

Intergenerational Transmission of Attachment: A Move to the Contextual Level

MARINUS H. VAN IJZENDOORN
MARIAN J. BAKERMANS-KRANENBURG

Attachment theory has been presented by John Bowlby (1907–1990) in the three volumes of *Attachment and Loss* (Bowlby, 1969/1984, 1973/1980, 1980/1981). During the last decade it has become so widely known that a brief overview will be sufficient here. Bowlby postulated that for children, the contact with their parent or caregiver is very important, especially when under stress. By nature, children seek proximity and contact and show behavior that brings about such contact (e.g., crying or crawling) or that is meant to maintain contact (e.g., smiling). For toddlers it is the parent's psychological availability rather than his or her physical presence that is supposed to be essential. Children who are securely attached to their caregivers are confident of the caregivers' availability; they know that they can rely on them when distressed (Bowlby, 1969/1984). Children who are securely attached are prone to grow up as socially competent preschoolers (Arend, Gove, & Sroufe, 1979; Waters, Wippman, & Sroufe, 1979).

Infant–parent attachment relationships can, however, develop less favorably as well. Bowlby (1969/1984) already formulated criteria for observing differences in patterns of attachment, but it is Mary Ainsworth (born 1913) who devised a laboratory observation procedure that enabled researchers to discriminate systematically attachment patterns among

1-year-old infants: the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978). In this procedure infants are confronted with three stressful components: a strange environment, interaction with a stranger, and two short separations from the caregiver. This stressful situation elicits attachment behavior and on the basis of infants' reactions to the procedure, three patterns of attachment can be distinguished. Infants who actively seek proximity to their caregivers upon reunion, communicate their feelings of stress and distress openly, and then readily return to exploration are classified as *secure* (B) in their attachment to that caregiver. Infants who seem undistressed and ignore or avoid the caregiver after reunion (although physiological research shows that their arousal during separation is similar to other infants'; Spangler & Grossmann, 1994), are classified as *insecure-avoidant* (A). Infants who combine strong proximity seeking and contact maintaining with contact resistance or who remain unsoothable, without being able to return to play and explore the environment, are classified as *insecure-ambivalent* (C). In the balance between attachment and exploration, ambivalent infants maximize attachment behaviors. Avoidant infants minimize or deactivate attachment behaviors and try to hide their upset emotions. Secure infants strike a balance between activating attachment behaviors upon reunion and returning to exploration after some time. An overview of all American studies with nonclinical samples (21 samples with a total of 1,584 infants, studies conducted in the years 1977 to 1990) shows that about 67% of the infants are classified as secure, 21% are classified as insecure-avoidant, and 12% are classified as insecure-ambivalent (van IJzendoorn, Goldberg, Kroonenberg, & Frenkel, 1992).

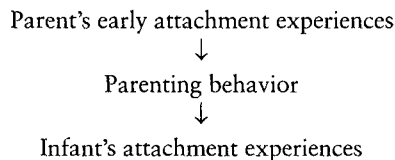
Recently, Main and Solomon (1990) identified a fourth category: Some children showed *disorganized/disoriented* behavior during the Strange Situation, for instance, contradictory or undirected behavior or indices of apprehension regarding the parent. It turned out that parents of infants who show these signs of disorganization often either suffer from unresolved mourning due to loss or other potentially traumatic experiences (Ainsworth & Eichberg, 1991; Main & Hesse, 1990), or abuse or neglect their children (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Crittenden, 1985; Lyons-Ruth, Repacholi, McLeod, & Silva, 1991). In nonclinical samples about 15% of the infants are classified as disorganized (van IJzendoorn et al., 1992). A second classification of secure, insecure-avoidant or insecure-ambivalent, is assigned to indicate the child's attachment strategy apart from the moments of disorganization.

It is hypothesized that infants' behaviors in the Strange Situation reflect their current *working model of attachment*, generated in the first year of life. The infant's attachment working model contains a representation of the caregiver and the caregiver's behavior toward him together

with a complementary representation of himself in the interaction. The attachment working model is rooted in the infant's experiences during interactions with the caregiver. Several studies show that mothers of securely attached infants respond sensitively to their children's signals; that mothers of avoidant infants are unresponsive or rejecting to their children's signals and are, in particular, distant and not inclined to physical contact; and that ambivalent infants have mothers who are inconsistently responsive to their signals (Ainsworth et al., 1978; Belsky, Rovine, & Taylor, 1984; Grossmann, Grossmann, Spangler, Suess, & Unzner, 1985; Isabella, 1993; Maslin & Bates, 1983).

THE ADULT ATTACHMENT INTERVIEW

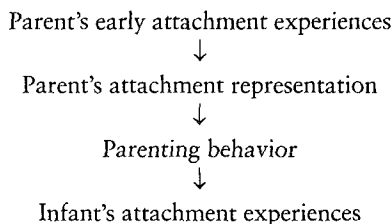
The influence of childhood attachment experiences on attachment relationships in adulthood is an intriguing but complex issue. Clinical and retrospective data seem to suggest that abused children are likely to become abusive parents, and that in general troubled parents look back on a troublesome childhood (although the estimates of intergenerational transmission of abuse vary widely, see Belsky, 1993; Malinosky-Rummell & Hansen, 1993; and Kaufman & Zigler, 1987). The basic model to describe the intergenerational transmission of attachment is simply the following:



This model emphasizes heavily the continuity of development across the lifespan and does not take into account discontinuities caused by contextual or experiential discontinuities. However, the link between early attachment experiences and later parenting behavior can be broken because of later attachment experiences with parents, intimate friends, spouses, or therapists. Bowlby (1988) emphasized that positive experiences in a partner relationship can bring about the reconstruction of an originally insecure attachment working model; a partner or therapist can provide a "secure base" for exploring and dealing with early attachment experiences. Therefore, to acquire insight into continuity and change of intergenerational transmission of attachment, it is crucial to pay attention to the working model (or mental representation) of attachment experiences of parents. For decades, adequate measures to assess adult attachment

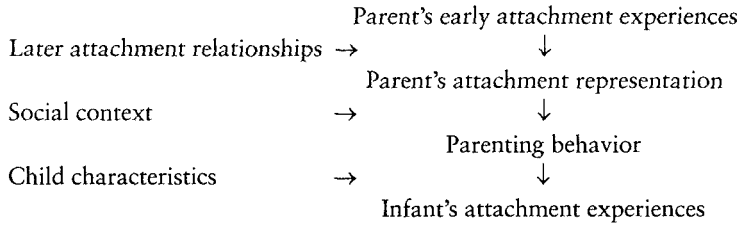
representations were lacking. In fundamental as well as in clinical research, self-report measures like the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) and the Mother-Father-Peer Scale (Epstein, 1983) dominated the field, but they had at least two shortcomings: first, these self-report measures about childhood experiences with parents are based on an unwarranted optimistic view on respondents' autobiographical memory capacities, and second, they do not take into account phenomena such as repression or idealization of past experiences.

The introduction of the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) was a simple but revolutionary shift in attention from the "objective" description of childhood experiences to the current representation of these experiences, and from the content of autobiographical memories to the form in which this autobiography is presented. The AAI is based on two assumptions: (1) autobiographical memory is the ongoing reconstruction of one's own past in the light of new experiences; and (2) repression, dissociation, and idealization of the past—especially of negative childhood experiences—exist and can be traced by studying form and content of the autobiographical narrative separately. Taking these considerations into account, the first model can be extended as follows:



According to attachment theory, there is no direct link between parents' early attachment experiences and their parenting behavior. Past attachment experiences are always filtered through the current mental representation of attachment in influencing parenting behavior and the construction of new attachment relationships. The current attachment representation is formed not only on the basis of the early attachment experiences, but also is influenced by later relationships. A good friend, spouse, or therapist can provide a "secure base" for exploring and working through adverse childhood experiences. In addition, parenting behavior is influenced by the social context. A supporting social network might moderate the effects of otherwise unfavorable circumstances (Belsky, 1984), and specific childrearing conditions may affect infants' attachment experiences negatively (Sagi et al., in press). Furthermore, some children may make it difficult for parents to respond sensitively to their attachment signals, because the infants' severe physical handicaps or highly irritable

temperament impair the communication (van IJzendoorn et al., 1992). We can add these factors to our model as following:



Our contextual model is, of course, simplified, but it makes clear that in attachment theory intergenerational transmission of attachment is interpreted in a quite specific way; in fact, almost all AAI studies available today start their search for the roots of current attachment relationships in parents' minds—and not in their pasts. In this respect, AAI research shows some affinity to recent studies on parental belief systems and their influence on parenting behavior (Goodnow & Collins, 1990; see also Lieberman, Chapter 9, this volume).

What is the structure of the AAI? The AAI is a semistructured interview which probes alternately for general descriptions of past relationships with parents, specific supportive or contradictory memories, and descriptions of current relationships with parents. After a warming-up question about the composition of the family of origin, the subjects are asked to present five adjectives that describe their childhood relationship to each parent and they also are asked the following: (1) why they chose these adjectives; (2) to which parent they felt the closest; (3) what they did when—as a child—they were upset, hurt, or ill; (4) what they remember about separations from their parents; and (5) whether they have ever felt rejected by their parents. In addition to these questions about experiences in childhood, subjects are asked how they think their adult personalities are affected by these experiences; why, in their view, their parents behaved as they did; and how the relationship with their parents has changed over time. In addition, some questions are asked about the subject's experiences of loss through death of important figures, both as a child and as an adult. In total, it takes about an hour to complete the interview (George et al., 1985).

Interviews are transcribed verbatim and coded with the complex AAI coding system. An important criterion for the classification is the interview's coherence. Coherence is defined in terms of Grice's (1975) maxims of quality, quantity, relevance, and manner. In adequate discourse subjects provide evidence for what they say and avoid contradictions (*quality*), subjects are succinct, and yet complete (*quantity*), subjects keep to the point (*relevance*), and they present the information in a clear and orderly way (*manner*).

