

Learning to Love: Milestones and Mechanisms

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The central questions in any developmental analysis are "What develops?", "What is the course of development?", and "What are the mechanisms of change?" Highlighting seemingly purposeful and context sensitive secure base behavior that organizes attachment relationships, Bowlby (1958) defined attachment as an emotional bond that ties the child to one or a few figures across time and space. He described its development in terms of emerging preference for one or a few figures, the onset of secure base behavior, and a change in the representation of attachment figures during the childhood transition from sensorimotor to representational thought.

Here we re-examine Bowlby's developmental outline with an eye toward providing finer detail, incorporating traditional mechanisms of learning into attachment theory, and placing greater emphasis on the parent's contribution to the organization of attachment behavior throughout childhood. We also emphasize the role of self awareness, self-observation, and self-consistency in attachment development and in ties between attachment and socialization outcomes. Although most questions regarding attachment and the self are unresolved (e.g. Connell & Wellborn, this volume; Sroufe, in press), the processes of self-observation and "informal inference" implicated here in developing attachment relationships are also central to cognitive theories of the self (e.g. Epstein, 1973, 1980, this volume). This common thread provides important hints about the role of attachment in the development of one's self

theory.

Paradigms and Perspectives

Differences among paradigms in personality research are nowhere more evident than in competing perspectives on the development of attachment relationships. Freud (e.g. 1949) viewed the infant's tie to its mother in terms of drive reduction and emerging mental structures that channel and transform instinctual drives. Social learning theorists (e.g. Maccoby & Masters, 1972) and behaviorists (e.g. Gewirtz, 1972) saw only discrete behaviors, displayed differentially toward the mother, and maintained by her attention and responsiveness. To date, neither of these views has produced powerful assessment tools or sustained productive research programs.

John Bowlby's (1958, 1960, 1969) ethological/control systems theory of attachment was founded upon important new insights into what develops. Instead of working to reconcile traditional perspectives, Bowlby offered a new paradigm that comprehended both affective and behavioral facets of attachment. His approach also made sense of previously inexplicable fears in infancy and of attachment behavior's sensitivity to infant state and the state of the environment. The assessment paradigms and research programs that have prospered under the rubric of Bowlby's "ethological theory" attest to the validity of his insights into what develops.

In Bowlby's view, attachment is a tie that binds

individuals together over time and space. A person comes to use another as a secure base from which to explore and as a haven of safety. This "secure base phenomenon" is regulated by a behavior control system that emerges during the first year of life and influences the organization of affect, cognition, and behavior in attachment relationships across the lifespan. According to Bowlby, the attachment control system is analogous to control systems that regulate complex adaptive behavior patterns in other species. Both biological biases in human learning abilities and social experience guide its development. Bowlby's emphasis on the secure base phenomenon has led to powerful attachment measures and sustained bountiful research programs. As we shall see, it also suggests a great deal about the role of close social relationships in the origin and development of the self.

Bowlby summarized the developmental course of attachment behavior and the underlying control system in terms of four stages: (1) indiscriminating social responsiveness, (2) focused responsiveness to one or a few figures, (3) the emergence of secure base behavior, and (4) the transformation of secure base behavior into a goal-corrected partnership with the primary caregiver. This description has organized attachment research for over 20 years. Early research concentrated on infant-mother interaction and the development of focused responsiveness. In the mid-1970's, theory and research concentrated on individual differences in secure base behavior. More recently, attention has turned to attachment beyond the secure base period (e.g. Ricks, 1986; Main & Kaplan, 1989; Parkes & Stevenson-Hinde, 1985).

After two decades of theoretical and descriptive work, we know a great deal about what develops and about the developmental course of early attachment relationships. The long deferred question remains "What are the mechanisms of change?" Indeed, the most pressing issue in contemporary attachment theory is to describe complete causal pathways to explain well-replicated correlations between early care and subsequent patterns of secure base behavior, and between secure base behavior in infancy and subsequent behavior with parents and siblings, social competence, self esteem, and behavior problems.

Correlational data played a critical role in the initial phases of attachment research when we were asking how best to define the construct, checking the broad outlines of attachment theory against em-

pirical data, and trying to translate Bowlby's theory into valid and economical measurement procedures. Are patterns of secure base behavior stable? Are they related to socialization or only to behavior in relationships? Does temperament offer an alternative to the control system interpretation of secure base behavior? This is the essence of construct validation. Although definition and description must precede explanation, they do not replace it. Eventually, we have to explain the correlations that helped us define the parameters of our construct.

From Drives to Control Systems

Freud's Contribution

We need only review Freud's last work, *Abriss der psychoanalyse* (1949; An outline of psychoanalysis), to realize that developmental psychologists are still working from the agenda he set. In this brief work he touches upon personality, the self, gender roles, social competence, emotion, prosocial and antisocial behavior, social cognition, and moral judgment, and upon processes involving reinforcement, punishment, imitation, memory and information processing skills, family interaction, and parenting.

Freud's descriptive insights about human attachment include the following:

1. An individual's attachment to another cannot be equated with the amount of overt behavior toward that person or with the amount or duration of protest that follows separation.
2. Loss of a loved one is always painful and is a major challenge to an individual's adaptive resources.
3. Attachment is never given up voluntarily or completely.
4. Grief and mourning are processes rather than behavior and they serve an adaptive function for the individual who experiences a significant loss.
5. The process of grieving is not concluded when the crying stops.
6. Human infants lead an exceedingly complex cognitive and emotional life.
7. Early attachment relationships are prototypes of later love relationships.

It is important to distinguish Freud's genuine insights about human attachments from the psycho-

dynamic metaphors and models used to express them and knit them together. Although psychodynamic formulations have almost no explanatory role in contemporary theory and research, Freud's descriptive insights remain at the heart of contemporary attachment theory. Having set so much of our current agenda, Freud, like Piaget, will be long remembered for his descriptive insights, even if cognitive and brain sciences eventually replace the motivational theory that tied them together. Genuine descriptive insights remain, even after explanatory devices and methods tied to particular moments in the history of science are replaced by more adequate ones. As in the work of so many grand theorists, there is genius merely in defining what the question should be and in recognizing what the answers might be like.

Bowlby's Contributions

If we were to organize John Bowlby's many contributions to psychiatry, psychoanalysis, and the behavioral sciences into just a few categories, we might include (1) his role in preserving Freud's insights about attachment, (2) his own contributions to attachment theory, (3) the role he has played in translating attachment theory into practice, and (4) the role he, working in tandem with Mary Ainsworth, played in the training and development of scholars who have advanced attachment theory and research during the last 20 years. For our present purposes, Bowlby's role in preserving Freud's insights about attachment and his own contributions to attachment theory are of primary importance.

Beginning in the early 1960's, the mainstream in developmental psychology shifted from grand theory toward methodological rigor and empiricism. Bowlby recognized that a genuine paradigm clash was in progress and that psychoanalytic insights might be discarded wholesale. In a series of early papers (Bowlby 1958, 1960, 1962) he identified key attachment-related insights in psychoanalytic theory, noted that they were not inextricably tied to Freud's mental energy and drive reduction models, and preserved them by providing an alternative motivational model based on ethological and control systems theories of the day. Were it not for Bowlby's timely intercession, the past 20 years might have been spent rediscovering rather than building upon Freud's insights. In addition to preserving important psychoanalytic insights about attachment, Bowlby contributed insights of his own. First, he emphasized that the infant mother relationship is a genuine attachment not merely an infantile precursor. He also emphasized that in-

fants' reactions to separation and loss are more than mere cries. They reflect the same grief and mourning process experienced by adults. The similarity of infant separation responses to phases of adult grief and mourning was subsequently documented in several striking films by Bowlby's colleagues, Joyce and James Robertson.

An ethological control-systems analysis of attachment motivation. Bowlby's goal in developing an ethological/control systems view of attachment was to replace Freud's drive reduction model of motivation with one that was better grounded in contemporary biological theory and research. Many telling criticisms leveled at psychoanalytic theory focussed on Freud's motivational models. Bowlby recognized that only an alternative motivational model could preserve Freud's genuine insights about emotional bonds in infancy and adulthood. Control-systems theory allowed Bowlby to emphasize the seemingly motivated and purposeful organization of infant attachment behavior without attributing to the infant sophisticated cognitive abilities or intentions.

In brief, Bowlby proposed that human infants' behavior toward their primary caregivers is under the control of an attachment behavioral control system. He described this control system as a neurally based feedback system that integrated several functions:

1. *defining a set goal* that the system uses as a criterion for activation of adaptive behaviors. In the case of attachment, Bowlby defined the goal as a degree of proximity or access to the caregiver. This set goal can be modified in the short term in response to contextual factors and, in the long term, in response to experience with a particular caregiver.
2. *collating information* about the infant's previous experience with the caregiver, the infant's state, the caregiver's location and activities, interesting objects and events in the environment, special cues to danger (e.g. looming objects, darkness, novelty.)
3. *comparing information* about the current state of the infant, caregiver, and environment with the criterion defined by the set goal.
4. *activating behavior patterns* that correct deviations from the set goal and maintain the infant within the bounds defined by the set goal. Critical behaviors here include crying, approach, following, clinging, and exploration.

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Descriptively, the control system is said to maintain a balance between attachment behavior (proximity seeking) and exploratory behavior. As with any control system, the key parameter of individual differences is not the quantity of any particular behavioral output but the efficiency and success with which the behavioral system maintains the infant within the parameters defined by the set goal.

Bowlby cited a wide range of examples from ethology to establish that control system models were respectable and powerful concepts in behavioral biology. He also discussed at length evidence that natural selection could account for the presence of such control systems in animal nervous systems.

The following postulates outline the logic of Bowlby's analysis:

1. Humans and their ancestors were under considerable pressure from predators in the environment in which key characteristics of our species evolved.
2. Maintaining a degree of proximity or access to adults reduces the likelihood of depredation.
3. Species specific behavior patterns and learning abilities have genetic substrates whose representation in a population is influenced by the effects of the behavior pattern or learning ability on reproductive success.
4. As a result of the selective advantages conferred by certain behavior patterns and learning abilities, an attachment control system is part of our primate evolutionary endowment.
5. The organization of the attachment behavioral system is encoded in the underlying plan of the human nervous system and becomes readily available when perceptual and motor systems mature, if the infant experiences patterns of care and living circumstances that are not entirely foreign to our species. Bowlby uses the term "average expectable environment."
6. The attachment behavioral system is sensitive to a variety of prepotent environmental and infant state variables that would have been associated with increased risk of depredation in the environment in which key human characteristics evolved ("the environment of evolutionary adaptedness"). These include darkness, separation from adults, and unfamiliar settings or individuals, as well as illness, hunger, or exhaustion. In this respect, many aspects of contemporary infant behavior can only be understood in terms of the environment to which they are adapted.
7. Because the attachment control system requires experience in order to become operational, differences in early experience can lead to different operating characteristics in different individuals. These tend to be stable over time and are important contributors to individual differences in adjustment and personality. They may change in response to experience in significant relationships or experience in psychotherapy.

