

CHAPTER 2

PERCEIVED SECURITY AND EXTENSION OF THE CHILD'S REARING CONTEXT: A PARENT-REPORT APPROACH¹

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ABSTRACT

It is argued here that Bowlby's monotropy thesis is theoretically and empirically untenable, and should be replaced by our "extension hypothesis", which states that an optimal child-rearing context is formed by a *network* of more or less stable attachment relationships between the child and its caregivers. The "Perceived Security" scale is then introduced, a parent-report measure purporting to assess one aspect of the multi-dimensional attachment construct, that is, the degree to which the child feels secure in the more or less strange, potentially threatening situations it is likely to encounter in everyday life. After describing two validation studies with this Perceived Security scale (relating its score to Strange Situation classification results and data on the children's Temperament, respectively), two studies relating the children's Perceived Security to a number of operationalized aspects of the "extension hypothesis" are discussed. Both studies support this hypothesis in that their results suggest that an extension of the children's rearing context (both quantitatively and qualitatively) is associated with a higher degree of Perceived Security.

INTRODUCTION

The work of Bowlby is characterized by a relatively strong neglect of the influence of child-rearing practices on the development of attachment, what may be described as its "pedago-

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gical" dimension. Although Bowlby does not question the important role played by caregivers in the development of attachment, he has devoted far more attention to the (unamenable) ethological roots of attachment than to its potentially controllable "pedagogical" determinants. Yet, at various places in his oeuvre one can find interesting comments on the effects of these determinants.

It is our objective to put these comments together and, if necessary, to criticize them. In this connection we will pay special attention to Bowlby's so-called "monotropy thesis", which will be replaced by our "extension hypothesis". In this hypothesis, we will emphasize the positive effects of an extension of the child's rearing context on the development of (secure) attachment.

The dynamic equilibrium between caregiver and child: attachment, exploration, and stability

Bowlby looks upon the structure of the early child-rearing context as a dynamic equilibrium between reciprocal and antithetical behavioral patterns of caregiver and child (Bowlby, 1971, p.288). On the one hand, the child's behavior is characterized by a tendency towards being in the proximity of a protecting conspecific ("proximity seeking"). On the other hand, it is characterized by the irrepressible urge to explore the environment ("exploration"). Between these two basic behavioral patterns (which Bowlby puts on the same level as the need for nutrition) there is a subtle equilibrium: the "unknown" is often alarming (thus evoking a stimulus to proximity seeking) as well as cause for curiosity (eliciting an impetus to exploration), all at the same time. Dependent upon the situational context, the balance either shifts in the direction of proximity seeking (when a familiar attachment figure is not available) or in the direction of exploration (when there is a protecting conspecific supplying a secure exploration base).

The caregivers' behavior, too, is characterized by two possibly antithetical tendencies. On the one hand, they feel called upon to establish a relationship with the child that confirms their position as a familiar and protecting conspecific ("interaction"). In addition, due to the compelling nature of the child's proximity-seeking behavior (such as crying or clinging), caregivers will reluctantly shirk their duty to act as an attachment figure. On the other hand, though, caregivers have to pay attention to other aspects of family life (e.g., the rearing of other children, their relationship with the partner, household chores, etc.), and to societal demands (such as work, education, and leisure inter-

ests). This last category of activities (briefly defined as "work") may well prove to be incompatible with "interaction" activities.

In such a dynamic and fragile equilibrium, conflicts seem difficult to avoid. The question is, which disturbances of the equilibrium exert a negative influence on the child's development, and how they can be counterbalanced. Of crucial importance to maintaining the equilibrium is the process of "matching" the child's proximity-seeking behavior to the caregiver's "interaction" behavior. Caregiver and child will have to get attuned to each other in such a way that they learn to be perceptive of each other's signals. The caregiver should be able to decode the relatively undifferentiated behavior of the baby and the young child and be able to respond adequately, for example by cuddling and providing comfort. Stern (1977) has described this subtle attuning process in detail. A stable relationship with regularly recurring interaction episodes forms a condition which is necessary for the development of a harmonious "match" between both partners. Only within such a stable relationship is provision made for the establishment of the aforementioned attuning process. This could be described as Bowlby's "law of stability or continuity": "The more stable and predictable the régime, the more secure a child's attachment tends to be; the more discontinuous and unpredictable the régime, the more anxious his attachment" (Bowlby, 1975, p. 261). In the context of a stable relationship with regularly occurring interactions, the behavior of the interaction partners will become more and more predictable to each other. This attuning process takes time to develop; not only because of its subtle nature, but also due to the relatively underdeveloped interactive abilities of the child and its initial inability to form inner representations of the pattern of interaction. In our view, however, Bowlby's "law of stability" does not automatically imply that only one specific caregiver can form an attachment relationship with the child. In other words: stability does not imply monotropy, as we will demonstrate in the following sections.