Coding leads to three classifications, indicating three types of attachment representations: dismissing, autonomous, and preoccupied. *Dismissing* (Ds) subjects emphasize their independence; when they acknowledge negative aspects of their childhood they insist on their not being influenced negatively by those experiences. More often, however, they offer a very positive evaluation of their attachment experiences, without being able to illustrate their positive evaluations with concrete events demonstrating secure interaction. They often appeal to a lack of memory of childhood experiences. In particular because of internal contradictions between general evaluations and specific illustrations, the narrative of dismissing subjects is incoherent. *Autonomous* (F; derived from "Free") subjects tend to value attachment relationships and to consider them important for their own personality. They are able to describe attachment-related experiences coherently, whether these experiences were negative (e.g., parental rejection or over involvement) or positive. They present a coherent and balanced picture without contradictions or other major violations of Grice's rules for adequate discourse. *Preoccupied* (E; derived from "Enmeshed") adults are still very much involved and preoccupied with their past attachment experiences and are therefore not able to describe them coherently. Passivity and vagueness may characterize their biography, or they may express anger when they discuss the present relationship with their parents. Dismissing and preoccupied subjects both are considered to be insecure. Some autonomous, dismissing, or preoccupied subjects indicate through their incoherent discussion of trauma (usually involving loss) that they have not yet completed the process of mourning. These subjects receive the additional classification *Unresolved* (U), which is superimposed on their main classification (Main & Goldwyn, 1991).

In this section three questions concerning the AAI will be addressed: (1) the instrument's reliability, (2) the instrument's discriminant validity, and (3) the distribution of classifications in studies with the AAI conducted so far. Furthermore, we will briefly describe instruments that are available as alternatives for the time-consuming AAI. In the next section we will describe research on the intergenerational transmission of attachment. Addressing these questions, we will rely on the increasing number of studies in which the AAI has been applied since its development about 10 years ago and on some meta-analyses based on these studies (van IJzendoorn, 1995a; van IJzendoorn & Bakermans-Kranenburg, 1996).

Reliability: Interviewer Effect, Intercoder Reliability, and Test-Retest Reliability

As the AAI resembles a natural dialogue about personal issues rather than an objective, impersonal interview, it is possible that the conversation is

influenced in a certain direction by the interviewer's personality or interviewing style. Thus far two studies of a potential interviewer effect have been conducted. In The Netherlands, 83 mothers were interviewed twice, by two out of five interviewers, in counterbalanced order (Bakermans-Kranenburg & van IJzendoorn, 1993). The interviewers did not provoke systematically different AAI classification distributions. Furthermore, each pair of interviewers showed about the same stability of AAI classifications over time. In a replication and extension of this study, 59 Israeli college students were interviewed by interviewers who also served as coders (Sagi, van IJzendoorn, Scharf, et al., 1994). The interview outcome was not influenced by the interviewer, whether that interviewer also coded the interview or not. The roles of interviewer and coder of the same interview do not seem to be incompatible. Provided that interviewers are adequately trained, we may conclude that AAI classifications are robust against potential interviewer effects.

It is not the audiotape but rather the verbatim transcription that is coded. Although the reliability of the transcription is, therefore, essential, this fact hardly ever is underscored. The intercoder reliability, however, is established and reported in almost every AAI study. On the basis of 18 studies, we found an average intercoder reliability of about 80%, a reasonable but not perfect reliability.

It is important that the test-retest reliability of the AAI be examined. Although Bowlby chose the term "attachment working model" to emphasize that it is an open, dynamic model that can be restructured on the basis of new experiences (Bowlby, 1988), the model itself stimulates continuity more than change, as internal working models become more rigid over the years (Sroufe, 1988). For adults, stability of the attachment representation may be expected, especially when no major life events take place. Therefore, it is crucial for a measure of adult attachment representations to be stable over time. Thus far, four studies considered the test-retest reliability of the AAI (Bakermans-Kranenburg & van IJzendoorn, 1993; Benoit & Parker, 1994; Sagi, van IJzendoorn, Scharf, et al., 1994; Steele & Steele, 1994). Test-retest reliabilities between 77% and 90% were reported, with an intervening period that varied from 1 to 15 months. Note that the test-retest reliability cannot be 100%, due to imperfect intercoder reliability. After all, it is improbable that all interviews that were coded incorrectly on the first occasion were coded incorrectly again on the second occasion—and in the same (wrong) direction. On the basis of these findings it can be concluded that the instrument seems suitable to examine the *stability* of the attachment working model after changes in life circumstances, major life events, or therapeutic intervention. Note, however—with an eye to the high stability reported by Benoit and Parker (1994), who conducted the interview some weeks before

and a year after the delivery—that the birth of the first child is not yet so far reaching that it brings about changes in the parents' attachment representations.

Discriminant Validity: Intelligence, Memory, Social Desirability, and Temperament and Adaptation

Intelligence

The AAI relies on subjects' speech production. The classification is based on the verbatim text of the discourse and the coding system heavily emphasizes coherence in the sense of Grice (1975): The discourse should embody the maxims of quality, quantity, relevance, and manner. Therefore, the coherence of AAI transcripts could be determined by subjects' logical reasoning abilities. In three studies, associations between AAI classifications on the one hand and verbal fluency and logical reasoning on the other hand have been explored. Bakermans-Kranenburg and van IJzendoorn (1993) found that a verbal IQ test (Groningen Intelligence Test; Luteijn & van der Ploeg, 1982) and a logical reasoning test (Raven's Standard Progressive Matrices; Raven, 1958) were not related to the AAI classifications. Sagi, van IJzendoorn, Scharf, et al. (1994) replicated this result with a college admission battery test in a group of Israeli students. If anything, the dismissing students tended to perform somewhat better on this test than did the other students. Crowell et al. (1993), however, found a difference between preoccupied and autonomous mothers: Autonomous mothers scored better on the Henmon-Nelson Test of Mental Ability. Therefore, they propose that in studies with the AAI, an IQ measure should be used as a covariate. Taking into account that two other studies did not confirm this result (Rosenstein & Horowitz, 1996; Ward, Botyanski, Plunket, & Carlson, 1991), it is questionable whether this conclusion is justified.

Memory

Several questions of the AAI consider experiences in the subject's childhood. Although these experiences do not play a major role in the subject's classification, it is nevertheless indicated by the coding system that a lack of memory of childhood events might be interpreted as characteristic of an insecure attachment working model. It is supposed that dismissing subjects are not open to negative aspects of their early attachment relationships and fall back on a lack of memory to avoid reflecting on or discussing those aspects. However, an alternative interpretation would be that dis-

missing subjects are just not able to remember as many childhood experiences in as much detail as are the other subjects. In the latter case, dismissing subjects would be unable to provide the interviewer with enough material to back up idealized descriptions, but the lack of supporting evidence would be the result of a cognitive rather than an emotional factor. It is therefore important to examine whether the AAI assesses subjects' attachment representations or general cognitive differences in subjects' autobiographical memory abilities.

The two studies that addressed this issue are the aforementioned studies of Bakermans-Kranenburg and van IJzendoorn (1993) in Leiden, The Netherlands, and of Sagi, van IJzendoorn, Scharf, et al. (1994) in Israel. The 83 mothers in the Dutch study evaluated their own long-term and autobiographical memory abilities on a self-report memory questionnaire and completed a memory test with questions about common issues in childhood not related to family attachment experiences. The dismissing mothers did not indicate that they perceived their autobiographical memory abilities as less developed than the other subjects', and they performed even somewhat better on the memory test. In the Israeli study, subjects were asked in a remote memory test to choose among four titles of TV programs, out of which three were fake and only one actually ran during their childhood. Furthermore, subjects completed a paired associate test for relatively short-term memory (3 months). Finally, using Galton's method of Semantic Cuing (Crovitz & Quine-Holland, 1976), subjects were asked to think of memories from their childhood associated with each of 12 cue words and to indicate the age when the event took place. No significant differences among the attachment categories were found; dismissing subjects, however, tended to recall the information on the Semantic Cuing task from a somewhat later age (average age for recall was 8 years for the dismissing subjects and 7 years for the other subjects). This difference is small; it seems justified to conclude that the classification of the AAI is not influenced by differences in autobiographical memory. Without further evidence, dismissing subjects' appeals to a lack of memory for attachment experiences cannot be attributed to general memory deficits.

Social Desirability

In an open, semistructured interview like the AAI, in which subject and interviewer communicate in an intensive way about sensitive issues of childhood and daily life, subjects may be inclined to present their answers in a socially desirable way. Dismissing subjects might, therefore, not be idealizing their childhood to avoid facing negative experiences, but rather to create a pleasant atmosphere and to impress the interviewer favorably.

In that case, AAI classifications do not indicate subjects' representation of attachment, but instead their tendency to give socially desirable answers. In two studies with the AAI, a measure of social desirability (the Marlowe-Crowne scale; Crowne & Marlowe, 1960) was included (Bakermans-Kranenburg & van IJzendoorn, 1993; Crowell et al., 1993). Neither of these studies showed an association between social desirability and attachment classification.

Temperament and Adaptation

The AAI aims at internal working models of attachment, assessing mental representations and behavior within the context of intimate relationships. Although some association with temperament and social adjustment may be expected, the measure pretends to be more specific, not overlapping too much with measures of general personality traits or mental and physical health. Relations with variables within the attachment domain (e.g., infant attachment, parental responsiveness) should be dominant. If this were not the case, the AAI would lack specificity and a firm foundation in attachment theory (Crowell et al., 1993). Two studies focused on relationships between AAI classifications and personality traits.

