

Security of Attachment and Stranger Sociability in Infancy

Ross A. Thompson
University of Nebraska

Michael E. Lamb
University of Utah

The relationship between stranger sociability and the security of the infant-mother attachment relationship was examined in a sample of 43 infants observed initially when they were 12½ months old, and again at 19½ months of age. The sociability measure was a revision of the Stevenson and Lamb (1979) sequential-initiatives procedure; it was followed by the Ainsworth Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978). At both ages, infants in subgroups B₁ and B₂ had the highest sociability scores, whereas A₁ and C₂ infants had the lowest. Analysis of the relationship between stranger sociability and interactive behaviors in the Strange Situation revealed the centrality of a distal interactive mode in both contexts. Because of a high incidence of family change, only 53% of the infants had the same overall attachment classification at both ages. Sociability scores at 12½ and 19½ months were highly correlated when attachment status was temporally consistent but were nonsignificantly related when attachment classifications changed over time. Absolute changes in sociability scores reflected a similar pattern of results. Cross-lagged correlational analyses suggested that predictive relationships with the security of attachment are meaningful only when attachment status itself is consistent over time.

There has been considerable interest recently in infants' reactions to unfamiliar persons and in the security of the infant-mother attachment relationship, but there have been few attempts to explore the relationship be-

tween security of attachment and behavior toward adult strangers. The goal of this study was to independently assess stranger sociability and the security of attachment in infants at 12½ and 19½ months of age and to then examine their relationship at each age and over time.

An earlier version of this article was presented at the annual meeting of the American Psychological Association, Washington, D.C., August 1982.

This study is based on a dissertation submitted by the first author in partial fulfillment of the requirements for the doctoral degree at the Rackham School of Graduate Studies, University of Michigan. It was supported by a grant from the Riksbankens Jubileumsfond of Sweden to Michael E. Lamb and by a dissertation grant from the Rackham School to Ross A. Thompson. While the research was conducted, Ross Thompson was a predoctoral fellow in the Bush Program in Child Development and Social Policy at the University of Michigan and a National Science Foundation predoctoral fellow. We are very grateful for the assistance provided by Lisa Colvin, Susan Dickstein, Melinda Feller, Leslie Fried, Michael Iskowitz, Margaret Madden, Susan Piconke, Jane Stein, Jamie Steinberg, Susan Strzelecki, and Michele Tukul. David Estes and Catherine Malkin provided special help with both testing and scoring. We are also appreciative of technical assistance provided by Lee Davis. David Estes provided many helpful comments on an earlier version of this article. Finally, we wish to express a special debt to the families who participated in this study.

Requests for reprints should be sent to Ross A. Thompson, Department of Psychology, 209 Burnett Hall, University of Nebraska, Lincoln, Nebraska 68588.

After a number of years in which research on stranger reactions was focused on fearful or wary responses, researchers have recently begun to consider affiliative reactions as well (e.g., Bretherton, 1978; Clarke-Stewart, Umeh, Snow, & Pederson, 1980; Rheingold & Eckerman, 1973; Stevenson & Lamb, 1979). Assessments of stranger sociability that consider the diverse socioemotional responses of infants to overtures by an unfamiliar adult are probably more sensitive to individual differences than are assessments of fearful reactions only. Consistent with this, Stevenson and Lamb (1979) recently developed a brief, nonintrusive measure of stranger sociability that entails consideration of both amiable and wary reactions, and that appears to be both reliable and valid. A review by Lamb (1982) indicated that there was reliability from day to day and from home to laboratory assessments, and that scores on this measure of sociability were correlated

with sociability exhibited during a test session that was, in turn, related to cognitive test performance. Research on the origins of individual differences in sociability is limited, but suggests relationships between sociability and the quality of the caregiving environment (Clarke-Stewart et al., 1980; Lamb, 1982), as well as between sociability and the security of the infant-mother attachment relationship (Main, 1973). The primary goal of this study was to further elucidate the relationship between attachment status and stranger sociability in infants.

