Development and Psychopathology, **15** (2003), 691–718
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Printed in the United States of America
DOI: 10.1017.S0954579403000348

Toward the next quarter-century: Conceptual and methodological challenges for attachment theory

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Abstract
Attachment theory and research have offered fundamental insights into early sociopersonality development for the past quarter-century. As its scope expands throughout the life course with applications to developmental psychopathology, however, attachment work faces important conceptual and methodological challenges. These include (a) expanding Bowlby's theoretical formulations to address developmental changes in the nature of attachment organization beyond infancy, the converging influence of multiple attachment relationships, and the nature and development of internal working models; (b) systematically validating assessments of attachment security for older ages in the context of enhanced theoretical understanding of how attachment itself changes with age; (c) new methodological approaches to understanding the relations between attachment and later behavior in light of empirical evidence of stability and change in attachment security and the need for explicit theoretical predictions of the sequelae of attachment security; and (d) more complex conceptualizations of the associations among attachment, contextual risk, and later behavior. These are similar to the challenges facing the original pioneers of attachment theory and research, suggesting that familiar problems must now be reconsidered against the landscape of new applications of attachment work and the insights of contemporary developmental science.

Nearly 30 years ago, Masters and Wellman (1974) concluded their authoritative review of research on infant attachment on a discouraging note. Based on current research, they found that individual differences in attachment behavior showed very poor stability, varied unpredictably across situations, and did not converge in expected ways with other social behaviors. Although the authors offered alternative ways of addressing validity concerns, it was clear that the integrity of the attachment construct was in doubt. Attachment research was at a crossroads.

Just a few years later, everything had changed. Attachment research was reinvigorated by Sroufe and Waters' (1977) argument that when viewed *organizationally,* individual differences in attachment behavior were both meaningfully interrelated and predictable across different circumstances. Waters' (1978) demonstration that attachment security *could* be stable over a six-month period when assessed organizationally—but not when individual behaviors were analyzed—provided a powerful demonstration of the value of this approach. With the publication of *Patterns of Attachment* (Ainsworth, Blehar, Waters, & Wall, 1978), which summarized studies validating the Strange Situation procedure, a new era of attachment research was consolidated. Since that time, attachment theory and research have provided some of the most important conceptual and methodological tools for understanding early socioemotional development and developmental psychopathology, and it is currently the leading perspective for understand-

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https://doi.org/10.1017/S0954579403000348 Published online by Cambridge University Press

ing continuity and change in personality development.

However, at the current moment, attachment work is again at a crossroads. Although it is central to developmental science, concerns about the measurement and conceptualization of attachment security have reemerged as attachment research has expanded in new, life span directions. Significant critiques of theory and method have emerged from within and outside the community of attachment researchers. In a recent methodological review, for example, Solomon and George (1999) chastised the "frontier mentality" of researchers who have produced a proliferation of attachment assessments with inadequate attention to their validation. Others have questioned whether the construct of internal working models, which has been so heuristically powerful in advancing attachment theory, constitutes a "catch-all, post-hoc" explanation for an almost limitless variety of research findings on the outcomes of attachment security (Belsky & Cassidy, 1994; see also Hinde, 1988). Rutter (1995), in an overview of the clinical implications of attachment theory, cautioned that when considering causal associations between attachment and later difficulty, "the adverse environments that predispose to attachment insecurity usually include a wide range of risk features that may have nothing much to do with attachment as such" (p. 558). These critiques are not just the growing pains of a maturing theory. Rather, they reflect important concern about whether the theoretical clarity and methodological rigor that guided attachment work through its first quarter-century will be maintained into the future.

These are particular concerns for the field of developmental psychopathology. Attachment formulations have become central to how developmental psychopathologists conceive of relational influences on disorder and therapy, the representations that arise from relational experience, and the ways in which early experiences can have an enduring psychological impact. Ideas from attachment theory have become a scientific foundation to clinical work with children and families even as therapeutic applications have raised new questions for attachment researchers. Attachment theory has, for several decades, nurtured an unusually productive interaction of developmental science and clinical practice. Advancing this collaborative work into the future is as dependent on the clarity of attachment theory and the methodological sophistication of attachment research as it has been during the past quarter-century.

Our discussion of conceptual and methodological challenges to the study of attachment over time focuses on several broad issues. First, how does attachment develop beyond infancy? In particular, how can Bowlby's developmental theory be expanded to encompass the monumental advances in psychological functioning that occur after infancy and their implications for the organization of attachment processes? We focus especially on the converging influences of multiple attachment relationships, the associations between attachment and other affiliative relationships, and the nature and development of internal working models because these are central to a life-span theory of attachment. Second, we consider the methodological challenges to attachment research arising from the variety of age-related operationalizations of attachment security that have emerged during the past two decades. How should these creative assessment strategies be validated? What criteria should guide validational research, and what does current research tell us about the convergent validity of different attachment assessments? In particular, how should the refinement and validation of measures of attachment beyond infancy be guided by theoretical views of how attachment develops in childhood through adulthood? Embedded in many assessments of attachment security are assumptions concerning the continuity of individual differences over time, and this leads to a third set of conceptual issues. What are the expectations of theory and the evidence of research concerning the consequences of attachment security? In particular, what conditions mediate whether the security of attachment will remain consistent over time and influence later behavior? How should research be designed to provide the best understanding of the ways that attachment, in concert with other devel-

https://doi.org/10.1017/S0954579403000348 Published online by Cambridge University Press

opmental processes, influences later psychosocial growth? Finally, in the last section, we relate these issues to developmental psychopathology in general and the study of at-risk populations in particular. How are conditions of risk and the security of attachment mutually influential, and how do they influence later development? How does our understanding of risk and attachment influence our thinking about children in difficult circumstances, and, also, children in relatively advantaged conditions?

We offer suggestions for how these conceptual and methodological challenges should be addressed in the future. However, throughout, our overall goal is to call the field of attachment back to its origins. It was the careful empirical methodology and thoughtful development of theory that initially reinvigorated attachment research from the doldrums of the early 1970s. It requires a renewal of attention to theoretical clarity and methodological rigor to ensure that attachment theory makes equally fundamental contributions in the next quarter-century.

Developing Attachment Security

The current era of attachment work originated in Bowlby's (1969/1982, 1973) theoretical achievements and Ainsworth's (1973) conceptual and methodological advances. Neither alone would have been sufficient to move the field ahead. Without Bowlby's theory, research on infant attachment would have continued to be guided by prevailing social learning formulations that led to Masters and Wellman's (1974) discouraging conclusions. Without Ainsworth's Strange Situation procedure, Bowlby's theory (like other neoanalytic formulations) would have proven provocative but frustratingly difficult to test empirically. The juxtaposition of the two reinvigorated attachment work.

Although Bowlby's theory has generated a rich literature on individual differences in the security of attachment, Bowlby was also concerned with the development of attachment in infancy and early childhood. Drawing on Piaget's theory, neoanalytic developmental theory, and developmental research, he described four stages in the growth of attachment, of which the third stage ("Maintenance of proximity to a discriminated figure by means of locomotion as well as signals") has been the focus of most research attention. Bowlby was primarily concerned with the emergence of attachment relationships in infancy. His fourth stage, "Formation of a goal-corrected partnership," informally outlined the growth of representational capacities in early childhood that alter children's relationships and working models and has been subsequently elaborated by attachment theorists (e.g., Main, Kaplan, & Cassidy, 1985).

Since Bowlby's formative work, attachment research has expanded significantly in longitudinal scope; most current attachment research is focused, not on infants, but on children, adolescents, and adults. This requires that contemporary attachment theorists systematically extend Bowlby's theoretical formulations to the development of attachments beyond infancy. Much is already known about the further development of attachment relationships (Ainsworth, 1990; Marvin & Britner, 1999). In early childhood, for example, young children decreasingly depend on physical proximity to their caregivers and increasingly rely on mental representations of their partners' accessibility, especially beliefs about the availability of the caregiver when children are stressed. Representations of a partner's physical and psychological accessibility are central to the security that derives from attachment relationships throughout life. As children mature, they develop increasingly sophisticated capacities for managing the emotional stress of separations from their caregivers. They also acquire enhanced capacities for understanding the mental and emotional perspectives of their partners, comprehending and accommodating to the attachment figure's goals and interests, communicating more effectively their own needs and concerns, and even taking into consideration other family relationships in addition to their own attachment to the adult (Harris, 1997). With the psychological growth of childhood and adolescence, the goal-corrected partnership shared by children and caregivers becomes increasingly complex, mutual, and dynamic as the relative roles of child and par-

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ent continue to evolve. In adolescence, for example, the parent–child relationship is transformed by a young person's efforts to clarify and differentiate self from others, reflect on complex abstract realities (such as the nature of human love and relationships), explore romantic relationships with peers, and develop capacities for emotional reflection and self-regulation (Allen & Land, 1999).

