

Attachment^m in the Preschool Years

Theory, Research, and Intervention

EDITED BY

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9 · Assessing Internal Working Models of the Attachment Relationship

AN ATTACHMENT STORY COMPLETION TASK FOR 3-YEAR-OLDS

Inge Bretherton, Doreen Ridgeway,

and Jude Cassidy

IN A GROUND-BREAKING paper, Bowlby (1958) reconceptualized psychoanalytic views of the infant-mother relationship in terms of new insights from the ethological literature (Hinde 1961; Lorenz 1957; Tinbergen 1951). He proposed that the infant's attachment to the mother has the basic survival function of protection and that it is regulated by a motivational-behavioral system (the attachment system) which is neither subordinate to nor derivative from motivational systems that subserve feeding or sex. For this reason, attachment theory is often categorized as an evolutionary-ethological theory.

Bowlby's reworking of Freud's instinct theory should not be allowed to obscure the fact, however, that attachment theory still shares many basic assumptions with several psychoanalytic theories of interpersonal relatedness (see Greenberg & Mitchell 1983 for a review). Such theories, usually known as (love) object relations theories, are concerned with the crucial role played by self and object representations in the conduct of close human relationships. Bowlby not only elaborated on the ideas of the object relations theorists but also made them more amenable to empirical investigation. He used a new metaphor, *internal working model* of self and attachment figure, to underscore the dynamic and functional aspect of representations. In addition, he built on current advances in the academic study of information processing and cognition to carry attachment theory beyond the older psychoanalytic formulations.

In this paper, we will first review Bowlby's initial postulates regarding the significance, function, and development of internal working models and consider subsequent developments of these ideas. We will then link these theoretical formulations to a number of recent empirical studies that attempted to investigate internal working models of attachment relations in 6-year-olds and

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adults. After outlining these findings, we will present results of an exploratory study in which we tried to examine 3-year-olds' internal working models of the attachment relationship.

THE CONSTRUCT OF INTERNAL WORKING MODELS

Like other psychoanalysts, Bowlby (1973) was greatly concerned with the relationship between outer reality and an individual's inner world. He was drawn to the term "internal working model" (Craik 1943) because it had the functional and dynamic connotations that other related terms like "representation" or "image" lacked. This is how Craik, a psychologist interested in devising intelligent cybernetic systems, describes his conception of working models:

By a model we thus mean any . . . system which has a similar relation-structure to that of the process it imitates. By "relation-structure" I do not mean some obscure nonphysical entity which attends the model, but the fact that it . . . works in the same way as the process it parallels . . . My hypothesis then is that thought models, or parallels reality . . . If the organism carries a "small-scale model" of external reality and of its own possible actions within its head, it is able to try out various alternatives, conclude which is the best of them, react to future situations before they arise, utilize the knowledge of past events in dealing with the present and future, and in every way to react in a much fuller, safer and more competent manner to the emergencies which face it. (P. 61)

Bowlby was not the only theoretician who noted the usefulness of Craik's metaphor of representation as internal working models. In his recent book on *Mental Models*, Johnson-Laird (1983), building on Craik, placed the concept in an evolutionary perspective very compatible with attachment theory. Working models, Johnson-Laird suggested, owe their origin to the survival advantage that they afford an organism by permitting insightful and foresightful behavior. Because the essential feature of a mental model is its functional role in guiding adaptive behavior, structural correspondence between the representation and what is represented (similarity in "relation-structure," in Craik's terms) is crucial. The more adequately internal working models can simulate relevant aspects of the world, the better the potential planning and responding capacity of an organism.

Bowlby (1973) suggested that, *within* an individual's working model or representation of the world, working models of the self and of principal caregiving figures are of special significance. It is these models that allow an individual to interpret and predict the attachment partner's behavior and to plan immediate and future responses. Because working models of self and other in the attachment relationship have their origin in actual interpersonal transactions, they complement each other—or, as Sroufe and Fleeson (1986) have recently expressed it, taken together they represent both sides of the relation-

ship. For example, a child who experiences—and hence represents—attachment figures as primarily rejecting, is likely to form a complementary internal working model of the self as unworthy or unacceptable. Similarly, a child who experiences a parental figure as emotionally available and supportive, is likely to construct a complementary working model of the self as competent and lovable.

At this point, it is important to note how these ideas relate to other psychoanalytic theories of interpersonal (object) relations (see Greenberg & Mitchell 1983, for a review). The technical terms are different. Object relations theories do not make reference to internal working models but use terms like “introject,” “projective identification,” “internal objects,” “self,” and other representations. Nevertheless, the basic notion that representations of self and parent developed in childhood are imposed on future close relationships are held in common with attachment theory. Several crucial differences, however, should not be overlooked. Bowlby’s theory ([1969] 1982, 1973, 1980) is both narrower and more general than those psychoanalytic theories of object relations that it most closely resembles (Sullivan 1953; Fairbairn 1952). Attachment theory is narrower, because it is concerned with relationships in which one person serves as secure base and secure haven to another, not with all types of social relationships. It is more general than other object relations theories, because the construct of internal working model is used to explain the development of healthy as well as pathological relationships. Sullivan and Fairbairn, in contrast to Bowlby, focused primarily on the internalization of unsatisfying relationships, because they wanted to explain the puzzling distortions in adult relationships that seemed to be derived from representation and subsequent repression of early experiences with parents (see Bretherton 1987 for an overview; see also Cummings & Cicchetti, this vol.).

Inspired by Craik’s (1943) as well as by Piaget’s (1951, 1954) writings, Bowlby suggested that the construction of internal working models of self and attachment figure is a natural consequence of the human ability to construct representations of the world. Internal working models ordinarily have the adaptive function of providing an adequate representation of self, attachment figures, and the environment. The development of healthy attachment relationships is based, therefore, on continued updating and fine tuning of internal working models. It is only when *defensive* information processing subverts the normally adaptive function of *selective* information processing that development is diverted into nonoptimal pathways. We will return to this issue in a later section.

*Theories of Event Representation as Related
to the Construct of Internal Working Models*

When Bowlby incorporated the term “internal working model” into attachment theory, it was little more than a metaphor with useful connotations that allowed us to think about representation in a new way. However, recent

developments in the study of event representation have provided a useful basis for fleshing out the notion of working models. These theories are very compatible with Bowlby's theorizing because they share the configurational and dynamic approach to memory processes that is implied in the term "working model." Representational processes are viewed as governed by event schemata or scripts (Mandler 1979; Nelson & Gruendel 1981; Schank & Abelson 1977) that summarize skeletal information about repeated similar events in a person's life. The structure of event schemata or scripts is said to simulate the spatiotemporal-causal structure of the original experience in connected form, or, as Craik (1943) would have said, event schemata or scripts imitate the "relation-structure" of the event they represent.

Schank and Abelson's original version of script theory (1977) had several disadvantages as far as attachment theory and the concept of internal working models was concerned. The definition of the term "script" was too vague. In addition, there was little discussion on how scripts or generalized event schemata were related to autobiographical memory, whether they were organized into larger structures, how new scripts might be generated, and what role affect might play in event representation. The revised formulation of the theory (Schank 1982) provides, we suggest, a more adequate basis for thinking about the acquisition, use, and change of internal working models.

Schank now argues that information derived from episodic or autobiographical memories (including affect) is reprocessed, partitioned, cross-indexed, and summarized in a variety of ways. All of the diverse resulting schemata preserve a spatiotemporal and causal relation structure that simulates real-world event structures. Some of these structures link mini-event representations into coordinated longer-event sequences (the former scripts), others generalize across mini-events (e.g., feeding situations regardless of context), and yet others generalize across event categories (e.g., all caregiving routines). Schank's conceptualization deliberately blurs the distinction between episodic and semantic memory proposed by Tulving (1972, 1983), and substitutes for Tulving's two-level memory system multiple interconnected hierarchies of schemata that are graded from very experience-near to very general-abstract. These hierarchies are constructed, continually reconstructed, and revised on the basis of new input. Existing schemata determine how new experiences are decoded or processed, although new event schemata will be generated if an initially unexpected event is reencountered several times. Moreover, new schematic memories will be parsed and information fed into many other structures that represent generalized event information about agents, actions, intentions, goals, and emotions. These parsing and ordering processes can therefore explain how events experienced with attachment figures can influence more general normative working models of the caregiving role, or, more generally, how autobiographical memories become incorporated into a variety of general knowledge structures.

