecedent codes were controlled). For each row a χ^2 was computed comparing the expected mean frequencies (i.e., the average of A and B within each group). These χ^2 were summed separately for the stranger group and the best-friend group. Degrees of freedom were adjusted in a conservative fashion, as follows: (1) diagonal cells (i.e., codes following themselves) were omitted because the data were considered event sequential data (Bakeman 1978); (2) all zero-frequency cells were not counted. This procedure made a significant χ^2 more likely and, hence, was a conservative procedure. For children who hit it off, the overall χ^2 between A and B was not significant, $\chi^2 = 90.90$, $df = 153$. Furthermore, no row of the transition matrix and no cell within a row was significant. For children who did not hit it off, the χ^2 was also not significant, $\chi^2 = 78.93$, $df = 134$. Once again, no row of the transition matrix and no cell within a row was significant. There is thus no evidence to suspect the validity of the homogeneity of sequential structure assumption.

An additional methodological implication of combining data across subjects is the change in the reliability statistic. For sequential analysis, agreement still needs to be tied to the unit of analysis, not summed over time. However, Cohen's κ rather than Cronbach's α is clearly the statistic of choice because data are combined across tapes. A second reliability checker coded 100 turns of each tape. An overall κ was computed for all codes, $\kappa = .870$.

Table 15 summarizes the χ^2 analyses in the frequency of the codes between groups. The results show that children who did not hit it off were more likely to engage in conflict (disagreement chains or squabbling), more likely to engage in unsuccessful amity (e.g., unreciprocated affection

TABLE 15

DIFFERENCES IN THE FREQUENCIES OF THE MACRO CODES BETWEEN STRANGERS WHO HIT IT OFF AND THOSE WHO DID NOT, STUDY 1

CODE	χ^2	ADJUSTED PROPORTIONS	
		Hit It Off	Didn't Hit It Off
Information success	4.74*	.177	.132
Information failure	4.63*	.042	.072
Common-ground success	.26	.158	.150
Common-ground failure	2.30	.048	.071
Escalation success	10.23***	.021	.049
Escalation failure	2.29	.016	.030
Deescalation success	1.29	.008	.003
Deescalation failure	1.80	.006	.002
Conflict	7.52**	.066	.115
Conflict resolution	.01	.077	.077
Similarity	.23	.060	.054
Difference	1.39	.023	.035
Gossip success	10.52***	.050	.016
Gossip failure	.89	.018	.012
Self-disclosure	7.53**	.040	.015
Amity success	22.22***	.090	.026
Amity failure	9.94**	.003	.025
Clarification success	.01	.071	.071
Clarification failure	2.38	.026	.043

* $p < 05$.
** $p < .01$.
*** $p < .001$.

or humor), and more likely to be unsuccessful in exchanging information than children who hit it off. They were also less likely than children who hit it off to reciprocate gossip, to self-disclose, and to exchange information successfully. An unexpected finding was that children who did not hit it off were more likely than children who did hit it off to successfully escalate the common-ground activity. Gottman and Parkhurst (1980) suggested that some children will adopt a "high-risk strategy" in making friends that will either be very successful or disastrous. They wrote that these children "will either become friends instantly, or their interactions will end in fury and adult intervention" (p. 246). The fact that both escalation and conflict are more likely for children who did not hit it off than for children who did hit it off supports this interpretation.

The sequential analysis proceeded in the following steps. First, for each group the first-order Markov matrix of transition frequencies was computed, after the data had been converted to event-sequential data (Bakeman 1978). Then the observed frequency of a transition, from code A to code B, $n(\mathrm{A} \rightarrow \mathrm{B})$, was compared with its expected frequency under the null hypothesis of the independence model, which would expect a joint frequency of $\mathcal{N} \cdot p(\mathrm{A}) \cdot p(\mathrm{B})$, where $\mathcal{N}$ is the total number of observations. These two numbers, the observed and expected frequencies, were used to

compute a χ^2 statistic (see Castellan 1979). This statistic has been shown to be robust to a variety of factors, such as sparse tables (Koehler & Larntz 1980). These analyses led to the identification of stochastically predictable lag-one sequences within each group. The two groups were compared on only the sequences identified in this manner. The group comparisons were performed in a manner similar to those in table 15. The transition frequency of the most frequent antecedent code was conservatively adjusted downward so that the groups would be comparable; the adjusted observed transition frequencies of the two groups were then compared using a χ^2 statistic; the appropriate expected values for the χ^2 under the null hypothesis that the transition frequencies are equal was the average of the sum of the two adjusted frequencies. Two kinds of results emerge from these analyses. The first kind of result is a list of the sequences likely within each group. The second kind of result is a list of those sequences that are significantly more likely in one group than in another. The test of differences between groups is clearly the most stringent test. However, if a particular sequence is present among children who hit it off and not among children who did not, this will be taken in the following discussion as evidence sufficient to generate a hypothesis for further investigation.