Bowlby's Developmental Model

Bowlby (1969, ch. 14) described four phases in the development of infant-mother attachment and mentioned mechanisms that might underlie developments within and across phases. The model is summarized in *Figure 1*.

Phase 1. The first phase in Bowlby's model is a brief period of indiscriminating responsiveness. His analysis is much like Piaget's in that he describes innate behavior patterns as the foundations upon which later organized behavior develops and proposes that interaction with the environment is critical. The notion that attachment arises from interaction rather than emerging fully formed is important both in demystifying the processes involved and in accounting for the adaptedness of attachment behavior.

The mechanisms Bowlby mentions include reflex patterns of grasping, crying, sucking, and other neonatal adaptations that clearly serve a variety of non-attachment related functions. The common element they share is in increasing the time the mother spends with the infant. Woodson, Shepherd, and Chamberline (1981; see also, Woodson, 1983) demonstrated a remarkable relationship between infant crying, maternal holding, infant body temperature, and bilirubin metabolism that clearly illustrates the multiple functions of these behaviors as well as the interplay between behavior and physiology that must have played a role in their evolution. Mechanisms that might be more narrowly adapted to serve the development of attachment have received less attention.

In brief, Bowlby views attachment as arising from *interaction*, but not from interaction alone. From the beginning, attachment involves the interplay of *experience* and *species specific biases in learning abilities*. Surprisingly, very little has

The Development of Attachment Bowlby's Four Phase Model	
Phase	Age (months)
1. Non-focussed orienting and signaling	(0 - 3)
2. Focus on one or more figure(s)	(3 - 6)
3. Secure base behavior	(6 - 24)
4. Goal-corrected partnership	(24 - 30+)

Figure 1. The development of attachment: Bowlby's four phase model.

been said about what these biases might be.

Phase 2. The second phase in Bowlby's model describes a period of differential responsiveness and focusing on one or a few figures. Bowlby mentions an in-built bias to orient toward certain classes of stimuli, exposure learning, and an in-built bias to approach that which is familiar as potentially relevant mechanisms underlying this process. Interaction with a parent providing species typical patterns of care is also critical.

On the face of it, it would seem difficult to disentangle biases in infant learning abilities, the structure of parental behavior, and infant cognitive processes play in the tendency to focus on one or a few figures. Bowlby does stipulate, for example, that the emergence of attachment depends on the infant's encountering patterns of care that are co-adapted to the attachment behavioral system. He refers to this as the "*average expectable environment*," the caretaking environment that is taken for granted in the design of the attachment behavioral system. Underlying processes and limits on an infant's ability to establish concurrent focal relationships with more than one figure have not been examined in detail.

Phase 3. The centerpiece in Bowlby's model is, of course, his description of the infant's tendency to maintain proximity to a focal figure through locomotion and signaling, which Ainsworth subsequently designated the *secure base phenomenon*. This brilliant descriptive insight concerning the nature of the child's tie to its parent allowed Bowlby to highlight the apparently purposeful organization of infant attachment behavior without invoking drive concepts and without at-

tributing goals or other cognitive guidance that might simply have replaced one bit of magic with another. Or was it simply one bit of magic replacing another?

This is the only point at which evolutionary theory plays a critical role in Bowlby's theory. The argument is this: Attachment arises from interaction between an infant with certain biases in its learning abilities and an average expectable environment (i.e. responsive mother). The biases in infant learning abilities, taken with the expectable environment, essentially guarantee that the attachment behavioral system will be put together according to the species specific pattern.

Bowlby proposed that these biases evolved by natural selection. This was a perfectly reasonable hypothesis, if it could be supported by evidence that specific biases in learning abilities can indeed evolve. Research on imprinting in precocial birds offered clear and well-studied examples of species specific biases in socially significant learning abilities that can plausibly be attributed to evolution. The point here is not that imprinting is a mechanism involved in human infant attachment. Imprinting is cited merely as an example of socially significant learning that had been shaped by evolution. Any example of socially significant biases in learning abilities would have done as well. In retrospect, it is unfortunate that, in addition to illustrating biases in a species learning abilities, locomotor imprinting also resembles following in human infant attachment. This has led to misinterpretations of Bowlby's argument and to misinterpretations of the role ethology plays in his work.

The reference to evolution at this point in Bowlby's theory serves a very specific role -- that is, to tie the biases in learning abilities that underlie the development of a behavioral control system to a specific mechanism. Citing a well understood mechanism that is neither drive related nor tied to prevailing contingencies of reinforcement sets Bowlby's theory apart from those that preceded it. Beyond this, there is nothing inherently evolutionary, ethological, or biological about Bowlby's view of attachment. While the designation "ethological attachment theory" commemorates the influence of ethological theory and research on Bowlby's early thinking, it also leads to misapprehensions.

Note also that the theory does not depend on identifying predation or any other specific factor as *the* selective pressure that led to the biases in our

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learning abilities. The key is that attachment behavior is expected to enhance an individual's reproductive success and the success of its offspring. Predation is but one factor influencing this. Attachment behavior may also have helped maintain supervision and thus reduce the likelihood of accidents and injuries unrelated to predation. Moreover, its contributions to reproductive success may have changed during the course of primate evolution, ultimately contributing more as a precursor to the capacity for adult bonds and parental care than as an anti-predator strategy in infancy. This has been a source of naive and fruitless speculation that is more likely to discredit attachment theory than to add depth or clarity. There is every reason to be interested in the evolution of attachment behavior, but the issue is not central to Bowlby's analysis of relationships between early attachment and either later personality or later relationships.

As the theory stands today, it seems more appropriate to refer to it as the *control systems*, or even the *affective/cognitive control systems* perspective. If this were more widely appreciated, there might be fewer misapprehensions regarding the "biological" orientation of attachment theory; moreover, attachment theorists might feel more comfortable demurring when asked about the "adaptive significance" of specific attachment patterns.

Bowlby's analysis of the attachment control system clearly offers much more than one bit of magic to replace another. Indeed, if Bowlby finessed anything at all, it is not the role of biases in learning abilities, but rather the relationship between maternal care and the emergence of secure base behavior. Both Bowlby and Ainsworth initially worked toward a normative theory of attachment--that is, the emphasis was on the typical infant rather than on individual differences among infants. The individual differences orientation, which would have been a long term goal in any event, entered the work not as a substantive interest but, rather, as a methodological strategy. Ainsworth was interested in identifying patterns of maternal behavior that explained the emergence of secure base behavior. The obvious strategy would have been to identify maternal behaviors that distinguish between infants who do and do not become attached. The practical problem is that essentially all home-reared infants become attached.

Because attachment arises from interaction, different histories of interaction should account in

part for different outcomes among attached infants. That is, the maternal behaviors that best predict differences in attachment outcomes were viewed as more likely than others to play critical causal roles in the normative development of attachment. In effect, this correlational strategy assumes that information about differences among individuals can support (causal/developmental) inferences about changes within individuals over time. This assumption also underlies many popular designs in causal analysis and structural equation modeling.

In retrospect, we might criticize this strategy on several counts. Evidence that a particular maternal behavior is correlated with attachment outcomes is necessary but not sufficient evidence that it plays a causal role as attachment develops. We must also show that the maternal behavior precedes the attachment behavior and specify a plausible causal mechanism. Research designs that measure maternal behavior early and outcome variables later, assessing neither the outcome variable in the first phase nor the influence of maternal behavior at the final phase of the study, are not decisive on this point. From an evolutionary perspective, we should note that traits critical to survival tend to be relatively uniform within a species and not particularly amenable to analysis in terms of individual differences. Insofar as attachment behavior evolved to reduce depredation, we could argue that its development would be highly canalized and primarily dependant upon maternal behaviors in which there is little diversity. In this light, the correlates of diversity would remain interesting but might not prove critical to the onset of attachment behavior.

More importantly, Ainsworth's longitudinal/correlational strategy reflects what might be called "the developmental bias", that is the tendency to look for the causes of behavior in the relatively remote past rather than in contemporaneous influences. Ainsworth's descriptions of maternal sensitivity, cooperation vs interference are descriptive insights of the first order. Sensitive and responsive care are clearly the most consistent and significant interactive behavior correlates of later attachment outcomes. That the correlations between maternal sensitivity and secure base behavior are rarely greater than .40 is easily accounted for in terms of methodological and measurement issues. What is missing is a detailed explanation of how these particular patterns of maternal behavior would lead to the emergence of secure base behavior. Even a descriptive analysis, something similar to Piaget's descriptions of stage transitions in sensorimotor de-

velopment, would be extremely useful. As it is, there seems to be a bit of magic here. Once recognized, however, the need to identify plausible causal mechanisms relating maternal behavior to secure base behavior is quite manageable.

Phase 4. Bowlby describes the fourth phase in attachment, which begins sometime after the second year, as the phase of "goal corrected partnership." Very little is said about this phase, except that the infant is increasingly able and willing to take the mother's immediate goals and activities into account when the attachment behavioral system is active. In a word, attachment behavior becomes somewhat less peremptory under ordinary circumstances. Bowlby's description of this phase is clearly influenced by Piaget's description of changes at the end of the sensorimotor period of cognitive development. The only descriptive data we have on this stage are Marvin's (1977) dissertation, which shows relationships between attachment security, cooperation/self-control tasks when the mother is too busy to respond, and tolerance of separation.

In principle, this should be a critical part of Bowlby's developmental model: As the last phase in the sequence, it is the one that must interface with "mature" attachment patterns. Developing this interface is one of the critical tasks of attachment theory. Until it is accomplished, the Bowlby/Ainsworth perspective will remain vulnerable to the criticism that it is a theory of infant attachment, a theory of adult attachment, and a great deal in between left to the imagination.

Advantages and Limitations

In the early years, Bowlby's outline of development from interaction to goal-corrected partnership played an important definitional role in attachment theory. It clearly expressed his view that attachment can have biological underpinnings, without springing fully-formed into the infant's behavioral repertoire or operating without environmental input. His view remains that attachment arises from interaction-- biology conditions but does not determine the outcome.

Bowlby's four phase model also serves as a framework within which to present his key descriptive insight - the control system analysis of infant attachment behavior. It also formalizes important insights about changes in attachment at the end of infancy. First, attachment does not decline along with separation protest. Second, the trend

from sensorimotor to representational thought, detailed so eloquently in Piaget's work, has a parallel in the development of attachment and establishes early attachment as similar to, and even a prototype of, later love relationships.

Clearly, the four-phase model has served attachment theory very well. Important insights have been preserved. The view that attachment arises from interaction is well understood and empirical evidence has favored the secure base phenomenon as the better of several competing descriptions of attachment behavior. It should be noted, however, that we have not yet demanded a great deal of the theory. As we move from the descriptive phase of research into a more formal mode of hypothesis testing, weaknesses in the four-phase model become increasingly apparent.