As children mature, moreover, attachment security becomes increasingly an attribute of the person, rather than of a specific relationship. That infants and young children develop attachments that vary independently in their security with different caregivers is well documented. By adolescence and adulthood, in contrast, it is more common to describe individuals as "secure" or "insecure" rather than secure only in specific relationships. Although this may be an artifact of the measurement strategies used at different ages rather than an empirical reality, it nevertheless seems apparent that over time, people become personally characterized by the quality of the relationships they have experienced throughout infancy and childhood. This assumption is, in fact, foundational to the associations between attachment security and personality development.

Beyond these conclusions, however, many questions remain in explicating a life-span theory of attachment development. Three issues seem especially central. First, how are the experiences and expectations arising from multiple attachments integrated in psychological development and understanding? Is there a hierarchy among attachment relationships in their developmental influence (and if so, what determines the relative priority among relationships for children of different ages)? Or are attachments psychologically influential in a domain-specific fashion instead, such that relationships with mothers predict different aspects of socioemotional growth than, for example, relationships with fathers or child-care providers? Most important, is the harmonization of relational influences a developmentally changing process? Are the psychological influences of multiple attachments differentially integrated for preschoolers compared to adolescents? In light of how older children become capable of understanding relational partners in more psychologically sophisticated and differentiated ways, for example, it seems likely that multiple attachment relationships would have a different aggregate influence on the relational representations of adolescents compared to preschoolers, but at present we have little understanding of whether or how this occurs. These questions are increasingly relevant to attachment theory because, by contrast with normative conditions a quarter-century ago, children typically develop close relationships with several caregivers from early in life. Understanding their independent and overlapping influences and how they change with maturity is an important theoretical challenge.

Second, to what extent are other affiliative relationships based on (or patterned around) infant–parent attachments? With increasing age, children and adolescents experience many close relationships with siblings and other kin, close friends, romantic and marital partners, and one's own offspring. It is a theoretical mistake to consider each of these relationships to be a kind of attachment, even though they share many qualities with parent–child attachment relationships. For example, by enlisting a behavioral systems analysis, Ainsworth (1989) distinguished other affiliative relationships from parent–child attachments because of the different behavioral systems involved. The bond linking a parent to offspring involves the caregiving behavioral system, for example, which makes it psychologically distinct from the infant–parent attachment relationship. Romantic relationships are distinct, she argued, because they involve reproductive and caregiving systems, as well as the attachment system. However, other attachment researchers have described adult pair bonds as attachments because of the way in which each kind of relationship enlists comparable relationship expectations, self-representations, and reactions to intimacy (Hazan & Shaver, 1994; Hazan & Zeifman, 1999). This is consistent with Freud's famous dictum about the way in which the early mother–infant relationship forms a prototype for later love relationships, but it neglects the distinctly different roles and motivations under-

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lying these different affectionate relationships. Thus, greater theoretical clarity is needed concerning the psychological processes that are common between attachments and other affiliative relationships and those that are distinct. This is especially necessary as attachment researchers increasingly generalize the formulations of attachment theory to other relationships throughout life.

Third, but most importantly, how does attachment itself change throughout life? Bowlby's final stage of the goal-corrected partnership emerges in early childhood, but the dramatic psychological changes of the years that follow raise questions about how attachment processes become reorganized as the meaning and functions of attachment relationships change over time. Many of the ethological functions of attachment early in life become less relevant as children mature and no longer require protective supervision, for example, and the changing roles and relative responsibilities of parents and offspring in adolescence and early adulthood further alter the initial functions that attachment relationships serve in infancy. In young adulthood, for example, needs for autonomy and emotional support with the challenges of adult life significantly alter parent–child attachment compared to earlier ages. Because relational security remains important throughout life, how do attachment processes evolve over time to accommodate age-related changes in the close relational needs uniting attachment partners?

Crittenden's (2000) dynamic–maturational approach offers a unique theoretical portrayal of the reorganization of attachment in childhood and adolescence. In this view, attachment processes in infancy are developmentally transformed by the behavioral and cognitive advances of later years, together with the broader range of relational contexts to which attachment strategies are applied and the adaptational needs of older individuals. According to Crittenden, there are two periods of significant change, the preschool years and adolescence, during which neurobiological maturation combines with intellectual and psychosocial growth to create significant organizational changes in attachment processes. These changes are manifested in a broadening array of behavioral strategies reflecting more differentiated variations in security and insecurity. Crittenden has identified a wider variety of attachment classifications for preschoolers and adults than can be found in the fourfold classification system used to describe infants in the Strange Situation. Just as the simpler behavioral patterns of infancy develop into more sophisticated and complex patterns of maturity, she argues, so also do the simpler attachment patterns of infancy develop into more differentiated and psychologically sophisticated attachment patterns of later years. Periods of attachment reorganization are also manifested in changes in individuals' attachment strategies, with some shifting from security to insecurity, others moving in the reverse, and many changing from simpler to more complex strategies within a consistent overall pattern of security. This is consistent with the manner in which new life experiences, psychological maturity, and the more complex relational requirements of increasing age can provoke a reworking of earlier understandings of relationships and the self.

Theoretical views like Crittenden's dynamic–maturational approach are important to attachment theory because they suggest that the organization of attachment processes with which Bowlby's theory concludes is not necessarily the end of developmental changes in attachment throughout life. They are also important in renewing attention to Bowlby's developmental theory and the need to extend this theory to the life-span applications of contemporary attachment theory and research.

Internal working models (IWMs)

The concept of IWMs will be central to how these theoretical challenges are addressed. Among the most heuristically powerful and provocative formulations of Bowlby's theory is the view that attachment security influences children's developing internal representations, or "working models," of the world. IWMs are based on young children's expectations for the behavior of their attachment figures that develop into wider representations of themselves, interpretations of their experiences, and decision rules about how to interact with

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others. These models become interpretive filters through which children (and adults) reconstruct their understanding of new experiences and relationships in ways that are consistent with past experiences and expectations, sometimes enlisting unconscious defensive processes in doing so. In this manner, IWMs constitute the bridge between young children's experience of sensitive or insensitive care and the development of beliefs and expectations that affect subsequent experience in close relationships (Bretherton & Munholland, 1999). Attachment theorists' interest in these internal representations has led to a growing research literature on the association between attachment security and children's conceptions of themselves, close relationships, and human experiences (such as friendship, emotion, and conscience) in ways that have significantly broadened the scope and significance of attachment formulations.

The theoretical challenge posed by this heuristically powerful concept is that "in the very power of such a model lies a trap: it can too easily explain anything" (Hinde, 1988, p. 378), a concern shared by other developmental scientists (Belsky & Cassidy, 1994; Rutter & O'Connor, 1999). The difficulty is that Bowlby's concept of the IWM is a conceptual metaphor, not a systematically defined theoretical construct, and this poses several problems for theory development. First, it lacks the specificity required to guide its empirical applications and constrain expansive theoretical applications. As a result, the IWM concept has been enlisted over the years to explain a widening variety of attachment-related processes, from the social understanding of young children to the intergenerational transmission of attachment security, adult romantic attachments, and the role reversal of disturbed parent–child relationships. The IWM concept has broadened significantly in these applications. Second, basic conceptual questions about IWMs remain unclarified. Are they consciously accessible? How do they develop? What accounts for consistency or change in IWMs over time? How do they relate to other aspects of cognitive processing? Such questions are at the heart of understanding the nature of internal working models and their development. Third, because the IWM concept is a conceptual metaphor, its relations to other developmental and conceptual processes are also unclear. Indeed, although the inclusive breadth of the IWM concept is heuristically appealing, it needs to be shown how it offers clearer, more precise explanations of representational development than those offered by other, more specific concepts like social expectations, self-referential beliefs, attributions, relational schemas, and other social–cognitive constructs that are more clearly defined and better understood. These social–cognitive processes have been studied for many years in children and adults and can be applied to many of the same developmental phenomena that IWMs are currently enlisted to explain.

IWMs potentially offer developmental theory a valuable way of thinking about socioemotional development that is dynamic, integrative, affectively toned, and relationally based, but only if IWMs are defined more precisely and with reference to other developing mental phenomena that arise from social interaction. There is, after all, no reason to expect that IWMs exist independently in the mind from other mental processes that also encode, represent, and interpret social experience. Understanding the development of IWMs with reference to other representational processes can add clarity and specificity to the IWM concept. Bretherton (1991; Bretherton & Munholland, 1999) has contributed to this goal by relating the IWM concept to theoretical concepts of mental models (following Bowlby), script theory, and constructive memory, and in doing so has underscored that, regardless of their unconscious influences, IWMs are based on consciously accessible cognitive processes that change over the course of development. She has also described IWMs as a system of hierarchically organized representational systems that involve different levels of generalizability and are relevant to various broader belief systems. Building on this view, Thompson's (1998, 2000) developmental account of IWMs is based on research on the growth of implicit

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memory and early social expectations in infancy, the development of event representation and episodic memory in early childhood, the emergence of autobiographical memory and theory of mind in the preschool years, and the development of specific social–cognitive skills by the end of the preschool years. Each of these well-researched processes relates to core conceptual attributes of IWMs (representations of people and experiences, self-understanding, interpretation of relational experiences) within a developmental account while embedding IWMs within a broad network of developing social, cognitive, and affective capabilities.