According to attachment theory, securely attached infants are likely to generalize the trust and confidence derived from interaction with their mothers to initial encounters with strangers. Conversely, insecurely attached infants should respond more negatively to strangers because of a history of inconsistent, unhelpful, or unsatisfying interactions with their mothers. By and large, the research evidence tends to confirm these formulations. First, the security of the attachment relationship as assessed in the Strange Situation procedure (Ainsworth et al., 1978) has been related to the quality of prior mother-infant interaction in Ainsworth's initial research (Ainsworth, Bell, & Stayton, 1974). Second, attachment status is related to sociability with peers (Easterbrooks & Lamb, 1979; Lieberman, 1977; Pastor, 1981; Waters, Wipman, & Sroufe, 1979). Infants who had a secure attachment relationship with their mothers scored higher on measures of interactive competence with peers than did insecurely attached babies. Furthermore, Easterbrooks and Lamb (1979) showed that the subgroups within the secure attachment group were also meaningful: B₁ and B₂ infants were more sociable with peers than were B₃ and B₄ infants. They suggested that this may be due to differences in the secure infants' mother-directed behaviors that either fostered or impaired effective peer interactions. Only Main (1973; see also Londerville & Main, 1981), however, has examined the relationship between the security of the infant-mother attachment relationship and responsiveness to an adult stranger outside of the Strange Situation procedure. She reported that, compared to insecurely attached infants, securely attached 1-year-olds exhibited

greater playfulness and cooperativeness at 21 months of age in a Bayley examination (Bayley, 1969) and toward an unfamiliar adult playmate. Unfortunately, Main did not examine subgroup differences.

Like many studies of this genre, Main's research explored the predictive validity of attachment security, relating behavior in the Strange Situation at one age to behavior in later relevant assessments. The interpretation of research of this sort is usually predicated on the assumption that attachment classifications remain consistent between the two assessments. Recent studies have demonstrated, however, that the security of attachment often changes substantially over time in response to life stress for the parents and changes in caregiving arrangements for the infants (Thompson, Lamb, & Estes, 1982; Vaughn, Egeland, Sroufe, & Waters, 1979; Vaughn, Gove, & Egeland, 1980). Consequently, it seems desirable to explore relationships between contemporaneous assessments of stranger sociability and attachment security, as well as predictive relationships both when security of attachment is consistent and when it changes over time. Such investigations permit us to specify more precisely the circumstances in which socioemotional continuity can reasonably be expected and the relationships between continuity and change in related constructs.

Such was the goal of the present study. At 12½ and again at 19½ months of age, infants were observed first in an assessment of stranger sociability based on that developed by Stevenson and Lamb (1979) and then in the Strange Situation (Ainsworth et al., 1978). Because the two tests entail different response measures assessed in relation to different social partners, and because the sociability assessment is brief, pleasant, and informal, there was little reason to believe that the inclusion of the sociability measure would complicate the interpretation of behaviors subsequently observed in the Strange Situation. These data were then used to explore the relationship between independent assessments of stranger sociability and the security of the infant-mother attachment relationship on two occasions as well as their temporal interrelationships. Following Easterbrooks and Lamb (1979), we were interested in ex-

aming not only secure-insecure group comparisons in sociability, but also differences within the secure-classification subgroups.

Method

Subjects

The subjects for this study were 43 infants (21 males, 22 females) and their mothers. Fifteen children were firstborns. They were tested when the infants were 12½ months old (± 2 weeks) and again at 19½ months (± 2 weeks).¹ Approximately half the families were contacted through a subject pool administered by the developmental psychology program at the university; the other half were recruited through birth announcements published in a local newspaper. All families were contacted by phone; roughly 78% of the families we called agreed to participate in the study.