First of all, Bowlby's developmental description abstracts attachment from the context of related behavioral and cognitive developments. This was useful when the attachment construct was less familiar; today we gain more by placing the secure base phenomenon in a broader context. Second, although control systems theorists have mentioned a number of mechanisms relevant to the development of attachment, they have not systematically followed the influence of specific mechanisms across the full course of attachment development. Moreover, they have overlooked some mechanisms, placed too much emphasis on very early influences, and placed relatively little emphasis on concurrent influences and traditional learning mechanisms. Perhaps most importantly, attachment theorists in the Bowlby/Ainsworth tradition have placed little emphasis on the secure base figure's role in organizing and providing coherence and consistency to early secure base behavior. The observational/ethological underpinnings of the outline have not been updated since Ainsworth's early home studies in Baltimore. It is our impression that the current description underestimates how long it takes for secure base behavior to become consolidated and efficient and suggests that its onset is more discrete than it really is.

While highlighting that onset of secure base is not the final stage in attachment development, the goal-corrected partnership concept doesn't capture later development of attachment very well. Among other things, it seems easier to describe how the child's interests and goals diverge from the parents' than to identify common goals that are attachment-related and could serve as the basis for

such a partnership. Thus, Triver's (1972, 1974, 1985) analyses of competing parent and child interests and the biology of parent-offspring conflict seem to provide a more powerful evolutionary perspective on developmental changes after infancy. Problems inherent in the goal-corrected partnership concept may, in part, account for the fact that it receives less attention in the second and third volumes of Bowlby's attachment series and has not been the starting point for recent advances in attachment theory and assessment. Main & Kaplan (1989), for example, develop their theory of adult working models from the secure base concept rather than the goal-corrected partnership.

Fortunately, the genuine insights at the core of attachment theory can be preserved in the context of alternative developmental descriptions. The undertaking here is clearly evolutionary rather than revolutionary, but it is directly relevant to the theme of this year's Minnesota Symposium. As we will see, an alternative view of developmental changes in attachment brings with it the prospect of closer coordination with self-related constructs.

It is in the nature of developmental research that the question "What develops?" recurs at different levels of analysis. At each turn, the course of development is described in more detail and questions about mechanisms of change come into sharper focus. Thus, research inspired by Bowlby's four-stage model has brought us to the threshold of new, finer-grained descriptions, better understanding of ties between attachment and developmental change in other domains, and a more comprehensive view of mechanisms underlying developmental changes in attachment behavior.

We propose recasting Bowlby's four stage-model in terms of the following developmental phases: (1) early dyadic interaction, (2) emergence of the self-other distinction, (3) onset of secure base behavior in infancy, (4) consolidation of secure base behavior in early childhood, (5) emergence of a positive orientation toward parental socialization goals and internalization of family values in early childhood, and (6) a period in which a partnership of sorts develops around the task of maintaining communication and supervision once the child begins to be independent. The last of these phases reconceptualizes Bowlby's notion of the goal-corrected partnership, which in this analysis is placed in middle childhood and tied to socialization practices in specific cultures and social

strata.

This description is more detailed than Bowlby's. It casts a broader descriptive net and emphasizes that attachment related development continues throughout childhood and beyond. It also suggests that secure base behavior (and thus any underlying control system) takes much longer to become organized and is much more dependent on supportive parental behavior than Bowlby suggested. Although these departures from Bowlby's original outline complicate the picture somewhat, they pave the way toward incorporating traditional learning mechanisms into attachment theory. This is a critical integration, one that psychoanalytic theory never achieved. Our pre-sentation also highlights the role of cognitive/reflective processes in developmental change. Particular note is paid to processes of self-observation and to a process we term "informal inference." As a step toward understanding relationships between attachment and the self, we also consider the extent to which early attachment relationships provide important information during the formative stages of what Epstein (1973) has called one's theory of one's self.

A Revised Developmental Analysis

Phase 1: From interaction to familiarity and preference. The initial phase in our revised developmental analysis corresponds to the first phase in Bowlby's analysis. In the course of interaction and routine care, the infant acquires at least sensorimotor familiarity with one or a few primary caregivers. The first sensorimotor anticipations can be described as "islands of predictability" organized around interaction and caregiving routines. In the first weeks, these "islands of predictability" are too closely tied to behavior to be described as "expectations," But they are the foundations upon which the infant builds expectations and expands its temporal horizons. From predictability grows preference.

One of Bowlby's most important insights was placing the origins of attachment this early in infancy, long before secure base behavior emerges. Correlations between early care and later secure base behavior (e.g. Ainsworth, Blehar, Waters, & Wall, 1978) provide evidence for this insight. Nonetheless, they do not allow us to choose between alternative causal models. Attachment theorists have often interpreted these correlations as evidence that early care has a direct causal influence on later behavior. Such influences are not

unimaginable: Direct effects of early experience on later behavior are well documented in ethological literature. In many instances, the critical environmental input is available only for a brief time and the effects may not be evident until maturation.

Although compelling, in several respects ethological data do not parallel early maternal care and secure base behavior in human infants. First, although the examples Bowlby cited are often complex, the behaviors are typically more stereotyped than secure base behavior in human infants. In addition, human infants interact with primary caregivers almost continuously throughout infancy and early childhood. Consequently, the correlational data are equally consistent with the hypothesis that early interaction predicts later interaction, and only the later having direct effects on secure base behavior. To decide this matter, we must first specify *in detail* what develops and then test hypotheses about proposed mechanisms of change. *Figure 2* presents the first three phases of our revised developmental outline. Mechanisms are presented on the left and products on the right.

Mechanisms relevant to the development of familiarity, predictability, and preference in early infancy might include traditional mechanisms of learning, the type of contiguity learning often mentioned by Robert Cairns (e.g. 1972), less well known mechanisms that underlie species identification and preferences in mammals and birds (e.g. Roy, 1980), and perhaps species-specific biases in the infant's learning abilities. The last of these is central to Bowlby's theory as currently formulated. Among these biases, affective response to contingency seems to be a biologically prepared response in human infants. However, it is not necessarily adapted specifically to the development of attachment relationships. Other biases in our learning abilities, such as the fact that affective contrast does not interfere with bonding at this age, may have evolved specifically to accommodate attachment formation. Unfortunately, the range of learning biases in play during attachment formation has never been catalogued or even examined in detail.

Far from being the general purpose learning machines envisioned in traditional learning theories, humans are peculiar learners indeed. Consider how easily we learn about sounds at the beginnings and ends of words, that we remember both the beginning and the end of a word list better than the middle, that we learn better if practice is spaced rather than concentrated in time, that we

learn musical patterns so easily and have strong and memorable affective responses to them. Consider too how readily we learn to enjoy throwing things in the air. These and a host of other biases in our learning abilities are so distinctive that in the aggregate they distinguish our species from any other as well as any suite of physical or physiological traits.

With strong assertions about our learning abilities at the core of Bowlby's attachment theory, it is somewhat of a mystery that the task of uncovering and cataloguing attachment-related biases in human infant learning abilities has received so little attention. Here, for Bowlby's admirers and critics alike, is the prospect of a strong and dangerous test that goes to the foundations of the theory. What could be plainer than predicting that human infants are endowed with an array of learning biases that map so completely and so redundantly into the predictable caregiving environment as to guarantee the emergence of preference and eventually attachment in virtually every case?

Phase 2: Mother as the intersection of sensorimotor schemes. The second phase in our proposed analysis begins with the coordination of sensorimotor schemes. In *The Origins of Intelligence*, Piaget described how an infant comes to recognize particular objects as occasions for practicing particular action patterns. As these action patterns become increasingly inter-coordinated, objects become more discriminable and eventually become identified as objects distinct from the actions the infant can perform on them.

An attentive adult is, of course, the opportunity *par excellence* for sensorimotor expression, and none is encountered more often, at closer range, and in more modes than the primary caregiver. According to Piaget, objects are recognized first as suckables, lookables, and graspables, and then as suckable-lookables, lookable-graspables, etc. How much more vivid then must be the infant's view of a caregiver who is at once nutritively and non-nutritively suckable, graspable, lookable, listenable, and all of this in every combination? Suppose the caregiver is good at identifying infant signals, selecting responses, and delivering them in a timely manner (i.e., she is, in Ainsworth's terms, "sensitive"). Suppose further that she coordinates her behavior with the infant's ongoing behavior in a way that supports sensorimotor coordinations and establishes bridging ties from one moment's activities to the next (i.e., again in Ainsworth's terms,

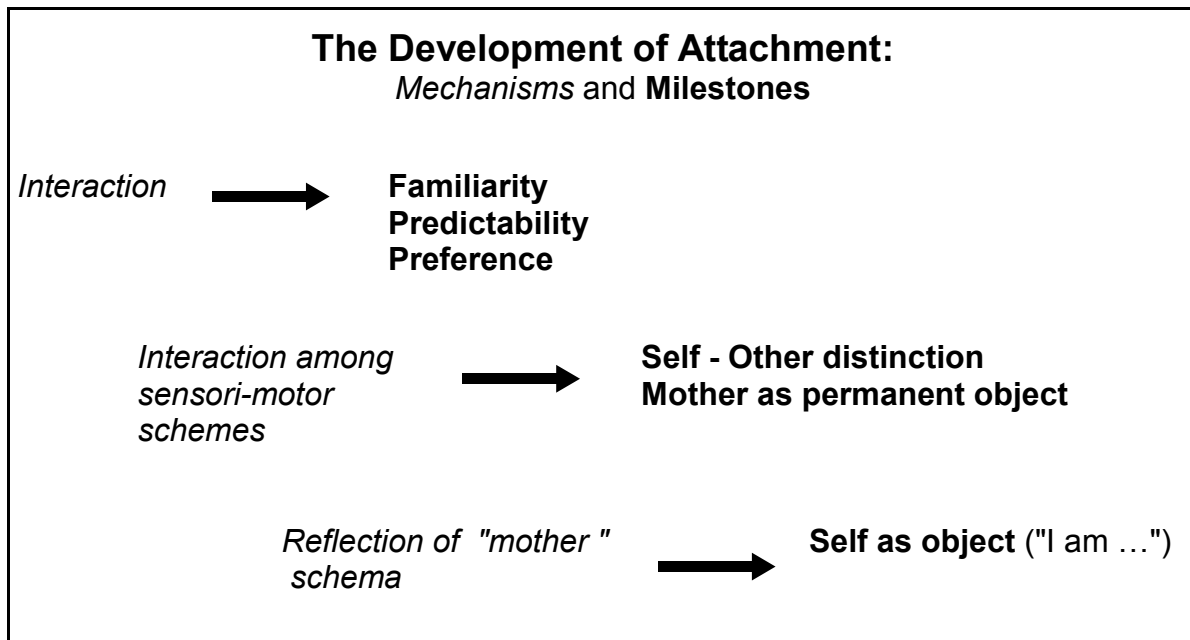


Figure 2. Precursors of attachment: Mechanisms and milestones in early infancy.

she is "cooperative" rather than interfering). In all likelihood, such a partner will be more uniquely defined than inanimate objects and sooner recognized as existing independent of the infant's behavior (e.g. Bell, 1970; Kaye, 1982; Winnicott, 1965). Here, in the context of early interaction, previously acquired familiarity, and preference, is the first true external object.