De Haas, Bakermans-Kranenburg, and van IJzendoorn (1994) examined the association between the EAS (Emotionality, Activity, Sociability scale; Buss & Plomin, 1984) and the attachment categories. No significant relationships between temperament and adult attachment were found. Neither were the AAI classifications related to subjects' mental and physical health (assessed by the General Health Questionnaire; Goldberg, 1972, 1978). In the second study, Crowell et al. (1993) detected a significant relation between the AAI classifications and an instrument for social adjustment (the Social Adjustment Scale; Weissman & Paykel, 1974). Secure mothers were better adjusted than were dismissing mothers; preoccupied mothers yielded the lowest scores. Crowell et al. (1993), however, found also that this association disappeared when they controlled for differences in IQ between the subjects. In sum, the conclusion that the psychometric characteristics of the AAI are excellent seems warranted.

Distributions of Classifications in Normal and Clinical Samples

Standard Distribution

Normative data about the distribution of interview classifications can be found by means of a meta-analytic combination of the separate primary

studies. More than 2,000 AAIs have been classified and reported, and such an impressive number of classifications provides a basis for analyses of the reported distributions. In Table 5.1, these data are presented briefly. Compared with the combined samples of "normal" infant-mother dyads observed in the Strange Situation (21% avoidant, 67% secure, and 12% ambivalent; van IJzendoorn et al., 1992), the overall AAI distribution of nonclinical mothers shows an underrepresentation of autonomous mothers (58%) and an overrepresentation of preoccupied mothers (18%). As a result, the percentage of insecure mothers is relatively high. When the classification of unresolved is taken into account as a separate category, 19% of the nonclinical mothers are classified as such for unresolved loss or trauma of other kinds. The majority of these unresolved mothers are from the insecure categories, so that the percentage of autonomous mothers does not decrease drastically (from 58% to 55%; see van IJzendoorn & Bakermans-Kranenburg, 1996, for details). Mothers' nationality or socioeconomic status appeared not to influence the distribution. The distribution of fathers is remarkably similar to the standard distribution of mothers. Although it could be imagined that men tend to be more dismissing than are women (Gilligan, 1982), this idea is not confirmed by the data. The distribution of adolescents' AAI classifications corresponded to the distribution of classifications of adults. Finishing school, getting married, and having children do not seem to affect the attachment representations, at least on the level of the global distribution of classifications. The question of whether this applies to individuals as well can be answered only by longitudinal studies.

In five studies, both partners of, in total, 226 couples were interviewed (Cohn, Silver, Cowan, & Pearson, 1992; Crittenden, Partridge, & Claussen, 1991; Miehls, 1989; Steele, Steele, & Fonagy, 1993; van IJzendoorn, Kranenburg, Zwart-Woudstra, van Busschbach, & Lambermon, 1991). Autonomous wives appeared to be most often married to auto-

TABLE 5.1. Distributions of AAI Classifications in Normal and Clinical Samples

Population	N	Distribution (%)		
		Dismissing	Autonomous	Preoccupied
Mothers (normal)	584	24	58	18
Fathers (normal)	286	22	62	16
Low SES	254	28	57	15
Adolescents	237	26	56	19
Parents of clinical children	148	41	14	45
Clinical adults	291	41	12	47

Note. Derived from van IJzendoorn and Bakermans-Kranenburg (1996). SES, socioeconomic status.

mous husbands, although one-third of the autonomous wives were married to a dismissing or a preoccupied husband. The same was true of autonomous husbands. About one-third of them were married to insecure wives (van IJzendoorn & Bakermans-Kranenburg, 1996). That means that there seems to be a tendency toward stabilization of security or insecurity by the choice of a partner, but that there also are many exceptions to the rule that husbands and wives share the same working model of attachment. Therefore, many chances for breaking the intergenerational cycle of insecurity exist (Rutter, Quinton, & Hill, 1990).

Clinical Groups

The AAI has become increasingly popular in clinical psychology, developmental psychopathology, and child psychiatry. The attraction of the measure for diagnostics and evaluation of therapeutic processes may stem from the theoretical roots of the instrument, in which knowledge of normal development is combined with psychopathological insights. The application of the AAI in clinical samples—that is, adults with psychiatric problems and parents of children with problem behavior—has led to two hypotheses. First, it is supposed that clinical groups show an overrepresentation of insecure attachment representations compared with the standard distribution in nonclinical samples. Secondly, it is hypothesized that externalizing problems such as oppositional behavior are rooted in a dismissing representation of attachment, whereas internalizing problems such as depressive symptoms are associated with a preoccupied representation of attachment (Rosenstein & Horowitz, 1996; see also Goldberg, Chapter 6, this volume).

The AAI has been administered in a variety of clinical groups (for details, see van IJzendoorn & Bakermans-Kranenburg, 1996). The combined clinical groups indeed show a strong overrepresentation of insecure subjects. The dismissing as well as the preoccupied category are well represented (see Table 5.1). Whether the clinical problems are located primarily in the adults or in the children does not make a difference for the overall distributions. Thus, we found confirming evidence for the first hypothesis. The second hypothesis, however, concerning the relation of a specific kind of psychiatric disturbance—externalizing or internalizing—to a specific type of adult attachment representation could not be confirmed on the basis of our data (see also van IJzendoorn & Bakermans-Kranenburg, 1996). Although some studies showed a clear link between externalizing problems and dismissing attachment on the one hand, and internalizing problems and preoccupied attachment on the other hand (e.g., Rosenstein & Horowitz, 1996), other studies did not present such

an unambiguous picture (e.g., Patrick, Hobson, Castle, Howard, & Maughan, 1992; see Goldberg, Chapter 6, this volume, for similar discussion with reference to the Strange Situation).

An example of the complicated associations between psychiatric diagnosis and AAI classifications is provided by the study of mentally disturbed criminal offenders that we carried out in cooperation with two Dutch forensic mental hospitals (van IJzendoorn et al., in press). The sample consisted of 40 forensic psychiatric inpatients of Dutch ethnicity who were sentenced for (attempted) murder, rape, or similar sexual crimes, and other major crimes, but who were found to be mentally ill at the time of their crime. The criminal offenders were subjected to a special juridical measure that imposes on criminal offenders with psychiatric disturbances a psychotherapeutic treatment of potentially unlimited duration in a maximum-security forensic hospital to protect society against repetition of their crimes. The subjects were interviewed with the AAI before entering the forensic hospital. After about 6 months they were interviewed with the Structured Interview for Disorders of Personality—Revised (SIDP-R; Pfohl, 1989), and therapists completed staff–patient interaction inventories to assess the quality of the patients' interactions with the staff. Background information about crime characteristics and childrearing history was derived from court files.

We found that only 5% of the subjects were autonomous according to the AAI. The remaining subjects were distributed about equally among the dismissing, preoccupied, unresolved, and cannot classify (CC) categories. In particular, the high percentage of CC subjects is remarkable. The CC classification is used when subjects display contradictory attachment strategies, for example, highly dismissing toward their father as well as highly preoccupied with their mother (Hesse, 1996; see Fonagy et al., Chapter 8, this volume, for discussion of mismatched attachment strategies). Although we had expected to find more dismissing subjects diagnosed with an antisocial personality disorder, this was not the case. In fact, the dismissing subjects seemed to be less disturbed than were subjects in the other insecure categories. Eight out of 11 CC subjects were diagnosed with a personality disorder, whereas in total only 22 of 40 criminals reached the DSM-III-R (American Psychiatric Association, 1987) criteria for personality disorders. The preoccupied subjects showed elevated externalizing as well as internalizing problems (Goldberg, Chapter 6, this volume, reports the same findings with a sample of preschool children). Constructing a continuous AAI scale on which the autonomous subjects receive the lowest score, the unresolved and CC subjects the highest score, and plain dismissing and preoccupied subjects a score in the middle, we found that the more insecure the subjects were, the more personality disorders they had. It is interesting to note that 90% of the CC subjects

were raised in institutional care, compared with 45% of the remaining subjects in the other AAI categories. Lastly, attachment security appeared to be related to the quality of patients' interactions with the staff: the autonomous and dismissing subjects did function better than did subjects in the other categories; the CC subjects performed worst (van IJzendoorn et al., in press). In a study on nonclinical subjects, Crowell et al. (1993) also found that subjects in the F (autonomous) and Ds (dismissing) categories seemed to be better socially adjusted. In sum, we did not find clear-cut associations between the AAI and type of personality disorder, although we found that more insecure delinquents were more disturbed. Furthermore, the AAI classifications were related to early childhood experiences, and to staff-patient interactions. Note that the AAI classifications were not based on the early childhood experiences per se.

To summarize the results on attachment in clinical groups, we displayed graphically the information in Figure 5.1. In Figure 5.1, the centers of gravity of the distributions of the clinical samples (with problems located in the adults and in the children, respectively) are projected against the background of the standard distribution of AAI classifications of nonclinical mothers. Figure 5.1 shows that the distributions of both types of clinical groups and the distribution of mentally disturbed criminal offenders diverge strongly from the standard distribution, which is located at the crossing of the three axes. Note also how close to the origin, that is the standard distribution, the distributions of the fathers and of the adolescents are situated. The centers of gravity for the clinical samples, however, are located far away from this origin, and indicate overrepresentations of dismissing as well as preoccupied subjects. Conclusions about the relation between specific clinical groups and attachment representation, however, are not yet warranted; the data base for systematic inferences about this issue is still rather small.