Disturbances of the equilibrium: overprotection and neglect

Broadly speaking, the maintenance of the equilibrium is threatened by two tendencies that may occur to a greater or lesser degree. First, the caregiver might pay too much attention to "interaction" activities due to, for example, the absence of "work". In this case, "smothering" (Bowlby) or "overprotection" may develop, imposing care on the child in a coercive way. Such an over-anxious concern for the child results in an insufficient degree of exploratory behavior, and it is the

cause of the child's fixation on the maintenance of proximity seeking to the caregiver. Secondly, the caregiver may feel forced into spending so much time on "work" activities (e.g., other children in the family, a job, etc.), that the interaction component lags behind. In that case, caregiver and child have little opportunity to attune to each other in a way that is satisfactory to both, and there is the looming danger of "neglect": the child experiences too many separations from its caregivers to remain confident in their accessibility in case of need.

We have just described these two disturbances of the equilibrium from a quantitative point of view, that is, in terms of too much or too little time and attention given to the child. Bowlby, however, repeatedly points to the more qualitative aspects of the interaction process between caregiver and child. On account of their own development and upbringing or due to societal factors, caregivers sometimes are unable to respond sensitively to the child, even though the amount of time spent with the child should in itself be sufficient for the establishment of a harmonious relationship. In addition, he refers to the frequently occurring phenomenon that caregivers, unintentionally or deliberately (by way of punishment), threaten the child with separation, for example by threatening to leave the home or to send the child away (cf. Bowlby, 1975, p.243). In Bowlby's view, such threats of sanctions may have as calamitous an effect on the development of attachment as real separations.

To summarize, in Bowlby's work one can find the following disturbances of the equilibrium which have negative effects on the development of attachment:

1. Physical inaccessibility of the caregiver (separation);
2. Emotional inaccessibility of the caregiver (lack of sensitivity);
3. Instable and unpredictable régimes (too many relationships of short duration with several different caregivers);
4. Threats with temporary or permanent inaccessibility (threats of sanctions in terms of separation and "love-withdrawal");
5. Inversion of the attachment relationship by an insecurely attached caregiver (this pertains especially to the older child being forced into playing the role of an attachment object);
6. Compulsive interaction on the part of the caregiver, which does not meet the child's needs ("compulsive care-giving" or "overprotection", cf. Bowlby, 1979, p.137).

In Bowlby's opinion, the most frequently occurring distur-

bances of the equilibrium are brought about by "neglect", that is, by too low a degree of interaction between caregiver and child, and by a lack of stability and sensitivity in this interaction. In his judgment, the child cannot actually be spoilt by too much attention on the part of the caregiver (by overindulgence or overprotection), provided that the child's needs regulate the amount of attention given. Overprotection develops as a result of the caregiver's compulsive need to give more attention than is wanted by the child. Bowlby, therefore, prefers the phrase "compulsive care-giving" to "overprotection" to underline that it is the caregiver and not the child who is the cause of the excessive amount of attention and care (Bowlby, 1971, p.422). A child cannot be spoilt if its own need for interaction determines the amount of attention it receives. Besides, according to Bowlby, children up to about three years old, who do not yet possess adequate cognitive abilities to form inner representations of the caregiver's availability, can only be confident as to the attachment figures' accessibility when they are actually present (Bowlby, 1975, p.237). Elsewhere he remarks on this matter: "...effects of separations from mother during the early years are cumulative and ... the safest dose is therefore a zero dose" (Bowlby, 1975, p.255). From this perspective, his sceptical attitude towards institutional care of children under the age of three years (for example in day care centers) can be understood. In his opinion, the danger of overprotection is very small (contrary to the view of, for example, Van den Berg, 1958), since children can hardly be spoilt by too much attention. Furthermore, he assumes that children at this early age can be contented only with the actual presence of their attachment figure, and, finally, that separation experiences are not "forgotten" but, on the contrary, have a cumulative effect. Thus, from Bowlby's point of view, the most plausible conclusion is that child-rearing contexts characterized by the permanent availability of one and the same caregiver lay the ideal foundation for the development of secure attachment relationships. We, however, are rather critical of this conclusion, and will go further into the matter in the next section.