Perhaps there is nothing specific to attachment in all this. Our point is not that we should mark the onset of attachment here at 3-5 months-of-age. We should not; nonetheless, there are compelling reasons to present developing attachment relationships and emergence of the self-other distinction in a common developmental outline. First, each of the learning biases mentioned in the previous section is in full play here. Second, the infant has to recognize the caregiver as an object existing in its own right before the concept of attachment can make any sense at all. Third, and more importantly, we can see here the first example of a process that is influential throughout infancy and early childhood. The *caregiver* modifies the environment in order to serve as a *matrix* upon which the organization of the infant's behavior can play out. She does this both incidentally, as a consequence of entailing so many behavioral possibilities for the infant, and intentionally, by arranging objects and

her own behavior in coordination with or anticipation of the infant's ongoing behavior. The caregiver provides much of the organization that is eventually consolidated in the infant's sensorimotor schemata and in the first conceptual categories. This is the sense in which Winnicott (1965) observed that "there is no such thing as an infant."

Note especially that, from the infant's point of view, the experience is the same as if he had arranged it all himself -- that is, attributing a major organizing role to the caregiver does not diminish the significance of ongoing interactions to the child. This is not to concede that the development of attachment is trivially under stimulus control, as proposed by traditional learning theorists. As we see shortly, the primary caregiver provides important elements of structure throughout the development of the first attachment relationship; indeed, she probably structures the infant's secure base behavior to a far greater degree and for a much longer time than attachment theory currently envisions.

Phase 3: Reflection of the mother scheme: Self as object. As outlined earlier, the mother is the *aliment* (input) to an entire suite of sensori-affective schemata. As these schemata become well practiced and intercoordinated, she becomes better and better defined, until she is recognized as

an object in her own right. This is a significant step beyond the ability to recognize and discriminate that developed in Phase 2. Of course, to the sensorimotor infant there are no differences among objects upon which the same acts can be performed. The mother, however, is virtually unique in the range and complexity of intersections between her caretaking and play behavior and the infant's schemata.

Thus, just as the primary caregiver is defined as the intersection of the things she does toward the infant, there comes a moment in which the infant recognizes itself as the intersection of the schemes she directs at him -- that is, "*She* is the common element in a vast array of sensori-affective contexts and experiences." Then by a process of "informal inference," for the first time, "*I* am the common element that ties her behavior together across these contexts and behaviors." Through a process perhaps akin to perceptual learning, the infant notices *itself* in the reflection of the experiences that define its mother as an independent object. In subsequent months, this *I* is mapped into a physical self-representation and eventually becomes evident in mirror self-recognition tests. Piaget might have described this as a process of cognitive reorganization. Such explanations leavened his theory with an element of magic-- about which it was just a trifle rude to ask. In contrast, we propose that the tendency to *observe one's own behavior* is a biological given, easily verified by empirical research. Thus, reference to informal inference has considerably more explanatory potential than Piaget's appeals to cognitive reorganization.

If such mechanisms are critical to developing attachment relationships, why are they left to cognitive/perceptual psychologists? Why haven't they attracted attention as key issues for attachment research? They are obviously relevant to the task of cataloguing species-specific learning abilities that support developing attachment relationships. A variety of factors seem to have contributed to this. It is at least partly an unintended consequence of elegant simplifications employed when Bowlby introduced his theory. Foremost among these devices is the four phase model outlined above. The model clarifies a new paradigm by abstracting milestones in attachment behavior from the complex developmental context in which they are embedded.

Attention to mechanisms was also delayed by

desire to complete basic descriptive research before analyzing processes and mechanisms of change in detail. The proper relationship between description and explanation is, of course, a matter of strategy, one that sharply divides research programs into construct- vs operationist-oriented approaches. One limitation of traditional learning approaches has been the tendency to define attachment in certain terms in order that could be explained by a standard litany of mechanisms. In contrast, Bowlby and his construct-oriented colleagues view attachment as a biological phenomenon that had to be discovered and described on its own terms before we can know what needs to be explained.

Phase 4: Initiation of secure base behavior. As indicated in Bowlby's model and confirmed in research employing the Ainsworth Strange Situation, secure base behavior is evident in most infants by 12-months. In the proposed analysis, however, the boundaries of the secure base phase are considerably wider than in the traditional model and the emergence and consolidation of secure base behavior are placed in separate phases.

Informal observations suggest that the rudiments of secure base behavior emerge within a few days or weeks of the first free crawling. It seems likely, therefore, that important cognitive substrates of secure base behavior are *available* and in some preliminary way even *organized*, before the onset of locomotion. These substrates might include, among other things, knowledge of the spatial layout of the home, expectations about mother's typical behavior and her responsiveness to infant signals, and at least some ideas about using her as a resource when interacting with interesting toys and objects.

Granting this, a problem remains. In a word, the notion that attachment arises from interaction doesn't explain exactly *how* sensitive care early in infancy could affect secure base behavior six months to a year later. Pressed to account for the relationship between maternal sensitivity and the behavioral details of secure base behavior, attachment theorists traditionally cite biases in the infant's learning abilities. Given certain biases in the infant's learning abilities, sensitive early care is said to initiate or catalyze the process by which components of the attachment control system fall into place. This is an interesting hypothesis with implications for behavioral development in general, and in view of the ethological literature it is

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not altogether implausible. It will not become compelling, however, until we have detailed research on biases in infant learning abilities and an empirically based catalogue of control system components.

The search for mechanisms that can have direct effects from early infancy into later infancy and toddlerhood should not be left to specialists in learning theory or to comparative psychologists. It should be placed at the top of the attachment agenda. We should not, however, construe this search as a critical test of Bowlby's attachment theory. Correlations between early care and later behavior are clearly replicable, as are relationships between attachment status in infancy and later adaptive behavior in many domains. The critical issues is to explain them. In this context, it matters not whether early care affects later behavior directly or merely predicts later care, which then proves to be the proximal cause. Although theorists in the Bowlby/Ainsworth tradition (e.g. Sroufe, Egeland, & Kreutzer, in press) have favored the former, any explanation combining biases in infant learning abilities, structure provided by the primary caregiver, and traditional learning mechanisms could be equally consistent with Bowlby's control systems model. The significance of these mechanisms is highlighted in *Figure 3*, which continues our revised model through Bowlby's secure base stage.

Just as play and caregiving interactions can help organize sensorimotor schemes and provide information relevant to secure base behavior prior to the onset of locomotion, care and interaction with a sensitive caregiver continue to *provide* and *organize* information related to secure base behavior throughout infancy. In a sense then, early secure base behavior is closely tied to dyadic spatial patterns seen in early care. The infant knows the general outline of the "secure base strategy (or game)" before the onset of locomotion. Distance, accessibility, and caregiver responsiveness provide information that modifies affective state. Interaction, proximity, and contact can reestablish hedonic equilibrium. The infant learns that the key to the puzzle is to use the mother.

It matters little whether the distance between infant and caregiver is managed by coordinating infant communication with maternal locomotion or by the infant's own locomotion. This being the case, the rapid onset of secure base behavior is not surprising, nor is it strong evidence of biological

priming; indeed, it requires little explanation at all. As in other domains, new skills are applied to familiar problems as soon as they are learned (i.e., without explicit instruction related to each potential application). When locomotion enters the infant's repertoire, it is promptly applied to the already familiar problem of balancing exploration and hedonic state. Biases in the infant's learning abilities may have to be invoked to explain 1) the speed and complexity of prelocomotor learning, 2) the infant's ability to monitor mother's access and responsiveness consistently, and 3) the selection and coordination of exploratory, proximity seeking, and contact related behaviors. These biases may account for the fact that eliciting and terminating conditions of attachment and exploratory behavior are so similar across cultures. The important task for attachment theorists is to detail these biases rather than merely alluding to them.

Although extensive prelocomotor experience with organized patterns of maternal care may facilitate the onset of secure base behavior, some of our recent work suggests that *explicit instruction* plays a critical role in perfecting it -- that is, secure base behavior is not merely learned, it is taught. Once we expect this, it is easy to confirm both in humans and non-human primates. *Figure 4* shows a mother macaque teaching her infant to return to her. Our home observations of human infants suggests that similar behavior is common in our species as well. This should be recognized in attachment theory, and the learning mechanisms involved should be examined in detail.

Maternal influences on the organization of infant secure base behavior are not limited to explicit instruction and prompting. In a recent study of 24 female Japanese macaques and their infants at the South Texas Primate Observatory, Waters & Kondo-Ikemura (submitted for publication) examined the maternal behavior correlates of individual differences in infants' ability to use the mother as a secure base. Our goal was to determine whether there are strong links between infant attachment behavior and concurrent maternal behavior in free-ranging animals and to identify the domains in which these are most evident. To assess infant attachment security, we developed a 90-item Q-set similar to the Attachment Q-set used in our research on human infants. A Q-sort definition of the hypothetical infant macaque "most able to use its mother as a secure base" was used to assign

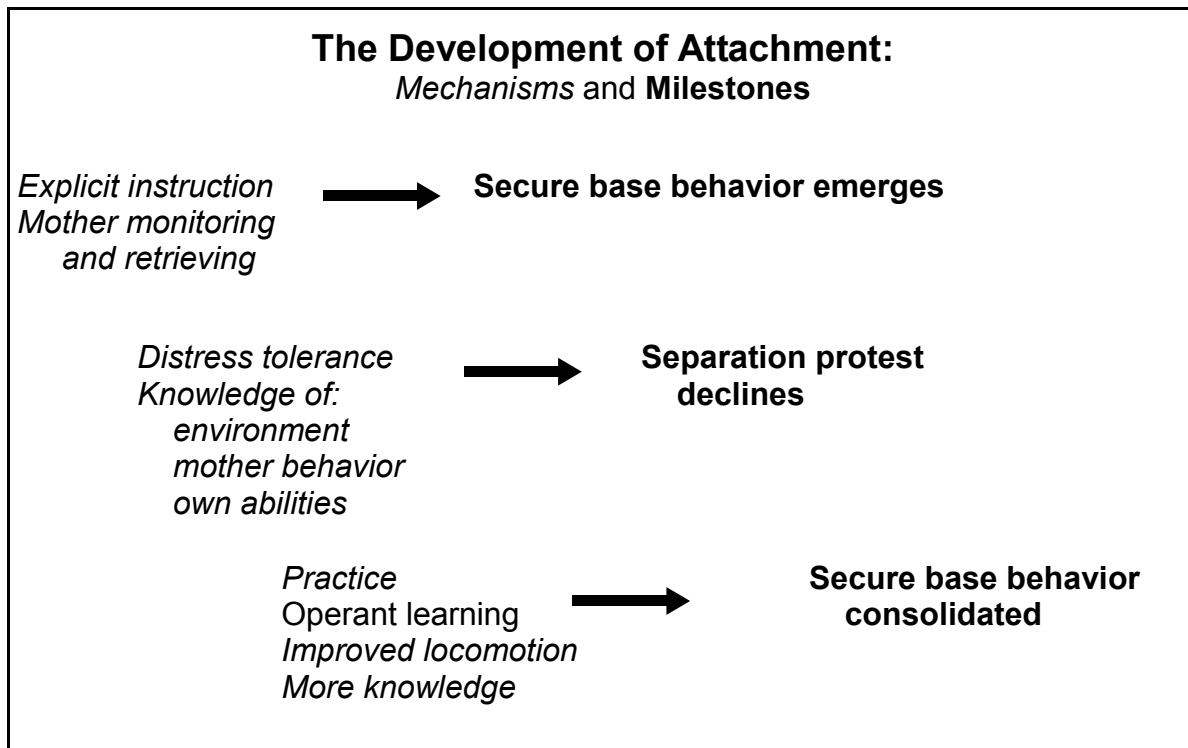


Figure 3. Attachment and secure base behavior: Mechanisms and milestones in infancy and early childhood.

each infant a score on attachment security. Each infant was observed for approximately two hours and then described by sorting the Q-sort items in terms of how characteristic they were of the infant in question. Items that described the infant well received higher scores (maximum = 9). Items that were less characteristic or the opposite of the infant in question were assigned lower scores (minimum = 1). The correlation between the array of scores describing the infant and the array of scores describing the hypothetical most secure infant served as the infant's score on attachment security.