Alternative Measures

The AAI is a laborious instrument; administering, transcribing, and coding an interview require training and an impressive amount of time. Therefore, several researchers have been motivated to devise a questionnaire concerning the same issues of childrearing and attachment experiences. Hazan and Shaver (1987) developed a self-report questionnaire in which subjects choose which of three short descriptions of attachment styles fits their ideas best. Other questionnaires, such as Epstein's Mother-Father-Peer Scale (Epstein, 1983), the Egna Minnen Beträffande Uppfostran (EMBU; Perris, Jacobsson, Lindström, von Knorring, & Perris, 1980), the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987), and the Adult

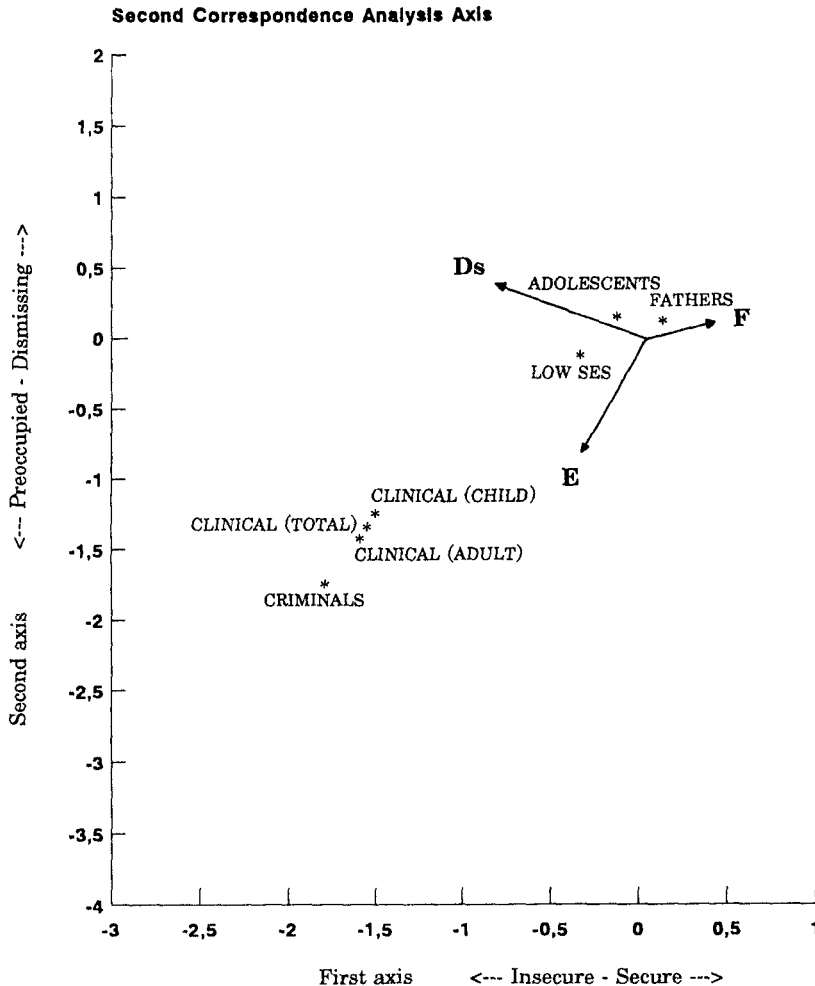


FIGURE 5.1. Distributions of AAI classifications in specific groups projected against the background of the standard AAI distribution.

Attachment Questionnaire (AAQ; Lichtenstein, 1991) focus on a description of the past and present relationship with subjects' parents. The Berkeley-Leiden Adult Attachment Questionnaire for Unresolved Loss and Other Trauma (BLAAQ-U; Main, van IJzendoorn, & Hesse, 1993) aims at identifying subjects who probably will be classified as unresolved on the basis of their AAI. The most obvious problem of these instruments is their validity. The questionnaires developed thus far lack satisfying

convergent validity and cannot be used as an alternative for the AAI despite the advantages of questionnaires in large samples (van IJzendoorn et al., 1991; De Haas et al., 1994). The BLAAQ-U seems to be rather successful in identifying subjects with unresolved loss or other trauma, but does not provide information about the other classifications. Taking stock of the alternatives for the AAI, we must conclude that a good alternative is as yet not available; that reliable self-classification may remain problematic; and that—at least for the time being—we have to rely on the time-consuming AAI. Attachment questionnaires bring insecure subjects into the paradoxical position of having to present a balanced self-diagnosis of their mental representation of attachment, whereas they are insecure because they are not able to reflect on their attachment experiences in a balanced way. One of the consequences of this self-report paradox is that with the regular questionnaire format, dismissive idealization and veridical description of positive attachment experiences cannot be differentiated.

INTERGENERATIONAL TRANSMISSION OF ATTACHMENT

Infant's Attachment Classification

The development of the AAI was embedded in research on the question of why some children are securely and others are insecurely attached to their parents. Investigators examined whether the answer could be found in parents' attachment representations; the coding system of the AAI classifications reflects the infants' attachment classifications in the Strange Situation. The Strange Situation procedure and the classifications that can be assigned have been described above (see also Goldberg, Chapter 6, this volume; see Rutter, Chapter 2, this volume for a critique of the Strange Situation). In the balance between exploration and attachment behavior, children who are attached avoidantly to their parents minimize or deactivate attachment behavior, whereas ambivalently attached children maximize attachment behavior at the expense of exploration (Main, 1990). Securely attached children strike the balance between attachment behavior (asking for comfort) immediately after the reunion and return to exploration after some time. In the same vein, the AAI classifications are based on the communication about emotions in attachment relations. Autonomous subjects are characterized by an open and unbiased reflection on their attachment experiences, dismissing subjects minimize the influence of early attachment experiences on their adult personalities, and preoccupied subjects are still preoccupied by their childhood experiences or the present relationship with their parents. Thus a potential association between adult and infant attachment goes further than Belsky's (1984) process model,

which states that the child is influenced by specific characteristics of the parent's personality that result from the parent's own upbringing. The intergenerational transmission of attachment suggests an analogy of adult and infant strategies, showing, as it were, two sides of the same coin: the manifestation of the strategy in the parent (at the level of verbal representation) on the one hand, and that of the infant (at the level of attachment behavior) on the other hand. In Figure 5.2 the corresponding attachment categories are presented. It is hypothesized that autonomous parents stimulate a secure relationship with their children by their openness to their children's attachment signals (Main, 1991), whereas the insecure parents' pasts interfere with the required open communication.

The correspondence between parental attachment and infant attachment has been examined in a number of studies during the past decade. Eighteen studies have been published or are in an advanced stage of publication thus far. (Due to the frequent use of the AAI in the field of attachment research, this collection of studies should be considered the current reflection of a growing number of AAI studies.) The correspondence between parents' unresolved loss and infants' disorganization in the Strange Situation has been addressed in a small minority of these studies. Therefore, we pay little attention to this issue. A short presentation of the 18 studies and details about the method of the meta-analysis can be found in van IJzendoorn (1995a). In most studies, the AAI was administered with mothers; four studies, however, concerned fathers (Main & Goldwyn, in press; Radojevic, 1992; Steele et al., 1993; and van IJzendoorn et al., 1991).

On these 18 studies (with a combined sample of 854 parent-child dyads) we performed three meta-analyses. First, we combined effect sizes for the correspondence between autonomous parents and secure infants. The combined effect size was $d = 1.06$, which is comparable to a correlation coefficient of $r = .47$. This effect size is quite strong; it would take 1,087

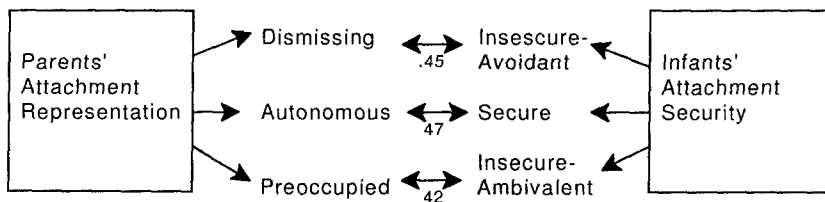


FIGURE 5.2. Intergenerational transmission of attachment: Correspondences between parents' and children's attachment representations. Note: Effect sizes are based on 18 studies with 854 parent-child dyads in total (van IJzendoorn, 1995a).

studies with null results to diminish the combined probability level to insignificance (Rosenthal, 1991). Studies with mothers showed a stronger relationship between parental attachment and infant's attachment than did studies with fathers; for mothers, the combined effect size was $r = .50$, whereas for fathers it was $r = .37$.¹ The four studies that assessed the attachment representations of the parents before the birth of their (first) child (Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Radojevic, 1992; Ward & Carlson, 1995) did not yield effect sizes different from studies that administered the AAI simultaneously with the Strange Situation, or even years after the assessment of the infant's attachment. The benefit of studies with a prospective design is that they can shed light on the direction of the causal link between parents' and infants' attachment classifications; these studies indicate that parents' prenatal attachment representations, which are of course uninfluenced by their unborn children, can predict the quality of the parent-child attachment relationship about 1 year later. The causal direction of the relation between parental and infant attachment thus goes from parent to child. Alternative explanations involving a third factor determining both the parent's and the infant's attachment do not seem very plausible; studies of the discriminant validity of the AAI show that parental IQ and temperament are not associated with the AAI classifications. Therefore, hereditary IQ or temperament may not be involved in establishing the association between AAI and Strange Situation classifications.

The second meta-analysis aimed at the correspondence between parents' dismissing attachment representation and infant's avoidant attachment. A comparable effect size was found ($r = .45$). Again, the correspondence was stronger for mothers ($r = .50$) than for fathers ($r = .32$). The third meta-analysis, concerning the relationship between the preoccupied AAI classification of the parent and the infant's ambivalent classification, yielded a combined effect size of $r = .42$ for fathers as well as for mothers. The effect sizes are presented in Figure 5.2. Although beyond the scope of this chapter, note that the studies in which the unresolved classification was assigned as well showed a combined effect size of $r = .31$ for this category. In that case, however, the association between the preoccupied and the ambivalent classification decreased to $r = .19$ (see van IJzendoorn, 1995a).