Thompson's (1998, 2000) developmental portrayal of IWMs has several implications for attachment theory (see also Thompson, Laible, & Ontai, in press). First, as developing representations, the scope and depth of IWMs change with age. Periods of significant representational advance (e.g., the transition to more symbolic representational capacities in early childhood; the emergence of abstract thinking in adolescence) are especially likely to be accompanied by changes in working models. This is consistent with the views of other attachment theorists (e.g., Ainsworth, 1989; Crittenden, 2000) and the idea that advances in a child's capacities to represent experiences create new ways of conceptualizing prior experiences and the understandings they have yielded.[1] Second, IWMs may have the greatest influence on other aspects of children's behavior and thinking during periods when these capabilities are maturing most significantly. The working models associated with a secure attachment may influence self-understanding most strongly in early childhood, for example, when an integrated, enduring sense of self begins to become consolidated. The same may be true of the influence of IWMs on emotional understanding, conscience, conceptions of friendship, and other aspects of social and personality development. Thus, contrary to the traditional approach of using Strange Situation assessments in infancy to predict later psychosocial functioning, the IWMs associated with attachment security may be developmentally most influential during the preschool years or later, depending on the sequelae of interest.

Third, in early childhood, IWMs are shaped not only by direct experience but also by the secondary representations of experience mediated by language. This is consistent with the conclusions of cognitive theorists like Nelson (1996) and Tomasello (1999), who believe that the symbolic representations of language shared with others significantly shape conceptual growth in early childhood. This view is also consistent with the conclusions of researchers like Dunn and colleagues (e.g., Brown & Dunn, 1996; Dunn, Brown, & Maguire, 1995) and Fivush (1993) who have found that specific features of parent–child discourse are associated with young children's representations of their experience. Consistent with theoretical predictions, researchers have found that conversations in which parents make more frequent reference to feelings and other psychological experiences and inquire frequently about—and expand more elaboratively upon—the events a child describes contribute to the growth of psychological understanding and the depth of a young child's memory and autobiographical representations (see Thompson, 1998, for a review). With respect to attachment, studies in our lab indicate that the mothers of securely attached preschoolers respond more elaboratively in their conversations with offspring and make more frequent references to feelings and moral evaluatives. We have also found that both attachment and maternal discourse style predict children's conscience development and other aspects of early socioemotional understanding (Laible & Thompson, 2000, 2002; Thompson et al., in press; see also Kochanska, 1995, for complementary findings). These conclusions suggest that one of the age-relevant manifestations of parental sensitivity is how parents talk with their young offspring about their experiences. Parents who provide rich elaborative detail in their accounts of shared experiences and who

1. For the same reasons, these periods of significant representational advance may also be associated with changes in the security of attachment.

https://doi.org/10.1017/S0954579403000348 Published online by Cambridge University Press

talk often about people's feelings significantly influence the lessons that young children acquire about themselves, other people, and how people relate to each other: in short, their developing IWMs.

These theoretical and empirical findings offer steps toward understanding the nature of IWMs and influences on their development. Consistent with attachment theorists' emphasis on parental sensitivity and open communication with offspring, these studies underscore the power of language for clarifying the invisible, psychological qualities of human experience, and the trust established in close relationships causes children to believe what caregivers tell them about people's thoughts, motives, and intentions. Researchers have yet to understand, however, how other features of parent–child conversations, including the adult's emotional tone, pragmatic behaviors, and the implicit attributions, moral judgments, and dispositional assumptions embedded in child-oriented references, may also be appropriated by young children and incorporated into their emergent representational systems. There is also much more to learn about how conversational discourse complements other features of parent–child interaction in early childhood to guide children's psychological understanding, as well as how social stress and contextual risk alter patterns of parent–child discourse and, potentially, young children's representations of experience. Thus, considerably more research remains in understanding the growth of IWMs in the context of parent–child relationships and shared discourse (Thompson et al., in press).

Most important, research of this kind can confer greater coherence and specificity to the IWM concept. As IWMs become better understood in relation to other developing representational systems in the early years, their explanatory scope and limits can be clarified with respect to the understanding of the association between attachment security and emergent behavior and thought. As this occurs, the uniquely valuable features of the IWM concept will also be apparent, as will the domain of reasonable predictions of attachment theory for later behavior.

Assessing Attachment Security

Throughout the history of attachment research, theoretical understanding and methodological innovation have been dual challenges and advances in each have occurred in concert. As Bowlby's theory provided new conceptualizations of attachment organization, it also highlighted new avenues for assessing individual differences in attachment security. In this way, the theoretical insights of attachment theory and the methodological innovations of the Strange Situation stimulated developmental science in concert. In light of the complex theoretical challenges now encountered in conceptualizing attachment security and IWMs beyond infancy, it is not surprising that the development and validation of measurement approaches for childhood, adolescence, and adulthood is also a significant challenge for attachment research.

The Strange Situation procedure was important in the 1970s not only because it provided a creative empirical approach but also because it was carefully validated. By the time that *Patterns of Attachment* (Ainsworth et al., 1978) was published, Ainsworth and her students had completed years of careful research linking infant behavioral patterns in the Strange Situation to secure base behavior at home, which is the basic external correlate of attachment assessments (Waters & Cummings, 2000). Subsequent researchers have replicated this early evidence of construct validity and supplemented it with findings confirming the predictive validity of Strange Situation classifications, and some limited evidence of convergent and discriminant[2] validity also exists (see Thompson, 1998). Although reliance on a single behavioral assessment had disadvantages, for example, the identity of a construct with an index complicates the understanding of how prior experiences can affect Strange Situation behavior independently of attachment security (Lamb, Thompson, Gardner, & Charnov, 1985), it en-

2. For example, variations in attachment security are not strongly associated with differences in intellectual functioning.

https://doi.org/10.1017/S0954579403000348 Published online by Cambridge University Press

abled researchers to integrate a wide variety of research findings based on Strange Situation classifications. Equally important, the careful attention devoted to convergent, predictive, and discriminant validation enabled attachment researchers to address critics of the Strange Situation who found it inconceivable that a 20-min laboratory paradigm could capture such an important quality of infant–parent relationships. The Strange Situation has been far more extensively validated than have most other research procedures in developmental psychology.

The strategy of the Strange Situation is to create conditions of moderately escalating stress to activate the attachment behavioral system of 1-year-old infants. Based on the infant's behavior throughout the procedure, but especially during reunions with the mother, an attachment classification is assigned based on the infant's proximity- and contact-seeking behavior, distance interaction, and avoidant and resistant behavior. A secure attachment is revealed in the infant's relatively unequivocal pleasure at the mother's return and organization of behavior around her as a secure base. Although the insecure classifications each reflect relational uncertainty, they are very different from each other (and from the secure classification) in behavioral strategy, their relations to secure base behavior, maternal sensitivity, and later sequelae.[3] In brief, therefore, the Strange Situation is an observational assessment organized around conditions of moderate stress, yielding one secure and multiple insecure classifications of attachment.

3. As we later note, understanding of the distinctive sequelae of the insecure classifications has been obscured by the long-standing tendency of researchers to combine avoidant and resistant classifications in their analyses, together with sample sizes that are insufficiently large to permit reliable conclusions concerning the later correlates of insecurely attached groups. This is one reason why some of the strongest evidence for the different sequelae of the avoidant and resistant classifications comes from the large-scale, longitudinal Minnesota Parent–Child Project (see e.g., Weinfield, Sroufe, Egeland, & Carlson, 1999). With the later discovery of the insecure D classification in the Strange Situation, attention to the differentiated sequelae of insecure attachments has been renewed.

Varieties of assessment

As attachment research has broadened in longitudinal scope, attachment assessments have also changed. The need to do so was recognized in the early 1980s, when Schneider–Rosen and Cicchetti modified Ainsworth's Strange Situation coding criteria to accommodate the more sophisticated behavioral capabilities of 18- and 24-month-olds within this procedure (Schneider–Rosen, Braunwald, Carlson, & Cicchetti, 1985). In the years that followed, other researchers have been guided by the general outlines of Bowlby's developmental theory to create attachment assessments for older people that rely on observational ratings, semiprojective narrative coding, self-report, and other procedures. The result has been a wide variety of procedures that differ in assessment strategy, indicators of security, and conceptions of insecurity. With such a broad variety of approaches yielding, at times, different conclusions concerning the security of attachment and its correlates, attachment researchers now face challenging questions about how these measures should be refined and validated, whether they reflect a consistent core conceptualization of attachment security, and how developmental changes in the organization and manifestation of attachment security are reflected in assessment procedures for children, adolescents, and adults.

Although a comprehensive overview of these measurement procedures is beyond the scope of this article (see Solomon & George, 1999; and Stevenson–Hinde & Verschueren, 2002, for more comprehensive reviews), several broad assessment strategies can be identified.