Nearly all children began with information exchange (92.3%), though not necessarily successfully. Table 15 showed that successful information exchange was more likely for children who hit it off than for those who did not, while unsuccessful information exchange was more likely for those children who did not hit it off. Table 16 suggests the consequences of successful and unsuccessful information exchange for each group. Following successful information exchange, children who hit it off were likely to progress to a common-ground activity or amity (41% of the time). They were more likely to do either than children who did not hit it off, who progressed to successful common ground or amity 22% of the time after a successful information exchange.

Children who did not hit it off were most likely after successful information exchange to conflict or to explore similarity or differences (49% of the time) compared with 24% of the time for children who hit it off. The difference between groups for these three activities combined was significant, $\chi^2(1) = 12.52$, $p < .001$. Judging by the size of the χ^2 linking information-exchange success with similarity in the group of children who did not hit it off, it appears that the early establishment of a "me too" climate of agreement is very important to these dyads.

Following unsuccessful information exchange, the two groups did not appear to differ very much. The largest marginal differences exist in common-ground success and clarification failure.

Once a common-ground activity is successfully established, the sequences of the two groups continue to differ. Table 17 shows that the

greatest difference between groups is the likelihood that the children will progress to successful amity, which occurred 16% of the time for children who hit it off and 3% of the time for children who did not.

There were other interesting differences between groups. Once a common-ground activity was successfully established, children who did not hit

TABLE 16

PATTERNS OF INTERACTION FOLLOWING SUCCESSFUL OR UNSUCCESSFUL INFORMATION EXCHANGE

	HIT IT OFF		DIDN'T HIT IT OFF		
CONSEQUENT CODE	Conditional Probability	χ^2 within Group	Conditional Probability	χ^2 within Group	χ^2 BETWEEN GROUPS
Following successful information exchange:					
Common-ground success	.23	5.54*	.18	.33	4.67*
Conflict	.11	5.07*	.21	7.64**	.31
Similarity	.09	2.76	.19	30.25***	.62
Difference	.04	2.29	.09	8.82**	.83
Amity success	.18	13.93***	.04	.15	13.50***
Following unsuccessful information exchange:					
Common-ground success	.29	4.65*	.14	.05	2.25
Common-ground failure	.16	9.68*	.14	2.77	.40
Conflict	.05	.11	.00	4.84*[a]	2.00
Clarification success	.16	4.19*	.20	11.02***	.29
Clarification failure	.08	3.35	.20	29.78***	2.60

[a] Significantly *less* than expected under the independence model.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

TABLE 17

PATTERNS OF INTERACTION FOLLOWING SUCCESSFUL COMMON-GROUND ACTIVITY

	HIT IT OFF		DIDN'T HIT IT OFF		
CONSEQUENT CODE	Conditional Probability	χ^2 within Group	Conditional Probability	χ^2 within Group	χ^2 BETWEEN GROUPS
Escalation success	.04	3.31	.11	6.53**	2.57
Escalation failure	.03	1.52	.12	25.05****	3.57*
Deescalation success	.01	.21	.05	5.56**	2.67
Similarity	.13	12.16****	.09	2.62	.80
Self-disclosure	.01	2.50	.03	4.80**	1.00
Amity success	.16	7.56***	.03	.03	8.00****
Common-ground failure	.01	5.39**[a]	.05	.29	3.40*

[a] Less than expected by the independence model.
* $p < .10$.
** $p < .05$.
*** $p < .01$.
**** $p < .001$.