Parental Responsiveness

Responsiveness has been defined as the "ability to perceive and to interpret accurately the signals and communications implicit in the infant's behavior, and given this understanding, to respond to them appropriately and promptly" (Ainsworth, Bell, & Stayton, 1974, p.127). Parental respon-

siveness fosters a secure parent–infant attachment relationship. For that reason, responsiveness is supposed to be a mediating factor in the relationship between parents' attachment representations and their children's attachment working models. Parental attachment representations determine the way the parents are inclined to communicate about emotions in intimate relationships, in particular in the attachment relationship with their children. Parents who tend to dismiss their negative feelings about their own childhood experiences may also be inclined to be less open to their infants' feelings of anxiety and distress. For parents who still are strongly preoccupied with their own attachment experiences as children, these past experiences may be in the way of an open and balanced communication about their children's feelings in stressful situations. These parents also might feel threatened by the negative and ambivalent emotions of their children, as they remind them of their own past. Parents with autonomous attachment representations, however, can be expected to be open for communication about their children's anxiety and distress.

In 10 studies, with a total of 389 parent–child dyads, AAI classifications have been related to measures for sensitive responsiveness. Within studies, often more than one scale for sensitive responsiveness was used. Therefore, these measures were combined through separate meta-analyses (van IJzendoorn, 1995a). The combined effect size for the ten studies was $r = .34$. At least 156 studies with null results would have to be conducted to diminish the probability level to insignificance. Unfortunately, this effect size describes only the association between a secure or insecure attachment representation and sensitive responsiveness; it would be interesting to distinguish between dismissing and preoccupied representations as well. In that case, we could examine whether these different types of insecurity are related systematically to quality of responsiveness, for example, over- and understimulation. The available studies, however, lack relevant data to perform meta-analyses exploring this issue.

The Transmission Gap

The rather modest effect size for the relation between AAI classifications and sensitive responsiveness indicates the existence of an uncharted territory in the field of transmission of attachment, referred to as a "transmission gap" (van IJzendoorn, 1995a). After all, only a limited part of the correspondence between parents' attachment representations and children's attachment classifications can be ascribed to the mediating force of sensitive responsiveness, and the complete process of intergenerational transmission of attachment still remains unexplained.

This unexplained part can be quantified as follows (see van IJzen-

doorn, 1995a). The effect size for the association between AAI classifications and sensitive responsiveness was $r = .34$. Goldsmith and Alansky's (1987) meta-analysis of the relation between responsiveness (assessed with Ainsworth's measure for sensitivity at home) and children's attachment classifications in a selected set of studies yielded a combined effect size of $r = .32$. As the effect size of the correspondence between parental attachment representations and infants' attachment classifications amounts to $.47$, the unexplained part must be equal to $.36$ (i.e., $.47 - [.34 \times .32]$). Differences in responsiveness between parents with different attachment representations play a part in the explanation of transmission of attachment across generations, but this part is, as we saw, only modest. Alternative explanations can be found in correlated errors of measurement (but the measures involved may not share much systematic error variance because they are so different), genetic factors (but Suomi, 1995, discussed an ethological study in which the substantial intergenerational transmission of parenting between biologically related primates and their offspring did not differ from the transmission in adoptive "families"), and/or the hypothesis that the current measures of responsiveness may not capture all relevant aspects of the parent-child interaction (e.g., that we do not pay enough attention to the interchange between parents' and children's facial expressions of emotions). The issue of the transmission gap is discussed more extensively in the debate between Fox (1995) and van IJzendoorn (1995b).

Environmental Influences

Is intergenerational transmission of attachment restricted to specific childrearing conditions? This question is raised in the first place because the correspondence of $r = .50$ implies that there also are autonomous parents with insecure children, and that the children of some insecure parents are nevertheless securely attached to them. In fact, in about 25% of the families, there is no correspondence between parental and infant attachment security (van IJzendoorn, 1996). These exceptions to the general rule seem important for generating knowledge about the process of intergenerational transmission of attachment on the case level (see Lieberman, Chapter 9, this volume). Secondly, the social context of the parent-child relationship should be taken into account. Most studies with the AAI have occurred in Western, industrialized countries with similar and relatively stable family constellations. Therefore, the issue of the ecological context might fade into the background. In a very discrepant ecological context, however, the general rule of intergenerational transmission may lose strength. In other words, the conclusion that a universal law

of intergenerational transmission of attachment exists is not justified until the contextual limits of the transmission phenomenon are tested.

The Israeli kibbutzim appear to provide an opportunity to test the universality of intergenerational transmission of attachment. Although still a Western cultural setting, the childrearing context in kibbutzim, in particular in kibbutzim with communal sleeping arrangements, deviates strongly from the "normal" Western patterns of childrearing and family life (Aviezer, van IJzendoorn, Sagi, & Schuengel, 1994). In all kibbutzim children spend a large part of the day in special "infant houses" under the care of professional caregivers. Some kibbutzim, however, kept until recently to the practice of communal sleeping as well. In the communal sleeping arrangement, children spend only 3 to 4 hours in the afternoon at home; during the rest of the day and at night they are under the care of professional caregivers or watchwomen. Whereas the former kibbutzim appear to provide a situation similar to that of dual-earner families with full-time daycare, kibbutzim with communal sleeping arrangements deviate from this pattern. The care at night is provided by watchwomen who have to supervise many infants and children through intercoms. Sensitive responsiveness to infants' signals of anxiety and distress at night is, therefore, almost impossible.

In a quasi-experimental design, 20 mother-infant dyads from kibbutzim with communal sleeping arrangements and 25 mother-infant dyads from other kibbutzim (where the children slept at home) completed the AAI and the Strange Situation. The parents and children were comparable on potentially intervening variables, with the sleeping arrangement being the only difference (Sagi et al., *in press*). The distributions of mothers' attachment representations were quite similar; 65% of the mothers from communal sleeping kibbutzim were autonomous, and 72% of the mothers from other kibbutzim were classified as autonomous. These percentages are not significantly different. However, a significant difference between the children's attachment classifications appeared; whereas the distribu-

TABLE 5.2. Mothers' and Infants' Attachment Classifications in Two Types of Kibbutzim

Infant's attachment security	Mother's attachment representation			
	Communal sleeping		Home sleeping	
	Secure (<i>n</i>)	Insecure (<i>n</i>)	Secure (<i>n</i>)	Insecure (<i>n</i>)
Secure	6	5	16	4
Insecure	7	2	2	3
Correspondence	$\frac{8}{20} = 40\%$		$\frac{19}{25} = 76\%$	

Note. Derived from Sagi et al. (*in press*).

tion of the children who slept at home was comparable to the distribution of attachment classifications in normal, Western families (80% secure), only 55% of the children from kibbutzim with communal sleeping arrangements were securely attached (Sagi, van IJzendoorn, Aviezer, Donnell, & Mayseless, 1994). Relating type of kibbutz, maternal attachment, and infant attachment, a significant three-way interaction was found between type of kibbutz, infant attachment classification, and maternal attachment classification. Depending upon the sleeping arrangement, which thus seems to be an important aspect of the childrearing context, the intergenerational transmission of attachment was present or absent. In the kibbutzim where the children slept at home, the normal correspondence between mothers' and infants' attachment was found (76%). In kibbutzim with communal sleeping arrangement the correspondence between mothers' and infants' classifications was only 40%, with intergenerational transmission of attachment as the exception rather than the rule (see Table 5.2).

This remarkable result points at the limits of the hypothesis of intergenerational transmission. A closer look at the mismatches makes clear that, in particular, autonomous mothers with insecure infants are responsible for the low percentage of agreement. It is supposed that because of the inconsistent childrearing pattern in the communal sleeping arrangement, the transmission process is blocked, that the influence of a secure maternal attachment representation is overruled by the insensitive context. Two factors seem important. First, the infants spend only a few hours per day with the mother. The lower correspondence could be due to that factor, comparable to the lower effect size we found for fathers than for mothers. It may also be true of fathers that they do not spend enough hours per day with their children to be the deciding factor in their children's attachment. Secondly, infants in kibbutzim with communal sleeping arrangements might feel deserted by their attachment figures at night. Although they experience sensitive care during the afternoon, during the night their attachment signals and behaviors remain unanswered. The recurrent and prolonged separations might induce feelings of insecurity—*notwithstanding the positive attachment experiences with the mother during parts of the day.* We must conclude that intergenerational transmission of attachment is not context-free, and that cultural childrearing practices may block the transmission of security.

Attachment from Infancy to Adulthood

In coding the AAI the subjects' self-reports about their early years are not taken for granted. On the contrary, the form of the discourse about past

and present attachment experiences, rather than the content of their autobiographies, is decisive for the classification. Nevertheless, early attachment experiences may play a role empirically in the formation of adult attachment representations. How strongly is the current mental representation of attachment expected to be rooted in early childhood (van IJzendoorn, 1995b)? And what data are available to address this issue empirically?

More than two decades ago, Bowlby (1973/1980, p. 411 ff.) wrote about the traditional model of lifespan personality development as resembling a railway system with a single main line along which are set a series of stations. Personality development was supposed to be fixed from the very beginning, and only temporary stops, regressions, or accelerations were allowed to exist. In contrast, Bowlby compared his alternative model to a railway system that starts with a single main route which leaves the city in a certain direction but soon forks into a range of distinct routes, some of which diverge from the main route, and others take a convergent course. At any point, critical junctions may show up at which the lines fork; once a train is on any particular line, homeorhesis (Waddington, 1957) tends to keep it on that line.

