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Commentary

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It is tempting to assume that attachment in infancy and attachment in adulthood are organized in similar ways. It is also natural to suggest that on the individual level continuity of attachment security or insecurity across the life span is the rule rather than the exception. With the recent upsurge of studies on attachment in adulthood, the issues of both organization and continuity are becoming central to attachment theory as it evolves into a life span developmental theory. In this commentary I elaborate on Maysless' speculations about the issue of attachment continuity in relation to some empirical evidence that has become available very recently.

Attachment organization in infancy and in adulthood of course differ in cognitive and emotional complexity. Nevertheless, Maysless suggests that the three major attachment classifications in infancy (avoidant, secure, ambivalent) and in adulthood (dismissing, autonomous, preoccupied) reflect similar strategies for dealing with negative emotions. Avoidant infants and dismissing adults deactivate their attachment concerns and emotions in stressful and distressing situations, whereas ambivalent infants and preoccupied adults hyperactivate negative attachment emotions. Secure infants and their adult counterparts are able to strike a balance between the activation and expression of negative emotions, and the monitoring of the wider environment. Main [1990] has suggested a somewhat more complicated picture of primary and secondary conditional strategies to control attachment behavior by altering the perceptions of attachment-relevant events and situations.

Evidence exists supporting the basic similarity of infant and adult attachment strategies. For example, avoidant infants and dismissing adults both show physiological signs of stress when confronted with situations arousing the attachment system, but they are not inclined to show their feelings of stress on the verbal or behavioral level [Dozier and Kobak, 1992; Spangler and Grossmann, 1993]. In fact, the Adult Attachment Interview (AAI) [George et al., 1985] and its coding system [Main and Goldwyn, 1985-1994] were constructed to provide classifications of attachment representations parallel to the classifications of infant behavior in the 'strange situation' procedure [Ainsworth et al., 1978]. The rating scale for angry resistance of ambivalent infants to their parents after a brief separation, for example, parallels the AAI coding system for anger in preoccupied adults' representation of their past attachment experiences.

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The similarity of attachment organization in infants and adults is empirically documented in a series of studies [Van IJzendoorn, 1995]. This evidence led to the idea of intergenerational transmission of attachment and to the hypothesis that attachment security is stable from infancy to adulthood. In a strict sense, intergenerational transmission of attachment means that the parent as an infant used the same attachment strategy to deal with negative emotions as the parent's infant now uses. Continuity of attachment from infancy to adulthood (and parenthood) is presupposed in the idea of transmission of attachment across generations. Secure infants are presumed to become autonomous or secure adults who as parents raise secure children. Mayseless speculates about stable developmental trajectories of attachment across the life span. Because infants organize their attachment experiences in an internal working model of attachment that filters and channels new experiences, they tend to remain on the same trajectory throughout their lives. But Mayseless points to the lack of longitudinal studies to document her speculations.

Recently, some pertinent empirical evidence has become available. Three decades after the 'strange situation' procedure was invented, and some decade after the AAI was constructed, we now witness the exciting possibility of assessing the development of attachment from infancy to adulthood. Four major longitudinal studies have been published thus far (see table 1), and more studies are on their way. The studies offer intriguing data on crucial issues regarding attachment theory. The interpretation of the evidence is, however, not unequivocal. I will argue that longitudinal studies confined to the first two decades of life may not be able to settle the issue of the continuity of attachment in a definitive way. On the basis of the longitudinal findings, I will discuss several ways to interpret the continuity of attachment. In so doing, I want to draw attention to the contextual dimension of developmental trajectories, which seems to have been deemphasized somewhat in Mayseless' model as well as in (adult) attachment theory in general.