it off were more likely to attempt to escalate the play (23% of the time) than children who hit it off (7%). This difference was significant, $\chi^2(1) = 7.76$, $p < .01$, with conditional probabilities .08 and .24 for those children who hit it off and those who did not, respectively. This is consistent with the hypothesis that the children who did not hit it off adopted a high-risk strategy. The probabilities were nearly equal within the two groups for successful or unsuccessful escalation. However, the within-group χ^2 suggests the hypothesis that escalation failure was a more predictable sequence for children who did not hit it off than for children who did; the marginally significant between-groups χ^2 supports this conclusion. Furthermore, once a successful common-ground activity is established, its subsequent failure was somewhat more likely for children who did not hit it off (29%) than for children who did hit it off (1% of the time). Thus, it appears that the escalation of the common-ground activity is indeed part of a high-risk strategy of acquaintanceship. From a study of the tapes it also appeared to be the case that the common-ground activity of children who did not hit it off was less extended and developed than children who did hit it off. If this were true, it would suggest that the play of children who did not hit it off was characterized by a "staccato rhythm"—that is, brief periods of common-ground activity interrupted by frequent escalation attempts. To test this observation, the average number of consecutive turn units that were coded common-ground success was computed for each transcript. The mean for the group of children who hit it off was 6.46 turns, which was significantly different from the mean of 4.11 turns for the group of children who did not hit it off, $t(11) = 7.26$, $p < .001$.

The two groups do not differ significantly following a common-ground failure. For both groups the most likely event was conflict; conditional probabilities were .20 for children who hit it off, within-group $\chi^2(1) = 10.71$, $p < .001$; and .21 for children who did not hit it off, within-group $\chi^2(1) = 2.85$, $p < .05$. The next most common activity following an unsuccessful common-ground activity was a return to successful information exchange; conditional probabilities were .18 for children who hit it off, within-group $\chi^2(1) = .00$, N.S., and .30 for children who did not hit it off, within-group $\chi^2(1) = 9.82$, $p < .001$. The difference between the within-groups χ^2s suggests the hypothesis that return to information exchange after a common-ground failure may thus be a useful strategy for children who do not hit it off. It is likely to be a return to an easier level of interaction in terms of the responsiveness it demands. This can clearly be interpreted as another form of deescalation.

Successful escalation resulted in common-ground success 84% of the time for children who hit it off, $\chi^2(1) = 59.18$, $p < .001$, and 90% of the time for children who did not, $\chi^2(1) = 112.50$, $p < .001$. The two groups did not differ significantly, $\chi^2(1) = .03$, N.S. The two groups also did not

differ significantly in the consequences of an escalation failure; for example, combining conflict, information failure, and common-ground failure, the conditional probabilities for the two groups were .57 and .44 for children who hit it off and those who did not, respectively. Unsuccessful escalation had uniformly negative consequences for the two groups.

Table 15 showed that conflict was more likely among children who did not hit it off than among children who did. What were the consequences of conflict? Table 18 suggests two hypotheses. First, common-ground success and information success were somewhat more likely consequences of conflict for children who hit it off than for those who did not; the difference between groups for these two combined consequences was marginally significant, $\chi^2(1) = 3.19$, $p < .10$, with conditional probabilities .55 for children who hit it off and .32 for those who did not. Table 18 also suggests that the two groups differed significantly in their use of conflict resolution. However, children who did not hit it off were more likely to use conflict resolution than children who did. This result is not surprising when it is viewed in the context of the results obtained from the first coding system about the *effectiveness* of weak demands; dyads who were higher on the criterion used weak demands more effectively, in the sense that they were more likely to obtain compliance from their partner. The significant difference between groups in table 18 in conflict resolution may follow from the greater likelihood of conflict for children who did not hit it off.

There were only two remaining significant sequential differences between groups. Following the exploration of similarity, children who hit it off were more likely to return to successful information exchange than children who did not hit it off. The χ^2 between groups was 4.76, $p < .05$; the conditional probabilities were .39 and .12, respectively, for children who hit it off and those who did not. The remaining significant difference

TABLE 18

CONSEQUENCE OF CONFLICT

	HIT IT OFF		DIDN'T HIT IT OFF		
CONSEQUENT CODE	Conditional Probability	χ^2 within Group	Conditional Probability	χ^2 within Group	χ^2 BETWEEN GROUPS
Information success	.35	8.02***	.20	2.64	2.41
Common-ground success	.20	.33	.13	.21	.00
Common-ground failure	.13	7.35***	.13	3.43*	.01
Conflict resolution	.02	2.07	.17	14.49****	4.05**

* $p < .10$.
** $p < .05$.
*** $p < .01$.
**** $p < .001$.

between groups involved the transition from successful to unsuccessful clarification; this chain was more likely for children who did not hit it off (conditional probability = .14) than for children who did (conditional probability = .02), $\chi^2(1) = 4.19$, $p < .05$.