The development of attachment is not considered to be fixed during the first year of life, but should be regarded as "environmentally labile," in particular in the early years of life (Bowlby, 1973/1980, p. 414). More specifically, Bowlby (1973/1980) always contended that attachment is environmentally labile during the first 5 years, and that even during the decade after the fifth birthday the development of attachment is sensitive to environmental changes, albeit in steadily diminishing degrees. At any stage during the years of immaturity—infancy, childhood, and adolescence—changes in childrearing arrangements and life events such as rejections, separations, and losses (Egeland & Farber, 1984), but also positive experiences such as parents getting a job, adolescents finding a supportive partner (Rutter et al., 1990), or being in therapy (Bowlby, 1988) may provoke a change in the course of attachment development. Almost two decades ago, Sroufe (1978) wrote about his expectations for the longitudinal studies he was embarking upon: "We would not expect a child to be permanently scarred by early experiences or permanently protected from environmental assaults. Early experience cannot be more important than later experience, and life in a changing environment should alter the qualities of a child's adaptation" (p. 50).

There are four studies on attachment available now that cover the first 18 to 20 years of life, and more studies are in progress. The first study is the Bielefeld study of Zimmermann (1994), working with Klaus and Karin Grossmann. Forty-nine families from northern Germany participated in a study starting with home observations of parental sensitivity during the

first year of life. Infants between 12 and 18 months of age were observed with their parents in the Strange Situation procedure. At 6 years of age, AAIs of the parents were collected. At 10 years of age, the children were interviewed to assess their mental representation of parental support. At 16 years of age, AAI data of 44 adolescents who were seen as babies became available. Life events such as divorce, life-threatening illness of the parents, and loss through death of parents or other family members were assessed. Zimmermann (1994) did not find a simple, bivariate correspondence between attachment security in infancy and security of attachment representation in adolescence. In particular, divorce and life-threatening illness of parents appeared to be associated with insecure adolescent attachment representation. In a multivariate hierarchical regression analysis, almost 70% of the variance of adolescent attachment security could be explained by life events, maternal attachment representations, and children's representation of parental support at 10 years of age.

Hamilton's (1994) study of 30 adolescents who as 1-year-olds were observed in the Strange Situation procedure showed that attachment may be amazingly stable across a 17-year period. She found that 77% of her subjects were classified similarly as secure or insecure at 1 year and at 17.5 years of age, when they completed the AAI. The subjects were recruited from a larger California sample in which children from families with alternative lifestyles such as communal living were overrepresented. Review of the case notes for each family, gathered over the full course of the study, suggested that the continuity of attachment was associated with certain family circumstances (Hamilton, 1994). Adolescents who retained a secure attachment classification grew up in families that experienced few stressful circumstances. In contrast, adolescents who were classified insecure at both assessments came from families characterized by marital dissolution in early childhood, often accompanied by family violence, persistent parental substance abuse, and financial stress (Hamilton, 1994). In other words, the stability of secure and insecure attachments was supported by stable positive or stable negative circumstances.

The third study has been carried out by Beckwith, Cohen, and Hamilton (1995) at UCLA. They followed 86 preterm children from the first months until 18 years of age. The sample covered a wide range of socioeconomic statuses and a diversity of ethnic groups and contained subjects with at least 28 weeks gestational age. Assessments of parent-infant interaction were derived from naturalistic home observations when the infants were 1, 8, and 24 months of age. A maternal responsiveness score for each age was computed, but—unfortunately—the Strange Situation procedure was not included. When subjects were 18 years of age, the AAI was administered. Results showed that dismissing subjects received lower mother-infant responsiveness scores than did the other two attach-

ment groups, which did not differ from each other. Furthermore, mothers of dismissing subjects did not change their unresponsive behavior; they were equally less engaged at all three observations during infancy, whereas mothers of autonomous or preoccupied subjects changed their patterns over time. In particular, in the subgroup of boys, mothers of autonomous subjects became more sensitive across the three assessments, whereas the mothers of preoccupied subjects showed a steady decrease of responsiveness (Beckwith et al., 1995). The authors note also that 73% of the preoccupied adolescents had experienced a family breakup before 8 years of age, whereas only 28% of the autonomous and 20% of the dismissing subjects had experienced a divorce of their parents.

Waters, Merrick, Albersheim, and Treboux (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). The 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 consist of very stable families. For example, 78% of the parents remained married during this 20-year period. Information about major life events was derived from the AAIs. 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; and ambivalent/preoccupied) the correspondence was 64%. In the group of subjects who did not experience major negative life events the percentage of correspondence amounted to 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, or physical or sexual abuse.

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 the continuity (Waters et al., 1995). An alternative hypothesis is the idea that continuity of attachment is dependent on the stability of the environment in which the child is raised. If the childrearing 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. In fact, the four longitudinal studies illustrate how disruptions of caregiving arrangements may be responsible for discontinuities in the development of attachment. This seems to provide some support for the idea that the prototype is only effective under optimally stable conditions.

We may conclude that the studies show some continuity of attachment over the first 20 years of life. At the same time—and more interestingly—discontinuity of attachment can be explained by attachment-relevant life events such as loss or divorce. Lawful continuity as well as lawful discontinuity (Sroufe, 1988) are dependent on family circumstances and life events that threaten the equilibrium of the subjects' attachment representations. These pioneering studies can provide only a first impression of what is to be expected of attachment across the lifespan, and they seem to illustrate nicely Bowlby's (1973/1980) emphasis on the environmental lability of internal working models of attachment in the early years. What these studies do not support is a simplistic model of a critical period of attachment development. The development of attachment does not become fixed during the first year of life, but may remain open to external influences well into adolescence (see also Rutter, Chapter 2, this volume). How strong the environmental pressures have to be to cause a discontinuity in attachment development is still unclear. In general, the development of the childrearing environment has been studied somewhat less intensively than has the development of attachment across the lifespan. For example, the assessment of changes in childrearing 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 so far. To test the prototype and the stable environment hypotheses more thoroughly, however, we need adequate measures for both dimensions (in van IJzendoorn, 1996, this line of reasoning has been detailed).

Breaking the Intergenerational Cycle of Insecure Attachment

Insecure attachment in infancy is associated with a higher risk of malfunctioning in the socioemotional domain during the preschool years (Sroufe, 1988). Although insecure attachment cannot be considered "pathological" per se, its status as a risk factor has urged researchers and clinicians to reflect on potentially preventive and corrective measures (Belsky & Nezworski, 1988). In recent years, several intervention studies aiming at the prevention or correction of insecure attachment have been performed. The studies take two, sometimes complementary, approaches. First, interventions may be directed at parental sensitivity, that is, at the behavioral level. Second, interventions may also focus on the parents' mental representation of attachment, that is, on the representational level, to pave the way for subsequent behavioral changes. The behaviorally oriented inter-

ventions are often short-term and focused, whereas the representational interventions often are long-term and broad-band therapeutic interventions. A good example of the first type of studies is the Anisfeld, Casper, Nozyce, and Cunningham (1990) study in which the effectiveness of a soft baby carrier was tested. A good example of the second type of interventions is the seminal study of Lieberman, Weston, and Pawl (1991), who modeled their approach after Fraiberg's ideas about mother-infant psychotherapy, in which the "ghosts" of the past are discussed.

Intervention studies may show different outcomes. Some interventions may be effective in changing parental sensitivity but not infant attachment; other interventions may change only parental attachment representations, but not infant attachment or parental sensitivity; and, of course, there may be studies that are successful in every domain: parents' attachment representation, infant attachment, and parental sensitivity. Unfortunately, most intervention studies do not report on changes in attachment representations. One of the most intriguing issues in this area is, however, the issue of generalizability: If the parent's insensitivity for infant's attachment signals has been changed and, as a consequence, also the infant's attachment insecurity, how firmly is this change rooted in the parent's personality and how long will its influence last?

We found four case studies and 12 experimental studies that aimed at changing at least the infant's attachment ($N = 869$; data derived from van IJzendoorn, Juffer, & Duyvesteyn, 1995). Eleven of 12 experimental studies also presented data on the effectiveness of the intervention in changing parental insensitivity. The combined effect size of these 11 studies was $d = .58$, an effect size of medium strength (Cohen, 1988). The combined effect size of the 12 studies on attachment security was much lower: $d = .17$. Some interventions even showed negative effects. These interventions used long-term and intensive approaches. In fact, the combined effect size for the long-term, broad-band interventions ($n = 7$) was $d = .00$, whereas the combined effect size for the short-term, behaviorally oriented interventions was $d = .48$. Of course, several explanations may be provided for this intriguing difference in effectiveness, for example, differential attrition (see van IJzendoorn et al., 1995, for elaboration).

A crucial issue is how effective the short-term interventions are in the long run. From the perspective of attachment theory, the generalizability of the interventions seems guaranteed only if the interventions not only change parental behavior or infant attachment, but also attachment representations. It may not be too difficult to teach a mother to be more responsive to the baby's crying, and this may be one of the factors changing the infant's attachment behavior in the Strange Situation procedure, but how deeply rooted is this change in the parent's personality, or more

specifically, in his or her mental representation of attachment? In a case study we tried to address this issue in an exploratory and preliminary way (Juffer, van IJzendoorn, & Bakermans-Kranenburg, in press). An insecure-dismissing mother and her 5-month-old daughter participated in this study. The AAI and Ainsworth's 9-point sensitivity rating scale were used as pre- and posttests, and the Strange Situation was included in the posttest. The intervention was implemented between the 6th and 9th month after the birth of this firstborn baby. In four intervention sessions the mother received written information about sensitive interaction with infants and video home training with feedback on videotaped mother-infant interactions, and the intervenor involved the mother in discussions about her childhood attachment experiences in relation to the current interaction with the baby. At the pretest the mother appeared to be insecure-dismissing, and her sensitivity rating was rather low. At the posttest the mother again had to be classified as insecure-dismissing, but her sensitivity rating was almost two scale points higher. This change on the behavioral level was reflected in the Strange Situation. At 14 months of age the child was classified as securely attached to her mother (B3/B2). It is remarkable that only four intervention sessions were effective in changing the mother's insensitive behavior, and in changing the child's attachment insecurity (assuming that the girl was insecurely attached to her mother before the intervention). This is an illustration of the remarkable effectiveness of several short-term intervention studies (e.g., van den Boom, 1988). At the same time, the mother's representation of attachment remained insecure. If parents only acquire new behavioral strategies to interact with their infant, they may not be able to find sensitive ways to deal with the attachment needs of the developing child. Because they are still dismissing or preoccupied they might be less creative and flexible, and more defensive in the communication about emotions with their child. The generalizability of the intervention effects may therefore be restricted. In the long run, the discrepancy between the representational and the behavioral levels may even be counterproductive because the child may experience several shifts in sensitivity of the parent across the years. Another interpretation would be more optimistic. The change at the behavioral level may, after some time, induce a change at the representational level. A securely attached child may provoke positive interactions with the parent, and may reinforce the mother's sensitive behavior, even at a later stage of development. In this way, the child may help to break the intergenerational cycle of insecure attachment. Until more data from experimental longitudinal studies, including data on parental representations, become available, we have no empirical evidence to support one or the other alternative (van IJzendoorn et al., 1995; Juffer et al., in press).