Strange situation based procedures for older children. Several observational assessments for preschoolers enlist the separation–reunion procedure of the Strange Situation and adapt Ainsworth's classification criteria for older children. One example is the Cassidy and Marvin (1992) procedure for preschoolers, based on an earlier approach by Main and Cassidy (1988) for 6-year-olds, that focuses

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on reunions with the parent after one or more separations. Classification categories closely parallel those of Ainsworth's Strange Situation. A similar separation–reunion procedure by Crittenden (1992, 1994) uses somewhat different classification categories for older children, including secure, insecure–defended, insecure–coercive, and other insecure groups. Both approaches depend on the assumption that preschoolers' attachment organization is activated by the stress of the separation episodes, and sometimes separation episodes are lengthened to better ensure that this occurs for older children. Although they are similar, the two approaches differ from each other (and from the Ainsworth scoring procedures) in how secure base behavior is indexed. The Cassidy–Marvin approach focuses on body position, affect, speech, gaze, and physical proximity and contact, whereas Crittenden's classification procedure also encompasses affect regulation and open communication with the parent.

Observation-based Q-sort ratings. A very different assessment strategy for preschoolers is the Attachment Q-Sort (AQS; Waters & Deane, 1985). Based on extensive home observations, a well-trained observer (or the mother) sorts 90 descriptive statements into nine groups based on how accurately each statement describes the child. The distribution is then correlated with a criterion sort to yield a correlation coefficient that is the child's security score. The AQS seeks to directly describe secure base behavior at home rather than provoking attachment behavior in the laboratory. Consequently, children are observed under a variety of conditions, but less often in circumstances that deliberately heighten the activation of attachment behaviors; this can make secure base behavior more difficult to observe. The criteria for secure attachment are thus broader than for Strange Situation–based procedures. In addition to secure base behavior, for example, items that are high in the security criterion sort include "Child follows mother's suggestions readily, even when they are clearly suggestions rather than orders," "Child uses mother's facial expressions as a good source of information when something looks risky or threatening," "Child recognizes when mother is upset. Becomes quiet or upset himself. Tries to comfort her," and "Child is strongly attracted to new activities and new toys." By incorporating into the security criterion sort many of the theoretical correlates of attachment security (such as the child's obedience, social referencing, empathy, and preference for novelty), the AQS enlists a much broader operationalization of attachment security that is perhaps better suited to a home observational measure, in contrast with the more narrow focus on secure base behavior of the laboratory measures. The AQS is an assessment of security alone; there are no consistent procedures for distinguishing "secure" from "insecure" attachments on the continuous security score, nor does the procedure yield differentiated forms of insecurity such as those provided by Strange Situation based assessments.

Semiprojective narrative assessments. Consistent with the view that at older ages attachment security becomes increasingly a matter of the child's representations of a partner's accessibility, a variety of narrative assessments of attachment have been devised that rely on semiprojective methodology to assess children's working models. In these assessments the children are asked to complete story stems that are designed to evoke attachment-related issues, with the assumption that children will project onto the story's characters their own feelings and beliefs associated with their attachment figures. These procedures include semiprojective story-completion tasks for young children involving a doll family and various props (e.g., Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1988; Oppenheim, 1997), which index security by whether the story character's negative feelings are acknowledged and satisfactorily resolved with the support of another. There are also semiprojective story-completion tasks for older children (e.g., Jacobsen, Edelstein, & Hofmann, 1994; Jacobsen & Hofmann, 1997), which index security by the child's acknowledgment of the story character's feelings and vulnerability, strong sense of self, and constructive ideas about coping. The semiprojec-

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tive design of these story-completion tasks is thus intended to evoke in children the feelings and motives that they would experience in circumstances comparable to those portrayed in evocative story vignettes, which describe experiences like separation from attachment figures. Insecure classifications for each procedure closely parallel those of the Strange Situation. A similar general strategy underlies approaches that assess attachment representations in young children through picture response procedures (e.g., Main et al., 1985; Slough & Greenberg, 1990), in which the quality of children's descriptions of people presented in photographs designed to evoke attachment-related themes are assessed (e.g., a child watching a parent depart).

Self-report procedures. Attachment assessments at older ages also include self-report instruments for older children and adolescents, such as the Security Scale (Kerns, Aspelmeier, Gentzler, & Grabill, 2001; Kerns, Klepac, & Cole, 1996; Kerns, Tomich, Aspelmeier, & Contreras, 2000) and the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987), which directly ask children and youth to describe the extent of their trust, ease of communication, and closeness to an attachment figure. Self-report interview or questionnaire measures of attachment also exist for adolescents and adults to report on their attachment experiences with romantic partners, many of them yielding delineations between security and insecurity similar to Strange Situation classifications, such as secure, dismissing or fearful (comparable to infant avoidant), preoccupied (resistant), and unresolved (disorganized; Crowell, Fraley, & Shaver, 1999).

Representational assessment through discourse quality. The measures described above characterize the security of specific relationships through direct assessments of relational experience. A much different strategy is incorporated into the Adult Attachment Interview (AAI), in which memories of adults' childhood relationships with each parent are elicited and the adult is characterized as secure or insecure (Hesse, 1999). Rather than relying on direct observations, self-reports, or responses to semiprojective stories, the AAI enlists measures of discourse quality (e.g., coherence) that are believed to reflect unconscious influences on adults' representations of their attachment-related experiences in childhood. This approach yields attachment classifications of secure/autonomous, insecure–dismissing, insecure–preoccupied, or unresolved/disorganized that closely parallel infant Strange Situation classifications. The classification of adult attachment is not based primarily on whether adults recall their childhood experiences positively or negatively, but rather on clarity, contradiction, digressions, unsupported generalizations, and other discourse features that are believed to be based on unconscious defenses in response to the interview inquiries.[4] Indeed, an adult can be deemed secure despite recollections of difficult parent–child relationships, and an insecure classification can be assigned despite the adult's glowing recollections of family interaction.

Validity issues. Attachment researchers have been laudably innovative in devising new strategies to capture developing relational representations in children, adolescents, and adults. The task of assessing attachment security in age-appropriate ways is especially formidable because attachment becomes psychologically more multifaceted with increasing age (linked to emerging systems of self-understanding and social cognition), is manifested in behaviorally more complex ways, and may require assessments that tap into nonconscious and conscious processes. The assessment strategies that have been developed provide creative avenues toward identifying individual differences in security beyond infancy. However, after nearly two decades of method development, it is now essential that researchers respond to the calls for methods validation that have also been long-standing concerns (see e.g., Ainsworth, 1990; Cicchetti, Cum-

4. The AAI also differs from other attachment assessments because of the significant effort and expense required to obtain the training necessary to conduct valid AAI interviews and scoring. This is perhaps an inevitable consequence of the effort of this instrument to "surprise the unconscious."

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mings, Greenberg, & Marvin, 1990). Just as the initial generation of infancy attachment research is respected because of the careful validational work of Ainsworth and her followers, the careful validity studies of the new generation of attachment measures will encourage developmental scientists to consider seriously the findings of research employing these measures.

Establishing a meaningful link between a construct (attachment security) and behavioral indices has been challenging from the beginning of attachment research (Lamb et al., 1985) and remains so today. When observational procedures are used, for example, researchers must ensure that age-appropriate behavioral indicators of security or insecurity are enlisted into coding procedures while maintaining a consistent underlying theoretical construct of attachment security.[5] When home observations are used and security criteria must necessarily be broadened, it is important to show that these criteria are closely tied to secure-base behavior and do not include other potential correlates of secure attachment that research has yet to confirm. When narrative indices of secure attachment are used, validational issues become especially complex because of the multifaceted influences on semiprojective story completions or self-reports. Children's narrative coherence, story themes, and emotional openness may be affected not only by the internal representations that are associated with a secure attachment, of course, but also by other relational influences on children's narratives (e.g., verbal fluency; use of language in the home) that may be distinct from attachment security (and have other correlates, such as socioeconomic status or social stress). As Oppenheim and Waters (1995) note, "[a]s long as we focus on narrative assessments solely as a means of tapping internal models generated by the individual, we may miss recognizing the contributions made by the interpersonal world to such narratives and to their underlying representations" (pp. 213–214). Moreover, if children's representations of relationships are affected by parent–child discourse in the ways described earlier, then a parent's discourse style, emotional inferences, moral judgments, and motivational attributions may be incorporated into children's narratives about story characters in ways that may or may not be related to the security of the parent–child relationship.

Of course, narrative assessments of children's representations of experience provide important insight into the influence of family relationships. One of the best examples is research comparing maltreated and nonmaltreated children in their representations of themselves and their caregivers and their understandings of conflict, comfort, and other interpersonal processes as revealed in their story-stem completion responses (e.g., Macfie et al., 1999; Toth, Cicchetti, & Macfie, 2000; Toth, Cicchetti, Macfie, & Emde, 1997; Toth, Cicchetti, Macfie, Rogosch, & Maughan, 2000). Validation of narrative responses as measures of attachment security, however, requires showing that variability is closely tied to differences in the security of attachment. This is a more challenging task owing, in part, to the expected influences of self-presentation biases and defenses on responses to focused questions about close relationships. Indeed, if attachment insecurity can be revealed in the AAI in idealized descriptions of the parent–child relationship (Hesse, 1999), then children's self-reports may provide misleading information about the true nature of that relationship if they are accepted at face value.