Extension of the child-rearing context

Although Bowlby repeatedly points to the negative effects of temporary separations between child and caregiver, he makes, in our view, too little allowance for the fact that in the modern family (still the context in which most children are brought up), separations between caregiver and child are inevitable. In present-day society, permanent actual presence of

the (primary) caregiver is virtually impossible in a family in which there is (often) more than one child to be cared for, and in which the caregiver has to fulfil other responsibilities than bringing up children. In most families, help provided by baby-sitters, neighbors, relatives (for example grandparents), friends, acquaintances and especially the partner is indispensable. Given the inevitability of temporary separations, the optimal rearing context will, from the child's perspective, be made up by more or less stable relationships with several different caregivers who all act as attachment figures. For if only one specific caregiver has developed into an attachment figure, each separation will appear to be a very severe event, since the child has no one else to turn to. On the other hand, in an extended rearing context, a separation from an attachment figure does not automatically imply a separation as perceived by the child: there are other caregivers who may provide the same source of security in potentially threatening situations. Moreover, forced permanent separations between caregiver and child (for example due to decease or divorce) can be endured better in an extended rearing context. In his most recent book, "Loss", Bowlby, basing himself on a multitude of clinical data, contends that a young child is capable of coping with the loss of an attachment figure when the following three conditions are met: (1) prior to the separation, a secure attachment relationship should exist; (2) young as the child may be, it should be informed promptly and accurately of the fatal event, and (3) there should be the comforting presence of its surviving parent or a known and trusted substitute as well as an assurance that the relationship will continue (Bowlby, 1980, p.276).

It is the last condition which is of particular importance in this respect. In a rearing context in which there is only one attachment figure interacting intensively with the child, an unexpected temporary or permanent separation can hardly be endured. On the other hand, in an extended rearing context, the continuity of the régime will be better ensured, and in the case of such a fatal event, this is exactly what the child needs most. Moreover, an extended rearing context may enrich the child's experiences: in a way, each attachment relationship is different as to its form and substance, and the child therefore is more likely to learn to attune its behavior in a subtle way to that of the interaction partner concerned. Add to this that certain peculiarities inherent to a particular caregiver-child relationship may be compensated for by the interaction with other caregivers. For instance, there are caregivers who are more strongly inclined to enter into distal rather than proximal interaction, in spite of the child's need for intensive physical contact. In an extended rearing con-

text, this need is more likely to be fulfilled by other caregivers. Also the danger of "smothering", of too much involvement on the part of the caregiver with the child, is likely to decrease in such a context. An "overprotective" caregiver will be forced to "hand over" the child to others regularly, and in this way is likely to be corrected more readily.

Of course, the abovementioned positive effects of an extended rearing context hold only on condition that the necessary amount of stability is provided for, in spite of the greater number of attachment relationships. Consequently, in an extended rearing context each caregiver will have to interact quite frequently with the child in order to build up the "sensitive responsiveness" (Ainsworth) necessary for the development of a secure attachment relationship. From the child's perspective, regularity should guarantee the predictability of the situations it will encounter. It may therefore be expected that a sufficient amount of stability can also be realized in extended rearing contexts characterized by the presence of multiple attachments, provided that the degree of extension remains within certain limits. This last aspect will be discussed later.

Finally, an important advantage of an extended rearing context for the caregivers is that they can devote more time and attention to the "work" component, without fear of harming their attachment relationship with the child. For attachment research has made clear that, given a certain quantitative minimum of interaction time, the attachment relationship will be determined primarily by the *quality* of the interactions (cf. Van IJzendoorn, 1979). Moreover, in an extended rearing context the temporarily absent caregiver (for example the working mother) is assured that the child is being cared for by persons with whom it has developed a good attachment relationship. In such a context, the possibly negative effects, on rearing as well as "work" activities, of "feelings of guilt" on the part of employed mothers can be reduced to a minimum (cf. Goossens, 1986; see also Chapter 4 in this volume).

Therefore, our extension hypothesis is that negative disturbances of the equilibrium in the Bowlbyan model of early child-rearing described above, can be prevented effectively in an extended rearing context. Neither tendencies to neglect nor tendencies to "overprotect" are likely to become prominent in an extended context. The negative effects of temporary or permanent separations between caregiver and child can be resisted successfully and constructively, as there are other attachment figures who will provide security and trust. Thus, an extended rearing context does not necessarily imply instability and unpredictability for the child.