The families in this study ranged from upper-middle-class professionals to lower-middle-class blue-collar workers. Educational level ranged from graduate degrees to highschool education. All families except one were intact, two-parent families. Social position was appraised by Hollingshead's (Note 1) Four-Factor Index. Fourteen families were in Hollingshead's Class I (major professional and business), 12 were in Class II (minor professional and technical), 13 were in Class III (skilled craftsmen, clerical, sales workers), and four were in Class IV (machine operators and semiskilled workers). All families were white except one, which was Puerto Rican.

Procedure

Overview. The assessments at 12½ and 19½ months were identical. After a brief period for instructions to the mother, the experimenter left the room. Then a female research assistant entered and performed the assessment of stranger sociability, using a procedure adapted from that of Stevenson and Lamb (1979). Following a brief intervening period for further instructions, the Strange Situation (Ainsworth et al., 1978) was conducted, with a different research assistant serving as stranger. The assessment of stranger sociability always preceded the Strange Situation because the latter usually involves the arousal of marked distress in the baby, whereas the sociability assessment is brief and pleasant. Thus no infants began either assessment in a distressed state. In this research, a group of eight highly-trained female college students served as strangers; a different group of four students was employed for the assessments at each age. The observations took place in a large, carpeted playroom (5.75 m \times 4.5 m) containing two chairs (one for the mother and one for the stranger), a table, decorative wall hangings, and an assortment of age-appropriate toys in the middle of the room for the baby. Sessions at both ages were videotaped from behind one-way windows; ceiling microphones were used to record sound.

Assessment of stranger sociability. Stranger sociability in infants was assessed using a modified version of a semistandardized procedure developed by Stevenson and Lamb (1979), which was designed to measure an

infant's responses to an initial encounter with an unfamiliar adult. The procedure entails a series of social overtures of gradually increasing intrusiveness conducted by a female stranger in the mother's presence. The initial social bids occur while the infant is seated on the mother's lap: first an interesting toy is offered the baby and then the stranger attempts to initiate a give-and-take exchange. Following this, the infant is placed on the floor, and the baby's initial response to floor freedom is observed. The stranger then moves to the floor, again offers the baby a toy, and initiates a turn-taking exchange. After a few moments of play, the stranger attempts to pick up the baby, before finally leaving the room. The mother remains noninteractive throughout the procedure. The total session typically lasts about 5 or 6 minutes.

From videotaped records, the infant's initial response to each successive initiative was scored on a scale from 1 (withdrawal, distress) to 5 (outgoing, friendly). Scale points for rating each initiative were behaviorally based, and the coder was asked to indicate the rating that was most characteristic of the infant's response to each initiative. The baby's responses to the stranger's entrance and departure were similarly appraised. Finally, the rater made a summary assessment of the baby's responsiveness to the stranger on a 9-point measure. The sum of these ratings constituted the infant's score for stranger sociability (see Thompson & Lamb, 1982, for further details on procedure and scoring).

Assessment of the security of attachment. The Strange Situation is a semistandardized laboratory procedure designed to appraise the security of the infant-mother attachment relationship (Ainsworth et al., 1978; Ainsworth & Wittig, 1969). The procedure consists of a series of seven 3-minute episodes, each entailing an important change in the social setting while the baby is playing with toys. It is designed to create a situation of gradually escalating stress for the baby (e.g., interaction with an unfamiliar adult, separation from the mother in the company of that adult, and finally being left alone), so that changes in the organization of the infant's behaviors in relation to the parent can be assessed. Particular attention is devoted to the quality of the infant's reunion responses following brief separations from the mother.