Maternal behavior was observed using a 90-item maternal behavior Q-set that focused on social interaction with other adults, caregiving, protection, interaction, supervision, communication, and other behaviors that mapped onto the items in the infant secure base Q-set. Two-hour observations of maternal behavior were obtained on a schedule insuring that maternal and infant Q-sorts were not obtained during the same time interval for any dyad.

As summarized in *Table 1*, there are indeed

very strong correlations between infant security and concurrent maternal behavior in support of secure base behavior. Interestingly, the strongest concurrent correlates of infant secure base behavior are related to the quality of maternal supervision.

Infants who were most able to use their mothers as a secure base had mothers who supervised them closely and consistently, were persistent in caregiving, and were willing and powerful enough to defend them if they came into conflict with juveniles or other adults. Face-to-face interaction is not a primary mode of infant-mother interaction in this species, and there was little evidence that this or other behavior analogous to "sensitivity" in humans was related to the infants' secure base behavior. Indeed, by standards applied to human mothers, even the mothers of the more secure infants could be remarkably insensitive and intrusive.

The salience of supervision and consistency in these data is attributable in part to the fact that these infant macaques were constantly at risk of serious injury from other macaques; nonetheless, the data clearly illustrate the fact that an infant's

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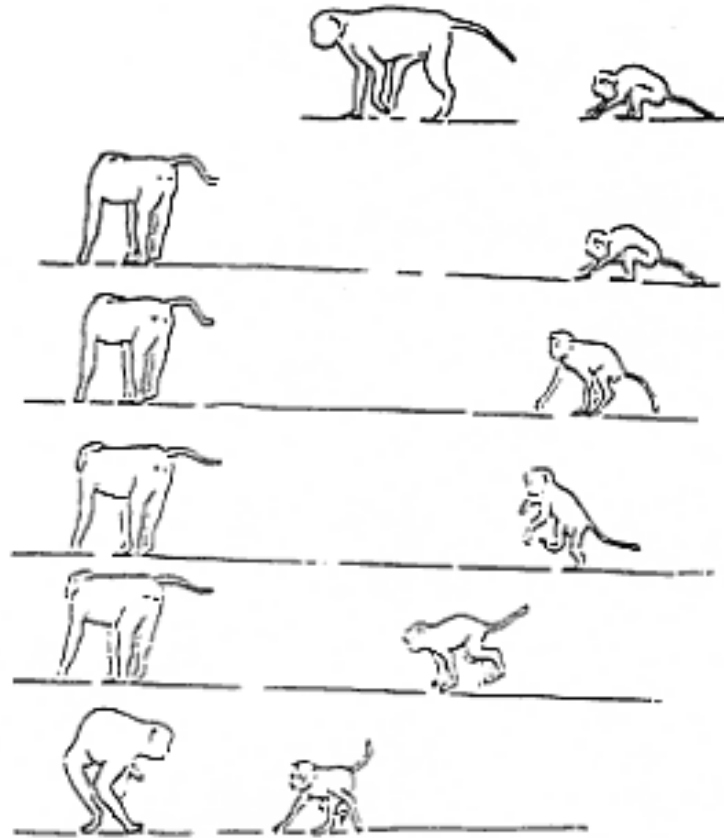


Figure 4. The leaving game. Mother leaves, then pauses and calls or makes partial return. Infant goes to mother. Mother repeats leaving sequence. Five second sequence drawn from film. From Hinde and Simpson (1975, p. 52).

use of its mother as a secure base depends on her behaving as one. If she is predictable, consistent, powerful, and available, she provides a matrix or template around which the infant can organize exploration and effective attachment behavior. It is unnecessary to attribute all the structure of the secure base phenomenon to the attachment behavior control system; indeed it is most reasonable to imagine that the components of such a behavioral control system depend upon a matrix of maternal behavior in order to become inter-coordinated and begin to act as a system (Waters, 1981). Although mechanisms that might tie early care to later secure base behavior deserve attention in theory and research, mechanisms that relate infant behavior to concurrent maternal behavior deserve special attention, if only because they have been overlooked for so long.

Early competition between attachment theory and learning theory was as much over the descrip-

tion of the basis phenomenon as it was over mechanisms. The control systems model has clearly proved to be the better description. The task now is to explicate the roles of traditional learning mechanisms in the development of secure base behavior. The understandable concern among attachment theorists is that admitting a role for traditional learning mechanisms may reopen old debates with learning theorists. This should not deter us. Although every operational definition of attachment proposed by traditional learning theorists has proven utterly sterile, the *mechanisms* detailed in traditional learning theory may play important roles that learning theorists never anticipated. In a word, learning may yet prove more interesting and useful than Learning Theory.

The notion that mother's behavior plays a significant role in organizing and maintaining attachment behavior has an important implication for longitudinal research. We need to pay more atten-

tion to the possibility that consistency in parental behavior and supervision can explain predictive/correlational results in attachment research. This is why we developed a measure of mother monkey's behavior and why we are developing a parallel one for human mother's behavior.

In brief, the fact that Infant Behavior A predicts Child Behavior B is likely to reflect the fact that parenting is consistent. As discussed earlier, this could be the case for early security and later socialization, where mechanisms that would give direct effects of security on socialization are hard to imagine.

Phase 5: The decline of separation protest. The fifth phase in the proposed model covers the period during which separation protest declines. Most research places this between 12 and 30 months-of-age, though for this presentation the timing is not critical and we are not implying that any phase begins and ends discretely. Several factors contribute to the decline of separation protest.

Specifically, the infant becomes:

1. More able to tolerate distress without becoming disorganized;
2. More able to predict caregiver behavior and to monitor caregiver location and behavior;
3. More able to regulate and re-establish contact on his own (i.e., gains a degree of control that makes situations less novel and thus less threatening);
4. More experienced with various types of environments and can devote less effort and attention to the features of the situation per se and more attention to monitoring and forethought in a wider range of circumstances;
5. More experienced with coping in various environments and thus has a better estimate of his ability to cope under various circumstances (a degree of "self knowledge") and is less likely to initiate retreat to mother early in encounters with novel situations.

Note that the infant's reflecting on past behavior does not have to be explained. As above, self-observation is a fundamental fact of adaptation in humans. Note also that the tendency to observe, represent, and reflect on one's own behavior is central to Epstein's self theory (1972, and this volume).

This phase is included in our outline to con-

solidate the important observation that decline in separation protest does not imply decline in the infant-caregiver attachment. On the contrary, as cognitive development and experience are causing separation protest to decline, the same mechanisms are contributing to the consolidation of secure base behavior, as described in the next phase. Changing perceptions of separation have obvious implications for attachment behavior, but they reflect little about changes in the underlying control system.

Phase 6: Consolidating secure base behavior. In Bowlby's model, secure base behavior emerges by age one-year, begins to decline along with separation protest at around age two, and gives way to what he calls the "goal-corrected part-nership," around the beginning of the third year. This is a point at which our own naturalistic observations begin to diverge somewhat from Bowlby's description. Despite early signs of secure base behavior along with the onset of locomotion and the rather reliable separation related responses that can be elicited in the laboratory, secure base behavior in naturalistic settings does not seem very well organized or very consistent in 12-month-olds. Traditional descriptions underestimate the time it takes to consolidate this complex behavior; moreover, our observations do not point strongly to the emergence of a meaningful goal-corrected partnership at either the end of infancy or during early childhood.

The secure base phenomenon has received surprisingly little attention in naturalistic research on human infants. Ainsworth's (Ainsworth *et al.* 1978) descriptions of secure base behavior in the fourth quarter of the first year in her Baltimore study and Anderson's (1972) observations in public parks stand almost alone and are rarely cited. This is more than a curiosity or an oversight; it reflects several difficulties associated with control system models. Patterns of behavior are inherently more difficult to define and describe than are discrete behaviors. In addition, the performance of a control system cannot be equated with the quantity of behavioral output. For proper assessment, we must focus instead on the success and efficiency with which the control system maintains itself within specified set goals (see, Waters, 1981; Waters & Deane, 1985).

A behavioral control system's performance is not inherently beyond quantitative analysis, but it presents measurement problems much more difficult than those associated with rates and frequen-

Table 1
Correlations Between Maternal Behavior and Infant Security Scores
Among Japanese Macaques^a

Q-Set Item	Pearson Correlation
Does not allow other monkeys to hold infant. (R) ^b	.64
Occupied in caretaking, to the exclusion of other activities.	.64
Keeps infant closer for some time after unusual event has ceased.	.55
Carries infant when moving from place to place (i.e., Doesn't just walk off).	.54
Devotes more time to infant than to older siblings.	.53
Does not quickly become bored with caretaking. (R)	.52
Accepts or tolerates infant using mother's tail or body during play.	.50
Alert to subtle changes in the environment.	.50
Does not hesitate to punish infant in appropriate circumstances.	.47
Rarely changes attitude toward infant. (R)	.46
Continues caretaking behavior even if infant wiggles or gets annoyed. (R)	.45
Monitors infant's location and activities consistently.	.44
Retrieves infant or drives adults away if infant approaches (Esp. adult males or dominant females)	.44
Allows infant to leave in unfamiliar settings.	.42
Recognizes infant signals of fear, etc.	.41
Allows infant to play with novel objects. (R)	.40

Note. All values significant at $p < .05$ or less.

^a For additional items related to maternal rank see Waters & Kondo-Ikemura (submitted).

^b (R) = Wording of original Q-set item is reversed in this table (as is the sign of the correlation coefficient) for clearer presentation.

cies of specific behaviors. Thus, the Ainsworth *et al.* (1978) summarized infants' ability to use the mother as a secure base in terms of highly subjective ratings, and Anderson *et al.* found the phenomenon rather elusive when they moved beyond discrete frequency counts and timing intervals. Our efforts to address these measurement problems warrant a brief description.