Monotropy and hierarchy as related to the extension hypothesis

The extension hypothesis we have just introduced is based on two assumptions: (1) increasing the number of attachment relationships (within certain limits, see the next section) does not have to bring about negative effects on the quality of these relationships, and (2) several different attachment relationships may all serve the same purpose of providing security in potentially threatening situations. In a way, however, Bowlby's monotropy-thesis seems to be in contradiction with these assumptions. This monotropy-thesis states that "... there is a strong bias for attachment behaviour to become directed mainly towards one particular person" (Bowlby, 1971, p.368). In addition to this thesis, Bowlby differentiates between "principal" and "subsidiary" attachment figures; the child allegedly places several persons with whom it forms an attachment relationship in a hierarchy, on top of which one finds just one attachment figure who, especially in extreme situations, will provide enough trust and security. The monotropy-thesis, then, should not be interpreted to mean that the child forms a "true" attachment relationship with just one particular caregiver (an interpretation still endorsed by Smith, 1980). Bowlby does admit the existence of multiple attachments. He denies, however, the fact that several different caregivers may play essentially the same role of attachment figure, and he constructs an explicit hierarchy of attachments. However, the concept of "hierarchy" implies that the bond with the "principal" attachment figure is the strongest one, and that the other relationships should be placed lower in the scale. Now, speaking of the "strength" or the "intensity" of a bond implies a change of paradigms (see Chapter 1 in this volume). For within the attachment paradigm, the crucial concept is that of the *quality* of attachment (to be assessed in Ainsworth's Strange Situation), whereas the concept of "strength of the bond" represents a category stemming from learning theory. Besides, the monotropy-thesis, i.e., the hierarchy of attachment relationships, is not consonant with various empirical findings which provide evidence that children may have similar attachment relationships with several different adults, i.e., father, mother, and professional caregivers (cf. Lamb, 1978; Main & Weston, 1981; Sagi, Lamb, Lewkowicz, Shoham, Dvir, & Estes, 1985).

Arguments for the existence of monotropy can also not be inferred from the phenomenon that a child may, in certain (stressful) situations, be inclined to take refuge with one of the attachment figures present; the child can make a choice, and this choice may be made for "casual" reasons (when there is a thunderstorm the child may be looking for its mother, for

instance, because the mother feels more secure in such a situation - and therefore inspires more confidence - than the father). Only if in the mother's absence the child would not take refuge with the father (which it would have done in other, less alarming situations), is it possible to assume that there is a "subsidiary" attachment relationship with the father. Such findings, however, have not been reported and in such a case, they would appear to be quite counterintuitive. Experiences with young children, and the abovementioned empirical evidence as to the existence of (qualitatively) similar attachment relationships with several different adults, point in another direction. In our opinion, then, the monotropy thesis lacks empirical support and proves to be untenable. We therefore adhere to the extension hypothesis, which states that an optimal child-rearing context is formed by a *network* of more or less stable attachment relationships of the child with its caregivers.

Limits of extension

In our introduction of the extension hypothesis, it was emphasized as an essential condition that the extended rearing context should remain sufficiently stable and predictable for the child. It is not realistic to expect a one year-old child to enter into a large number of equivalent attachment relationships, considering the lengthy process of attuning between child and caregiver in each case. It is not easy to determine where the lines at extending the rearing context should be drawn, also in view of the fact that this might be very strongly dependent on the child's age, its cognitive abilities, etc.. Smith (1980, p.380) after reviewing cultural-anthropological literature relevant to this subject, came to the rather trite conclusion that "shared care amongst some 20 to 80 caretakers ... seemed to make it difficult for children to make attachment relationships ...". Results stemming from research into the role of the father in the development of attachment (cf. Vergeer & Van IJzendoorn, 1981; Lamb, 1976), and research into the influence of nurseries and day care centers on attachment (cf. Kagan, Kearsley, & Zelazo, 1978; Sagi et al., 1985; Goossens, 1987) suggest that at least three caregivers can form an attachment relationship with the child without difficulty. Future research into communal child-rearing practices might shed more light on the upper limit of extending the rearing context.