Evidence for (Dis-)Continuity of Attachment

The Bielefeld longitudinal study [Zimmermann, 1994] shows how complex the issue of attachment continuity is. Forty-nine families from Bielefeld (northern Germany) participated in a study that began with home observations of parental sensitivity during the first year of life. During the second year, the infants were observed with their parents in the 'strange situation' procedure to assess the quality of their attachment relationship, and at 6 years of age, AAI data were collected from the parents. At 10 years of age, the children were interviewed to assess their mental representation of parental support. Finally, at 16 years of age, the AAI was completed by 43 of the adolescents seen as babies. Throughout the study, life events such as divorce, life-threatening illness of the parents, and loss through death of parents or family members were noted. Zimmermann [1994] demonstrates that attachment security in infancy is not associated with the security of attachment representation in adolescence. In particular, divorce and life-threatening illness of parents appeared to be associated with insecure adolescent attachment representations. Almost 70% of the variance in adolescent attachment security could be explained by life events, maternal attachment representations, and children's representation of parental support at 10 years of age [Zimmermann, 1994]. Attachment in infancy was not significant in this multivariate prediction of the adolescents' attachment representations. Its influence seems to be overshadowed by later experiences and repre-

Table 1. Longitudinal studies of attachment from infancy to adulthood

Study	Sample	n	Nonresponse rate %	Age (SSP) months	Age (AAI) years	Female %	Secure %	Autonomous %	Stability of attachment classification %
Waters et al. [1995]	stable middle-class	50	17	12	21	58	58	58	70
Hamilton [1994]	nontraditional families	30	26 ^a	12	17	43	40	30	77
Zimmermann [1994]	low - upper middle-class	43	12	12	16	50	30	49	44 ^b (n.s.)
Beekwith et al. [1995]	wide range SES	86	?	1, 8, 24	18	38	-	42	not assessed

Infant assessments are based on the 'strange situation' procedure (SSP), except in the Beckwith et al. study, in which parent infant interaction at home was assessed. Adult assessments are based on the AAI.

^aNonresponse in total sample (n = 200).

^bAAI classifications without AAI coding system.

sentations, even in this relatively stable sample. Unfortunately, the AAI was coded using Kobak's [1989] Q-sort coding system. The validity of the Q-sort coding system has been studied less extensively than the original Main and Goldwyn [1985-1994] system, and it is still unclear how the two systems are related.

Continuity is illustrated by Hamilton's [1994] study of 30 adolescents observed as 1-year-olds in the 'strange situation' procedure. Hamilton found a remarkable stability of attachment across a 17-year period: 77% of her subjects were similarly classified as secure or insecure at 1 year of age and at 17.5 years of age, when they participated in the AAI. The subjects were recruited from a larger California sample in which children from families with alternative life-styles were overrepresented. The sample should therefore be considered as living in rather unstable circumstances. Review of case notes for each family, gathered over the full course of the study, suggested that the continuity of attachment was associated with stable negative or stable positive family circumstances. Adolescents who retained a secure attachment classification grew up in families that experienced few stressful circumstances. In contrast, adolescents classified as insecure at both assessments came from families characterized by marital dissolution, family violence, persistent parental substance abuse, or financial stress [Hamilton, 1994]. Thus, the early years may leave their mark on later attachment representations if circumstances remain stable.

Waters et al. [1995] studied the attachment security of 50 white, middle-class subjects in infancy (using the 'strange situation' procedure) and in young adulthood (using the AAI). Attachment security of the original sample of 60 infants and their mothers was highly stable from 12 to 18 months of age [Waters, 1978], and the sample may be considered to consist of very stable families. For example, 78% of the parents remained married during this 20-year period. Through the AAI, information was derived about major life events. The continuity of attachment across 20 years was remarkable: 70% of the subjects were classified in the same secure versus insecure category. Across the three categories (avoidant/dismissing, secure/autonomous, ambivalent/preoccupied), agreement between early and later categorization was 64%. In the group of subjects who did not experience major negative life events, agreement was 78%. Discontinuity of attachment appeared to be related to negative life events such as loss of a parent, parental divorce, life-threatening illness of parent or child, parental psychiatric disorder, and physical or sexual abuse.

In a longitudinal study by Beckwith et al. [1995], 86 preterm infants were observed with their parents at home when the infants were 1, 8 and 24 months of age. The families came from a wide SES range and diverse ethnic groups. Maternal responsiveness at home predicted the AAI classifications of the same subjects at 18 years. The mothers of dismissing subjects had been less responsive than the mothers of autonomous or preoccupied subjects, who did not differ from each other. Mothers of dismissing subjects had also been consistently less responsive, whereas mothers of the other subjects seemed to change their behavior more often. Of the preoccupied subjects, 73% had experienced a family break-up, whereas only 28% of the autonomous and 20% of the dismissing subjects had this experience. The high rate of family breakup may have caused a discontinuous trajectory in the preoccupied subjects, who may have been to some degree responsively treated and securely attached during the years before the breakup. The absence of attachment assessments in this study makes it impossible to draw any definitive conclusion about the continuity of attachment across the first 18 years of life.