Despite the lack of significant differences between groups with respect to the consequences of gossip success, self-disclosure, and amity success, it is interesting to speculate about potential differences by examining the likely sequences following these codes within each group. Two factors militate against obtaining group differences: the conservative procedure for computing between-groups χ^2s, which involves equalizing the frequencies of antecedent codes to the frequency that is least frequent; and the relative infrequency of these particular codes among the children who did not hit it off. It may well be that a larger number of subjects or larger samples of interaction would have adequate power to detect group differences that could be suggested by within-group comparisons. The within-group comparisons can thus be used to generate hypotheses for further study. Table 19 summarizes all within-group sequences that had significant χ^2s in either group following the three codes. These results suggest the following hypotheses. First, gossip that is reciprocated may be likely to end abruptly—that is, to become unreciprocated gossip among children who do not hit it off. Among children who do hit it off, on the other hand, reciprocated gossip may be likely to lead to successful amity. Second, self-disclosure among children who do hit it off may be more likely to lead to either unreciprocated gossip or successful amity than is the case for children who do not hit it off. The two groups will probably not differ very much in their use of estab-

TABLE 19

SEQUENCES WITHIN EACH GROUP FOLLOWING GOSSIP, SELF-DISCLOSURE, AND AMITY

ANTECEDENT AND CONSEQUENT CODES	HIT IT OFF		DIDN'T HIT IT OFF	
	Conditional	χ^2	Conditional	χ^2
Gossip success:				
Amity success	.43	60.76****	.10	1.63
Gossip failure	.00	.92	.10	8.10***
Self-disclosure:				
Similarity	.17	6.83***	.33	14.45****
Gossip failure	.08	7.22***	.00	.18
Amity success	.31	18.59****	.00	.27
Amity success:				
Information success	.32	8.56***	.31	4.09**
Common-ground success	.35	19.22****	.31	3.36*

* $p < .10$.
** $p < .05$.
*** $p < .01$.
**** $p < .001$.

lishing similarity following self-disclosure. This suggests that a simple "me too" response following self-disclosure may not be effective in the acquaintanceship process, while other forms such as support, sympathy, or affection would be effective following self-disclosure. Finally, the hypothesis is suggested that successful amity leads to both information success and common-ground success. The fact that the conditional probabilities are similar for both groups and that both sets of χ^2s are significant or marginally significant suggests that the two groups may not differ in this regard.

Table 20 is a summary of many of the results with the macro-coding system. It is a summary of the sequential relationships between the social processes for children who hit it off and those who did not hit it off in study 1. The social processes are grouped into three categories: (1) processes that involve play—information exchange, establishing common ground, and escalation; (2) processes that involve self-exploration—gossip, self-disclosure, and the exploration of similarities and differences (Altman & Taylor [1973, p. 27] referred to this as increasing the "depth of social penetration"); and (3) processes that involve the repair and maintenance of the interaction—conflict resolution, deescalation, and message clarification. Also, there is amity and conflict. In table 20 the data are event-sequence data; transitions within categories are ignored. Each row represents conditional probabilities from antecedent to consequent; each row sums to 1.0.

Figure 1 is a schematic summary of the sequential relationships between the social processes for children who hit it off in study 1. The figure is known as a "state-transition diagram" (see, e.g., Gottman & Bakeman 1979). Its lines represent transitions from an antecedent to a consequent code (see table 20). Usually state-transition diagrams are drawn only when there are very few states; then all transitions are represented, and all the conditional probabilities from a particular state (such as play failure) sum to unity (see Bakeman & Brown 1977). In our case, however, the figure would have been too complicated to be useful, so only the larger conditional probabilities are shown; they sum to between .734 and .975, not to unity.

There are two processes that occasionally provide links within and between these processes. Amity provides links within self-exploration processes and between play and self-exploration. Conflict provides links between play and maintenance and between play and repair. However, this latter link was not frequent; it is more common for repair to follow the failure of any social process without intervening conflict or for the conversation to turn to information exchange (particularly after a common-ground activity failure).