*Stability, Change, and Distortion
in Internal Working Models*

Theories of event representation are helpful tools in thinking about representational stability and change. Once a schema is in place, it guides the processing of incoming information. The resulting stability and efficiency in processing events is, however, bought at the cost of oversimplification. Individuals will feel compelled to accommodate internal working models to a changed reality only when the lack of fit between the working model and actual circumstances becomes very obvious. Some distortion of incoming information in the service of adaptive simplification is therefore normal and unavoidable.

Although attachment theory posits some constraints on the updating of working models, they must adapt as the attachment relationship develops. A more competent child will need the caregiver's support in different ways than an infant. If such changing needs are not reflected in revisions of the child's and the parents' working models, the models will become seriously outdated and, therefore, inadequate. External factors impinging on the relationship (chronic illness, parental job loss, and so forth) are also likely to make the restructuring of internal working models necessary. Finally, cognitive development itself must be presumed to lead to change in the complexity and elaboration, and hence in the adequacy, of internal working models (see Bretherton, 1990, for further discussion of this point).

Clinical case studies cited by Bowlby (1980) suggest that defensive processes may interfere with the adequate development of internal working models of self and caregiver. This is most likely to occur in response to intolerable mental pain or conflict—for example, when an attachment figure habitually ridicules a child's security-seeking behaviors, reinterprets rejection as motivated by parental love, or otherwise disavows or denies the child's anxious, angry, or loving feelings toward attachment figures (Bowlby 1973, 1980). Under such circumstances, it is common for a child to defensively exclude from awareness the working model of the "bad" unloving parent and retain conscious access only to the loving model ("the good parent"). Since the internal working model of an unconditionally loving and supportive parent cannot possibly correspond to reality, a working model of an idealized parent is ultimately maladaptive. Defensive processes bring relief because they keep the individual from experiencing unbearable mental pain, confusion, or conflict in the present. Unfortunately, they are also likely to make the adequate accommodation of internal working models to reality problematic. Inadequate working models, in turn, will interfere with effective coping and with optimal development.

In his discussion of defensive processes, Bowlby (1980) makes use of the distinction between episodic and semantic memory proposed by Tulving

(1972; see also Tulving 1983). Episodic memory is said to store autobiographical memories of specific events in a person's life history, whereas semantic memory stores generic propositions (general knowledge as opposed to specific memories). Tulving believes that the two memory systems are based on different storage mechanisms. Building on this hypothetical distinction, Bowlby (1980) emphasizes that autobiographical memories can only be derived from actual experience, whereas generic knowledge (semantic memory) may also be based on information supplied by others. When the two sources of stored information (memories of actual experience and knowledge based on communications from others) are highly contradictory, severe psychic conflict is likely to arise. Under these circumstances, defensive processes may be brought to bear on episodically stored memories derived from actual experience as a means of eliminating the conflict.

Although Schank (1982) did not specifically discuss defensive processing, we suggest that his revised version of script theory sheds further light on this topic. If portions of autobiographical memories enter into cross-referenced schemata at many hierarchical levels, it is possible to see how material that has been defensively excluded from autobiographical memory can nevertheless be included in schemata at these other levels and thus influence a person's thinking and behavior.

The Intergenerational Transmission of Working Models

Bowlby suggests that internal working models of self and parents developed in childhood play a major part in the intergenerational transmission of attachment patterns (Bowlby 1973, p. 322). Individuals who grow up to become relatively stable and self-reliant, he postulates, normally have parents who are supportive when called upon but who also permit and encourage autonomy. Such parents tend not only to engage in fairly frank communication of their own working models of self, of their child, and of others but also indicate to the child that working models are open to questioning and revision. To quote Bowlby:

Because in all these respects children tend unwittingly to identify with parents and therefore to adopt, when they become parents, the same patterns of behaviour towards children that they themselves have experienced during their own childhood, patterns of interaction are transmitted, more or less faithfully, from one generation to another. Thus the inheritance of mental health and of mental ill health through the medium of family microculture is certainly no less important, and may well be far more important, than is their inheritance through the medium of genes. (P. 323)

Bowlby cites longitudinal studies by Peck and Havighurst (1960), Offer (1969), and Murphey, Silber, Coelho, Hamburg, and Greenberg (1963) in

support of these claims. More recent studies supporting the intergenerational hypothesis in an attachment-theoretical are reviewed by Ricks (1985).

The Development of Internal Working Models

How relevant are these new insights about representational processes to infancy and childhood? Stern's (1985) recent writings about generalized interaction schemata, also based on Schank's (1982) writings, provide some conceptual tools for studying emergent (presymbolic) working models even during the first year of life. Moreover, from the end of the first-year onward, there is some empirical evidence suggesting that infants can invoke working models in order to think about and forecast an attachment figure's probable behavior in the *future*, not only to adjust their behavior to a partner who is present (Izard 1978; Sroufe 1979). In the second and third years, toddlers' pretend play and language about emotions demonstrates that information about everyday events with the caregiver is available to them in schematic form (Bretherton 1984; Bretherton, Fritz, Zahn-Waxler, & Ridgeway 1986). In addition, a number of studies inspired by script theory (Nelson & Gruendel 1981; Nelson & Ross 1982) report that 3-year-olds have a good grasp of the order in which action sequences within routine everyday events occur, especially when event sequences are causally related to each other. Research has also shown that children do not have to experience a large number of exposures to an event in order to construct an event schema (Price & Goodman 1985). With respect to the construction of internal working models, it is especially interesting that when 3-year-olds were asked to produce specific memories of a routine event (such as eating dinner last night), they tended to recall event schemata or scripts, not autobiographical memories of specific episodes. Only extraordinary events were recalled as episodic memories (Nelson & Gruendel 1981).

Studies of event representation in infancy and toddlerhood have focused on children's knowledge of routine events (having dinner, going to a birthday party), not qualitative differences in attachment experience. They may, therefore, seem to have little to offer to attachment theory. However, anecdotal evidence suggests that event schemata enacted by toddlers *do* represent qualitative aspects of relationships. For example, the 2-year-old who reenacts separations and reunions with dolls may be activating his or her working model of actual experience with parents; or the toddler who is upset about mother's repeated absences and who reassures herself solemnly that "mommy always coming home" may have formed an event schema about her mother's behavior, based on many leave-takings and returns. The same can be said of the child who categorizes long and short maternal absences by whether the hairdryer did or did not remain behind, although the degree to which mention of the hairdryer replaces direct mention of mother's absence may indicate the onset of defensive processing.

Such anecdotal information suggests play and language could be useful vehicles for accessing even a toddler's internal working models of self and

other in the attachment relationship, though we must be cautious. As Bowlby (1980), Stern (1985), and Sullivan (1953) point out, language has a rather curious relationship to internal working models. A verbal child can be given verbal guidance on how to construe specific interpersonal events and thus acquire internal working models vicariously. This secondhand information may clarify the child's nonverbal experience, but it may also be at odds with it. In other words, language may serve to communicate or miscommunicate, to create concordances or discordances within internal working models. The adaptive function of language with respect to attachment, namely, to better align intentions and goals in an attachment partnership (Greenberg & Marvin 1979), can become subverted. We must, therefore, validate our inferences about children's and adult's internal working models of attachment derived from play and conversation against observational assessments of the actual attachment relationship.

Empirical Studies of Internal Working Models of Attachment and Their Correlates

The theories of event representation briefly reviewed in the last section, suggest that internal working models of self and attachment figure could be studied through representational activities from late infancy onward. Until quite recently, however, empirical work specifically concerned with internal working models has been limited to 6-year-olds and adults. Since this work bears importantly on our own study of 3-year-olds (to be reported in a later section of this chapter), it will be reviewed here in some detail.

The findings summarized in this section constitute pioneering attempts to examine qualitative differences in working models of the self and caregiver, and to relate them to qualitative differences in the attachment relationship assessed behaviorally in the Strange Situation or other separation-reunion procedures. Our review will concentrate on three major studies and on some attempts at replication.