From videotaped records, two kinds of response measures relevant to the baby's social behaviors were scored. The first consisted of ratings of the baby's social interactive behaviors directed to the mother or stranger, scored on an episode-by-episode basis. There were six interactive variables in all, each scored on a 7-point scale. They concerned the baby's (a) *proximity- and contact-seeking* activities, (b) *contact-maintaining* behaviors, (c) *resistance* to interaction or contact, (d) *avoidance* of social interaction, (e) *distance interaction*, and (f) *search* behaviors during the separation episodes. In order to increase the reliability of episode-by-episode ratings, interactive scores were combined for analysis across rele-

¹ There were two exceptions. One infant was initially tested 3 weeks before his first birthday; another was seen for the second time 1 week following her 20-month birthday. Inspection of the data revealed that these infants did not differ from others in relevant behaviors, so their data were included.

vant episodes of the Strange Situation in the following manner: mother preseparation (Episodes 1 and 2), mother reunion (Episodes 4 and 7), stranger preseparation (Episode 2), stranger separation (Episodes 3 and 6), and search separation (Episodes 3, 5, and 6).

The second type of measure entails an overall classification of the security of the infant-mother attachment relationship, based in part on the interactive ratings. These classifications focus on the infant's ability to use the adult as a secure base from which to play or explore in an unfamiliar setting and his or her ability to reunite positively with the parent after brief separations and comfortably return to play. Infants who are *securely attached* (Group B) are most common. Characteristically they are able to play comfortably in the parent's presence during the preseparation episodes, and positively greet and/or seek contact with the parent upon reunion. Insecurely attached infants constitute the two remaining groups. *Avoidant* (Group A) babies typically exhibit non-interactive exploration during preseparation and avoid or ignore the parent during the reunion episodes. *Resistant* (Group C) babies, on the other hand, characteristically seek proximity and contact even during the pre-separation episodes, and their contact-seeking activity during reunion is accompanied by angry, resistant behaviors. Subgroups within each of the three classifications (A, B, C) primarily reflect variations in infant reunion behavior, but other factors (e.g., quality and amount of preseparation proximity-seeking and contact-maintaining behaviors) are also taken into account (see Ainsworth et al., 1978, for further details concerning procedure and scoring).

Reliability

Assessments of stranger sociability and infant-mother attachment security at each age were scored independently by raters who were unaware of the infant's behaviors in the other context.

Scoring of infant responses during the sociability assessment was conducted by two highly trained research assistants with whom a high level of interrater reliability during training was achieved. Scoring of the 19½-month assessments was conducted by raters who were unaware of the 12½-month ratings. Periodic reliability checks performed on a total of eight assessments at each age yielded 87% exact agreement on subscales each time. Although different raters performed the scoring of the 12½-month and 19½-month assessments, consistency was assured by having a single researcher (the first author) conduct the training and reliability checks for each assessment. In addition, the rater of the 19½-month observations rescored five 12½-month assessments and achieved 95% exact agreement with the original rater.

Scoring of each Strange Situation assessment was performed by two or more highly trained raters working independently. Scoring of the 19½-month assessments was conducted without knowledge of the 12½-month classifications. Consistent scoring criteria were used for assessments at each age. Independent ratings of the interactive variables were highly correlated for both assessments (at 12½ months: mean $r = .95$, range = .90-.98; at 19½ months: mean $r = .93$; range = .89-.95). Exact agreement on the overall attachment classifica-

tions was 90% for the 12½-month assessment and 98% for the 19½-month assessment; agreement for subgroups was 86% and 93%, respectively. All disagreements were discussed to consensus.

Results

Stranger Sociability and the Security of Infant-Mother Attachment

Mean stranger sociability scores were very similar for the two assessments (12½ months: 34.53; 19½ months: 34.95). Similarly, the distribution of infants across attachment classifications was also consistent at 12½-month and 19½-month assessments. At each age, between 65% and 70% of the sample were securely attached; this distribution parallels the normative findings reported by Ainsworth (Ainsworth et al., 1978) and others. There were modest sex differences in sociability: at 19½ months, girls ($M = 37.45$) scored higher than boys ($M = 32.33$), $t(41) = -2.59$, $p < .015$. There was a similar but non-significant tendency at 12½ months. On the attachment measure, infants classified resistant (Group C) at 19½ months included more boys (7 of 8) than did the other groups (14 of 35), $\chi^2(1) = 4.15$, $p < .05$. There was a nonsignificant trend in the same direction at 12½ months.