Self-exploration, play, and amity are a tightly connected cluster, in a temporal sense. This was illustrated, in part, in the example on self-disclosure presented earlier in which A and K discussed Jimmy and A's mother

TABLE 20

TRANSITION PROBABILITY MATRIX FOR CHILDREN WHO HIT IT OFF AND CHILDREN WHO DID NOT (event sequence data)

ANTECEDENT	CONSEQUENT 1	2	3	4	5	6	7	8	9	UNCONDITIONAL PROBABILITY OF ANTECEDENT
Hit it off:										
1. Play success	...	.132	.226	.004	.154	.030	.282	.030	.141	.308
2. Play failure	.469	...	.012	.000	.185	.111	.062	.000	.160	.107
3. Amity success	.679	.095	...	.000	.036	.024	.083	.036	.048	.111
4. Amity failure	.333	.000	.000	...	.333	.000	.333	.000	.000	.004
5. Repair success	.678	.130	.035	.000	...	.043	.026	.009	.078	.152
6. Repair failure	.359	.026	.000	.000	.205	...	.026	.000	.385	.051
7. Self-exploration success	.496	.031	.302	.000	.085	.016	...	.031	.039	.170
8. Self-exploration failure	.375	.125	.188	.000	.063	.125	.125	...	.000	.021
9. Conflict	.569	.190	.103	.000	.034	.052	.034	.017	...	.076
Didn't hit it off:										
1. Play success	...	.209	.043	.000	.187	.072	.281	.014	.194	.271
2. Play failure	.418	...	.011	.000	.187	.154	.066	.011	.154	.177
3. Amity success	.625	.188	...	.000	.000	.063	.125	.000	.000	.031
4. Amity failure	.067	.067	.067	...	.667	.133	.000	.000	.000	.029
5. Repair success	.561	.183	.012	.012	...	.085	.098	.012	.037	.160
6. Repair failure	.286	.171	.000	.000	.257	...	.000	.000	.286	.068
7. Self-exploration success	.414	.121	.052	.000	.138	.000	...	.017	.259	.113
8. Self-exploration failure	.571	.143	.000	.000	.143	.000	.000	...	.143	.014
9. Conflict	.329	.271	.014	.000	.271	.071	.043	.000	...	.136