Berkeley Longitudinal Study. The most extensive study of attachment from the representational perspective was undertaken by Main and her colleagues (for an overview, see Main, Kaplan, & Cassidy 1985). The study began in infancy, with Strange Situation procedures at 12 and 18 months, but many of the participating families were seen again when the children were 6 years of age. During the 6-year phase of this longitudinal study, the following representational measures of attachment were obtained from a subsample of forty families that included approximately equal proportions of subjects classified as secure, avoidant, and disorganized in infancy (see Main and Solomon, this vol., for an account of the disorganized or *D* classification): (a) child responses to a picture set involving separation scenes, (b) child responses to a family photo, (c) child drawings of the family, (d) parent-child conversations

upon reunion after a one-hour separation, and (e) the parents' mental representation of attachment relationships obtained during a one-hour interview. This interview was given to a larger sample of parents, including some whose children who were classified as insecure-ambivalent. The following results were obtained:

(a) Those 6-year-olds classified as secure with mother in infancy gave coherent, elaborated, and open responses to a series of separation pictures adapted from the Klagsbrun-Bowlby (1976) version of the Hansburg (1972) Separation Anxiety Test. Secure subjects also sometimes volunteered information regarding their own separation experiences. By contrast, subjects earlier judged as insecure-avoidant with mother described the children in the more severe separation pictures as sad, but claimed they did not know what the pictured child could have done in response to separation. Subjects classified as disorganized/disoriented were either completely silent or gave irrational or bizarre responses (Kaplan 1984).

(b) 6-year-olds judged secure with mother at 12 months responded to a family photograph presented during separation from the parents by looking at it, smiling at it, and commenting on it. Subjects judged insecure-avoidant with mother in infancy turned away from the photograph, dropped it, or handed it to the examiner. Subjects who were insecure-disorganized with mother at 12 months showed depressed affect or became disorganized in response to the photograph (Main 1985).

(c) In response to a request to draw a picture of their family, 6-year-olds classified as secure with mother in infancy depicted family members as close but not overly so. Figures were well individuated, and not all of them were smiling. Arms tended to be held out in an embracing position. By contrast, drawings by subjects earlier classified as avoidant with their mother had an aura of falseness, with all family members bearing similar smiles, and with greater distance among family members. Figures tended to be armless. Drawings by subjects judged to have disorganized/disoriented attachments to mother in infancy showed a mixture of elements observed in the drawings of secure and avoidant children, but were bizarre in a number of ways. Strange marks were added, unfinished objects or figures were present. Parts of the work were sometimes scratched out. In addition, overbright and cheery elements such as hearts and rainbows were added to the setting without being integrated into the overall design (see Kaplan & Main 1985).

(d) Discourse patterns during mother-child reunions at 6 years of age were systematically related to earlier Strange-Situation classifications with the same parent. Dyads classified as secure in infancy were fluent and discussed a wide range of topics. Dyads classified as avoidant in infancy were restricted in discourse, emphasizing impersonal topics (focusing on activities or objects), showed little topic elaboration, and asked questions that were rhetorical or had yes/no answers. Dyads classified as disorganized/disoriented in infancy were

dysfluent, with much stumbling and false starts. The focus of the conversation was on relationship topics (not activities or objects), with the child steering the conversation (Strage & Main 1985).

(e) Infant-parent attachment patterns were strongly related to parental patterns of responding during the Adult Attachment Interview (Main 1985). This interview probed for parental recollections (general and specific) of childhood attachment figures. Main (1985) found that the parents of subjects classified as secure with them in infancy valued both attachment and autonomy, and were at ease when discussing the influence of attachment-related issues upon their own development (whether or not they recalled a secure childhood). Parents of children earlier classified as insecure-avoidant dismissed and devalued attachment, or felt that early attachment experiences had little effect on their own development. They frequently claimed not to remember any incidents from childhood. Specific memories that emerged despite this denial were likely not to support the generalized (usually highly idealized) descriptions of parents. Parents of children earlier classified as insecure-resistant seemed preoccupied with earlier family attachments. They were able to recollect many specific, often conflict-ridden, incidents about childhood attachments but could not integrate them into an overall picture. In sum, both the dismissing and preoccupied groups had difficulty in discussing attachment relationships in a coherent way. Finally, parents of children classified as insecure-disorganized in infancy seemed to be struggling with unresolved issues concerning loss of a parent before maturity (Main & Hesse, this vol.). These results have been replicated in two other samples (Eichberg, 1987; Grossmann, Fremmer-Bombik, Rudolph, & Grossmann, in press).

Charlottesville Study I (6-Year-Olds). The second set of results comes from a study by Cassidy (1988). Fifty-two 6-year-old children were seen twice, one month apart. During each of the two sessions a separation-reunion procedure developed and validated for the Berkeley study was used to assess the quality of child-mother attachment. A puppet interview and story completion task concerning the child's view of self in the attachment relationship were administered to the child in the mother's absence. Data from both sessions were aggregated and considered jointly.

In the puppet interview, subjects judged to be secure on the basis of reunion behavior with mother tended to represent the self in a positive way, but most were also able to acknowledge less than perfect aspects of the self. Insecure-avoidant children tended to depict the self as completely perfect, but without mentioning interpersonal relationships, while insecure-ambivalent subjects showed no clear pattern of responses and insecure-controlling subjects (found to be linked to the disorganized classification in infancy in the Berkeley sample; see Main et al. 1985) tended to make excessively negative statements about themselves.

In the story procedure, children were asked to use a doll family to complete six story beginnings in which self-esteem, familial conflict, and outside threat were enacted in the context of the mother-child attachment relationship. Secure subjects tended to present the doll protagonist as someone worthy, with a warm, supportive relationship to mother. Insecure-avoidant subjects depicted the doll protagonist as isolated or rejected; insecure-ambivalent subjects showed a variety of different responses, and insecure-controlling subjects tended to involve the doll protagonist in violent, hostile, negative, or bizarre behavior enacting a disorganized relationship to mother.

Charlottesville Study II (Young Adults). In a third empirical study of internal working models, Kobak and Sceery (1988) administered the Berkeley Attachment Interview (Main 1985) to fifty-three first-year college students.

When the interview classifications were compared with other assessments, it was found that peers rated secure young adults as significantly higher on social adjustment and positive affect than those classified as preoccupied (ambivalent) or dismissing (avoidant). Young adults classified as secure were also judged by peers to have more ego-resilience (flexibility and coping ability). Insecure young adults were rated as lower on social relatedness, insight, and achievement motivation than their secure peers. When these findings were compared with self-report measures, somewhat different patterns emerged. Surprisingly, the secure and dismissing groups resembled each other in terms of self-esteem, and only the preoccupied group had significantly lower scores than the secure group. These seemingly contradictory results are explained in terms of defensive processes that may have led the dismissing (avoidant) group to deny personal imperfections. It is interesting that, when asked to rate supportiveness by family and friends, the dismissing group differed from the preoccupied and secure groups by reporting much less support.

The findings from these three empirical studies point in the same direction. Secure children, parents, and young adults see attachment figures and the self as primarily good but not perfect. In addition, secure children and adults are able to communicate with ease, tend to be flexible in interpersonal conduct (to have ego-resilience), to express empathy for others, and to discuss attachment relationships coherently without idealizing them. By contrast, avoidant children and adults (those dismissing of attachment) tend to defend themselves against close relatedness by processes that interfere with the construction of adequate working models of relationships. They tend to be non-empathic and somewhat aloof, but at the same time to idealize relationships with parents when speaking of them in general terms. Ambivalent children are less easy to characterize. Their reunion behavior at 6 years of age shows elements of avoidance, sadness, fear, and/or hostility. The corresponding adult pattern is defined by preoccupation with difficult attachment relationships but without an accompanying ability to resolve these difficulties. A fourth path-

way begins with disorganized/disoriented reunion behavior in infancy. In childhood, this pattern seems to be characterized by controlling behavior toward the parent during reunions and with negative and somewhat bizarre responses to representational assessments of the attachment relationship. Moreover, it tends frequently to be associated with unresolved mourning for the loss of an important childhood attachment figure in parents.

The suggested link between the ability to coherently discuss (and presumably think about) attachment relations and secure attachment at the behavioral level is interesting and provocative. We propose that this link exists because a security-providing parent is operating with fairly well integrated internal working models of self and other in attachment relations. This enables such a parent to acknowledge the child's bids for emotional support rather than to consistently disavow and disown them. In this context, the child not only receives affirmation and acknowledgement but is free to elaborate, fine tune, and update working models of self and attachment figure so that they adequately reflect the attachment relationship. Let us illustrate this with an analogy. Patterned visual input is necessary for normal development of the visual processing system to occur (Riesen 1966). Similarly, we suggest, support and confirmation from an attachment figure are needed for stabilizing the child's interpretations of the interpersonal world. The quality of the emotional feedback from the parental figures (Ainsworth, Bell, & Stayton 1974 would say "sensitivity to signals"; Emde & Sorce 1983 would say emotional availability) appears to have far-reaching effects on how the social environment comes to be mentally represented and hence ultimately on parental *behavior* in the next generation (see Bretherton 1987, and 1990, for further elaborations of this point).