There was a strong and consistent relationship between stranger sociability scores and attachment classification subgroups at each age. At each assessment, infants in the B₁ subgroup received the highest sociability scores (12½-month $M = 41.00$, $n = 1$; 19½-month $M = 41.75$, $n = 8$), whereas the lowest scores were obtained by infants in subgroups A₁ (12½-month $M = 30.33$, $n = 3$; 19½-month $M = 31.00$, $n = 3$) and C₂ (12½-month $M = 23.00$, $n = 2$; 19½-month $M = 20.00$, $n = 1$). Infants who were in subgroup B₄ were also low on the sociability measure at 12½ months ($M = 24.40$, $n = 5$) but not at 19½ months ($M = 33.50$, $n = 6$). Because the number of infants in some of the subgroups was small, we combined across subgroups in the manner suggested by Easterbrooks and Lamb (1979) (i.e., A_{1,2} vs. B_{1,2} vs. B_{3,4} vs. C_{1,2}) to test the reliability of these differences. Differences in sociability scores were significant at 19½ months, $F(3, 39) = 3.02$, $p < .045$, and marginally significant at 12½ months,

Table 1
Mean Stranger Sociability Scores for Attachment Groups at 12½-Month and 19½-Month Assessments

Attachment group	Mean sociability score	
	12½ months	19½ months
Avoidant (A)	33.29	33.00
Secure (B)		
Subgroups 1, 2	38.36	39.21
Subgroups 3, 4	32.12	32.73
Resistant (C)	33.50	33.12

$F(3, 39) = 2.50, p < .075$. A series of planned pairwise comparisons revealed that at each age, B_{1,2} infants tended to be more sociable than A babies: 12½ months, $t(41) = 1.69, p < .10$; 19½ months, $t(41) = 1.97, p < .06$. B_{1,2} infants were also significantly more sociable than B_{3,4} infants: 12½ months, $t(41) = 2.63, p < .015$; 19½ months, $t(41) = 2.70, p < .015$. B_{1,2} infants were significantly more sociable than C babies at 19½ months, $t(41) = 2.13, p < .05$, but not at 12½ months ($t = 1.54, ns$). There were no other significant differences among the groups (see Table 1). The finding of significantly higher stranger sociability scores for infants in subgroups B_{1,2} thus parallels similar findings for peer sociability obtained by Easterbrooks and Lamb

(1979). There were no significant differences between overall attachment classifications in sociability scores at either age, although securely attached infants consistently tended to be more sociable toward the stranger than did other babies.

The relationship between stranger sociability and infant-mother attachment status was further elucidated by examining the correlations between ratings of the interactive behaviors exhibited in the Strange Situation and scores from the sociability assessment (see Table 2). At each age, sociability scores correlated negatively with contact-maintenance and positively with distance interaction with the mother during the reunion episodes. As expected, however, the relationships between stranger sociability and stranger-directed interactive behaviors in the Strange Situation were more striking. At both 12½ and 19½ months, sociability scores correlated positively with preseparation ratings of proximity seeking, and with both pre-separation and separation ratings of distance interaction. In addition, at 19½ months sociability was negatively related to pre-separation ratings of resistance and avoidance. At both ages, sociability scores were not significantly correlated with the ratings of search behavior (12½ months: $r = .03$; 19½ months: $r = .15$).

Table 2
Correlations Between Stranger Sociability Scores and Interactive Behaviors for 12½-Month and 19½-Month Assessments

Interactive variable	Mother preseparation	Mother reunion	Stranger preseparation	Stranger separation
	12½ months			
Proximity seeking	-.20	.20	.36*	.15
Contact maintaining	-.32*	-.38*	.00	.07
Resistance	.14	.05	.13	-.01
Avoidance	.01	.04	-.28	-.26
Distance interaction	.21	.50****	.59*****	.52*****
19½ months				
Proximity seeking	.12	-.17	.37*	.07
Contact maintaining	-.27	-.35*	.00	-.27
Resistance	-.12	-.04	-.44***	-.09
Avoidance	-.26	-.16	-.50*****	-.26
Distance interaction	.28	.40**	.46***	.60*****

* $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$. ***** $p < .0005$.