EMPIRICAL STUDIES WITHIN THE FRAMEWORK OF THE EXTENSION
HYPOTHESIS: THE RELATION BETWEEN "DENSITY OF THE REARING
CONTEXT" AND ATTACHMENT, I.E., PERCEIVED SECURITY

Since the early eighties, a number of empirical studies have been undertaken within the framework of the research project "Early Child-Rearing" at the University of Leiden, with a view to sharpening and testing the extension hypothesis. In a series of successive investigations (carried out between the end of 1979 and the end of 1982), an attempt was made to detect certain "attachment-relevant" behavioral characteristics of children's everyday life experiences, by using questionnaires sent to their caregivers. The focus was on one aspect of the multi-dimensional attachment construct, namely *the degree to which the child feels secure in the more or less strange, potentially threatening situations it is likely to encounter in everyday life*. The answers of the mothers to a number of questions concerning their child's behavior in these situations result in a summative score on the so-called "Perceived Security" scale (the specific content of which will be discussed in later sections). These "perceived security" scores have been related to a number of variables, each of which can be regarded as an operationalization of certain aspects of the extension hypothesis. They include the following:

- working status of the mother ("maternal employment"): is she a full-time homemaker or does she have a full-time or part-time job?
- non-parental care of the child: does the child attend a nursery or day care center; the frequency and duration of non-parental care, not only in institutional settings, but also child care provided by neighbors, relatives (grandparents), baby-sitters, etc.;
- the number of (short) separations, for example, the number of times the child stayed at a friend's or relative's house ("overnight separations");
- the division of tasks and responsibilities between the spouses, particularly the role of the father in extending the rearing context;
- maternal involvement with the child, a measure varying between the two poles of (anxious) overconcern ("Overprotection") and a more distant or relativistic attitude towards child-rearing (which only in its most extreme form might develop into "neglect").

In this way, various aspects of what we define as the "density of the rearing context", i.e., measures for quantitative (e.g., "maternal employment", "non-parental care") as well as

qualitative (e.g., "maternal involvement with child-rearing") modifications of this context have been related to perceived security scores.

The empirical studies to be reported on in the following sections are successively²:

- Two validation studies with respect to the Perceived Security scale. In the first study Perceived Security scores have been related to Strange Situation classification data; in this chapter only a summary will be given, as a more detailed account was presented elsewhere. In the second study, to be described in more detail, Perceived Security scores were related to a parent-report measure of temperament ("Perceived Temperament"). The goal was to determine the discriminant validity of these two scales, both designed to measure important early childhood constructs.
- Following these validation studies, we will discuss the results of several studies based on the extension hypothesis which were conducted to find correlates of Perceived Security with the abovementioned operationalized aspects of this hypothesis.
- At the end of this chapter a tentative synthesis of the results of these last studies will be presented.

THE "STRANGE SITUATION" AND "PERCEIVED SECURITY" COMPARED: A SUMMARY OF A FIRST VALIDATIONAL STUDY

In this section we will summarize briefly the results of this study, in which Perceived Security scores were related to Strange Situation classification results. A complete description is given by Van IJzendoorn, Tavecchio, Goossens, Vergeer and Swaan (1983). It was found that children belonging to Ainsworth's B4 and C (sub)groups were perceived as considerably "less secure" (i.e., they scored lower on the Perceived Security scale) in stressful everyday life situations than both the A children and the B1-B3 children, who seemed to be indistinguishable with respect to their "Perceived Security" scores. In attempting to answer the question which aspects of the Strange Situation procedure correspond most with the Perceived Security score, two multiple regressions were computed, with the scores on four interactive scales (i.e., "proximity seeking", "contact seeking", "maintenance of contact", and "resistance") in the two reunion episodes (5 and 8) as "predictors", the children's Perceived Security score serving as dependent variable. For Episode 5, interactive scale scores explained about 21% of the variance in Perceived Security. Interactive behavior in the most stressful reunion Episode 8 explained only 10%. This episode did not seem to elicit the same behavior in children as is perceived in potentially threatening daily life situations. In Episode 5 less

intense proximity seeking and contact maintaining seemed to correlate with greater security as perceived by the mothers. Resistant and avoidant behavior hardly seemed to explain any variance in Perceived Security (cf. Van IJzendoorn et al., 1983, pp.688-689).

In this first validation study, then, indications were found for the ecological validity of the Strange Situation. This originally American procedure appeared not only to produce reliable results in the Dutch context but also to elicit behavior in children comparable to their behavior in corresponding everyday, possibly stressful situations. Although the Strange Situation only allows for a relatively short period for the observation of behavior in unfamiliar surroundings (cf. Bronfenbrenner, 1979, p.19), mothers appear to make similar observations during their frequent and intensive contact with the child in many different everyday situations. Mothers perceive the same fear, sorrow, and other feelings of restlessness among their B4- and C-children as might be expected on the basis of their behavior in the Strange Situation. In Episode 5 in particular, children showed interactive behavior that corresponds with their Perceived Security score. The most threatening Episode 8 seems more atypical in this respect. However, mothers did not appear capable of expressing on the Perceived Security scale the more subtle indicators of an avoidant attachment. The scale makes no distinction between seemingly undisturbed and unruffled behavior as displayed by the ("avoidantly attached") A children in stressful situations, and behavior which demonstrates trust in the accessibility of the attachment figure as displayed by the ("securely attached") B1-B3 children in these situations. It is possible that this is due in part to the limited sensitivity mothers of A children display for signals from the child (Ainsworth, Blehar, Waters, & Wall, 1978, p.300).