AN ATTACHMENT STORY COMPLETION TASK FOR 3-YEAR-OLDS

The empirical findings reviewed in the previous section show that the study of internal working models of attachment in children and adults can shed considerable light on our understanding of attachment relationships. Until now, however, similar studies have not been conducted with children under 6 years of age.

In what follows we will report on a study in which we attempted to access the internal working models of attachment of 3-year-olds through a story-completion task, acted out with small family figures. The stories were designed to elicit individual differences in the children's enactment of a variety of attachment-related issues. Building on studies reviewed in the previous section, a system for classifying story completions as indicative of secure or insecure attachment was then developed and compared to a variety of other concurrent and prior assessments. These included attachment, family functioning, temperament, and cognitive development.

Method

Subjects. The children and parents in this study had already participated in a longitudinal study of hypothesized links between mastery motivation and the mother-child relationship at 18 and 25 months (Maslin, Bretherton, & Morgan 1986). Their families were originally identified through newspaper birth announcements. A few days after sending a letter explaining the study, the families were called on the telephone to invite their participation. Eighty percent of parents thus contacted were recruited to the study. Altogether, thirty-six families took part in the first two phases of the study. Of these, twenty-nine families were able to take part in the thirty-seven month phase (the remainder had either moved away and in two cases were unable to participate for personal reasons).

Some attachment-related information was available from earlier phases of the project: Strange Situation classifications at 18 months and attachment *Q*-sorts (Waters & Deane 1985) performed by the mother at 25 months. In addition, the mother had filled out the Spanier Dyadic Adjustment Scale at 18 and 25 months (Spanier 1976), the Family Adaptability and Cohesion Evaluation Scale (FACES II) at 25 months (Olson, Bell, & Portner 1983), and the Colorado Child Temperament Inventory at 18 months (Rowe & Plomin 1977). The mother had also completed a vocabulary checklist at 25 months (Bretherton, McNew, Snyder, & Bates 1983). A Bayley Test of Infant Development was administered at 18 and 25 months.

Procedure

The thirty-seven-month phase of this study included a laboratory and a home visit. During the laboratory visit we administered the attachment story completion task which is the focus of this chapter. In addition, we included a mother-child separation and reunion procedure as well as a mother-child affect communication task devised by Ridgeway (1987). During the home visit we administered the Waters and Deane Attachment *Q*-sort to the mother.

Attachment Story Procedure (Laboratory Visit). This procedure took place in a carpeted playroom furnished with a table, small chairs, and a beanbag seat. The entire session was videotaped.

After an initial brief encounter with the tester, mother and child spent about ten minutes engaged in free play with toys. The tester then returned, joining mother and child in additional free play. When the child seemed comfortable (after five-ten minutes), the mother was asked to sit in a corner of the room to fill out a questionnaire while the experimenter cleared away the toys and arranged the small table and chairs for the child and herself.

The administration of the story task began with a warm-up story about a birthday party to ensure that the child understood the procedure. Five attach-

ment-related story beginnings were then narrated and acted out for the children by the tester, using small family figures and props. A mother, father, and two child figures were used for the first three stories, a grandmother was added for the last two stories (three additional stories were concerned with other issues and are not discussed here). The two child figures—one older, one younger—were always of the same sex as the subject (for further details see the Appendix).

The story beginnings introduced the following themes:

1. *Spilled juice*. While the family is seated at the dinner table, the younger child accidentally spills juice on the floor, and the mother exclaims about it (issue: an attachment figure in authority relation to the child).

2. *Hurt knee*. While the family is taking a walk in the park, the younger child climbs a rock, falls off, hurts a knee, and cries (issue: pain as an elicitor of attachment and protective behavior).

3. *Monster in the bedroom*. After the child is sent upstairs to go to bed, the child cries out about a monster in the bedroom (issue: fear as an elicitor of attachment and protective behavior).

4. *Departure*. The parents leave for an overnight trip, with grandmother remaining behind to look after the two children (issue: separation anxiety and coping ability).

5. *Reunion*. Grandmother looks out of the window the next morning and tells the children the parents are coming back (issue: welcoming vs. avoidant, resistant, or disorganized reunion behavior).

After presenting each of these stories according to a standard protocol, the experimenter asked the subject to "show me and tell me what happens next." In addition, three types of prompts were used. The first type focused on the story issue and was used only if the subject failed to do so ("What did they do about the juice, hurt knee, monster, when mommy and daddy were gone, after mommy and daddy came back?"). Second, clarifying prompts were used if the subject talked about unspecified agents ("Who put on the Band-Aid?") or moved the figures without describing their action ("What is she doing?"); a third kind of prompt was designed to elicit more elaboration ("Anything else?"), unless the child indicated by speech or action that the story was finished. These prompts were worded so as not to suggest specific responses to the child. Instructions for the story completion task (Bretherton & Ridgeway) can be found in the Appendix.

Separation-Reunion (Laboratory Visit). This procedure was also videotaped. Upon completion of the story task, the tester asked the mother to go to the room next door in order to discuss her completed questionnaire with the research assistant. The mother had previously been told that she could say what-

ever she wished prior to her departure.

Experimenter and child remained in the observation room, with all family figures and props left out on the table for free play. The experimenter busied herself with paperwork and only interacted with the child if requested to do so. At the end of three minutes, the experimenter said, "I'm going to get your mommy now," leaving the child alone in the room for an additional three minutes. The mother then returned, and mother and child were free to talk or play with the family figures for three minutes.

After the separation-reunion procedure, mother and child participated in an affect communication task. Results from this part of the session will be reported elsewhere (Ridgeway 1987).

Data Analysis

Detailed verbal and behavioral transcriptions were made of the videotaped story completions. Verbatim records were made of the subject's verbal narratives and the tester's prompts. In addition we described as precisely as possible (sometimes with the aid of diagrams) how the family figures were moved and placed in relation to each other, especially noting emotional components of the subjects' enactments (e.g., aggressive, angry, gentle placement of the figures; sad or happy facial expression, tone of voice, or posture). Emotional responses during the story enactment (smiling, pouting, frowning) were also recorded. Three research assistants worked on each transcript. The first recorded only verbal utterances, the second transcribed behavior (including emotion) and checked/queried the accuracy of the verbal record, while the third checked the accuracy of the behavioral record, indicating disagreements and filling in omissions. Where there were disagreements, the judgements of the last coder were accepted. Only for one transcript out of the twenty-nine were the disagreements such as to affect classification of the child as secure or insecure.

The transcripts were subsequently analyzed in two ways. First, a content analysis was undertaken to examine the children's ability to understand the story issues and to create a story resolution. Second, each child's protocol was examined as a whole in order to classify the children's story presentations as reflective of secure or insecure attachment patterns. These classifications were based on structure *and* content of the stories. We looked for fluent presentation and coherent, benign story resolutions indicative of a secure attachment relationship. Note that the classifications took into account the child's total performance (language and enactment with figures) and were not primarily based on verbal fluency. One factor which facilitated the interpretation of enactments was the subject's willingness to respond to queries ("What are they doing?") when the nature of the behavior was unclear. A satisfactory response could be a one-word reply such as "Hug."

Criteria for Security. The classification system was developed by the first author and applied to the written protocols without knowledge of the 18-month Strange-Situation classifications (except in two cases). Separate criteria for security were established for each story. In the "spilled juice" story, responses were classified as secure if the juice was cleaned up, and parental discipline or anger (if mentioned) were not violent or extreme. In the "hurt knee" story, responses were classified as secure if one of the parents or the older sibling responded to the hurt child's pain by hugging or administering a Band-Aid. A positive ending to the story (children or parents climb the rock and jump off without falling) was classified as secure only if the story protagonist's initial pain was also acknowledged. In the "monster" story responses were categorized as secure if the parents dealt with the child's fear of the monster or the child approached the parents for comfort, allowing the child eventually to go to sleep. In the "departure" story, responses were regarded as secure if the children displayed coping behavior in response to the parents' absence (looking for the parents, playing with grandma, going to sleep). Finally, in the "reunion" story, responses were judged secure if the family figures faced each other, sometimes hugged each other, engaged in reunion conversations, and/or undertook a joint family activity. Furthermore, to be scored as secure, responses had to be given without more than one prompt for the story issue.