During the past few years, we have tried to resolve some of the difficult methodological prob-

lems that arise from the control systems

conceptualization of infant attachment relationships. Among these are the following:

1. Researchers from other methodological traditions have found it difficult to understand the control systems view of the attachment construct and to fully appreciate all it implies about the range of relevant behavior and the responsiveness of secure base behavior to context.

2. It is very expensive to collect detailed behavioral data on a phenomenon as complex as the secure base phenomenon by conventional time sampling methods, with the consequence that we use small samples, rarely replicate studies, and often under-design projects to keep down the number of subjects.
3. It is difficult to evaluate the attachment behavioral system if the starting point is rate or frequency data obtained through conventional observational methods. This problem arises in part from the fact that conventional methods have only a very limited ability to take contextual information into account within manageable observational coding systems.
4. Definitions of constructs such as attachment security have been difficult to formalize, which makes them difficult to communicate, evaluate, and improve.
5. It has been difficult to establish discriminant validity of attachment constructs and to address alternative interpretations proposed at the end of longitudinal studies.

Much of our work has involved developing and validating an economical, behaviorally specific Q-sort methodology for assessing secure base behavior. For the most part, these problems are proving much more manageable with the Attachment Q-sort methodology we have developed. The method has proved quite easy to learn; moreover, students, parents, and even researchers from other theoretical perspectives have consistently reported strong "ah-ha" experiences and a sense of what attachment theory is all about as soon as they have spent some time with the Q-set items.

Both observer and mother reports are reliable with only a few hours of observation. Q-sort data on one- and two-year-olds map quite well into Strange Situation data on attachment security (e.g., Vaughn & Waters, submitted). *Table 2* summarizes some of the Q-set items that distinguish significantly between secure and anxiously attached one-year-olds.

We encountered one of our most important results almost as soon as we began using the Attachment Q-set. In the first informal comparison of Q-sort security scores between small samples of one- and three-year-olds, it was evident that the mean score was much higher in the older group. This struck us as more of a nuisance than anything else. After all, unless it entailed some sort of problem

for the methodology we were trying to develop, it could probably be ignored, put off until later, or scaled away. Soon, however, the same result appeared in a larger set of parent reports we were collecting on different children, and later in other parent report data and in Q-sort data from other laboratories. Across laboratories and studies, the mean security score for 12-month-olds has ranged from .2 - .3. The mean score in typical samples of 3-4 year olds ranges from .4 - .7!

Rather than interpret these results as evidence that older children are more attached, we take them literally: Correspondence between children's behavior and the pattern of behavior that defines the secure base phenomenon increases with age. That is, they become much better at using the mother as a base from which to explore as they get older. This is a very striking result, yet it is quite understandable in light of the preceding discussion.

Relevant mechanisms are likely to include practice, operant learning, and improved locomotion. The infant also becomes increasingly familiar with and confident about its abilities and limitations, caregiver behavior, and facets of increasingly diverse environments. There is nothing mysterious in this. Every element can be examined in detail. The more fully we appreciate that attachment behavior is learned, even taught, the more evident it becomes that *it must take time*. Accordingly, the 12-month Ainsworth Strange Situation probably assesses nascent rather than mature secure base behavior. Viewed in this light, it is amazing that 12-month Strange Situation data are at all correlated with patterns of care in early infancy; yet the pattern of results is clear and replicable.

Of course, correlations between early maternal sensitivity and later attachment security do not *explain* attachment security. They are new facts *in search of an explanation*, as are correlations between secure base behavior and later developmental outcomes. Our Q-sort research highlights the need for additional descriptive/observational data on secure base behavior at various ages. The Attachment Q-sort is an economical method of surveying a wide range of behavior in advance of surgically precise time sampling and sequential analysis of specific behavior patterns.

Phase 7: Identification. If our goal were to cover only the time period spanned by Bowlby's four-phase model, we could conclude our presenta-

Table 2
Attachment Q-Set Home Observations of One-Year-Olds:
Differences Between Infants Classified Secure and Insecure
in the Strange Situation

Q-Sort Item-title (Item number) ^a	Item Means		t (56)
	Secure	Insecure	
Enjoys playful physical contact with mother (64R) ^b	8.09 (.90)	7.27 (2.11)	1.86+
Does NOT expect mother to be unresponsive (54R)	7.78 (1.12)	6.40 (1.92)	3.24***
Affectively responsive and expressive (25)	7.70 (1.51)	6.58 (2.40)	2.08*
Prefers to be comforted by mother (35)	7.55 (1.21)	6.67 (1.76)	2.15*
Looks to mother for reassurance when wary (31)	7.54 (1.00)	6.75 (1.56)	1.99+
Person oriented rather than object oriented. (65R)	7.08 (1.07)	6.02 (1.60)	2.93**
Easily comforted by mother (4)	7.03 (1.51)	6.10 (2.02)	2.02*
Laughs easily with mother (87R)	6.98 (1.37)	6.12 (2.17)	1.78+
Affective sharing occurs during play (77)	6.83 (1.84)	5.73 (1.89)	2.23*
Predominant mood is happy (3)	6.67 (2.24)	5.35 (2.60)	2.09*
Acts to maintain social interaction (40)	6.64 (1.94)	5.17 (2.06)	2.79**
Imitates mother's behavior (88)	6.61 (1.53)	5.67 (1.59)	2.28*
Easily distracted from distress (22)	6.52 (1.93)	5.52 (1.90)	1.93+
Transition from explor. to prox. is smooth (52)	6.36 (1.34)	5.23 (1.63)	2.89***
Gross motor control is smooth and coordinated (46R)	6.33 (1.65)	5.46 (2.02)	1.76+
Does NOT lack self-confidence (48R)	6.20 (1.41)	5.42 (1.43)	2.09*

Table 2 (Continued)

Done NOT become angry with mother easily. (82R)	6.03 (1.72)	5.06 (2.05)	1.93+
Stays closer to mother in unfamiliar settings (72)	5.77 (1.44)	5.15 (1.29)	1.69+
Transition from prox. to explor. is smooth (68R)	5.66 (1.73)	4.85 (1.74)	1.77+
Prefers tasks that are difficult (6R)	5.20 (1.30)	4.58 (1.19)	1.89+
NOT Demanding when initiating activities with mom (74R)	5.03 (1.69)	3.71 (2.18)	2.52*
Explores objects thoroughly (19)	5.00 (1.75)	4.17 (1.69)	1.82+
Adapts active play to avoid hurting mother (84R)	4.83 (.91)	4.23 (1.25)	2.04*
Careful with toys (27)	4.78 (1.15)	3.83 (1.83)	2.31*
Cries to prevent separation (29)	4.27 (2.10)	3.25 (1.47)	2.16*
Remains fearful of moving toys or animals (1)	3.87 (.84)	3.19 (.93)	2.93***

Note. *** = $p < .005$, ** = $p < .01$, * = $p < .05$, + = $p < .10$

a Item numbers from the 100-item Q-set are in parentheses.

b "R" beside an item number indicates that the item wording from the 100-item Q-set has been reversed to clarify tabular presentation and the raw scores have been reflected (i.e. value in table is 10 - mean score.) Signs of the t -values are correspondingly reversed.

c Values in parentheses are standard deviations.

tion with the consolidation of secure base behavior in the second or third year, leaving out the goal corrected partnership concept altogether. In doing so, however, we would overlook the important transition from sensorimotor to cognitive representation of attachment relationships that Bowlby tried unsuccessfully to capture in terms of the goal corrected partnership. As Main & Kaplan (1989) have recently demonstrated, this move to this level of representation is the key to linking developmental theories of attachment with perspectives on attachment among adults.

Concluding our analysis with consolidation of secure base behavior would also leave open the

task of explaining widely cited empirical relationships between patterns of secure base behavior and later developmental outcomes. As earlier, correlations are not explanations; rather, they are facts in search of explanations. Detailing mechanisms that account for the predictive validity of attachment data broadens the foundations of attachment theory and clarifies the place of attachment in development. Accordingly, let us at least briefly turn to sequelae of secure base behavior that carry attachment relationships from sensorimotor to representational thought and from preference to values.

Correlations between infant attachment security and later socialization outcomes are among the most widely cited findings in the attachment litera-

ture. At the same time, they present attachment theory with one of its most difficult challenges. Specifically, it is not obvious how a child's confidence in its mother's availability and responsiveness (i.e. secure attachment) could keep it from putting a rock through the schoolhouse window. (Were it not contrary to the empirical data, one could just as easily imagine that confidence in Mom or Dad saving him would *increase* the likelihood of the child throwing the rock.)

Obviously, few parents would approve of their children vandalizing the neighborhood school; nonetheless, given opportunity and ammunition, some children would transgress and others would not. Given comparable socialization pressure against vandalism, why the diverse outcomes? Part of the explanation turns on the fact that socialization pressures on children are not entirely comparable across families. Individual differences in temperament, IQ, and other traits might contribute as well. Most importantly, literature on behavior problems and delinquency suggests that children exposed to entirely appropriate socialization practices and conventional norms of good behavior differ in their orientation toward these norms. In short, some children don't care as much as others. Some don't care at all. They take their lumps and do what they want.

Hypotheses relating early attachment relationships to later orientation toward socialization were central to Freud's theory of psychosocial development and were extensively investigated in early social learning research. Unfortunately, empirical confirmation was beyond the concepts and methodologies of the day, and these hypotheses have received little attention in recent theory or research. They deserve renewed attention in light of Bowlby's attachment theory and new methods of assessing attachment related constructs. To this end, Richters & Waters (in press) redefined the traditional concept of identification in terms consistent with current views of cognitive-social learning and empirical research on development in infancy and early childhood. Although their formulation is neither psychodynamic nor focussed on gender and explicit imitation, the term *identification* was retained to acknowledge the origins of the attachment-socialization hypothesis in psychoanalytic and social learning theory.

Preliminary empirical support for a link between attachment and a child's orientation toward socialization is emerging in an ongoing longitudi-

nal study of study of attachment, identification, and socialization in 3.5 - 7-year-old boys at SUNY Stony Brook. In brief, maternal reports of attachment security were obtained at age 3.5 years, using our Attachment Q-set. We subsequently obtained parent reports regarding the child's orientation toward socialization practices at age 5, using an 81 item Likert format survey. Typical correlations between attachment security and subsequent scores on identification items are presented in Table 3.

In brief, we described two facets of identification: encapsulation during infancy and commitment during early and middle childhood. During infancy the child is typically enmeshed in secure base relationships with both parents. As already d , the parents provide much of the matrix upon which the child organizes its behavior. In a sense, the family is a behavioral/affective economy from which the child derives considerable benefits in the form of nurturance and support for exploration and cognitive development. Figure 5 extends our developmental outline through middle childhood. It captures the transition to representational thought emphasized in Bowlby's coal corrected partnership stage and also emphasizes the foundations of socialization that are established at this age.