One approach to validating postinfancy attachment assessments is to establish their contemporaneous convergence with other measures of attachment. There has been considerable empirical work in this area, and the evidence of such studies is mixed (see Solomon & George, 1999, for a more comprehensive review). With respect to the convergence of infant Strange Situation classifications with

5. The standardization of assessments is also critical. Just as the comparability of findings from studies employing variations on the standard Strange Situation have been uncertain, so also the procedural and coding variations of researchers using the Cassidy–Marvin procedure makes it difficult to evaluate the comparability of these procedures as attachment assessments and the relevance of their findings to validity concerns (compare, e.g., Barnett, Kidwell, & Leung, 1998; Cassidy, 1988; NICHD Early Child Care Research Network, 2001; Stevenson–Hinde & Shouldice, 1995).

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the AQS, for example, the strength of the relation seems to depend on whether mothers or independent observers are performing the AQS, with observer-based AQS scores converging better with Strange Situation classifications than maternal scores (see, e.g., Mangelsdorf et al., 1996; Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996; Vaughn & Waters, 1990). With new procedures proposed by Teti and McGourty (1996) to improve the validity of the maternal sorts, it remains to be seen whether convergence with the Strange Situation is improved. Solomon and George (1999) report that the Cassidy–Marvin and Crittenden observational procedures do not reliably index the same children as secure, nor has a significant association been found between Cassidy–Marvin classifications and the AQS. With respect to narrative measures, 3-year-olds' responses to Bretherton et al.'s (1990) Attachment Story Completion Protocol were marginally correlated with contemporaneous AQS scores and significantly associated with responses to a parental separation coded by the Cassidy–Marvin procedure (although differences in insecurity were not comparably indexed by the two assessments). Oppenheim's (1997) doll-play measure did not yield differences that were consistent with AQS security scores, however, although they were associated with other measures of parent–child interaction and hypothesized correlates of attachment.

The difficulty in validating postinfancy attachment assessments by their contemporaneous associations is that none has yet been established as the gold standard. Even the AQS, which seeks to assess secure base behavior at home, is an uncertain standard because of questions about whether the operationalization of security it enlists is too inclusive, reflecting variability in security but also in temperament and other influences (Solomon & George, 1999; Vaughn et al., 1992). Thus, the somewhat mixed picture of convergent validation empirically yielded thus far is consistent with a view that, although there is meaningful shared variance among the various observational and narrative assessments that likely indexes attachment security, there is also considerable independent variance that is partly attributable to differences in assessment strategy and other influences on these measures. One implication is that future research may benefit from enlisting a multimethod approach to assessing attachment, exploiting the diverse strategies that currently exist and using the convergence among different measures as a more reliable index than any single measure might alone provide.

An alternative approach to validating postinfancy attachment assessments is to establish their reliable association with external measures of the parent–child relationship. Waters and Cummings (2000) argue that the use of the parent as a secure base, especially in challenging or difficult circumstances, is the most important external correlate of attachment security at any age. Such a view reflects the conviction, incorporated into Bowlby's theory, that representations must always relate to behavior in close relationships (Marvin & Brittner, 1999). However, can secure base behavior be assessed after infancy? Although older children, adolescents, and adults rely much less on physical proximity to their attachment figures, it is clear that security is nonetheless derived from reliance on their support, ease of communication with them, and their psychological accessibility. Lynch and Cicchetti (1991, 1997), for example, characterized relational needs in middle childhood and adolescence in terms of emotional quality (positive or negative feelings) and psychological proximity seeking (striving for closeness). For children and adolescents, these qualities may be apparent when they seek a parent's assistance when upset or stressed, cooperate with the parent's supervision of their activities, use the home as an important venue of activity, participate in family activities, share affection, disclose information about the important events of their lives, or seek help on school or social problems (Marvin & Britner, 1999; Waters, Kondo–Ikemura, Posada, & Richters, 1991). If attachment theory is correct in asserting that security remains important to close relationships throughout life, then these and other observed indicators of secure-base behavior may be important to the validation of later age assessments of attachment security. Thus far, Kerns'

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work with the self-report Security Scale for children has been the only systematic effort to validate a new attachment assessment with respect to observations of secure base behavior (see Kerns et al., 1996, 2000, 2001), and Crowell et al. (2002) recently associated secure base behavior in adulthood with AAI classifications. Future efforts to validate attachment assessments with respect to external measures of the parent–child relationship are probably warranted.

In the end, the challenge faced by attachment researchers is like the challenges of establishing the heterotypic continuity of personality constructs. Until attachment researchers, who are guided by the development of attachment theory, have validated later age measures of attachment security, it is difficult to determine the later correlates of secure attachment or understand in which ways attachment itself is consistent or changes over time. Until that time, studies of attachment after infancy are likely to yield a variety of expected (and sometimes unexpected) correlates of attachment security because of the way in which attachment is itself indexed in terms of secure base representations, emotion regulation capabilities, communicative coherence, empathy, a strong sense of self, and/or other qualities, depending on the age of the sample and the assessment strategy used. In this regard, the development of theory that addresses how attachment changes throughout life must guide the development and validation of postinfancy attachment assessments (rather than the reverse). The need for attachment theory and methodological validation to develop in concert is similar to what existed at the time of Masters and Wellman's (1974) review of the status of attachment work, but the challenges and opportunities facing attachment researchers today are much greater.

Varieties of insecurity?

One of the most striking features of the Strange Situation is that not one, but several, insecure classifications were identified that are different in their behavioral characteristics, origins, and sequelae. Nevertheless, the common practice of attachment researchers has long been to combine the insecure–avoidant and insecure–resistant classifications to yield a broader comparison of insecure with secure relationships, despite the heterogeneity this produced in the insecure group (Lamb et al., 1985). This practice also derived from the use of relatively small samples in attachment research that made insecure groups too small to be meaningfully analyzed. The practice of combining insecure groups remained standard until the "discovery" of the insecure–disorganized (D) classification by Main and Solomon (1986, 1990), at which time variations in insecurity became a renewed focus of attention. The extremity of the behavioral disorganization of infants with the D classification, together with its links to antecedent maternal maltreatment and risk for later psychopathology, together focused attention on this and other variations in attachment insecurity (van IJzendoorn, Schuengel, & Bakermans–Kranenburg, 1999).

However, research on the D classification in the Strange Situation has created new challenges for investigators of attachment throughout life, because many attachment assessments after infancy do not distinguish between variations in insecurity. Although Strange Situation based procedures for preschoolers identify several insecure groups, the AQS indexes attachment security alone, and narrative and self-report attachment assessments for older children and adults vary in whether differences in insecurity are distinguished. It is not hard to understand why: it is as difficult to validate age-appropriate indicators of attachment insecurity in older samples as it is to identify valid markers of secure attachment. In this respect, theoretical development is again necessary to understand why, for example, the disorganization of the infant D classification should, by the preschool years, evolve into a much more coherent and organized controlling strategy (Main & Cassidy, 1988). Understanding the later behavioral and representational attributes of different forms of insecurity is thus an important theoretical and empirical challenge.

This is especially so in light of the findings of prospective longitudinal research indicating that early avoidant or resistant attachment in-

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security (not just disorganization) can be prognostic of later psychological maladjustment (Weinfield et al., 1999). In many cases, therefore, it is as important to understand the organization or disorganization of attachment insecurity as it is to identify whether a child is secure or insecure. More attention should be devoted, therefore, to determining how varieties of insecurity should be conceptualized and measured beyond infancy. This will likely require larger sample sizes than have been typical for past attachment research, together with home observations to confirm the behavioral correlates of different insecure classifications. In the end, the inability to satisfactorily assess differentiated forms of insecurity at later ages may pose a threat to theory development because it significantly constrains empirical efforts to understand the sequelae of insecure attachments and their consistency over time.

What Does Secure or Insecure Attachment Lead To?

A prevalent assumption among many attachment researchers, which is borrowed from the analytical legacy, is that security or insecurity early in life will remain consistent in the years that follow.[6] This assumption is incorporated into the design of postinfancy attachment assessments in several ways. First, several measures were created by examining the behavior of children whose attachment classifications in infancy were known and searching for commonalities in the responses of children sharing the same prior classification years earlier. This was the strategy used by Main and Cassidy (1988), which was the basis for the Cassidy and Marvin assessment, and by Kaplan (1987), whose assessment approach was the basis for the story-completion procedures of Jacobson and colleagues (1994) and others.[7] If attachment security normally remains consistent as children mature, then such a strategy could potentially yield age-appropriate indicators of later security or insecurity. But if attachment status more typically changes over time, it is unclear what the later classifications mean. This strategy for measurement development explains the close correspondence between the classification categories yielded by these measures and infant Strange Situation classifications. Because later age security groups are based on the infant classifications, it is unlikely that researchers will seek or identify new attachment groups in older people that are unanticipated in infant Strange Situation behavior.