Combining the findings from the three studies in which attachment in infancy and in late adolescence or early adulthood was assessed, 78 of 123 subjects (63%) remained in the same secure versus insecure category. Although this percentage is impressive, it should also be noted that one third of the subjects changed categories. Some part of the latter percentage may be ascribed to coding errors (intercoder reliability for the 'strange situation' procedure and the AAI are about 90 and 80%, respectively). Some part of the instability may also be ascribed to Zimmermann's application of the Q-sort coding system. But even if only the Hamilton and Waters studies are considered, room seems to remain for other explanations of discontinuity, for example in terms of the child-rearing environment.

Early Prototypes or Stable Environments?

Waters et al. [1995] consider the outcome of their longitudinal study as important support for the prototype hypothesis. This hypothesis states that the primary infant-mother attachment relationship serves as a prototype for later love relationships, and that mental representations of real attachment experiences constructed early in life – in fact during the first year of life – account for this continuity [Waters et al., 1995]. An alternative hypothesis, however, is that continuity of attachment depends on the stability of the environment in which the child is raised. If the child-rearing environment provides enough sensitive care to stimulate the development of a secure attachment in the first year of life, it may continue to be optimal in later stages as well and therefore scaffold secure attachment throughout the first two decades of life. If this hypothesis is interpreted in a radical way, attachment only reflects the quality of the child-rearing environment, and the idea of an internal working model of attachment may be declared obsolete. Lamb et al. [1985] seemed to defend this position in their critique of the stability and predictive validity of the 'strange situation' procedure.

It is difficult to imagine a critical test of the two competing hypotheses. The continuity of attachment in stable environments cannot be considered as definitive proof for the prototype hypothesis nor for the stable-environment hypothesis. Both hypotheses would be supported, or at least they would not be contradicted. More definitive proof might be expected from falsifying evidence [Popper, 1980]. The early prototype hypothesis can only be disconfirmed if the quality of attachment changes in accordance with changing child-rearing circumstances. The stable environment hypothesis can only be disconfirmed if the quality of attachment remains the same even in an unstable environment. If continuity of attachment in stable environments is documented empirically and if no other evidence is available, two alternative interpretations remain open. In this case, the stable-environment hypothesis should – for the time being – be preferred on grounds of economy, because it does not presuppose a theoretical construct that cannot be observed directly, i.e., the internal working model of attachment.

In the longitudinal study, unstable environments provoked discontinuous attachments. These studies therefore appear to disconfirm the prototype hypothesis. In Beckwith et al.'s [1995] study, preoccupied adolescents had experienced about the same sensitive responsiveness during their first two years of life as had autonomous subjects. They differed from autonomous subjects, however, in terms of family breakup experiences. The preoccupied adolescents may have been secure infants, but the breakup of their family may have turned them into adolescents still preoccupied with their past attach-

ment experiences Hamilton [1994] noted that the adolescents who remained secure from infancy to adolescence came from stable families with few stressful life events. Adolescents who remained insecure came from families suffering from marital dissolution in early or middle childhood, marital tension, substance abuse, and financial uncertainty. More importantly, Hamilton also found that a change from insecure to secure attachment was associated with a stable family life without many stressful life events. The implication is that early negative attachment experiences such as lack of sensitive responsiveness may be compensated by later more optimal child-rearing circumstances. In other words, changes in the environment may override the influence of early insecure internal working models.

The studies of Zimmermann [1994] and Waters et al [1995] present similar data. In fact, the Zimmermann study entails the most stringent falsification of the early prototype hypothesis because in this nonclinical and rather stable sample, a direct association between early infant-mother attachment and attachment security in adolescence was absent. Early attachment experiences thus may only indirectly leave their mark on later attachment representations – through a multitude of intervening factors such as more or less serious life events. Again it should be noted, however, that the validity of the coding system that Zimmermann [1994] used remains unclear. Waters et al [1995] found remarkable continuity in their study, and the application of the attachment measures was exemplary. Does this study provide sufficient evidence for the early prototype hypothesis? In this stable middle-class sample, the continuity of attachment itself seems compatible with both the prototype and the stable-environment hypothesis. Incompatible with the prototype hypothesis, however, is the finding that changes in child-rearing circumstances, in particular the occurrence of negative life events such as parental divorce, parental psychiatric illness, or serious illnesses in the parents or the child, led to discontinuity of attachment.