Further research with the Perceived Security scale should be done to find out whether attachment measures based on a parental report can be improved to the extent that they will also reflect more subtle and unspectacular behavioral characteristics of the child (cf. Waters & Deane, 1985).

DISCRIMINANT VALIDITY OF SCALES FOR PERCEIVED TEMPERAMENT AND PERCEIVED SECURITY: A SECOND VALIDATIONAL STUDY

Along with attachment, temperament belongs to the most widely studied constructs in infant and early childhood research, and this situation might well continue for many years to come. Regarding temperament, most researchers agree today that individual differences in this characteristic refer to relatively enduring aspects of behavioral style that have some

constitutional basis (cf. Goldsmith & Campos, 1982). Because of the omnipresent and pervasive influence of such stylistic differences in behavior, early childhood research has increasingly more set itself to answering the question whether temperamental differences affect the development of attachment and influence the assessment of attachment quality in the Strange Situation. Attachment theorists, however, have tended to minimize the direct role played by endogeneous characteristics such as temperament in the development of individual differences in infant-parent attachment. Although these theorists acknowledge that infants are born with distinct behavioral styles, they propose that it is the mother's accommodation to these characteristics during the first year which determines individual differences in the interactive quality of the mother-child dyad, and, consequently, individual differences in the quality of attachment as assessed on the basis of the child's behavior in the Strange Situation.

Without going in detail into the discussion on the relation between temperament and attachment (cf. Goldsmith & Campos, 1982; Waters & Deane, 1982), we draw attention to the fact that there exist widely divergent views on this subject. For instance, Kagan (1982) argues that temperamental differences rather than differences in maternal behavior are the major sources of individual differences in Strange Situation behavior; differences among "avoidant", "ambivalent", and "securely" attached infants may not reflect a history of mother-infant interaction, but rather individual differences in susceptibility to stress - any stress, not just temporary loss of the mother. At the other extreme, Sroufe and Waters (1982) maintain that temperament and attachment are essentially orthogonal dimensions: securely attached infants may have vastly different temperaments, as may anxiously attached infants.

In reviewing the available evidence concerning the relationship between temperament and attachment quality (as assessed in the Strange Situation), Lamb, Thompson, Gardner, and Charnov (1985) state that variations in temperament as assessed using parental report questionnaires may not play a direct role in determining infant reactions in the Strange Situation. They also do not support claims regarding indirect influences of temperament on attachment, although they do not rule out the possibility that an interaction between maternal and infantile temperament determines the "goodness of fit" between them, and thus the quality of their interaction.

The purpose of this second validation study was to relate parent-report measures of these two important constructs, i.e., certain aspects of the multi-dimensional attachment construct as operationalized by means of Perceived Security, and temperament with the help of a Dutch version of Bates' Infant Characteristics Questionnaire (ICQ).

In caregiver-report questionnaire research, a central question is to what extent the caregiver's perception of the child's characteristics and behavior corresponds with its "real" characteristics: is perceived temperament (about) the same as the child's "real" behavioral style? Some researchers regard (difficult) temperament as a so-called "within-the-infant-characteristic", irrespective of the caregivers' perceptions (e.g., Thomas & Chess, 1977), while others hold the view that both components are intertwined: "reality" and attribution should be considered inseparable (cf. Bates, 1980). The same question arises with respect to caregivers' reports on attachment behavior, particularly regarding the child's feelings of (in)security in stressful situations, as assessed by means of the Perceived Security scale.

Comparing questionnaire data with observational results provides insight into the correspondence between caregivers' perceptions and "actual" behavior (or is it better to speak of the researcher's perceptions?). In such validation studies, rather low levels of agreement between questionnaire and observational data may be found. For instance, Bates and Bayles (1984, p.121) found only 4% to 10% common variance when maternal ratings of the child's temperament were compared to observational data. Recall that in the first validation study summarized in the previous section, we found an overlap of 21% variance between maternal ratings of attachment (i.e., Perceived Security) and observational data. It seems that only a modest proportion of the variance in parental ratings of both characteristics has been accounted for by more "objective" observations. This does not at all, however, invalidate the use of caregiver reports, for it is important to emphasize that parental perceptions are part of the child's rearing context, and are also likely to have major influence on parent-child interaction and thereby on the child's behavior. Moreover, because of the caregivers' extensive observations of their children, one may assume that such reports in a way complete the "objectively" obtained observational data. Yet, the low to modest (cor)relations existing between questionnaire data and observational indexes lead to a relativistic posture towards the import of caregivers' reports, and they provoke a continuous quest for additional approaches.