CONCLUSION

In sum, we may conclude that, according to a growing number of studies, intergenerational transmission of attachment should be considered an established fact. The AAI as the assessment of parental attachment representations plays a central part in these studies. We see not the specific events in parents' childhoods per se, but rather the representation of attachment experiences to be of overriding importance. Results on the reliability and discriminant validity of the AAI yielded satisfactory results. The AAI is a psychometrically sound instrument. Alternatives for the time-consuming AAI are not yet available; most questionnaires lack convergent validity. On the basis of a meta-analytic combination of the separate primary studies, a normative standard distribution of interview classifications in normal samples could be derived. The distributions of clinical groups diverge strongly from this standard distribution; irrespective of the location of the problems (in the children or in the parents), the insecure attachment categories are overrepresented. It seems impossible, however, to show systematic associations between type of attachment insecurity and type of psychiatric disturbance.

Responsiveness appears to be a mediating factor in the intergenerational transmission of attachment, but the rather modest effect sizes of the relations between parental responsiveness and parental attachment representations on the one hand, and between parental responsiveness and children's attachment on the other hand suggest a "transmission gap" of attachment. The limits of the intergenerational transmission have been explored on the basis of a quasi-experimental study with two types of Israeli kibbutzim. Apparently, intergenerational transmission of attachment can be blocked by culture-specific childrearing conditions. Intergenerational transmission of attachment may also be discontinued by major life events such as loss of attachment figures or a breakup of the family. Furthermore, interventions aiming at changing attachment insecurity are successful on the behavioral level, but it is still unclear under which conditions the intergenerational transmission of insecure attachment can be changed permanently.

The AAI enabled us to make substantial progress in addressing the issue of intergenerational transmission of attachment in normal as well as in clinical groups, and in different cultural contexts. The AAI also provoked numerous precise questions and hypotheses about the transmission of attachment across generations that deserve our attention in the years to come.

ACKNOWLEDGMENTS

This study was supported by a PIONEER award from the Netherlands Organization for Scientific Research (NWO, Grant No. PGS 59-256) to Marinus van IJzendoorn. Parts of this chapter were presented by the first author at the PAOS/RUL symposium on "Personality, Developmental Psychology, and Psychopathology" (P. D. Treffers, Chair), Leiden, The Netherlands, June 10-11, 1993.

NOTE

1. Effect sizes are presented as correlation coefficients, as this statistic is well known and can easily be interpreted.

REFERENCES

- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1974). Infant-mother attachment and social development: "Socialization" as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The integration of a child into a social world* (pp. 173-225). Cambridge, England: Cambridge University Press.
- Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.
- Ainsworth, M. D. S., & Eichberg, C. (1991). Effects on infant-mother attachment of mother's unresolved loss of an attachment figure, or other traumatic experience. In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 160-183). London: Routledge.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.
- Anisfeld, E., Casper, V., Nozyce, M., & Cunningham, N. (1990). Does infant carrying promote attachment? An experimental study of the effects of increased physical contact on the development of attachment. *Child Development*, 61, 1617-1627.
- Arend, R., Gove, F., & Sroufe, L. A. (1979). Continuity of individual adaptation from infancy to kindergarten: A predictive study of ego-resiliency and curiosity in preschoolers. *Child Development*, 50, 950-959.
- Armsden, G. L., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16, 427-454.
- Aviezer, O., van IJzendoorn, M. H., Sagi, A., & Schuengel, C. (1994). "Children of the Dream" revisited: 70 years of collective early child care in Israeli kibbutzim. *Psychological Bulletin*, 116, 99-116.

- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology*, 29, 870–879.
- Beckwith, L., Cohen, S. E., & Hamilton, C. E. (1995, March). *Mother–infant interaction and parental divorce predict attachment representation of late adolescence*. Paper presented at the biennial meeting of the Society for Research in Child Development, Indianapolis.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, 55, 83–96.
- Belsky, J. (1993). Etiology of child maltreatment: A developmental–ecological analysis. *Psychological Bulletin*, 114, 413–434.
- Belsky, J., & Nezworski, T. (Eds.). (1988). *Clinical implications of attachment*. Hillsdale, NJ: Erlbaum.
- Belsky, J., Rovine, M., & Taylor, D. (1984). The Pennsylvania infant and family development project II: Origins of individual differences in infant–mother attachment: Maternal and infant contributions. *Child Development*, 55, 706–717.
- Benoit, D., & Parker, K. C. H. (1994). Stability and transmission of attachment across three generations. *Child Development*, 65, 1444–1457.
- Bowlby, J. (1984). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). Harmondsworth: Penguin. (First edition published 1969)
- Bowlby, J. (1980). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. Harmondsworth: Penguin. (Original work published 1973)
- Bowlby, J. (1981). *Attachment and loss: Vol. 3. Loss: Sadness and depression*. Harmondsworth: Penguin. (Original work published 1980)
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.
- Buss, A. H., & Plomin, R. (1984). *Temperament: Early developing personality traits*. Hillsdale, NJ: Erlbaum.
- Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology*, 25, 525–531.
- Cohen, J. (1988). *Statistical power analysis for the social sciences*. New York: Academic Press.
- Cohn, D. A., Silver, D. H., Cowan, P. A., & Pearson, J. (1992). Working models of childhood attachment and couple relationships. *Journal of Family Issues*, 13, 432–449.
- Crittenden, P. M. (1985). Maltreated infants: Vulnerability and resilience. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 26, 85–96.
- Crittenden, P. M., Partridge, M. F., & Claussen, A. H. (1991). Family patterns of relationships in normative and dysfunctional families. *Development and Psychopathology*, 3, 491–512.
- Crovitz, H. F., & Quine-Holland, K. (1976). Proportion of episodic memories from early childhood by years of age. *Bulletin of the Psychonomics Society*, 7, 61–62.

- Crowell, J. A., Waters, E., Treboux, D., Posada, G., O'Connor, E., Colon-Downs, C., Feider, O., Fleischman, M., Gao, Y., Golby, B., Lay, K. -L., & Pan, H. (1993, April). *Validity of the Adult Attachment Interview: Does it measure what it should?* Poster presented at the biennial meeting of the Society for Research in Child Development, New Orleans.
- Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*, 349-354.
- De Haas, M. A., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1994). The Adult Attachment Interview and questionnaires for attachment style, temperament, and memories of parental behavior. *Journal of Genetic Psychology, 155*, 471-486.
- Egeland, B., & Farber, E. A. (1984). infant-mother attachment: Factors related to its development and changes over time. *Child Development, 55*, 753-771.
- Epstein, S. (1983). *The Mother-Father-Peer scale*. Unpublished manuscript, University of Massachusetts at Amherst.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development, 62*, 891-905.
- Fox, N. A. (1995). Of the way we were: Adult memories about attachment experiences and their role in determining infant-parent relationships: A commentary on van IJzendoorn (1995). *Psychological Bulletin, 117*, 404-410.
- George, C., Kaplan, N., & Main, M. (1985). *Adult Attachment Interview*. Unpublished manuscript, University of California at Berkeley.
- Gilligan, C. (1982). *In a different voice*. Cambridge, MA: Harvard University Press.
- Goldberg, D. (1972). *The detection of general illness by questionnaire* (Maudsley monograph No. 21). London: Oxford University Press.
- Goldberg, D. (1978). *Manual of the General Health Questionnaire*. Windsor, Berks: NFER-Nelson Publishing Company.
- Goldsmith, H. H., & Alansky, J. A. (1987). Maternal and infant temperamental predictors of attachment: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 55*, 805-816.
- Goodnow, J. J., & Collins, W. A. (1990). *Development according to parents: The nature, sources and consequences of parents' ideas*. London/Hillsdale, NJ: Erlbaum.
- Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Moran (Eds.), *Syntax and semantics III: Speech acts* (pp. 41-58). New York: Academic.
- Grossmann, K., Grossmann, K. E., Spangler, G., Suess, G., & Unzner, L. (1985). Maternal sensitivity and newborns' orientation responses as related to quality of attachment in northern Germany. In I. Bretherton & E. Waters (Eds.), *Growing points in attachment theory and research. Monographs of the Society for Research in Child Development, 50*(1-2, Serial No. 209), 233-278.
- Hamilton, C. E. (1994). *Continuity and discontinuity of attachment from infancy*