Temporal Relationship Between Stranger Sociability and Security of Attachment

Fifty-three percent of the infants were classified in the same overall attachment group (A, B, or C) at 12½ and 19½ months, and only 26% were assigned to the same subgroup at both ages. As reported in detail elsewhere (Thompson et al., 1982), change in attachment status over time was systematically related to parental reports of changes in family circumstances during the baby's lifetime, particularly those changes that seemed likely to influence the ongoing quality of mother-infant interaction (such as maternal employment or regular nonmaternal care for the baby). These findings are consistent with those of other investigators (e.g., Vaughn et al., 1979).

Stranger sociability scores at 12½ and 19½ months were significantly correlated ($r = .40$, $p < .01$), and the temporal consistency of sociability scores and overall attachment status were also related. When attachment classification was consistent over time, 12½-month and 19½-month sociability scores correlated very highly ($r = .74$, $p < .0001$). When the security of attachment changed over time, 12½-month and 19½-month sociability scores were not significantly correlated ($r = -.18$, *ns*). Moreover, the degree of change in stranger sociability scores from 12½ to 19½ months was highly related to temporal consistency in overall attachment classifications. When attachment status was stable, the average absolute change in sociability was 4.22; when attachment classification changed, the average change in sociability was 7.45, $t(41) = -2.30$, $p < .03$. The infants who exhibited the smallest change in sociability scores were those who were securely attached at 12½ months and remained so at 19½ months. Those who exhibited the greatest absolute change in sociability scores were those who changed from securely to insecurely attached over the assessment period.

A series of cross-lagged analyses were conducted to determine whether assessments of either construct at 12½ months were reliably related to later assessments of the other construct. The majority of these analyses proved nonsignificant. Stranger sociability scores at

19½ months were not related to overall attachment classification or subgroup (i.e., $A_{1,2}$ vs. $B_{1,2}$ vs. $B_{3,4}$ vs. $C_{1,2}$) comparisons at 12½ months. Similarly, there were no significant relationships between stranger sociability at 12½ months and overall attachment status at 19½ months. However, 12½-month sociability scores for infants classified as B_1 or B_2 ($M = 38.29$) or A_1 or A_2 ($M = 36.33$) at 19½ months were significantly higher than those of infants classified as B_3 or B_4 ($M = 32.60$) or C_1 or C_2 ($M = 30.25$), $F(3, 39) = 3.57$, $p < .025$.

Discussion

These results indicate that social responsiveness to an unfamiliar adult and the security of the infant-mother attachment relationship are associated, both in their consistent interrelationships at two ages as well as in their temporal consistency. At both ages, infants in the B_1 and B_2 subgroups received the highest sociability scores, whereas infants in subgroups A_1 and C_2 received the lowest. There were, however, no significant differences between A, B, and C Group infants, or between securely (B) and insecurely attached (A, C) infants. The findings thus underscore Easterbrooks and Lamb's (1979) claims regarding the importance of subgroup classifications in the relationship between infant-mother attachment status and sociability with other social partners.