Criteria for Insecurity. On the basis of prior findings, especially those of Cassidy (1988) and Kaplan (1984), two types of criteria for scoring insecure responses were used: (1) avoidance of the story issue, and (2) incoherent or odd responses. Story responses were coded as avoidant if the subject responded only after several "don't know"s and prompts, or gave no response other than "I don't know" or "I want another story." Some subjects avoided the story issue despite responding (e.g., one subject reenacted the hurt knee story beginning but then merely labeled all the figures instead of completing the story). We regarded this as indicative of avoidant insecurity, because we attributed such behavior to defensiveness with respect to attachment issues. Where a subject requested another story after giving a minimal though appropriate response, this was coded as a very mild form of avoidance only if it occurred repeatedly across several stories.

Odd and disorganized responses (e.g., violently throwing the child figure on the floor; a car wreck after father rejoined mother and children who left on a second trip; giving answers that did not make sense within the story, such as "I bumped my head" when asked "What did they do about the monster?") were regarded as indicative of a different type of insecurity.

Subjects who resolved the story issues fluently (without many prompts) and appropriately (i.e., in line with the criteria described above) were classi-

fied as very secure if this occurred for all five stories (akin to the *B3* classification in the Strange Situation). If the children showed slight avoidant or odd responses on one or two stories they were classified as fairly secure (akin to the *B1* and *B2* classifications in the Strange Situation). Subjects who displayed strong defensive responses ("don't know," or responded but with complete avoidance of the issue) over three or more stories were classified as avoidant-insecure even if they also showed some disorganized responses, while subjects with odd or disorganized responses over three or more stories were classified as insecure-disorganized even if they also displayed some avoidant responses. That is, classification was determined by the predominant type of response. In difficult-to-classify cases (mild avoidance on one or two of the first two stories, strong avoidance on the departure and reunion stories), responses to the departure and reunion stories were especially heavily weighted. Cassidy's (1988) story completion data for 6-year-olds did not suggest any consistent pattern for ambivalent children, and none was detected in this study. With further use of the procedure, we expect that considerable refinements in the method of analysis will be worked out and that an ambivalent category of responding will be identified.

Separation-Reunion Procedure. Videotapes of the children's behaviors during the separation/reunion procedure were classified by Cassidy without any prior information about the children, including their Strange-Situation attachment classifications at 18 months and the story classifications at 37 months. The 3-year reunion classifications were based on a coding scheme developed by Cassidy, Marvin, and the MacArthur Attachment Group (1987) for separation/reunion situations with children of this age range.

Children were classified as secure in the 37-month separation-reunion procedure if their behavior suggested a warm and intimate relationship with the mother, and if they showed positive interest in the mother's presence, either verbally (conversing freely and smoothly with the mother, asking the mother to join in play) or physically (orienting toward the mother, approaching the mother, or remaining close to her). Children were classified as insecure-avoidant if their behavior conveyed distance and coolness in the relationship. Insecure-avoidant children responded minimally to the mother when spoken to and did not initiate or expand conversation. They also moved or turned away from the mother. Children classified as insecure-ambivalent showed dependent, resistant, and/or immature behavior. The latter consisted of wriggling or whining. Finally, children classified as insecure-controlling tended to take charge of the interaction with the mother, either in a hostile-punitive or in a caregiving fashion. Such responses had previously been noted by Main and Cassidy (1989) in the reunions of 6-year-olds who had been classified as disorganized in infancy.

RESULTS

The findings are presented in two parts. Without evidence that 37-month-old children were able to respond meaningfully to the attachment story completion task, individual differences would be meaningless. We therefore first describe normative responses to the story beginnings. The second section is devoted to individual differences in the story task as related to other assessments of attachment quality, to measures of family and child social functioning, and to cognitive variables.

NORMATIVE FINDINGS

The content analysis performed on the transcripts of the story completion task showed that, as a group, the children understood the major issue presented in each story and that they were able to enact appropriate and differentiated story resolutions.

The Spilled Juice Story

Detailed responses are listed in table 1. The most common response was for the subject to have one of the family members (most often the mother) clean up the mess. In some cases the cup was put back on the table, and the child received more juice. Punitive parental behavior was enacted only by a minority of children, and in very few cases was this behavior violent (vehement hitting of the figures against each other or throwing them on the floor). A number of subjects reenacted the juice-spilling episode with the younger child; others made mother, father or the older child also spill juice. A few subjects seemed uncomfortable with the situation and reenacted or renarrated the story without coming up with a solution.

The Hurt Knee Story

As may be seen in table 2, a large majority of the subjects enacted sympathetic responses of some sort (putting on a Band-Aid, being picked up, going to the doctor, hugging or holding). Mother and father were about equally involved in these caregiving episodes. Many subjects replayed the story with a positive ending, using the target child or other family members (the person climbing the rock did not fall but jumped off). A few subjects made one of the figures give admonitions about being careful. On the other hand, some subjects avoided the issue of pain altogether, either by making the child get up without commenting on the pain, by denying the pain, or by reenacting the story beginning without acknowledging the pain. Four subjects gave nonempathic responses (e.g., the parents abandoned the child in the park or spanked

TABLE 1. RESPONSES TO THE SPILLED JUICE STORY

Dealing with the mess:		22
Wiping or cleaning juice off floor		20
Mother	11	
Father	2	
Younger child	5	
Subject	1	
Unspecified	3	
Picking up the cup		5
Mother	1	
Father	1	
Older child	2	
Younger child	1	
Subject	1	
Discipline:		12
Get no more juice		1
Reproach		5
Mother	3	
Father	4	
Children cry at reproach	1	
Mother is angry		3
Child or children sent to room		5
Mother	3	
Father	2	
Child or children are spanked		4
Mother	3	
Father	1	
Get more juice:		5
Mother	2	
Child	1	
Unspecified	2	
Reenactments:		9
With spilling		8
Mother	2	
Father	1	
Older child	1	
Younger child	3	
Without spilling (younger child)		1
No resolution attempted		3

NOTE: Totals in the subordinate categories may add up to more than the total in the superordinate category because subjects could show more than one response.

the child). A number of subjects also smiled at the story protagonist's pain when the tester enacted the story beginning.

The Monster Story

Findings are displayed in table 3. The most common response was for the parents (father somewhat more often than mother) to get rid of the monster by a variety of means (shooting, throwing in the water, etc.). In a few cases one of the children coped with the monster without the parents' aid. Only in one case did the parents come to the child's bedroom to say that they did not see

TABLE 2. RESPONSES TO THE HURT KNEE STORY

Empathetic responses:		21
Someone helps hurt child with Band-Aid	11	
Mother	4	
Father	5	
Subject	1	
Unspecified	1	
Hurt child is taken to hospital or doctor (in one case whole family who all hurt themselves)	3	
Hurt child is taken home, to bed	2	
Hurt child or other hurt person is picked up, hugged, kissed	9	
By mother	6	
By father	3	
Concerns about carefulness:		6
Parents issue warnings to be careful	4	
Subject claims family will not do it again, will walk on grass	1	
Subject reprimands mother for rock climbing	1	
Nonempathic responses		4
Parents leave child in park (then return)	1	
Parent spanks child	1	
Subject smiles at hurt	2	
Ignoring of hurt:		7
Child gets up after initial hurt and fall, gets better by self	7	
Reenactments:		14
Subject reenacts fall and hurt	9	
With mother	1	
With father	2	
With mother and father	1	
With older child	3	
With younger child	1	
With older and younger child	1	
Subject reenacts rock climbing without fall	9	
With father	1	
With mother and father	3	
With older child	4	
With younger child	2	
With older and younger child	2	
No resolution attempted at all		5

NOTE: Totals in the subordinate categories may add up to more than the total in the superordinate category because subjects could show more than one response.

the monster. Many subjects brought this story to a resolution by having the child or children go to bed, and sometimes to sleep, after the monster had been vanquished. Only three subjects enacted no resolution to the monster story.