Nevertheless, in the present study we have confined ourselves to parent-report questionnaires for two reasons: First, validation research of the kind just mentioned was already carried out with respect to temperament and perceived security. Secondly, research into the *discriminant* validity of two scales purporting to measure different but possibly related constructs is still missing. These two scales are Bates' Infant Characteristics Questionnaire (ICQ, cf. Bates, Free-

land, & Lounsbury, 1979; Kohnstamm, 1984), a parent-report measure for temperament, and the already introduced Perceived Security scale, purporting to measure certain "attachment-relevant" behavioral characteristics in the child's everyday life. "Temperament" refers to the formal aspects of the child's behavior, i.e., the child's characteristic behavioral style in several different situations. "Attachment" refers to the affective quality of the parent-child interaction and particularly to feelings of anxiety and security in separations from and reunions with the attachment figure.

Scales purporting to measure these different constructs (in whole or in part) must produce a reasonable amount of discriminant validity to be useful in an empirical discussion on the relation between temperament and attachment. In the present study, we expected most subscales of Bates' ICQ to have low correlations with Perceived Security, with the exception of the subscale "Adaptability". In view of the content of the items which usually make up this subscale (e.g., "How does your child typically respond to a new person?" (item 9), "How does your child typically respond to being in a new place?" (item 10), and "How well does your child adapt to new experiences?" (item 11)), it may be concluded that this subscale partly aims at behavioral characteristics similar to those measured by Perceived Security (see the Appendix), which probably leads to a rather high degree of convergent validity. If this is true, the subscale "Adaptability" should be considered a strange element in the temperamental domain.

A final word about the purpose of the present study. In discussions on the relationship between temperament and attachment one frequently comes across statements concerning the predictive value of early temperament measures with respect to later attachment behavior. It should be emphasized that the present study is a cross-sectional study carried out with various age-groups, and set up to examine the relationships between both characteristics at the same moment in the child's development.

Method: sample and construction of variables

Sample. The study was conducted with complete families (father, mother, and children living together) having at least one child between the ages of 10 and 32 months. The families participating in the study lived in and around the Dutch city of Leiden. Data collection took place from February to August of 1982. In the first instance, 566 families with a child in the relevant age range seemed suited to the purpose. Of this group, 99 families refused to participate with only a few giving a reason for their refusal, for example, anger at the

researcher's knowing their addresses. The questionnaire was then sent to the remaining group of 467 families and at lack of response, a maximum of two reminders followed. In this way, 413 families were ultimately used in the study (88% of the "non-refusers", and 73% of the original sample). Of the non-respondents who were willing to provide information on their socio-economic status (43%), 61% belonged to a lower SES-level, and 39% to higher SES-levels. The mean SES-score in the sample was 4.6 (s.d.=1.5), using the frequently applied Dutch SES-index of Van Westerlaak, Kropman, and Collaris (1975).

Goldsmith and Campos (1982) warn explicitly against attempts to assess temperamental characteristics across too broad an age range, pointing to such factors as cognitive and motoric development which affect the expression of temperament in infants and young children. Also, Bates studied temperament while using homogeneous age-groups (6, 13, and 24 months respectively). The large-scale Dutch temperamental study of Kohnstamm (1984) even made use of 9 age-groups, in which the ages differed by no more than 3 months per group. Van IJzendoorn (1979) pointed to similar age-related changes in the development of attachment. Therefore, it was decided to conduct the study with three relatively homogeneous age-groups which remain, however, large enough to warrant the use and interpretation of the statistical analyses we conducted. In this way the following three groups were formed:

1. Group I, or the youngest group, made up of 97 children with a mean age of about 1.5 years (\bar{X} =18.8 months, s.d.=1, minimum 16, maximum 20 months);
2. Group II, or the middle group, consisting of 123 children, with a mean age of slightly more than two years (\bar{X} =24.2 months, s.d.=1.5, minimum 22, maximum 26 months);
3. Group III, or the eldest group, made up of 119 children with a mean age of slightly less than 2.5 years (\bar{X} =29.6 months, s.d.=1.2, minimum 28, maximum 32 months).