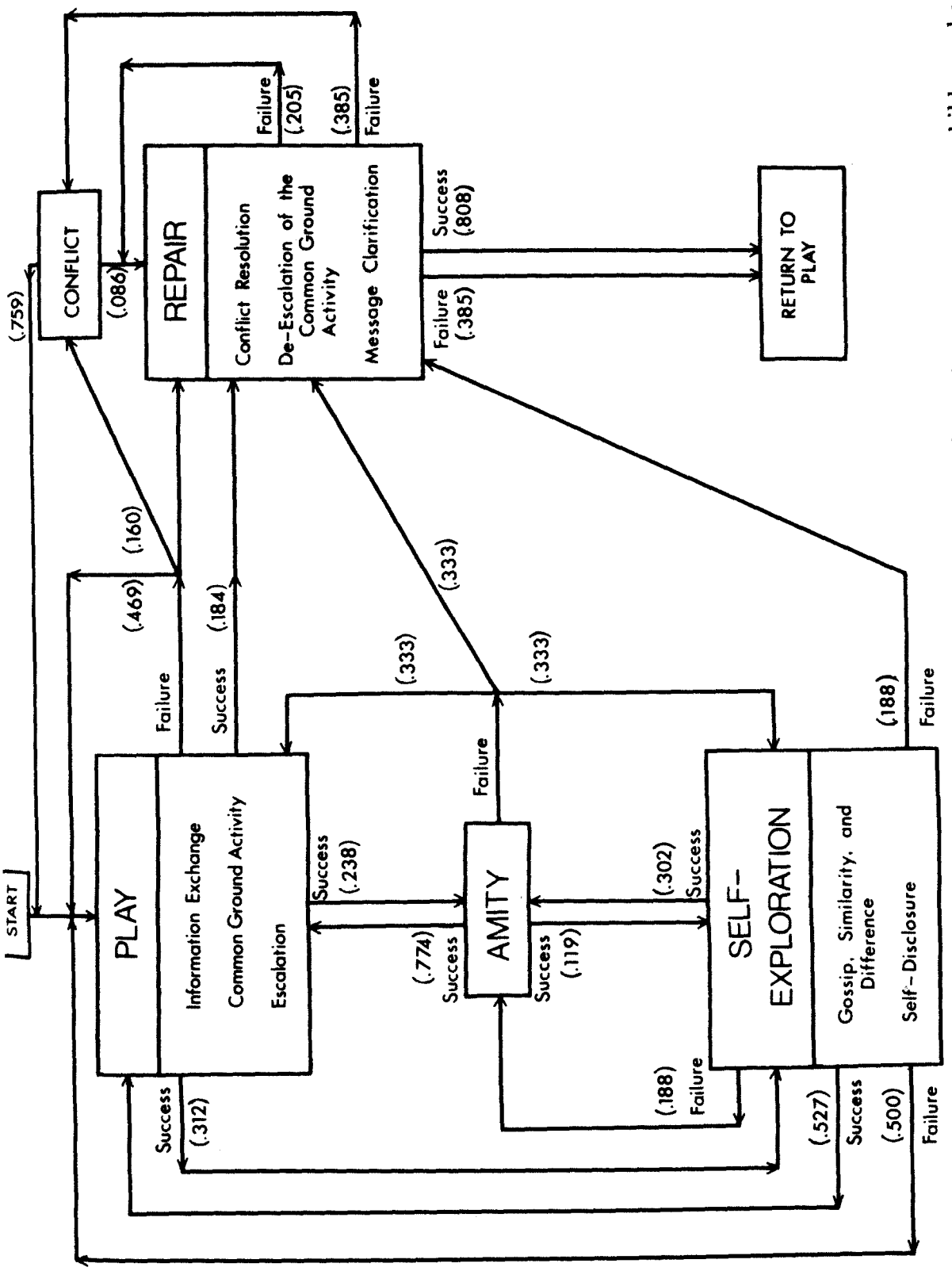

FIGURE 1.—Partial state transition diagram of a temporal flow model of friendship formation processes among children who "hit it off," study 1.

taking naps (gossip) and then moved immediately to the guessing game. One of the major tactics for dealing with the failure of any process is repair. It is important to note that the usual route to repair is not conflict; in fact, even play success leads occasionally to repair. An extremely common tactic after play failure is to return to play; further analysis shows that this is usually (52.2% of the time) a transition from common-ground failure to information exchange. Thus, information exchange plays the role of a "home base" to which the children can return when common ground or escalation has failed.

Although the self-exploration events (self-disclosure, gossip success, and the exploration of similarity and differences) occurred in these data and were related to whether or not the children hit it off, further discussion is needed to clarify the role of these social processes in the formation of friendship because the results presented in this report on these processes are not entirely clear or consistent. For example, the results of table 15 on gossip and self-disclosure require some discussion. Table 6 showed a marginally significant correlation (.467), $p < .10$, between the criterion and the sequences HQFE → GFE (host questions about feelings followed by guest's expression of feelings) for study 1. This is consistent with the results of table 16 on self-disclosure. However, one can argue that the results of the two tables taken together add some precision to the findings. Self-disclosure was assessed directly by the second coding system, and a stronger relationship with the criterion emerged. Thus, the index sequence HQFE → GFE should perhaps be reinterpreted as related to self-disclosure but not isomorphic to it. It is, literally, a feeling-probe sequence—a question about feeling followed by an expression of feeling. Table 8 can be reinterpreted to show that this sequence becomes increasingly more related to the criterion as the acquaintanceship proceeds (in study 2). However, it would be incorrect to conclude from the data presented here that self-disclosure itself is not initially important in the formation of friendship.

The results on successful gossip are inconsistent across the two coding systems (compare table 15 and table 6). Further investigation of the role of gossip is required. The strong relationship between age and the reciprocity of gossip in table 13 (an F ratio of 21.22 for the age main effect) suggests that it may be more fruitful to study gossip in children somewhat older than those represented in the two studies discussed here. The results suggest that amity and the self-exploration cluster may become more important for preadolescent and adolescent children. The work of Fine (1981) on the conversations of Little League preadolescent boys supports this conjecture. However, it is certainly the case that these processes do not arise suddenly and full blown in preadolescents; they certainly are important among younger children, though perhaps not as important as processes related to play, amity, and repair.

SOCIAL-SKILLS-DEFICIT HYPOTHESIS

The analyses presented in this paper have been at the dyadic level. These analyses describe what happens between children when they progress or do not progress toward friendship. They do not speak to the issue of whether or not these social events are a function of the social skill levels of the individual children. Consider the "high-risk strategy" concept suggested