The Departure Story

In response to the departure story (see table 4), about half the subjects were able to put the parental figures in the car and drive them off without hesi-

TABLE 3. RESPONSES TO THE MONSTER STORY

Disposal of the monster:		27
Parents or child hits, beats, bangs down, gets out, gets rid of, steps on, fights, or kills monster		23
Mother	7	
Father	11	
Older child	1	
Younger child	2	
Subject	2	
Unspecified	1	
States explicitly that monster is "out of action"		12
Monster is gone	9	
Monster is all dead	3	
Parents tell children they don't see any monster (in one case after chasing it)		2
Children leave room to go to parent		2
Parents then lock room		1
Father then saves family		2
Activities after disposal of monster:		13
Asserts that family can stay in room now		1
Child or children go to sleep		11
Older child	7	
Younger child	1	
Both children	3	
Parents go to sleep too		2
Mother tells father she got rid of monster		1
No resolution of monster problem:		3
Initial resolution but monster comes back		1
No resolution		2

NOTE: Totals in the subordinate categories may add up to more than the totals in the superordinate category because subjects could show more than one response.

tation. In a few cases, special leave-taking behavior was also enacted (e.g., parents told grandma to look after the children, family members hugged each other). The other half of the subjects showed mild anxiety about completing the departure story. Some found it difficult to drive the car away after having placed the parents in it, others took the parents out of the car again without making them leave. Yet others tried to make the children accompany the parents on their trip. Once the car had left (had been put under the table by the tester), a sizable number of subjects commented that the children would look or cry for the parents. Some also anticipated the reunion by either talking about it or by reaching for the car under the table. A few subjects were unable to say what the children would do while the parents were gone.

The Reunion Story

Most of the subjects pulled the car back "home" once the tester brought it back out onto the table, and the majority took the parents out of the car and placed them near the children. At this point some children enacted reunion conversations (e.g., making the parents ask the children, "Did you have a

TABLE 4. RESPONSES TO THE DEPARTURE STORY

Departure:		
Subject puts parents in car, makes them leave without problem		14
Subject reluctant in allowing parents to leave		15
Tries to include children in trip	9	
Takes parents out of car, after initiating departure or puts them in without driving off	9	
Family enacts special leave-taking behavior		3
During separation:		
Subject enacts or talks about child or parental activities (not related to separation anxiety)		22
Children sleep while parents are gone	9	
Children stay with grandma	6	
Children play	3	
Children walk	2	
Children have got to clean house	1	
Parents have dinner in park	1	
Subject enacts or talks about separation anxiety or reunion		17
Children search, call or cry for parents	12	
Subject talks about or tries to make parents come back	5	
Subject does not know what children might do in parents' absence		3

NOTE: Totals in the subordinate categories often add up to more than the total in the superordinate category because children could show more than one response.

TABLE 5. RESPONSES TO THE REUNION STORY

During reunion:		
Drives parents home (after experimenter brings car back on table)		17
Takes parents out of car and places near children (or reunion takes place in car)		27
Enacts greetings or welcome		11
Denies parental return		1
Removes grandmother from scene immediately		2
After reunion:		
Reports or acts out family activities		15
Children or family go to sleep	2	
Family goes on joint trip or engages in joint activity (going out to eat, going to church)	8	
Children stay home with mother (father leaves in 2 cases)	4	
Children pack to go home with parents	1	
Reenacts separations		6
Parents leave again (without children)	2	
Grandmother leaves with child or children	3	
Child leaves alone	1	
Don't know what happens after reunion		2

good time?"). In many cases the figures were placed facing each other, and sometimes affection was also enacted. Other children enacted avoidant reunions (the figures were placed so that they did not face each other; the parents came back, but as they did so the children left), or disorganized reunions (e.g., parents returned and the children promptly left with mother; father rejoined them, and there was a car crash).

Not all subjects elaborated the story beyond the immediate reunion scene, but those who did often made the family engage in a joint activity which varied from going to eat pizza, to having a party, going to church, or driving home to eat supper (some children seemed to think that the children were actually staying at the grandmother's house). In a few cases father was made to leave again while mother remained at home with the children (see table 5).

INDIVIDUAL DIFFERENCES

Story-Completion Classifications

On the basis of criteria described earlier, the story completions of ten children were categorized as demonstrating very secure relationships (equivalent of *B3* in the Strange Situation), and nine children were considered as representing fairly secure relationships (equivalent to *B1/B2* in the Strange Situation). Of the remaining ten subjects, four were classified as highly avoidant (equivalent to *A1*), two as fairly avoidant (equivalent to *A2* in the Strange Situation), and four as disorganized (*D*). For all but one of the subjects classified as insecure (*A* or *D*), the avoidant or disorganized behavior was to some degree present in four of the five stories. In addition to using the *ABCD* system, the classification scores were converted into security scores, using a four-point scale previously employed by Maslin et al. (1986), where *B3* = 4; *B1*, *B2*, and *B4* = 3; *A2* and *C1* = 2; and *A1*, *C2*, and *D* = 1.

Concordance of Story Completion and Separation-Reunion Procedure Classifications

The classifications and security scores for the story completion task (performed by Bretherton) were then compared with attachment classifications of the thirty-seven months separation-reunion procedure (independently scored by Cassidy). The concordance of secure versus insecure classifications for both procedures was significant at the $p = <.01$ level, using the Kappa statistic (twenty-one concordant, seven nonconcordant, with one separation-reunion missing because of technical problems). However, the classification of the type of insecurity was not consistent across procedures. Whereas children classified as *A*, *C*, or *D* by Cassidy in the separation-reunion procedure tended also to be categorized as insecure in the story completions, the type of secu-

TABLE 6. CORRELATIONS OF ATTACHMENT: STORY COMPLETION SECURITY RATINGS WITH OTHER VARIABLES

<i>Variables</i>	<i>Pearson Product- Moment Correlations</i>
37-month separation-reunion procedure	.49***
18-month Strange Situation	.33**
25-month attachment <i>Q</i> -sort (mother)	.61****
37-month attachment <i>Q</i> -sort (mother)	.26**
18-month marital satisfaction (mother) (Spanier 1976) ^a	.39**
25-month marital satisfaction (mother) (Spanier 1976) ^a	.44***
25-month family cohesion (mother) (FACES II) ^b	.53***
25-month family adaptability (mother) (FACES II) ^b	.57****
18-month sociability (mother) (CCTI) ^c	.38**
18-month shyness (mother) (CCTI) ^c	-.35**
18-month Bayley MDI	.38**
25-month Bayley MDI	.49***
25-month vocabulary checklist (mother report)	.60****

^aSpanier Dyadic Adjustment Scale filled out by mother

^bFamily Adaptability and Cohesion Evaluation Scale II, filled out by mother

^cColorado Child Temperament Inventory filled out by mother

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

urity was not predictable across procedures (children were not systematically classified into the same insecure category in both). Not surprisingly, the correlation between story security scores and thirty-seven-month separation-reunions was also highly significant (see table 6).

Correlations of Story-Completions with Other Attachment Measures

In addition, we were interested in ascertaining whether there were relationships between the story security scores and other measures of attachment security, family climate, temperament, and cognitive development (see table 6), most of them collected during earlier phases of the study. The story security scores were significantly related to the 18-month Strange-Situation classifications, converted into security scores as described above ($B3 = 4$; $B1, B2, B4 = 3$; $A2, C1 = 2$; $A1, C2, D = 1$), but the correlations were not as strong as the association between story scores and concurrent separation-reunion security. The story security scores were also highly correlated with the attachment *Q*-sort performed by mother at 25 months, but only marginally with the security scores from the concurrent attachment *Q*-sort at 37 months. Moreover, the longitudinal consistency of the 25- and 37-month attachment *Q*-sort security scores—though significant—was not especially high [$r(29) = .39$, $p < .05$] even though the mother performed both sorts.

*Correlations of Story-Completion Scores
with Assessments of
Family Functioning and Temperament*

Several nonattachment variables of family and child social functioning were also meaningfully related to the attachment story security scores (see table 6). Paper-and-pencil assessments of marital satisfaction (Spanier 1976), filled out by the mother during the 18- and 25-month phase of the study showed highly significant correlations with the story security scores. This was also the case for family adaptability and cohesion assessed at the 25-month visit through the Family Adaptation and Cohesiveness Scales (FACES II, Olson et al. 1983). In addition, there were significant correlations with the sociability and shyness scales of the Colorado Child Temperament Inventory (Rowe & Plomin 1977) filled out by the mother at the 18-month visit, with sociability relating positively and shyness relating negatively to the story scores.

*Correlations with Cognitive
and Language Development*

Finally, the attachment story security scores were related to the child's level of cognitive and language development during earlier phases of the study. The Bayley MDI at 18 and 25 months, and productive vocabulary assessed through a checklist filled out by the mother (Bretherton, McNew, Snyder, & Bates 1983) were significantly related to the story security scores, despite the fact that story classifications were based on enactments as well as verbal description.

CONCLUDING REMARKS

On the basis of our findings with 37-month-olds, we can claim that, given a structured framework (attachment related story beginnings), props, and non-leading prompts, most children in the early preschool period can produce resolutions to attachment related stories in which their parents are depicted as protective, empathetic, and remarkably nonpunitive and in which separation anxiety and reunion pleasure are activated. This is an interesting finding in terms of 3-year-olds' social-cognitive understanding of parent and child roles, and suggests that story-completion procedures with family figures and props have much to contribute in this area. But what can we say about the significance of individual differences?