During infancy and toddlerhood, the home-reared child is largely insulated from rule systems that differ dramatically from or offer alternatives to the family's. Parents are in a position to state the rules of the game and to shape the child's initial conceptualization of itself, of them, and of the world beyond the family. When sensitive, consistent, facilitative caretakers make the most of this situation, a predictable outcome is the development of secure attachment, self-confidence, and their concurrent correlates.

Although the child does not yet make an intentional commitment to the family's norms of good behavior, he or she is *behaviorally* committed to the family system long before these norms are even explained or imposed as rules. Participating in attachment relationships allows the child to maintain organized behavior and to maximize a wide range of benefits over time. Accordingly, the child enmeshes itself in the family system to whatever extent parental behavior supports. Herein lie the seeds of prosocial motivation.

During middle childhood, the rules of the game become increasingly complex. Parents begin to expect more consistent conformity to family

rules, and the range of rules and contingencies expands at whatever rate parents estimate cognitive development allows. If, up to this point, conformity had simply been a matter of contingency management, we might expect it to extinguish rapidly as the child moves out from under the parents' constant direct supervision; however this is not the typical outcome. In most respects, children retain significant elements of the family's behavioral norms and values in the face of novel alternatives, competing input, and opportunities to observe other children operating under different sets of contingencies.

This is not to suggest that contingency management is irrelevant to socialization or that early socialization inoculates a child against every untoward influence encountered in the peer culture; rather, a variety of factors related to the economics of family living, the encapsulated context of early socialization, and the behavioral commitment entailed in early attachments have the predictable outcome of rendering a child receptive to parental socialization practices. Of course, even if the child's behavior is not integrated with that of one or a few caregivers as described in the preceding phases, he or she can be controlled by contingency management, until independence renders this impractical. Control, however, will remain extrinsic and the child's orientation toward norms will remain one of conformity rather than commitment.

We employ the term identification to summarize (though not to explain) the child's investment in the family system and readiness to accept newly articulated demands. As long as the child's social world is mainly within the family, identification can be explained as an informal inference from participation in parental attachments and the behavioral affective economy of the family. When parents first "reveal" that a particular behavior or attitude is part of the family's system, the child can reasonably (if informally) infer that "If that's the system, then that's for me." Insofar as the child is already behaviorally committed to parental attachments and to the family, he or she is biased toward accepting the new behavior or attitude without explicit training or persuasion. As Epstein suggests, anything less would challenge postulates of the child's self definition or self theory and engender negative emotion. Indeed, the child should find that conformity and advocacy of newly defined norms confirms central self-theory postulates and, thus, engenders positive emotion.

This is a positive alternative to views of so-

cialization as an inherently coercive process. It assigns reinforcement and punishment important roles in shaping the behavioral commitment upon which such informal inferences are predicated. But beyond this, contingency management is simply another source of information available from the environment and from self-observation. These are the cognitive and motivational mechanisms underlying social and observational learning in early childhood.

Our conceptualization differs considerably from the traditional view of identification. It does not specifically involve gender or focus on the same sex parent. The focus is on identification with family norms rather than with one parent or the other. Our concept is also much less focused on literal imitation than is traditional social learning theory. It most closely approximates Rotter's notion of individual differences in the reinforcement value of stimuli. Secure attachment makes the child value the parent more, want to avoid parental censure, and over-look models that are discordant with family norms. As summarized in Figure 6, identification provides a missing mechanism necessary to explain the correlations between attachment and specific socialization outcomes. Attachment is correlated with socialization outcomes because of its influence on the child's orientation toward socialization. This, in turn, interacts with childrearing practices to yield differential socialization outcomes.

If a child cares about parental socialization goals and if the parents' socialization practices are sound, then effective and enduring outcomes are expected. If, on the other hand, attachment problems have resulted in an indifferent attitude toward socialization pressures, then even appropriate practices will only be effective in the short term. In addition, even secure attachment and a positive orientation toward parental socialization goals can be followed by significant socialization failures if parents' socialization practices are inconsistent, unclear, or in other respects inappropriate. That is, attachment does not explain socialization outcomes; it moderates them through the interaction of identification with child rearing practices.

Viewed in this light, it is ironic that attachment theory and social learning theory continue to be viewed (and practiced) as competing perspectives. After all, the paradigm clash between the control system view and learning theory was precipitated by disagreements about the level of complexity and organization at which attachment

Table 3
Attachment Security at 3.5 Years-Old and Identification
Q-Set Items at 4 - 5 Years-Old (N = 81 males)

Identification Q-Set Item	Pearson Correlation
When he realizes he is doing something wrong, he tries to undo it.	.47
Readily accepts (parent's) suggestions or advice.	.42
Does not persist in begging for things after (parent) tells him "No!" (R)	.42
Stops doing things (parent) has punished him for.(R)	.41
Tells (parent) what family rules are (as if checking to see if he has them right.	.41
Points (to parent) out ways he and (parent) are alike.	.40
Does not refuse to obey (parent) by saying "No!" (R)	.38
Does not become angry when (parent) has to interrupt something he likes to do.	.37
Doesn't hit, throw toys, or yell at (parent) when he is angry. (R)	.37
Learns family rules quickly; doesn't have to be told twice.	.37
Becomes sad rather than angry when (parent) has to punish him.	.36
Embarrassed when (parent) catches or punishes him for misbehaving; offers to make amends.	.35
Asks before doing something that might be unsafe or not allowed..	.35

Note. (R) = Wording of original Q-set item is reversed in this table (as is the sign of the correlation coefficient) for clearer presentation.

should be defined. No one disputed the importance of the causal mechanisms detailed in the literature on human learning, and the definitional issue has been resolved in favor of the control system/secure base conceptualization. Although traditional learning theorists never defined attachment in very useful terms, the well studied mechanisms of operant and social learning are not the exclusive property of one theoretical perspective. They are

obviously relevant to a comprehensive explanation of the development and developmental significance of attachment relationships. In fact, a sophisticated theory of social learning and social- (including self-) cognition is essential to the success of Bowlby's effort to demystify and preserve Freud's insights about human attachment.

Phase 8: A Supervision Partnership. A key function of attachment in infancy and early child-

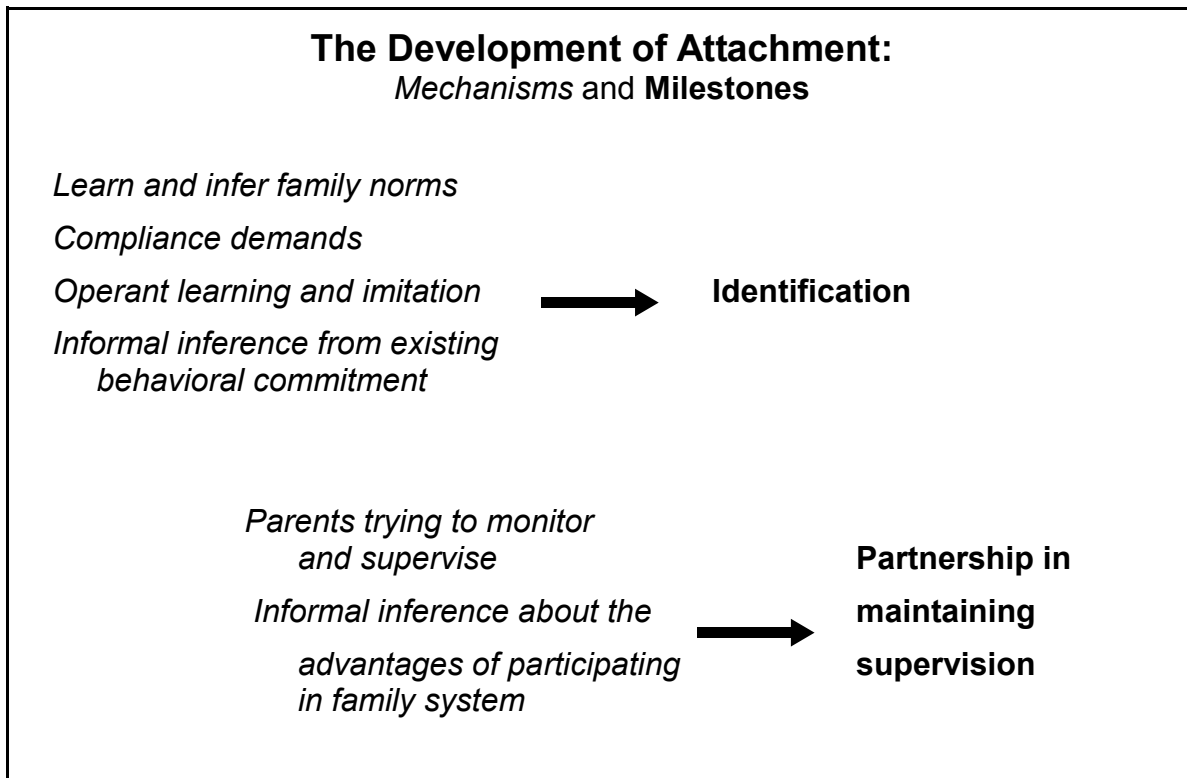


Figure 5. Attachment, identification, and the supervision partnership: Mechanisms and milestones.

hood is to foster the development of independence. The transition from sensorimotor to representational thought brings major changes in proximity seeking, contact maintaining, and communication between parent and offspring. The secure base acquires a cognitive representation and, as it becomes portable, exploratory and social excursions can become increasingly extended and extensive. Peremptory proximity and contact seeking in response to moderate uncertainty, discomfort, or stress is replaced by communication and direct coping.

Rather than competing with emerging behavioral systems such as peer affiliation, adult bonding, and parenthood, the attachment behavioral system operates in coordination with them; only when direct coping fails, or in the face of extreme threats, does it reassert the priority among behavioral systems that it enjoyed in infancy and early childhood.

These changes occasion difficult transitions. With the goal-corrected partnership, Bowlby emphasized that age-related changes in overt prox-

imity seeking represent reorganization within and among behavioral systems, not attenuation of the infant-mother relationship. This is a crucial insight. Without it, we might overlook the organizing role that parent behavior serves throughout childhood, adolescence, and early adulthood in many cultures and families. We would also find ourselves puzzled by grief and mourning at the loss of a parent. Thus, although we questioned the view that secure base behavior in the sensorimotor period develops into a goal corrected partnership in early childhood, we conclude our developmental outline by returning to the partnership concept, not as a species' characteristic way to manage attachment relationships in childhood and adolescence but, rather, as a strategy employed in some families, in some cultures.

Beginning in middle childhood, a child can enter into a wide range of contracts with adults. These arise within and across families. Within families, many key socialization practices entail exchange agreements between parent and child (e. g. rewards for good behavior.) Often, the need to

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care for younger children, share transportation, and divide household duties lead to agreements about division of labor and reciprocity. Across families, an adult may agree to extend privileges contingent upon a child's good behavior, offer instruction or pay in exchange for the child's assistance, or supervise and assist the child on the expectation that the child's parents will reciprocate.