Second, regardless of whether the design of later attachment groups is explicitly based on infant Strange Situation classifications, attachment researchers have maintained remarkable fidelity to the original secure and insecure classifications identified by Ainsworth for the Strange Situation. Rarely have researchers identified groups of respondents that do not closely parallel the secure, avoidant, resistant, and disorganized infant classifications. This makes it easy to compare the attachment status of people at different ages in longitudinal studies, of course, but within the assumption that there are no new forms of security or insecurity arising with the developmental changes of childhood, adolescence, and adulthood. By implicitly expecting that the meaningful variability in security is already apparent in infancy (and that at later ages the same variability will be manifested in age-appropriate ways), many attachment researchers have implicitly answered the theoretical question of whether attachment changes organizationally with age in the negative through the design of their assessments. In-

6. Crittenden (1992, 1994, 2000) is an important exception to this general view.

7. A somewhat related development strategy led to the creation of the AAI. The AAI was developed from a sample of interview responses of parents for whom the attachment classifications of their infant offspring from Strange Situation assessments conducted several years earlier were known (Hesse, 1999). The AAI coding and classification system were developed by searching for commonalities in the interview responses of parents whose infants shared the same attachment classification. This helps to explain why AAI classifications so closely parallel infant Strange Situation classifications and, of course, why several researchers have reported a correspondence between parental AAI groups and their infants' Strange Situation classifications. Predicting infant attachment status is what the AAI was originally created to accomplish.

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deed, with the exception of Crittenden (1992, 1994, 2000), the possibility that attachment organization might evolve significantly with psychological maturity appears not even to have been considered.

Stability and change in attachment

Empirical studies of the stability of attachment over time yield a conclusion that contrasts, however, with the expectation that attachment classifications will be developmentally consistent. Quite simply, children vary considerably in the extent to which attachment security remains individually consistent over time (Thompson, 1998, 2000). Whereas some studies have found remarkable consistency between infant Strange Situation classifications and assessments of attachment at later ages (e.g., Wartner, Grossmann, Fremmer–Bombik, & Suess, 1994), others have found very little consistency in Strange Situation assessments separated by as little as 6–7 months (e.g., Belsky, Campbell, Cohn, & Moore, 1996). Several recent reports are especially noteworthy. First, the NICHD Early Child Care Research Network (2001) compared 15-month Strange Situation classifications using Ainsworth's procedures with 36-month attachment classifications using the Cassidy–Marvin procedure for a sample of more than 1000 children and found that only 46% of the children obtained the same classification on each occasion. Second, the first studies longitudinally comparing infant Strange Situation classifications with late-adolescent AAI classification have yielded mixed results. Whereas two (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Hamilton, 2000) found that nearly two-thirds of the sample obtained the same attachment classification in infancy and adolescence, three (Lewis, Feiring, & Rosenthal, 2000; Weinfield, Sroufe, & Egeland, 2000; Zimmermann & Grossmann, 1997) found no continuity. It is simply impossible to conclude that attachment relationships are normatively stable (or, for that matter, unstable).

More important than descriptions of the stability of attachment are explanations for why stability or instability occurs. Consistent with its analytic heritage, attachment theory offers rich explanations for developmental continuity but more limited understanding of normative changes in attachment over time. This is surprising because if security can, and does, change for many children, we must understand the reasons underlying continuity and change. Understanding these causes would have relevance, for example, to identifying protective factors for the maintenance of security in the lives of some children and catalysts to security in the lives of others whose early experiences are relationally insecure.

The most common explanation of "lawful discontinuity" in attachment is the impact of stressful life events on mother and child. Although there is evidence that negative experiences (like the death or serious illness of a parent, parental divorce, legal or financial family problems, or child maltreatment) can undermine security or maintain insecurity over time, such an explanation is incomplete for several reasons. First, the association between negative life events and attachment change is moderate but not strong, suggesting that other influences are also relevant and perhaps preeminent (Thompson, 2000; Waters, Weinfield, & Hamilton, 2000). Second, stressful events are believed to precipitate attachment change because they alter the caregiver's sensitivity and responsiveness, but the adult's coping capacities can mediate whether these events affect the attachment relationship in this way (Thompson, 2000). A study by Teti, Sakin, Kucera, Corns, and Das Eiden (1996) illustrates this. They found that AQS attachment security in firstborn preschoolers decreased significantly following the birth of a new sibling and that children whose security scores dropped the most dramatically had mothers with significantly higher scores on depression, anxiety, and/or hostility compared to the mothers of children who maintained high security scores. Firstborns' security scores were also predicted by measures of the mothers' marital harmony and affective involvement with the firstborn. It was thus the interaction of family events with a caregiver's coping capacities that predicted continuity or change in attachment security. An adult's capacities to adapt to stress are likely to be af-

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fected by the availability of social support, personality factors, and other influences and may be especially relevant to changes in parental employment, child-care transitions, and other events whose effects on the child can be minimized or enhanced by the adult's adaptive coping. In families in risk conditions, the efficacy of a parent's coping with challenges and stresses may be limited by the scope and severity of negative life events. Consequently, it is also important for researchers to explore the conditions in which parental coping can or cannot mediate the influence of negative life events on the stability of attachment and the psychological resources of adults that enhance or diminish coping efficacy.

Third, negative family events can influence attachment security not only indirectly (through their effects on parental sensitivity) but also directly when they demand emotion regulation and adaptive coping from the children. This is most apparent with marital conflict. As research based on Cummings and Davies' emotional security hypothesis indicates (Cummings & Davies, 1994; Davies & Cummings, 1994), parental conflict challenges children's coping and can threaten emotional security directly, even before actual changes have occurred in parental responsiveness (see Davies & Forman, 2002, and Owen & Cox, 1997, for empirical applications to attachment theory). In this regard, children's expectations of parental conduct, temperamental individuality, and other influences on their coping capacities may mediate the continuity of attachment security over time (Thompson, 2000; Waters et al., 2000).

Finally, we know relatively little about the influences that can cause formerly insecure children to become secure. This is an especially important issue because of its relevance to developmental psychopathology and, in particular, understanding the conditions that improve security for children whose attachments are initially insecure. Research from the early mental health field shows that parent–child therapeutic interventions that are informed by attachment theory can heighten the incidence of secure attachments in groups that are initially insecure or at heightened risk of attachment insecurity (e.g., Cicchetti, Toth, & Rogosch, 1999; Toth, Maughan, Manly, Spagnola, & Cicchetti, 2003). But much less is known about the ordinary conditions that can provoke transitions to secure attachment in nontherapeutic contexts. Now that it is apparent that attachment status changes normatively for many children, it is important for attachment researchers to better understand the influences that contribute to "lawful discontinuity" in attachment. If Bowlby's claim is accurate that attachment patterns are a product of personal history and current circumstances, what factors in a child's current circumstances can alter the impact of history? Current research offers provocative hypotheses warrenting further study, such as the assertion that social support, the capacity to renegotiate familiar interaction patterns when family circumstances change significantly, and the experience of security in a close alternative relationship can each improve the chances for children to develop security despite a history of insecurity.

Early attachment and later behavior

Another central theoretical concern is how attachment security relates to later behavior. Consistent with the analytic legacy, attachment researchers have been guided by a general expectation that secure attachment predicts more positive social and personality functioning. Empirically, however, attachment security has been studied in relation to a dizzying variety of later outcomes, including cognitive and language development; frustration tolerance; self-recognition; behavior problems; relations with peers, friends, and siblings; interactions with unfamiliar adults; exploration and play; competence in preschool and kindergarten; language development; curiosity; ego resiliency; and math achievement. As Belsky and Cassidy (1994) asked, one might wonder if there is anything to which attachment security is *not* related (see also Sroufe, 1988; Waters, Crowell, Elliott, Corcoran, & Treboux, 2002).

Why has there been a search for so many diverse sequelae of a secure attachment? One reason is that attachment theory provides a conceptual umbrella for both broad and nar-

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row constructions of the developmental impact of attachment relationships. Weinfield and colleagues (1999), for example, propose that early attachment can influence later development as it influences (a) neurodevelopment, (b) affect regulation, (c) behavioral regulation and relational synchrony, and (d) early representations. Although they argue that attachment relationships should be most strongly predictive of sequelae like subsequent adjustment, interpersonal competence, and self-understanding, it is easy to see how a much wider variety of sequelae can be encompassed within the four sources of influence they describe. Similarly, to the extent that attachment security is believed to index the ongoing harmony of the parent–child relationship, a variety of socialization outcomes might be expected to arise from secure or insecure attachments related to identification, imitation, learning, cooperation and compliance, and prosocial motivation (Waters, Kondo–Ikemura, Posada, & Richters, 1991). The most important theoretical mediator between early attachment and later behavior, internalized representations of experience (or IWMs), also contributes to broad constructions of the influence of attachment on later behavior, as discussed earlier. In light of this theoretical pluralism, it is easy to understand why disagreements arise concerning appropriate theoretical hypotheses by which attachment theory can be tested (Sroufe, 1988). Belsky and Cassidy (1994) and other attachment theorists view language development as outside the range of attachment sequelae, for example, but van IJzendoorn, Dijkstra, and Bus (1995) report that they are significantly associated (based on a meta-analysis of eight studies), which they interpret as one of the consequences of a more congenial parent–child relationship.