Cross-classification of the children as secure or insecure in the story procedure and the concurrent separation-reunion procedure showed statistically significant concordance, but the results of the present study only partially parallel findings obtained by Cassidy (1988) and Kaplan (1984). Remember that

both authors were able to predict *subcategories* of insecurity (*A, C, D*) across observational and representational procedures whereas our study did not. We hope that further refinements in the story classification system and replications of the present study will shed light on this issue. In the meantime, however, we have shown that coherent and emotionally open responding to attachment story beginnings *were* successful in predicting 3-year-olds' security versus insecurity in a separation-reunion procedure at the same age.

With respect to cross-age comparisons among the various attachment measures, the expected correlations of attachment story ratings with 18-month Strange-Situation classifications, though significant, were not as strong as findings obtained by Main (1985) had led us to anticipate. She had found very high correlations between Strange-Situation classifications at 1 year of age and several representational measures of attachment at 6. One possible explanation for these divergent findings is that the quality of the mother-child relationship may have changed between 18 and 37 months. The fact that the attachment *Q*-sort security scores were much more highly related to the 37-month story completion scores than the Strange-Situation scores would support this contention. That the 37-month attachment *Q*-sorts, also performed by the mother, were only marginally related to the story completion scores unfortunately undermines this interpretation. It is also noteworthy that security scores from attachment *Q*-sorts at 25 months and at 37 months were not highly stable.

We draw two conclusions from this group of findings: first, that some real change may have occurred in the attachment security of some children during the period from 18 to 37 months; and, second, that the several attachment measures cannot be taken as equivalents of one another although they seem to share some commonality. A further factor, but one only affecting correlations of the story scores with the observational attachment measures, was that the story assessment procedure included father and mother as attachment figure. Main et al. (1985) found that, for 6-year-olds, representational measures of attachment using both father and mother were related only to earlier Strange-Situation classifications with the mother. Whether a better fit between attachment story classifications and the separation-reunion procedure at 3 years of age could be obtained by using only one attachment figure (father or mother) cannot be clarified without further study.

We do find it interesting that maternal reports of marital satisfaction and of family cohesion and adaptability were correlated with the story-based security ratings, supporting earlier studies reporting correlations between family climate and secure attachment (e.g., Belsky & Isabella, 1988; Goldberg & Easterbrooks 1984; for a review see Belsky, Rovine, & Fish, 1990). Such correlations make sense, since the mother's perception of marital and family functioning can plausibly be seen as a factor in her ability to provide a secure

base for her child. The correlations of the story-related security scores with the temperament measures are also intriguing, but cannot in and of themselves help to resolve the lively debate between attachment and temperament researchers (see Sroufe 1985 for an overview), because we do not have temperament assessments from earlier periods of the child's life. At 18 months, maternal reports of child temperament are often difficult to distinguish from maternal report of the child-parent relationship (Stevenson-Hinde 1985).

Finally, the correlations between story attachment scores and earlier assessments of the Bayley MDI as well as productive vocabulary may be interpreted in several ways. According to theory (Bowlby [1969] 1982), secure attachment should foster the ability to explore and therefore to learn. In support of this hypothesis, several researchers have reported correlations between secure attachment and cognitive tests (e.g., Ainsworth & Bell 1974; Main 1973), while others have found correlations between secure attachment and language production at 3 years of age (e.g. Beeghly & Cicchetti 1987). The fact that, in this study, the children's Strange Situation scores at 18 months were related to the 18-month Bayley MDI, but not to the 25-month MDI or to word production at 25 months, also corroborates the first hypothesis, but only partially. On the other hand, we cannot rule out the possibility that attachment story classifications were inadvertently influenced by impressions about the children's cognitive and verbal level (in other words that the relationship is spurious), even though every attempt was made to assess appropriate and open responses to the issues presented by the stories irrespective of story complexity.

In conclusion, while this study has answered some important questions regarding the validity of using representational measures of attachment with 3-year-olds, it has also raised several new ones. To resolve these new questions, it will be necessary to do more than apply a refined version of the attachment story procedure and separation-reunion classification to new samples. Although we have been able to show that there is significant statistical association between an observational and a representational assessment of attachment at 37 months, we have not yet established that the 37-month attachment story completions or the 37-month separation-reunion procedure are reflective of the actual attachment relationship as it is played out in the home. It is only when we have validated our laboratory assessments against fairly lengthy observations of parent-child attachment relationships in their natural setting, as Ainsworth and her colleagues did for the Strange-Situation classifications (Ainsworth, Blehar, Waters, & Wall 1978), that we will be on firmer ground in using the attachment story-completion classifications as alternative measures of attachment. Our findings suggest to us that this will be a fruitful goal to pursue.

APPENDIX:

STORY COMPLETION TASKS TO ASSESS
 YOUNG CHILDREN'S INTERNAL WORKING MODELS OF CHILD AND
 PARENTS IN THE ATTACHMENT RELATIONSHIP

Inge Bretherton and Doreen Ridgeway

This assessment consists of five story beginnings that are to be acted out with small family figures and other simple props. Each story is designed to elicit responses regarding a particular attachment issue. The idea for these stories came from a prior study, designed in collaboration with Marjorie Beeghly, in which we assessed children's understanding of emotions and roles. The issues addressed in the story beginnings are (1) the attachment figure in an authority role (the spilled juice story), (2) pain as an elicitor of attachment and protective behavior (the hurt knee story), (3) fear as an elicitor of attachment and protective behavior (the monster in the bedroom story), (4) separation anxiety and coping (the departure story), and (5) responses to parental return (the reunion story).

ATTACHMENT STORY COMPLETION PROTOCOL

Materials

Family Figures. Two "realistic, bendable" (catalog description) doll families each comprising a father, mother, girl, and boy. The two families can be combined so as to yield a father (F), mother (M), grandmother (GM), and two children (2 Cs), a smaller and larger boy, or smaller and larger girl. To create the grandmother, the hair of one of the mother dolls is painted grayish-white. The dolls can be obtained from several national school supply firms. To prevent the dolls from falling over, they are mounted on plastic stands (those used for Barbie dolls are suitable if you can obtain them).

Other Props. A small wooden box to represent a table; a birthday cake (about the size of a piece of tinkertoy; a set of very small dishes and silverware in suitcase or box; a table cloth (optional); a piece of green felt to represent grass (9×9 inches); a piece of gray or beige artificial sponge, cut to look like a rock; a bed and small felt blanket; a wooden box (4×6 inches) painted like a car.

Administration

The task is administered at a child's table, with the child and tester sitting opposite one another. Bring out the props as needed, naming each one (except for the dolls that are identified at the beginning). After each story, ask the subject to put the figures over to one side, saying, "Can you get them ready for the next story?" To lead into the next story, the tester may say something like, "Now I have an idea for a different story," or "Are you ready for something different now?"

The stories contained in this protocol are part of a larger set developed in collaboration with Helen Buchsbaum and Robert Emde. The remaining stories can be obtained from them. The monster in the bedroom story was developed by Helen Buchsbaum; the remainder were developed by Inge Bretherton and Doreen Ridgeway.

Before beginning presentation of the stories that are part of the assessment, it is a good idea for the tester (T) to present a warm-up story to get the subject to feel comfortable with handling the figures. We have chosen a birthday-party story for this purpose. It is not important to stick precisely to the script for the warm-up story, but it is important to follow standard procedure for the stories that form part of the assessment: "spilled juice," "hurt knee," "monster in the bedroom," "departure," "reunion." The latter is true whether the stories are used as written or whether they are somewhat altered. For example, they could be administered with one parent only, or with a babysitter instead of the grandmother. One change that we are considering for further studies is to present the five stories as events of one day in the family's life (a suggestion we owe to Ned Mueller).

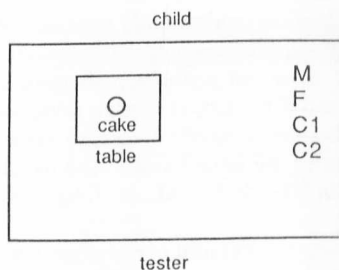
STORIES

Introduction of Figures

- T: "Look who we have here." (Bring out family.) "Here's our family. Look. This is the grandma, this is the daddy, this is the mommy, and these are the girls, Jane and Susan (and these are the boys, Bob and George)." (Show them to the subject as you name them.)
- T: "Who've we got?" (Point to family figures.) "You know what? I've got an idea. Let's pretend to make up some stories about them. Tell you what, how about if I start a story about our family and you finish it."