Unlike early attachment relationships, in which infant and adult share a common goals such as maintaining proximity, advancing the infant's cognitive competence, and affect regulation, these relationships are optional and essentially economic; they allow child and adult to meet their differing needs and goals by exchanging material or behavioral assets of comparable worth. They assume neither attachment between the parties nor skills specifically derived from early attachments. Most social arrangements between parents and children at this age are probably of this nature. One exception, however, is a supervision partnership designed to span the transition from family socialization to independence in a particular family, community, or culture.

During infancy and early childhood, parents largely control the level of supervision over the child's behavior. At least, the balance of responsibility falls to the parent. In cultures such as our own, however, 6 - 16 year-old children spend a considerable amount of time away from the parents' immediate supervision; yet many parents (and children) undertake to maintain some level of consistent supervision. The child's time with the peer group or in other activities is viewed as continuous with *exploration* and *training* begun earlier, not as *detachment* or *independence*. This entails a common goal not found in the commercial relationships described earlier. Specifically, within this arrangement child and parent share the goal of maintaining a degree of supervision and contact when the child is away from direct parental supervision for long periods.

In a sense, a supervision partnership is an extension of the parent's role as a matrix for the child's behavior and as a secure base; but now the balance of responsibility between child and parent is more evenly balanced than in infancy. The parent must want to maintain supervision and availability during this transitional period and insure that the child cooperates. Desire to do this may differ markedly across cultures and communities, and from family to family. Unlike the task of serv-

ing an infant as a secure base, however, the parent's intention to supervise an older child is not sufficient. The parent can only supervise and serve as a secure base if he or she is kept aware of the child's excursions and plans, both when the plan is first formulated and later when plans and play sites change significantly during the day. This is a responsibility that only the child can fulfill. Parents, of course, have a similar responsibility to keep the child up to date if they venture forth while the child is away at play. The supervision partnership has to include arrangements for a mode of communication, a set of contingency plans, or alternative supervision when the parent is away. Parents may also want to limit the child's activities to places where supervision by other adults is close at hand. It becomes the child's responsibility to operate within these limits or to negotiate exceptions in advance.

The items listed in Table 4 suggest the types of child behavior that might be used to assess the child's participation in such a partnership.

Obviously both the parent's initiative and consistency and the child's willingness to participate are critical to this kind of partnership. It is unlikely that such a partnership could arise solely as a result of early sensitive care or a secure attachment in infancy. Yet the parent's role in the partnership is analogous to sensitive care early, and the quality of early attachment may influence the child's willingness and desire to participate.

Early secure base experience may also provide an enduring understanding of what it is to relate to a person over space and time. In view of the limits egocentrism places on social cognition and cooperation at this age, this could be an important asset.

Where supervision partnerships are seen, they validate the insight that Bowlby conveyed in his references to the goal-corrected partnership; attachment does not simply decline as the child's horizons expand. Other attachment-related behavioral strategies that become necessary or possible only beyond early childhood may make this point as well. Our capacity for abstraction, prediction, and communication enables the attachment behavioral system to continue serving as an important resource as other behavioral systems mature, even into adulthood. For example, in our society, even adult children are expected to maintain implicitly agreed upon modes and schedules for "keeping in touch" with parents, who have been known to view lapses with alarm or anger. More-

The Origins of Prosocial and Antisocial Behavior

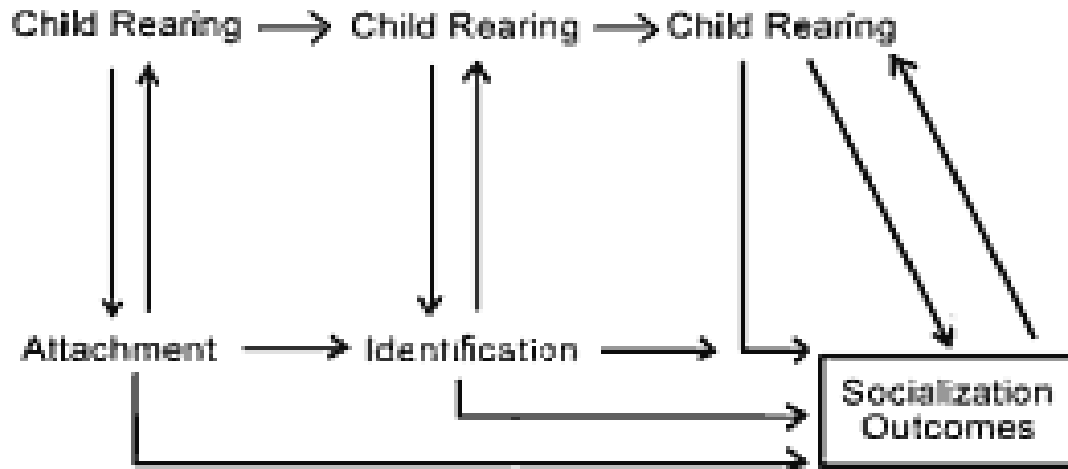


Figure 6. Links between attachment and socialization outcomes: Identification and the consistency of parental behavior as mediating mechanisms.

over, as parents come to depend more and more on their adult children, the children often adopt a similar view of their parents' habits of "keeping in touch."

Research on the secure base analogues in childhood, adolescence, and adulthood has hardly begun. We mention the supervisory partnership to see what can be done with Bowlby's partnership notion and to emphasize that the secure base concept is powerful enough to support a comprehensive perspective on attachment relationships. A complete description of mechanisms and developmental milestones in attachment has to reach well beyond infancy and early childhood. Although most adolescents and young adults may already have learned *to* love, most still have a great deal to learn about *how* to love. Thus Bowlby's emphasis on attachment in infancy and early childhood is entirely consistent with the view that relationship experience and commitment in adolescence and adulthood can influence cognitive models bearing on the conduct of adult attachment relationships and parenting. There may even be modes of attachment that are encountered only in some cul-

tures or only in the fullness of relationships late in life.

Conclusion

Our discussion of milestones and mechanisms in attachment, identity, and identification is firmly rooted in Bowlby's theory and in his efforts to preserve the best conceptual and descriptive insights from the psychoanalytic tradition. Our analysis is evolutionary rather than revolutionary and suggests that a major integration of perspectives is at hand.

Attachment theory and research have a great deal to gain from detailing the roles that active parent behavior and traditional learning mechanisms play in developing attachment relationships. Cognition and inference are also important mechanisms overlooked by traditional learning paradigms. We have described the self-other distinction as a developmental milestone that emerges from sensorimotor understanding of the mother as an object. The mechanism is "informal inference," a process that probably plays a role in a wide range of developmental changes. The sense of security

that arises within a well-functioning pattern of secure base behavior also arises initially as an "informal inference" about parental availability and responsiveness. Cognitive/emotional commitment and identification arise from behavioral commitment and meshing by the same process of "informal inference." Such effects on identification and socialization implicate attachment relationships in a wide range of socialization outcomes. As a consequence of self-observation and informal inference, the child takes its own behavior and attitudes as empirical evidence about itself and formalizes these as postulates of a self theory. Although we have discussed specific mechanisms in association with specific developmental milestones, it should be understood that most of them operate throughout development. The same must be said of parental influence on attachment behavior. Secure base behavior is not simply elicited by early care, parental behavior provides a matrix that continues to help organize it far beyond infancy. The combination of multiple mechanisms acting concurrently and continuing parental support provide an element of redundancy and consistency that accounts in part for the virtual inevitability of attachment within what Bowlby called our environment of evolutionary adaptiveness.

Neither the evolution of the self theory nor the ability to establish and maintain love relationships reaches a decisive conclusion in childhood or even in adolescence. Even if early experience proves critical for learning *to* love, learning *how* to love takes a very long time. Some of the mechanisms involved are specific to attachment processes; others are nonspecific and contribute to develop in other domains as well. Thus, describing either attachment or the self theory as antecedent to the other oversimplifies a complex sequence of developmental interactions. Throughout development, attachment relationships directly and indirectly generate a vast array of self-relevant data. Even if attachment relationships within the family prove to be the royal road to supportive adult-adult relationships and caring parental bonds, this is only one of many roads that must be traveled on the way to a well-defined, well-functioning self theory. What we can say for sure is that along this road we find many important clues.

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Table 4
Supervision Partnership From 6-12 Years:
Preliminary Q-set Items

-
1. Returns home at a predictable time.
 2. Starts playing somewhere or with some group and ends up elsewhere in other activities or with other children without returning home.
 3. Comforts parent when upset.
 4. Seeks parent when injured.
 5. Informs parent of injuries.
 6. Screams at parent in anger. (-)
 7. Can help parent supervise younger siblings.
 8. Helps parent by keeping certain areas of the home or certain sets of toys or clothes tidy.
 9. Open with parent about social worries when they occur.
 10. Asks parent for information about physical maturation.
 11. Reports brushes with danger and near accidents to parent.
 12. Accepts restrictions related to safety.
 13. Willing to stay within reach of parent's supervision. (informs parent, agrees to report change of activities, follows time restrictions, etc.)
 14. Enjoys having parent scratch back or talk before going to bed.
 15. Seems confident at home with babysitters at night.
 16. Stays angry at parent for a long time. (-)
 18. Is cold and indifferent to parent. (-)
 19. Shows an interest in parent's work/chores.
 20. Uses home as a main base for play activities.
 21. Feels like parents are always in the way. (-)
 22. Likes to go places with the parent.
(Prefers to go off on own activities)
 23. Wants to be left alone when in a bad mood. (-)
 24. Cuddly when tired.
 25. Proud of parent.

Table 6 (continued)

26. Interested in parent approval when achieving something new.
 27. Confides in parent when upset with or put upon by others.
 28. Gets angry when disciplined. (-)
 29. Rarely spends as much as an hour at a time helping parent. (-)
 30. Glad to get something for parent even if parent could get it just as easily.
 31. Thinks that childcare is parent's absolute top priority.
 32. Pulls away if parent is affectionate. (-)
 33. Says things to hurt parent. (-)
 34. Coercive: Bribes (-)
 35. Coercive: Threatens to misbehave. (-)
 36. Coercive: Threatens to hurt self / get hurt doing risky things. (-)
 37. Often goes off for over two hours without telling parent. (-)
 38. Vague or evasive about where or with whom he is playing. (-)
 39. Requires close supervision. (-)
 40. Comes to parent for help when in trouble.
 41. Accepts that parent is right when disciplined.
 42. Fear of doing something is reduced if parent says it is safe or ok.
 43. Lies to parent. (-)
 44. Takes whatever parent offers - but not really appreciative. (-)
 45. Accepts that cooperation or service to parent is reasonable pay back for help parent has provided in the past.
 46. Expects parent knows answers to most questions.
 47. Willing to profit from parent's experience in matters of risk and safety.
 48. Willing to profit from parent's experience in other areas.
 49. Resents restrictions imposed so that parent can get own work done. (-)
 50. Tells parent about funny experiences or observations.
 51. Jokes with parent.
 52. Hides bad experiences from parent for fear of being blamed. (-)
 53. Hides mistakes and accidents from parent for fear of being blamed. (-)
 54. Is clinging and immature with parent. (-)
 55. Reminds parent or retells stories of good times had with parent.
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