Achieving greater clarity in theoretical expectations is crucial to the development of attachment theory. When attachment researchers disagree over what hypotheses can be reasonably derived from the theory, it is difficult to determine whether empirical findings are confirmatory or disconfirming and both convergent and discriminant validities are obscured. Although researchers are always free to investigate a variety of possible sequelae, theoretical precision is necessary to guide whether associations with attachment are expected to be strong or weak, direct or indirect, mediated or moderated by other variables. Moreover, the clarity of the attachment construct is itself at risk when attachment appears to be hypothesized to predict all the outcomes reasonably expected of a well-functioning personality. Such a view obscures the original formulations of Bowlby's theory and threatens to dilute the specificity and significance of a secure attachment. With respect to research in developmental psychopathology, a general expectation that a secure attachment is associated with good outcomes and an insecure attachment with bad outcomes underestimates the complex interactions among risk and protective influences in life history and current experience, as well as the principles of equifinality and multifinality that underscore the probabilistic nature of early risk (Sroufe, 1997).

Theoretical clarity is one challenge in understanding the association between attachment and its sequelae. A related challenge is empirical clarity. The most common research design in this field examines direct predictive or contemporaneous relations between attachment and its expected sequelae with little attention to potential mediators or moderating influences. But as Belsky and Cassidy (1994) noted, this research literature thus does not clarify whether attachment alone accounts for these outcomes or whether attachment and outcomes are jointly associated with third, intervening variables. It is likely, for example, that attachment security is not directly predictive of math achievement but rather that both are associated with parental support, school attendance, and perhaps family values related to high achievement (Weinfield et al., 1999). In a similar vein, predictive relations between attachment security and later behavior must be interpreted with regard to the continuity in parental care: the apparent sequelae of a secure attachment may derive from continuity in parental sensitivity that initially contributed to attachment security (Lamb et al., 1985; Waters et al., 1991). As a consequence, it is difficult to determine whether current findings

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support broad or narrow constructions of the influence of attachment because few studies have been designed to examine these associations in the context of other relevant determinants of children's outcomes (see Sroufe, Egeland, & Kreutzer, 1990, for an illustrative exception).

This is especially important to research in developmental psychopathology because the sequelae attributed to early attachment insecurity may derive also from the risk factors that may have contributed initially to an insecure attachment. In several independent studies, researchers have found that the juxtaposition of attachment insecurity with other forms of child vulnerability, maternal and parenting problems, and an adverse family ecology best predicts the development of child behavioral problems (Greenberg, Speltz, DeKlyen, & Jones, 2001; Lyons–Ruth, Easterbrooks, & Cibelli, 1997; Shaw, Owens, Vondra, Keenan, & Winslow, 1996). Each of these additional risk factors is likely to have contributed to early insecure relationships as well as later behavioral problems, and thus studies of attachment and its sequelae must take into account these other influences. Moreover, the confluence of attachment insecurity with other risks may help to explain why the association between early attachment and later difficulty in high-risk samples is often not replicated in lower risk, middle-income families (Greenberg, 1999; Weinberg et al., 1999). The influence of attachment is far better understood in the context of allied risks to healthy development, and studies in developmental psychopathology should be designed to explore these.

Empirically, therefore, the relation between attachment and later behavior is ambiguous. Current research indicates that early secure attachment foreshadows more positive parent–child relationships, and possibly inspires closer relationships with peers, teachers, and other well-acquainted partners. In contemporaneous associations, secure attachment is also associated with more positive representations of self and peers and more sophisticated understanding of emotion and conscience development (Thompson, 1998, 1999). But it is difficult to determine whether these associations are due to social expectations, social skills, continuing caregiver support, or other correlates of attachment security. It is also unclear how attachment interacts with other significant influences within the family to shape early sociopersonality functioning. Among the conceptual challenges of this field are also understanding how multiple attachment relationships (e.g., with parents, child-care provider, grandparents) together influence children's social and personality growth. In addressing these and other challenges concerning attachment and later development, studies of attachment in high-risk populations may be especially informative.

Attachment and Risk

The association of attachment security with later behavior assumes particular importance in studies of children at psychosocial risk. Insecure attachment heightens the potential for later social and emotional difficulties for children growing up with poverty, family instability, and parental dysfunction (Greenberg, 1999). On the other hand, secure attachments can be a protective factor in these circumstances (Egeland, Carlson, & Sroufe, 1993), but children growing up in difficult conditions are less likely to develop secure attachments to their caregivers (Spieker & Booth, 1988). These conclusions have led to considerable inquiry about how to conceptualize the nature of early psychosocial risk, its association with attachment, and the interaction of contextual risk and attachment in shaping later psychological growth. Although there is little doubt that psychosocial adaptation is influenced by early relationships and current experiences (Sroufe, Carlson, Levy, & Egeland, 1999), understanding the complexity of the relationships among risk factors, attachment security, and later development has posed a number of theoretical and empirical challenges.

Attachment researchers have studied risks such as poverty (Coyl, Roggman, & Newland, 2002), child maltreatment (Barnett, Ganiban, & Cicchetti, 1999; Cicchetti & Barnett, 1991), maternal depression (Teti, Gelfand, Messinger, & Isabella, 1995), "negative" maternal personality (Belsky, Rosenberger, &

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Crnic, 1995), parenting stress (Teti, Nakagawa, Das, & Wirth, 1991), overcrowding in the home and parental incarceration (Shaw & Vondra, 1993), and other influences. Although the association between these contextual risks and attachment insecurity is clear, it is also apparent that the influence of contextual risk factors is far from uniform, and there is uncertainty concerning the processes by which different risk factors (singly or in combination) affect early socioemotional development (Greenberg, 1999; Greenberg et al., 2001). There are two issues that require particular attention in attachment research of the future. First, how does contextual risk affect attachment security, later behavior, and the association between them? Second, how should constellations of risks be conceptualized and assessed in relation to attachment and later functioning?

Risk, attachment security, and later behavior

How does contextual risk affect the development of attachment security? One influential hypothesis is that risk factors that are more proximal to the child and that have a stronger direct impact on parenting, such as maternal depression or parenting stress, will influence attachment more strongly than risk factors that are more distal to the parent–child relationship (Belsky, 1984). Moreover, distal risks such as poverty will influence attachment security to the extent that they affect proximal influences, such as the mental health of parents and, in turn, parental behavior (Aber, Jones, & Cohen, 2000; Coyl et al., 2002; McLoyd, 1990).

This view has been supported by studies indicating that children of depressed parents are more likely to become insecurely attached (Martens & Gaffran, 2000; Teti et al., 1995) and the substantial rates of depression and other psychological difficulties for parents in at-risk circumstances (Belle, 1990). Depression is an inconsistent predictor of insecurity (Cicchetti, Rogosch, & Toth, 1998), however, and its strongest influence appears in the context of broader family risk factors such as poverty and child maltreatment (Martens & Gaffran, 2000). When these findings are considered in light of the small effect sizes linking maternal sensitivity to attachment security in high-risk populations (De Wolff & van IJzendoorn, 1997), it is apparent that more than just proximal risks are influential in the development of attachment insecurity in disadvantaged samples. As De Wolff and van IJzendoorn (1997) conclude, a "move to the contextual level" is required to interpret the association between the quality of parental care and attachment. In high-risk samples, this means that although some contextual risks may be mediated by proximal influences on the parent–child relationship, other contextual risks may have direct and unmediated influences on attachment security through means other than parental behavior (e.g., unpredictability of ecological demands such as noise). How they are influential and the potential role of protective factors in the family ecology (given that some children in high risk environments with multiple risks develop secure attachments) are important topics for future research.

Contextual risk (whether mediated by parental behavior or not) influences attachment, and it is likely also to influence later behavior. Although early insecure attachment is a risk factor for later behavioral and emotional problems, so also are many of the contextual risk factors that accompany the development of attachment insecurity. Thus the sequelae of insecure attachment may arise also from the continuing influence of some of the same risks that initially contributed to insecurity (Rutter, 1995). Disorganized attachment especially illustrates this interpretive challenge. According to a recent meta-analysis (van IJzendoorn et al., 1999), child maltreatment is one of the strongest predictors of disorganized attachment and, further, children with disorganization are more likely to develop externalizing behavior problems. Given the importance of attachment to the development of emotional control and self-regulation, the association between disorganized attachment and behavior problems seems straightforward. Yet it is important to also consider the other risk factors that may characterize the experience of a child with disorganized attachment, especially one who has been abused or ne-

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glected. Without information about whether maltreatment has continued or ended, for example, it is difficult to determine whether later behavior problems reflect current psychological stress associated with abuse, poor quality care, disorganized internal working models, early relational insecurity, or an interaction of these influences. As Sroufe and colleagues (1999) and others (e.g., Lamb et al., 1985; Thompson, 1998) have cautioned, "early experience often plays a critical role . . . but this role is dependent on a surrounding context of sustained environmental supports" (Sroufe et al., 1999, p. 2).