- through adolescence. Unpublished doctoral dissertation, University of California at Los Angeles.
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, 52, 511–524.
- Hesse, E. (1996). Discourse, memory, and the Adult Attachment Interview: A note with emphasis on the emerging Cannot Classify category. *Infant Mental Health Journal*, 17, 4–11.
- Isabella, R. A. (1993). Origins of attachment: Maternal interactive behavior across the first year. *Child Development*, 64, 605–621.
- Juffer, F., van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (in press). Intervention in transmission of attachment: A case study. *Psychological Reports*.
- Kaufman, J., & Zigler, E. (1987). Do abused children become abusive parents? *American Journal of Orthopsychiatry*, 57, 186–192.
- Lichtenstein, J. (1991, April). *The adult attachment questionnaire (AAQ): Validation of a new measure*. Poster presented at the biennial meeting of the Society for Research in Child Development, Seattle.
- Lieberman, A. F., Weston, D. R., & Pawl, J. H. (1991). Preventive intervention and outcome with anxiously attached dyads. *Child Development*, 62, 199–209.
- Luteijn, F., & van der Ploeg, F. A. E. (1982). *Groninger Intelligentie Test. Handleiding [Groningen Intelligence Test. Manual]*. Lisse, The Netherlands: Swets & Zeitlinger.
- Lyons-Ruth, K., Repacholi, B., McLeod, S., & Silva, E. (1991). Disorganized attachment behavior in infancy: Short-term stability, maternal and infant correlates, and risk-related subtypes. *Development and Psychopathology*, 3, 397–412.
- Main, M. (1990). Cross-cultural studies of attachment organization: Recent studies, changing methodologies, and the concept of conditional strategies. *Human Development*, 33, 48–61.
- Main, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) vs. multiple (incoherent) model of attachment. Findings and directions for future research. In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 127–159). London/New York: Tavistock/Routledge.
- Main, M., & Goldwyn, R. (1991). *Adult Attachment Classification System: Version 5.0*. Unpublished manuscript, University of California at Berkeley.
- Main, M., & Goldwyn, R. (in press). Interview-based adult attachment classifications: Related to infant–mother and infant–father attachment. *Developmental Psychology*.
- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 161–182). Chicago/London: University of Chicago Press.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorgan-

- ized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 121–160). Chicago/London: University of Chicago Press.
- Main, M., van IJzendoorn, M. H., & Hesse, E. (1993, March). *Unresolved/Unclassifiable responses to the Adult Attachment Interview: Predictable from unresolved states and anomalous beliefs in the Berkeley-Leiden Adult Attachment Questionnaire (BLAAQ-U)*. Paper presented at the biennial meeting of the Society for Research in Child Development, New Orleans.
- Malinosky-Rummell, R., & Hansen, D. (1993). Long-term consequences of childhood physical abuse. *Psychological Bulletin*, 114, 68–79.
- Maslin, C. A., & Bates, J. E. (1983, April). *Precursors of anxious and secure attachments: A multivariate model at age 6 months*. Paper presented at the biennial meeting of the Society for Research in Child Development, Detroit.
- Miehls, D. A. (1989). *Marital attachment patterns and change in one's mental representations*. Unpublished dissertation, Smith College School for Social Work, London, Ontario, Canada.
- Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology*, 52, 1–11.
- Patrick, M., Hobson, R. P., Castle, P., Howard, R., & Maughan, B. (1992). *Personality disorder and the mental representation of early social experience*. Unpublished manuscript, Tavistock Institute, London.
- Perris, C., Jacobsson, L., Lindström, H., von Knorring, L., & Perris, H. (1980). Development of a new inventory for assessing memories of parental rearing behaviour. *Acta Psychiatrica Scandinavica*, 61, 265–274.
- Pfohl, B. (1989). *Structured Interview for the DSM-III-R Personality Disorders (SIDP-R)*. Iowa City: University of Iowa Hospitals and Clinics.
- Radojevic, M. (1992, July). *Predicting quality of infant attachment to father at 15 months from prenatal paternal representations of attachment: An Australian contribution*. Paper presented at the 25th International Congress of Psychology, Brussels.
- Raven, J. C. (1958). *Standard progressive matrices: Sets A, B, C, D, and E*. London: Lewis.
- Rosenstein, D. S., & Horowitz, H. A. (1996). Adolescent attachment and psychopathology. *Journal of Consulting and Clinical Psychology*, 64, 244–253.
- Rosenthal, R. (1991). *Meta-analytic procedures for social research*. Beverly Hills, CA: Sage.
- Rutter, M., Quinton, D., & Hill, J. (1990). Adult outcome of institution-reared children: Males and females compared. In L. N. Robins & M. Rutter (Eds.), *Straight and devious pathways from childhood to adulthood* (pp. 135–157). Cambridge, England: Cambridge University Press.
- Sagi, A., van IJzendoorn, M. H., Aviezer, O., Donnell, F., & Mayseless, O. (1994). Sleeping away from home in a kibbutz communal arrangement: It makes a difference for infant–mother attachment. *Child Development*, 65, 992–1004.
- Sagi, A., van IJzendoorn, M. H., Scharf, M., Joëls, T., Koren-Karie, N., Mayseless, O., & Aviezer, O. (in press). Ecological constraints for intergenerational

- transmission of attachment: In search of determinants of transmission failures. *International Journal of Behavioural Development*.
- Sagi, A., van IJzendoorn, M. H., Scharf, M., Koren-Karie, N., Joëls, T., & Mayseless, O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, *30*, 988–1000.
- Spangler, G., & Grossmann, K. E. (1994). Biobehavioral organization in securely and insecurely attached infants. *Child Development*, *64*, 1439–1450.
- Sroufe, L. A. (1978). Attachment and the roots of competence. *Human Nature*, *1*, 50–57.
- Sroufe, L. A. (1988). The role of infant–caregiver attachment in development. In J. Belsky & T. Nezworski (Eds.), *Clinical implications of attachment* (pp. 18–38). Hillsdale, NJ: Erlbaum.
- Steele, H., & Steele, M. (1994). Intergenerational patterns of attachment. In D. Perlman & K. Bartholomew (Eds.), *Advances in personal relationships* (Vol. 5, pp. 93–120). London: Kingsley.
- Steele, M., Steele, H., & Fonagy, P. (1993, March). *Associations among attachment classifications of mothers, fathers, and their infants: Evidence for a relationship-specific perspective*. Paper presented at the biennial meeting of the Society for Research in Child Development, New Orleans.
- Suomi, S. J. (1995). Influence of attachment theory on ethological studies of biobehavioral development in nonhuman primates. In S. Goldberg, R. Muir, & J. Kerr (Eds.), *Attachment theory: Social, developmental, and clinical perspectives* (pp. 185–202). Hillsdale, NJ: Analytic Press.
- van den Boom, D. C. (1988). *Neonatal irritability and the development of attachment: Observation and intervention*. Unpublished doctoral dissertation, Leiden University, Leiden, The Netherlands.
- van IJzendoorn, M. H. (1995a). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, *117*, 387–403.
- van IJzendoorn, M. H. (1995b). Of the way we are: On temperament, attachment, and the transmission gap: A rejoinder to Fox (1995). *Psychological Bulletin*, *117*, 411–415.
- van IJzendoorn, M. H. (1996). Continuity of attachment across the lifespan: Early prototypes or stable environments. Commentary to Mayseless (1996). *Human Development*, *39*, 224–231.
- van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (1996). Attachment representations in mothers, fathers, adolescents, and clinical groups: A meta-analytic search for normative data. *Journal of Consulting and Clinical Psychology*, *64*, 8–21.
- van IJzendoorn, M. H., Feldbrugge, J. T. M., Derks, F., De Ruiter, C., Verhagen, M., Philipse, M., Van der Staak, C. P. F., & Riksen-Walraven, M. (in press). Attachment, representations of personality disordered criminal offenders. *American Journal of Orthopsychiatry*.

- van IJzendoorn, M. H., Goldberg, S., Kroonenberg, P. M., & Frenkel, O. J. (1992). The relative effects of maternal and child problems on the quality of attachment: A meta-analysis of attachment in clinical samples. *Child Development*, 63, 840–858.
- van IJzendoorn, M. H., Juffer, F., & Duyvesteyn, M. G. C. (1995). Breaking the intergenerational cycle of insecure attachment: A review of the effects of attachment-based interventions on maternal sensitivity and infant security from a contextual perspective. *Journal of Child Psychology and Psychiatry*, 36, 225–248.
- van IJzendoorn, M. H., Kranenburg, M. J., Zwart-Woudstra, H. A., van Busschbach, A. M., & Lambermon, M. W. E. (1991). Parental attachment and children's socio-emotional development: Some findings on the validity of the Adult Attachment Interview in the Netherlands. *International Journal of Behavioral Development*, 14, 375–394.
- Waddington, C. H. (1957). *The strategy of genes*. London: Allen & Unwin.
- Ward, M. J., Botyanski, N. C., Plunket, S. W., & Carlson, E. A. (1991, April). *Concurrent validity of the AAI for adolescent mothers*. Paper presented at the biennial meeting of the Society for Research in Child Development, Seattle.
- Ward, M. J., & Carlson, E. A. (1995). Associations among adult attachment representations, maternal sensitivity, and infant-mother attachment in a sample of adolescent mothers. *Child Development*, 66, 69–79.
- Waters, E. (1978). The reliability and stability of individual differences in infant-mother attachment. *Child Development*, 39, 483–494.
- Waters, E., Wippman, J., & Sroufe, L. A. (1979). Attachment, positive affect, and competence in the peer group: Two studies in construct validation. *Child Development*, 50, 821–829.
- Waters, E., Merrick, S. K., Albersheim, L. J., & Treboux, D. (1995, March). *Attachment security from infancy to early adulthood: A 20-year longitudinal study*. Paper presented at the biennial meeting of the Society for Research in Child Development, Indianapolis.
- Weissman, M., & Paykel, E. (1974). *The depressed woman: A study of social relationships*. Chicago: University of Chicago Press.
- Zimmermann, P. (1994). *Bindung im Jugendalter: Entwicklung und Umgang mit aktuellen Anforderungen [Attachment in adolescence: Development and interaction with present circumstances]*. Unpublished doctoral dissertation, University of Regensburg, Regensburg, Germany.