If Waters et al [1995] had been unable to explain discontinuous attachments except on the basis of coding errors, their strong version of the prototype hypothesis would not have been disconfirmed. In view of the fact, however, that the environment affects the development of attachment even after the alleged critical first year of life, only a weak version of the prototype hypothesis seems defensible. This weak version of the prototype hypothesis would dictate that the quality of the first attachment relationship is robust against minor changes in child-rearing circumstances but that the internal working model of attachment may change as a consequence of major life events. Only this weak version of the prototype hypothesis is compatible with the Waters et al [1995] data.

The Waters et al [1995] study seems to explain discontinuous attachments most adequately on the basis of less strong retrospective evidence about changing life circumstances, compared to the other studies. Information about life events is derived from the same interviews (AAIs) that produce the adult attachment classifications. In addition to the potential risk of contaminated sources of information regarding the two factors – attachment and environmental stability – a major problem is that retrospective reports of autobiographical experiences have been shown to be reconstructions of the past on the basis of the present state of mind. This criticism does not apply to the AAI if it is only used for the assessment of (current) attachment representations because these are derived from the form in which the autobiographical narrative is being told [Van IJzendoorn, 1995]. However, it does apply to the interview if it is used to get an impression of what really happened in the past. This critique seems less pertinent in the case of retro-

spective reports on loss of attachment figures and divorce of parents but it might be relevant in case of reports on past abuse experiences or psychiatric disorders

In general the development of the child-rearing environment has been studied somewhat less carefully than the development of attachment across the life span. For example, the assessment of changes in child-rearing circumstances has often been restricted to major negative life events. Smaller fluctuations in the sensitivity of the environment to the attachment signals of a developing individual have not been included in the longitudinal studies published thus far. To test the prototype and the stable environment hypotheses more thoroughly we need adequate measures of both dimensions. In particular, the weak version of the prototype hypothesis can only be refuted if relatively minor changes in the environment lead to corresponding changes in attachment security. By minor changes I mean fluctuations in the sensitivity of the main caregivers below or above a certain baseline associated with secure attachment. For example, a parent's change of job may not be considered a major life event but it may decrease the parent's sensitivity to what is going on in the child's affective life substantially. The crucial issue in measuring the development of the attachment-relevant environment is change in form and content of a caregiving arrangement that can be considered sensitive to the attachment signals of the developing child. In fact, a theory of sensitive child-rearing beyond the first few years of life is still on the agenda of attachment theorists.

Conclusion

Maysel has speculated about the similarity and the continuity of attachment between infancy and adulthood. Four impressive longitudinal attachment studies across the first two decades of life have been described here. The outcomes of these studies become even more impressive when it is noted that infant attachment assessments involved only the mother, whereas the adult attachment assessments also covered the role of the father. Two competing hypotheses – the early prototype hypotheses and the stable environmental hypothesis – are relevant in explaining (dis-)continuity of attachment. On the basis of the available data, the strong version of the prototype hypothesis must be rejected. Major environmental changes are indeed associated with changes in attachment security. Whether less drastic changes in the child-rearing environment lead to changes in attachment security is still unclear. A weak version of the prototype hypothesis is only refuted by one study [Zimmermann, 1994] that did not involve the original AAI coding system. The assessment of stability and change in the attachment-relevant context of the developing individual is needed to test the two hypotheses more thoroughly.

I would note finally that strictly seen the issue of intergenerational transmission of attachment has only indirectly been addressed in these longitudinal studies. They document the (dis-)continuity of attachment within the same individual across the first two decades of life. Intergenerational transmission of attachment in the strict sense, however, means both that the parent of the focal subject would have been classified in the same attachment category and that the subject raises an infant exhibiting the same attachment classification. In the near future, I expect studies to become available involving subjects whose parents completed the AAI around their birth and who are now young adults or even parents themselves. Such studies may lead to deeper insight not only into the continuity of attachment but also into the transmission of attachment across several generations.

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