These relationships are informative and predictable from attachment theory (see Ainsworth et al., 1978). During the Strange Situation, B_1 (and to a lesser extent B_2) infants rely primarily on distal modes of interaction—smiling, showing toys, vocalizing—and this social style may affect sociability with strangers in at least two ways. First, these infants can check back to their mothers for emotional reassurance (cf. Mahler, Pine, & Bergman, 1975) without having to return to her physically and thus break off interaction with a stranger. Second, since proximity to a stranger increases the likelihood of wariness (Sroufe, 1977), an infant who is accustomed to interacting across a distance can more readily engage a stranger than an infant who is accustomed to more proximal inter-

active modes. Thus B_1 infants have a social style that is most likely to yield positive, sociable interactions with unfamiliar adults. The opposite is true of A_1 and C_2 infants. The A_1 infants conspicuously avoid their mothers, particularly upon reunion, whereas C_2 infants mingle passivity in social interaction with angry and resistant behaviors. Infants in both subgroups show less positive social behavior toward their mothers than do infants in the other subgroups. Thus A_1 and C_2 babies have a social style that is least likely to yield sociable interactions with strangers.

These relationships between subgroup classification and stranger sociability were buttressed by correlations between sociability scores and ratings of interactive behavior in the Strange Situation. At each age, stranger-directed and mother-directed distance interaction scores were most strongly and positively correlated with the sociability scores, indicating the centrality of a common distal interactive mode in both contexts. By contrast, mother-directed contact maintenance was negatively related to sociability at both ages, suggesting another way in which the infant's style of relating to the mother may conflict with sociability toward others: a preoccupation with maintaining physical contact with mother may preclude positive social interaction with another person. At each age, furthermore, sociability scores were positively related to stranger-directed proximity seeking during the preseparation episodes and negatively related to preseparation resistance toward and avoidance of the stranger. This indicates the transsituational consistency of stranger sociability in infants.

The consistent relationships between sociability scores, attachment classification subgroups, and ratings of interactive behavior in the Strange Situation are impressive for two reasons. First, they were derived from independent assessments involving different response measures and different measurement strategies. Second, the consistent relationships at each age were not due to the fact that infants obtained the same subgroup classification at both ages: 74% of the infants changed attachment subgroup status between 12½ and 19½ months. Evidently, therefore, the organization of attachment and sociable/

affiliative response systems changed in an intercoordinated fashion over time.

This conclusion is supported by our data concerning the interrelated temporal consistency of attachment classification and stranger sociability scores. When the security of attachment was consistent, 12½-month and 19½-month sociability scores were strongly related; when attachment classification changed over time, sociability scores were not significantly related. Moreover, sociability scores changed more (in absolute terms) when attachment status changed than when it was consistent over time.

These results suggest that changes in the security of infant-mother attachment brought about by changes in family circumstances or caregiving arrangements (e.g., Thompson et al., 1982; Vaughn et al., 1979) also influence the quality of the infant's responsiveness toward strangers, and this may be mediated by the processes described earlier. On the other hand, the relationship between these two constructs may be rather different, with changes in stranger-infant relations influencing the security of the infant-mother attachment relationship, or with *both* sociability and attachment status being influenced by a third factor, such as stability in and quality of caregiving arrangements. Interestingly, the only significant cross-lagged relationship between the two constructs suggested that sociability predicted later security of attachment rather than the reverse. Further research on the causal relationships among these and similar constructs has important implications for our understanding of socioemotional development in infancy.

Our failure to show that the Strange Situation classifications had predictive validity is instructive in light of the strong and consistent relationships we found between attachment classifications and sociability scores at both 12½ and 19½ months. Our data suggest that predictive validity should only be expected when attachment classification remains consistent over time. Furthermore, changes in the security of attachment may be quite frequent, given the occurrence of changes in family circumstances and caregiving arrangements in middle-class as well as lower-income homes (Thompson et al.,

1982; Vaughn et al., 1979). When attachment classification changes over time, predictive relationships may thus be unimpressive even though contemporaneous assessments are highly significant. Moreover, even when predictive relationships are significant, their meaning is difficult to assess without information concerning the temporal consistency of attachment classifications. It is thus important to recognize that the security of an attachment relationship reflects the *current*—not necessarily the *enduring*—status of the infant–parent relationship. Attempts to demonstrate predictive relationships with attachment classifications must be interpreted in this light.