Warm-up: Birthday Story. (M, F, GM, 2Cs, table dishes, cake.)

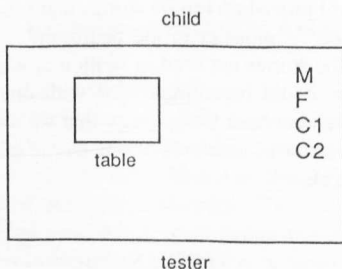
Put out the figures like this:



- T: "Here's their table and what's this?" (Show cake to subject and wait for subject to name it.). . . "What kind of cake?" . . . "Yes, it's a birthday cake. You listen carefully to the story. The mommy has baked this beautiful birthday cake and she calls out":
- M: "Come on grandma, come on Dad, come on boys (girls), let's have a birthday party."
- T: "Show me what happens now." (Inviting tone of voice; let the subject play with the figures or tell a story yourself if the subject does not.)

Spilled Juice Story. (2Cs, M, F, table, dishes.)

- T: "O.K., I think I have an idea for a new story." (Put away the grandmother and set out the figures as below, away from the table.)



- T: (Shake the box with the silverware.) "Can you help me set the table for dinner." (Give box to subject, wait till subject has set the table, help if necessary.)
- T: "Now put the family around the dinner table so they're ready to eat" (Wait till subject has placed the figures.)
- T resumes: "Here is our family eating dinner and Bob (Jane) gets up and reaches and spills his juice" (Make child figure knock cup off toy table so cup is visible to subject.)
- M: "Bob (Jane) you spilled your juice!" (Reproachful tone of voice, but don't overdo; turn M toward Bob or Jane, and move her up and down while she is talking.)
- T: "Show me what happens now."

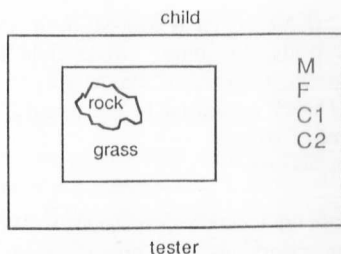
Prompting Procedure

T prompt (if subject does not spontaneously mention: "What do they do about the spilled juice?") T prompt if subject gives only one response: "Anything else?" "What else?" or "Then what?" If subject performs ambiguous actions with figures, ask "What are they doing?" and if the subject uses an ambiguous pronoun when talking about the figures, ask "Who was doing it?" T can also repeat the subject's statement in question form, to verify what the subject said ("The mommy wiped the juice? And then what?"). If the subject asks for the GM, say "She's not in the story, we'll get her out again later."

Note that these prompts are designed not to suggest precise ideas to the subject. The only exception is the prompt that focuses the subject's attention on the issue (spilled juice) if it has not been addressed.

Hurt Knee Story. (2 Cs, M, F, felt for grass, sponge for rock.)

- T: "O.K. I have an idea for another story. You put our family there and get them ready for the next one while I put these away." (T points to the side of the table; see below. It is important that the rest of the family be about 30 cm away from the rock the story child will climb.)



"O.K. Look what I've got." (Set out piece of green felt and sponge rock.) "This is the park. Do you sometimes go to the park with your mom and dad?" "Here is our family and they're out walking in the park, and at this park there is this high, high rock."

C: "Look, mommy and daddy. Watch me climb this high, high rock." (Make child figure climb rock, then fall off.) "Boo-hoo (or ouch), I've hurt my knee (crying voice)."

T: "Show me what happens now."

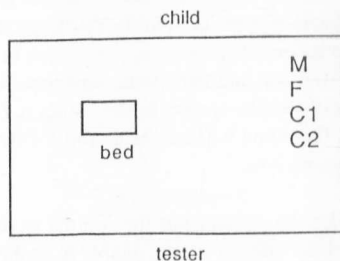
T prompt (if subject does not spontaneously mention): "What do they do about the hurt knee?" For other prompts, see "spilled juice" story, i.e., ask what the figures are doing if it's not accompanied by speech, ask the subjects to show you what they say the figures are doing, and prompt for elaboration by saying things like "Anything else?" "And then what?" etc.

If the subject seems to have finished, or becomes repetitive, say:

T: "All done? Shall we try another? Let's put these away."

Monster in the Bedroom Story. (2 Cs, M, F, bed with felt blanket.)

T: "Can you get the family ready for the next one?" (Set out the props as below, if subject does not do it. Again, it is important to have the rest of the family at least 30 cm from the bed in the "bedroom.")



T: "Look what happens now. Listen carefully."

M: (Face M toward story child and move her slightly as she speaks.) "It's bedtime. Go up to your room and go to bed."

F: "Go up to bed now." (Same action as with M, deep voice.)

C: "O.K., mommy and daddy, I'm going." (Make child figure walk to bed.)

T comment: "Bob goes upstairs to his room, and he goes":

C: "Mommy! Daddy! There's a monster in my room! There's a monster in my room!" (Alarmed tone of voice.)

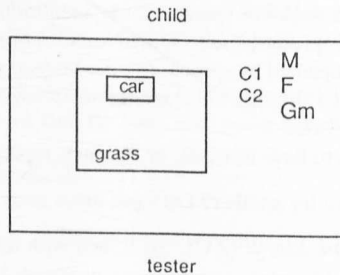
T: "Show me what happens now."

T prompt if subject does not mention spontaneously, "What do they do about the monster in the room?" If necessary, use other prompts given in "spilled juice" story, i.e., ask for clarification of ambiguous action, ask subjects to show you actions they simply described, and for elaboration by saying "Now what?" "Anything else?" etc. If the subject stops playing, or becomes overly repetitive, move on by saying:

T: "Are you ready for the next one?"

Departure Story. (2Cs, M, F, GM, felt grass, box as car.)

T: "Let's use the grandmother this time." (Set out family and grandmother at side of table, with green felt and car as below; it is important to have the car in front of the subject, and the two parents facing the grandmother and two children.)



T: "Here we have their front lawn, and here we have their car, this is the family car." (Make mom and dad face the children and grandma, with car in front of subject.)

T: "You know what it looks like to me, (subject's name). It looks like the mommy and the daddy are going on a trip."

M: "O.K. boys (girls). Your dad and I are going on a trip. We are leaving on our trip now." (Move M slightly as she speaks to the children.)

F: "See you tomorrow. Grandma will stay with you." (Move F slightly like M.)

T: "Show me what happens now."

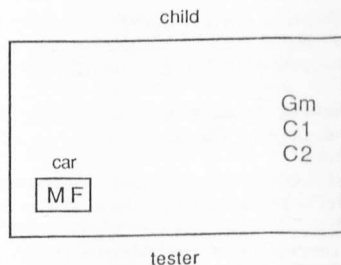
Important: T should let the subject put the figures in the car and make the car drive off. Only intervene if the subject seems unable to make the car drive off. If the subject puts the children in the car say, "No, only the mom and dad are going." After the subject (or if necessary, the tester) makes the car drive off, T puts the car under the table, out of sight. If the subject wants to retrieve the car, T replies, "No, they're not coming back yet."

T: "And away they go." (As the car is moved under the table.)

T prompt if subject does not spontaneously mention, "What do the children do while the mom and dad are gone?" and use other prompts to clarify actions, or actors, and to ask subject to act out what is being described.

Reunion Story. (Same Props as departure story.)

Bring the car with the two parents back out from under the table and set it on table at a distance from the family (i.e., keep it near T, so the subject has to reach for it and can make it drive "home"). If the subject has put the child and grandmother figures in the middle of the table during the previous story, put them back close to the subject to create distance between the returning car and the child figures).



- T: "O.K. And you know what? It's the next day and the grandma looks out of the window (make grandma look toward car, move her as she speaks) and she goes":
- GM: "Look boys (girls), here come your mommy and daddy. They're home from their trip."
- T: "Show me what happens now." (Let subject drive car toward "home," intervene only if the subject does not do so.)

Prompt if subject does not spontaneously take the figures out of the car. "What do we do now that the mom and dad are home?" Also use other prompts given in "spilled juice" story where appropriate.

If the subject asks for other props, like a bed, etc., bring it out. However, do not bring out the grandmother during the earlier stories. Just say, "She'll come back later" or "We'll use her in another story later." It is very important to adhere to the spatial arrangements suggested in each story, especially the distance between parent and child figures in the hurt knee, monster, and reunion stories.

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