Distinguishing the consequences of continuing risk factors from the influences of early relationships on later behavioral outcomes remains a significant conceptual and empirical challenge for developmental psychopathologists.[8] In addressing this challenge, researchers must assess risk factors when collecting both predictive and outcome variables, and should include indices of risk at both times of measurement as predictors of the outcomes of interest. Only in this manner can the importance of early relational insecurity be considered independently of early and continuing risk factors in the lives of children, and such an approach also enables researchers to examine whether early insecurity is more influential on later outcomes when contextual risk levels remain high rather than declining over time.

Cumulative risk and other models

Recognizing that constellations of risk better predict behavioral outcomes than do individual risk factors, researchers commonly use cumulative risk models to index aggregated challenges to psychosocial health. Cumulative risk models often combine influences such as low family income, low parental education, high depressive symptomatology, and low social support into a single measure. There are many justifications to doing so. Families experience difficulty in aggregate: in her study of families in a low-income Appalachian community, for example, Fish (2001) found high collinearity between several risk factors (including maternal "negative personality" and low maternal education) that could each potentially undermine caregiver sensitivity and attachment security. These risks are not easily dissociable empirically, especially when small samples are studied. Moreover, cumulative risk models are theoretically valuable: children with higher levels of risk have been shown to have poorer developmental outcomes than children with lower cumulative risk (Sameroff & Fiese, 2000). As might be expected, for example, multiple risks are more strongly predictive of attachment insecurity (Shaw & Vondra, 1993; Spieker & Booth, 1988).

There are, however, difficulties with cumulative risk indexes that warrant considering alternative approaches (Greenberg, 1999; Greenberg et al., 2001). Risk factors operate on different levels of influence (e.g., individual, familial, ecological), and it is unlikely that each has comparable meaning or strength (Cicchetti & Aber, 1986). However, cumulative indices make it difficult to determine the relative influences of individual risk factors or particular constellations of risk or how each affects behavior in direct or indirect ways. Cumulative risk indices also typically weigh each risk factor equivalently, and do not take into account the interaction or overlap between individual risks. As a practical matter, moreover, different investigators tend to create different cumulative risk indices to predict similar developmental outcomes, rendering the comparability of their findings more difficult. There is also substantial evidence to indicate that risks do not necessarily show a linear or additive association with outcomes, but rather have nonlinear effects: there is a rapid increase in the probability of psychological difficulty, for example, when risk factors increment beyond two or three (e.g., Rutter, 1985). Cumulative risk models tend to obscure the investigation of nonlinear associations like these between risk and outcome.

Developmental psychopathology research focusing on the relation between attachment and later behavior requires a more incisive

8. Consideration of whether early risk factors endure is also relevant to understanding the continuity of attachment over time.

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understanding of the influence of specific risk factors, and particular combinations of risk, on attachment and its sequelae. But strong alternatives to cumulative risk approaches are difficult to identify, especially for small research samples of low statistical power. One alternative is for researchers to reconsider that there might be value in examining the influence of individual risks on outcomes, with measures of effect size providing a comparative indication of relative impact. As effect sizes across multiple studies are compared, it is then possible to identify particular aggregates of risk factors whose combined influence on attachment and outcomes can be statistically evaluated. Risk factors can be aggregated in a data-driven manner (e.g., factor analysis) or based on theoretical models (e.g., identifying a priori constellations of proximal risks most likely to predict attachment insecurity). In each case, the result might be more informative than global cumulative risk indices because the reasons for the selection of risks to aggregate are more transparent and theoretically driven and alternative constellations of risk can be empirically compared.

These approaches require sample sizes that are adequate to the task of evaluating and empirically aggregating the effects of individual risk factors. New approaches to assessing risk also become possible for investigations of greater size and scope. Not only is it possible to compare the influence of specific risks on outcomes with other risk constellations controlled and to explore the statistical interactions of risk factors, but new analytical approaches can also be implemented. More specifically, person-oriented data-analytic strategies enable researchers to calculate risk ratios of the likelihood that negative developmental outcomes will occur given specific antecedent risk factors (see Scott, Mason, & Chapman, 1999). By contrast with variable-oriented approaches that represent individuals in terms of group means and variances, person-oriented approaches enable investigators to identify the proportions of individuals showing distinct risk profiles to aid in predicting the potentially diverse pathways to problematic outcomes more precisely. There are some disadvantages to the statistical techniques associated with person-oriented approaches (see Scott et al., 1999), but they offer a means of conceptualizing and empirically comparing different constellations of risk in relation to developmental outcomes that are a potentially attractive alternative to conventional cumulative risk models.

Finally, it is important to consider the value of experimental research designs for confirming hypothesized associations between risk factors and developmental outcomes like attachment insecurity. In particular, intervention studies that experimentally alter expected risk factors to determine whether developmental outcomes are more positive (in relation to a control group) have proven to be very powerful demonstrations of the effects of theoretically predicted risks in attachment research (see, e.g., Cicchetti, Rogosch, & Toth, 2000; Cicchetti et al., 1999; Lyons–Ruth, Connell, & Grunebaum, 1990; Toth et al., 2003). Moreover, the findings of experimental efforts to enhance maternal sensitivity and social support show that protective factors like these can buffer the effects of contextual risks, and subsequently enhance the likelihood that children will develop secure attachment relationships (Jacobson & Frye, 1991; van den Boom, 1994; van IJzendoorn, Juffer, & Duyvesteyn, 1995). In general, although experimental intervention studies are difficult to conduct well, they provide some of the most powerful empirical evidence of the influence of risk and protective factors on attachment security, and its sequelae, in the attachment literature.

In the end, greater sensitivity to the differentiated, interactive, and complex effects of risk factors on attachment security and its sequelae is necessary because of the complexity of these influences in developmental psychopathology. Given that most risks function in a manner that has been described as "equifinal" (different constellations of risk can lead to the same outcome) and "multifinal" (the same risks may lead to different outcomes), research strategies must be equal to the tasks of modeling these dynamic processes. This is especially so for families at risk, whose risk status itself changes over time, and in which resources as well as vulnerability characterize

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their influence on the developmental well-being of offspring. For developmental psychopathologists, this compels creative new ways of thinking about early risk factors and their influence over time, and empirical research strategies that are equal to the challenges of statistically modeling these influences in longitudinal investigations.

Conclusion

These conceptual and methodological challenges for attachment theory are not new. The need for growth in theoretical models of the development of attachment; to carefully and systematically validate measures of attachment security in age-appropriate ways, to conceptualize and study more incisively the relations between attachment and later behavior, and to understand the complex relations among attachment, risk, and later functioning have been with attachment researchers from the beginning. Bowlby recognized that a new conceptual perspective was necessary to liberate thinking about early parent–infant relationships from the psychoanalytic legacy and to provoke new ways of understanding attachments from the perspective of evolutionary biology, control systems theory, and developmental psychology. Early attachment theorists wisely recognized that the importance of their work would be judged by the extent to which the Strange Situation was carefully validated, and they appreciated that empirical demonstrations that attachment could predict later psychosocial functioning would offer compelling evidence of the value of the organizational approach. And in longitudinal research inaugurated in Minnesota in the 1970s with high-risk families, attachment researchers recognized early the importance of understanding the developing relations between attachment security and contextual risk.

What *has* changed is the scope of attachment theory and research. As attachment work has extended beyond infancy to encompass the life course, and as the importance of relational security has become the cornerstone to broader conceptualizations of personality development and developmental psychopathology, the formulations of Bowlby and Ainsworth have become stretched and expanded, perhaps beyond their original limits. Just as theoretical creativity and methodological rigor were necessary to rescue the integrity of the attachment construct from the doldrums of the early 1970s, the same qualities are essential to ensuring that attachment work proceeds in new directions in a manner that has strong theoretical and scientific integrity. Throughout this analysis, we have emphasized that among the most significant future needs of this field is for theoretical development that builds on Bowlby's fundamental insights. How should we think about developmental changes in attachment? What are internal working models, and how do they develop with increasing age? How important are differentiated forms of insecurity for understanding psychological adaptation? How is attachment related to later behavior in light of change and stability in attachment security over time? How do conditions of risk fundamentally influence the development of attachment security and later functioning? These are basic theoretical questions for which Bowlby's formulations offered tantalizing insights but were incompletely developed for life span applications. Attachment theory needs good theorists to develop these formulations in the context of developmental science of the 21st century.

We emphasize the development of theory because attachment work is among the most theoretically driven fields of contemporary developmental science. This is both a strength and a liability. The strength of its theoretical foundations is that ideas about the importance of relational security can find responsible applications that extend far beyond the limits of current empirical inquiry, and new research directions are inspired by these theoretical applications. The liability is that attachment researchers tend to treat empirical findings that are consistent with attachment theory as supporting the theory, and consequently they do not carefully investigate the alternative explanations that may occur to others, sometimes appearing to be loathe to critically evaluate central theoretical propositions. To the extent that attachment theory and research have the potential of guiding some of the most impor-

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tant work on sociopersonality development and developmental psychopathology in the next quarter-century, as we believe it does, it is time for attachment researchers to tackle these challenges with the alacrity of the pioneers.

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