TABLE 21

COMPARISONS OF BEST FRIENDS WHO HIT IT OFF WITH STRANGERS AND BEST FRIENDS WHO DID NOT

VARIABLE	ANCOVA *F* RATIO	MEANS	
		Hit It Off	Didn't Hit It Off
Criterion	2.06	.042	.034
Communication clarity:			
HQ→GCM	.09	4.22	3.75
GQ→HCM	9.03**	5.74	2.17
Information exchange:			
HATT	1.11	.033	.038
GATT	.87	.036	.041
HIN	.00	.066	.064
GIN	.08	.052	.043
HQ→GIN	.55	6.42	5.11
GQ→HIN	1.14	7.25	9.76
Common ground—activity:			
HWE→GAG	.54	2.53	1.38
GWE→HAG	2.31	3.90	1.57
HME	.23	.053	.049
GME	.43	.053	.046
Common ground—similarities/differences:			
HQAG→GAG	.58	5.47	4.30
GQAG→HAG	8.84**	7.95	3.56
HFE→GAG	.54	.99	.32
GFE→HAG	.42	1.46	1.39
HFE→GDG	1.66	−.20	.51
GFE→HDG	.28	−.08	.30
Conflict resolution:			
HDG→HCM	.30	10.04	8.51
GDG→GCM	.07	11.15	12.30
HDG→GDG	.64	1.73	.82
GDG→HDG	.06	.89	.57
HWEA→GAG	4.43*	3.35	1.78
GWEA→HAG	.20	1.58	2.56
Reciprocity:			
HJ→GJ	7.63**	13.88	5.59
GJ→HJ	10.58***	14.04	6.15
HG→GG	.13	3.00	4.53
GG→HG	.16	2.12	3.65
HF→GF	.04	9.99	9.18
GF→HF	.15	10.18	8.26
Self-disclosure:			
HQFE→GFE	.83	.06	2.49
GDFE→HFE	.14	2.15	2.32

* $p < .10$.
** $p < .05$.
*** $p < .01$.

to describe the children in study 1 who did not hit it off very well with strangers. It could be that these children are accustomed to a richer level of interaction with their best friends than children who did better with strangers. On the other hand, if the opposite were the case, it would suggest that these children may have problems with both best friends and strangers, which would support a social-skills-deficit hypothesis.

Study 1 provides an opportunity to ask questions about the high-risk and the social skills hypotheses, because the design of the study paired a host child with a best friend in one condition and with a stranger in the other condition. Table 21 presents the results of a series of analyses of covariance among the best friends in study 1, dividing them on the basis of whether the hosts did or did not hit it off with strangers, controlling for age. A differential test of the two hypotheses is possible. If children who did not hit it off with strangers have a higher level of play with their best friends than children who hit it off with strangers, this would support the particular interpretation of the high-risk hypothesis suggested above. If they have a lower level of play with their best friends than children who hit if off with strangers, this would support a social-skills-deficit hypothesis.

There is evidence that hosts who hit it off with strangers were more likely to clarify their messages with best friends (GQ → HCM), more likely to establish similarity with best friends (GQAG → HAG), somewhat more likely to employ weak forms of demands effectively in conflict resolution (HWEA → GAG), and more likely to reciprocate humor with their best friends. Thus these analyses support a social-skills-deficit hypothesis. Subsequent research is clearly necessary. It should be underscored that this research is based on subjects who, as far as is known, do not have problems with peers. To address specifically the issue of social skills deficits of children without friends, it will clearly be necessary to study a sample of children who range in peer sociometric status, using both nomination and rating sociometric measures. The usefulness of the present report lies in suggesting what to examine in terms of the criterion measure and the social processes.

SUMMARY

The goal of this research was to describe unacquainted children's progress toward friendship. The criterion variable that indexed how well two unacquainted children hit it off was guest agreement, which discriminated friends from strangers in study 1 and correlated significantly with the mothers' questionnaire in study 2. In replication or extension research in which the host and guest roles are not clearly defined, another criterion may be necessary. However, the relationships between process variables and the criterion were sufficiently robust when the mothers' questionnaire was used instead of the behavioral criterion variable. In short, from the results of these studies it is possible to suggest whether two children have hit it off directly from the nature of the interaction itself.

One of the major tasks of this research was the identification of variables that index such social processes as children's resolution of conflict, message clarification, and self-disclosure. All of the social processes selected were related to the criterion in a clear way except for the reciprocity variables. Reciprocity is a complex process that relates to responsiveness and the management of conflict; it may be more important in initial interaction than later. The consistent results were the following. Children who hit it off interact in the first meeting in a connected fashion in which they exchange information successfully, manage conflict, and establish a common-ground activity. Over the three sessions of study 2, the following processes become more important: communication clarity, information exchange, the establishment of a common-ground activity, the exploration of similarity and differences, the resolution of conflict, and self-disclosure.

In general, these relationships between process and criterion variables were robust to variations in the children's ages, the sex composition of the dyad, and the interaction of these factors. However, there was some evidence that children improve in acquaintanceship abilities as they get older. Some age trends were also obtained in the social processes. Children become somewhat more successful at information exchange, establishing a common-ground activity, conflict resolution, and the exploration of differences (but

not when they first meet) as they get older. Reciprocity results were less clear, but the reciprocity of fantasy declined and the reciprocity of gossip increased with increasing age.