Reference Note

1. Hollingshead, A. B. *Four factor index of social status*. Unpublished manuscript, Yale University, 1975.

References

- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. Attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The integration of the child into a social world*. New York: Cambridge University Press, 1974.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. *Patterns of attachment*. Hillsdale, N.J.: Erlbaum, 1978.
- Ainsworth, M. D. S., & Wittig, B. A. Attachment and exploratory behavior of one-year-olds in a strange situation. In B. M. Foss (Ed.), *Determinants of infant behavior* (Vol. 4). London: Methuen, 1969.
- Bayley, N. *Bayley scales of infant development*. New York: Psychological Corporation, 1969.
- Bretherton, I. Making friends with one-year-olds: An experimental study of infant–stranger interaction. *Merrill-Palmer Quarterly*, 1978, 24, 29–51.
- Clarke-Stewart, K. A., Umeh, B. J., Snow, M. E., & Pederson, J. A. Development and prediction of children's sociability from 1 to 2½ years. *Developmental Psychology*, 1980, 16, 290–302.
- Easterbrooks, M. A., & Lamb, M. E. The relationship between quality of infant–mother attachment and infant competence in initial encounters with peers. *Child Development*, 1979, 50, 380–387.
- Lamb, M. E. The origins of individual differences in infant sociability and their implications for cognitive development. In H. W. Reese & L. P. Lipsitt (Eds.), *Advances in child development and behavior* (Vol. 16). New York: Academic Press, 1982.
- Lieberman, A. F. Preschoolers' competence with a peer: Relations with attachment and peer experience. *Child Development*, 1977, 48, 1277–1287.
- Londerville, S., & Main, M. Security of attachment, compliance, and maternal training methods in the second year of life. *Developmental Psychology*, 1981, 17, 289–299.
- Mahler, M. S., Pine, F., & Bergman, A. *The psychological birth of the human infant*. New York: Basic Books, 1975.
- Main, M. Exploration, play, and cognitive functioning as related to child–mother attachment (Doctoral dissertation, Johns Hopkins University, 1973). *Dissertation Abstracts International*, 1974, 34, 5718B. (University Microfilms No. 74-10,428)
- Pastor, D. L. The quality of mother–infant attachment and its relationship to toddler's initial sociability with peers. *Developmental Psychology*, 1981, 17, 326–335.
- Rheingold, H., & Eckerman, C. Fear of the stranger: A critical examination. In H. W. Reese & L. P. Lipsitt (Eds.), *Advances in child development and behavior* (Vol. 8). New York: Academic Press, 1973.
- Sroufe, L. A. Wariness of strangers and the study of infant development. *Child Development*, 1977, 48, 731–746.
- Stevenson, M. B., & Lamb, M. E. Effects of infant sociability and the caretaking environment on infant cognitive performance. *Child Development*, 1979, 50, 340–349.
- Thompson, R. A., & Lamb, M. E. Stranger sociability and its relationships to temperament and social experience during the second year. *Infant Behavior and Development*, 1982, 5, 277–287.
- Thompson, R. A., Lamb, M. E., & Estes, D. Stability of infant–mother attachment and its relationship to changing life circumstances in an unselected middle-class sample. *Child Development*, 1982, 53, 144–148.
- Vaughn, B., Egeland, B., Sroufe, L. A., & Waters, E. Individual differences in infant–mother attachment at twelve and eighteen months: Stability and change in families under stress. *Child Development*, 1979, 50, 971–975.
- Vaughn, B., Gove, F. L., & Egeland, B. The relationship between out-of-home care and the quality of infant–mother attachment in an economically disadvantaged population. *Child Development*, 1980, 51, 1203–1214.
- Waters, E., Wippman, J., & Sroufe, L. A. Attachment, positive affect, and competence in the peer group: Two studies in construct validation. *Child Development*, 1979, 50, 821–829.

Received February 24, 1982

Revision received March 15, 1982 ■