A temporal model of friendship formation was then developed from an analysis of how the social processes were themselves sequenced. To summarize some of these results, the social processes were organized into three types—play, self-exploration, and repair—and two affective states—amity and conflict. Play processes include information exchange, which is the basis of conversation itself; it also represents the "home base" to which children frequently return when play disintegrates.

Play itself is an intricate set of activities, organized hierarchically in this report in terms of the interpersonal responsiveness demand required by the play. Children continually escalate and deescalate the play, thereby managing both the level of amity and conflict. Coloring side by side, for example, requires little responsiveness from each child, and the risk of conflict is low; unfortunately, the chances of amity and self-exploration are also low. Play is both more exciting and more risky when it demands more social responsiveness. Children's progress toward friendship can be described, in part, by the way they handle this complex problem of social management. It is probably the unfolding of these social events that can turn play and acquaintanceship into high adventure.

There was also evidence to suggest that these dyadic social events in part reflect individual social skill differences. Further research is required to determine if peer sociometric variables can be predicted from children's levels of social skill on these process variables.

CONCLUDING REMARKS

Howes and Mueller (1978, p. 4) wrote: "Why do some children form friendships while others do not? Because friendship formation has been studied so little, we cannot answer this question directly." The objective of this report was to describe how children become friends. This was accomplished by identifying a set of social processes that accounted for almost all the variation in unacquainted children's progress toward friendship. In many ways the objective of this report represents a return to our historical roots. Half a century ago the pioneering research of workers such as Bridges (1933), Bühler (1930), Dawe (1934), Isaacs (1933), and Parten (1932) represented a major effort to accomplish the goal of the systematic description of children's social interaction. Renshaw (1981, p. 9) noted, "These child psychologists were convinced that a science of child psychology would emerge only after the accumulation of basic observable facts. . . . As a result, they adopted methodologies that avoided predetermined categories for coding behavior and attempted to provide an unprejudiced reflection of the actual behavior of children."

Many of these early researchers were concerned with the observation of sequences of behavior in everyday contexts. Today we can return and address this concern with a new technology; detailed coding is possible because of the invention of tape recording; observational methods have improved; generalizability theory (Cronbach et al. 1972) has been developed; statistics has been invented since the 1930s; and sequential analytic methods have been developed since World War II.

The new methods now make it possible to contribute knowledge to a variety of fields. For example, sociolinguistics can profit from understanding the social consequences of different linguistic forms. Garvey's (1974) paper on social play pointed out that play formats were interaction formats. She asked, "What might actually sustain the practice, or repetition, of these formats? Why engage so often in the work of meshing or interrelating behaviors instead of simply singing, chanting, or performing some rhythmically satisfying monologue or individual game?" (p. 179).

We have seen how the continual escalation and deescalation of the involvement demanded by the play is related to the amount of both conflict and amity that results. There is an intricate minimax problem the children have to manage. It is a sort of coordinated dance, and it must be, in part, the continual reinvention of this dance that makes play such an adventure for children. When a young child is asked, "What makes him your friend?" the answer "We can play" contains a whole world that we are just beginning to discover.

Rubin (1980) noted that he was impressed by the social skills of one preschool child, Ricky. He wrote that these "are subtle skills, by no means easy to learn, and the fact that most children ultimately succeed in acquiring them is itself one of the most remarkable aspects of social development" (p. 47). Rubin was right. The social skills involved in the formation of friendship are remarkably complex.

The early researchers were concerned with helping those children who, for whatever reasons, never acquired these necessary skills (Chittenden 1942; Jack 1934; Page 1936). There has been a resurgence of intervention research in the past decade. A recent review of this intervention research by Conger and Keane (1981) shows how much attention has been given to *how* to change children (e.g., modeling, shaping, teacher praise, peer pairing, instruction, feedback, rehearsal). Unfortunately, comparatively little attention has been given to *what* to change. As much attention needs to be devoted to building the content of the intervention as to its mode of delivery. We must be precise in discovering what social processes are natural for children. Otherwise we may continue to design interventions that are not informed by the real social world in which our children must live.

The early researchers were on the right track. We cannot build theory in this area without phenomena, and we will not have phenomena to explain unless we carefully observe. Perhaps the major methodological contribution of this *Monograph* is in how much we have to learn from watching children.

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