The age-range of 10-15 months comprising only 23 children, was too small a group in view of the analyses to be conducted, and was therefore deleted.

The total remaining group (n=339 families) consisted mainly of families with one or two children (33.5%, and 51.6%, respectively); 12.5% of the families had three children, and 2.4% four or five. The mothers in this group had a mean age of 31.5 years (s.d.=3.9, minimum 21, maximum 44 years), the fathers averaged 34.6 years (s.d.=4, minimum 23, maximum 48 years). The total group comprised 174 girls and 165 boys.

Variables. The by now familiar Perceived Security scale was used to assess one aspect of the multi-dimensional attachment

construct, i.e., the degree to which a child feels secure in the more or less strange, potentially threatening situations it is likely to encounter in everyday life. The 13 items used in the present study (cf. the Appendix, more specifically the items indicated by "b") yielded a reliable summative score of .84 in group III (the eldest group) and .85 in the total group and the groups I and II (as assessed with the help of Cronbach's alpha). Low scores indicate a low security as perceived by the mothers, higher scores reflect a higher degree of perceived security. As you recall from results of the first validation study discussed previously, the scale clearly makes a distinction between B4- and C-children on the one hand, and the remaining subgroups (A, B1, B2, and B3) on the other. These latter subgroups seem to be indistinguishable with respect to perceived security.

The Dutch version of Bates' ICQ (also known as "N-ICQ") was used to assess temperament. Kohnstamm (1984) had used this version in a large-scale study, carried out in 1982, in which more than 7000 parents were involved. Kohnstamm's youngest group was aged 2-4 months, the eldest group 31 months and more, and for each of the 9 different age-groups, data were analyzed by means of factor analysis (cf. Duijvelaar, 1983). In (nearly) all age-groups, the factor structure found by Kohnstamm and Duijvelaar pointed to the existence of four temperamental dimensions:

- "Crying/Easy-Difficult"
- "Adaptability"
- "Persistent"
- "Cuddly"

The data of the present study were subjected to factor analysis and subsequent internal consistency checks with a view to finding a limited number of relatively independent temperamental dimensions (cf. Huitt & Ashton, 1982). Continuously and at each stage of the analysis, our results were compared with Kohnstamm's findings. Furthermore, we attempted to construct temperamental dimensions which were stable across the entire age-range without forcing the data into a predetermined structure. As in Kohnstamm's study, in our analyses the factor structure based on the four-factor solutions (and, to a lesser extent, the five-factor solutions) yielded the best interpretation of the data. In addition, it produced the highest agreement between the results of the various age-groups (the method used was "principal axes factoring" with iterations, performed with the help of SPSS). The results of the analyses led to a dimensional structure very similar to Kohnstamm's findings.

1. A "Crying/Easy-Difficult" dimension, which indicates how often, in general, a child cries or fusses, how irritable

- it is, how intensely it cries and how much attention it generally demands from its caregivers. This dimension also reflects the mother's opinion of how difficult the child is, for other parents as well as for herself. The scale used to assess this dimension was made up of 8 items (in terms of Bates' ICQ the items 5, 6, 13, 21, 23, 24, 32, and 33), with internal consistency values (Cronbach's alpha) of .75 (group II), .79 (total group, and group III), and .83 (group I). A low score on this scale indicates a relatively "easy" temperament, higher scores point to a relatively "difficult" temperament.
2. The second dimension, "Adaptability", reflects the child's ability to adjust itself to new circumstances. Does it respond positively or anxiously and resistantly to new environments as well as strangers? The scale used comprised three items (Bates' numbers 9, 10, and 11), with internal consistency values of .72 (group I), .75 (group II), .77 (total group), and .82 (group III). A high score indicates a low degree of adaptability, a low score the reverse.
 3. The third dimension, "Cuddly", indicates whether or not the child likes to be picked up or cuddled, and how often it insists on it by nestling close to mother or father. For the measurement of this dimension, we used the summative score over only two items (Bates' numbers 19 and 26), as did Kohnstamm and, in fact, Bates himself. A low score indicates that the child dislikes being cuddled, higher scores point to the reverse. Cronbach's alpha was .58 (group II), .64 (total group), and .66 (in groups I and III).
 4. The fourth dimension, "Persistent", reflects the child's obedience and docility: does the child abandon things it is not allowed to touch or, on the contrary, does it persist in such "disobedient" behavior? Does the child, time and again, attempt to get to places it should not enter or come near? Two items (Bates' numbers 28 and 29) were used to assess this dimension; the internal consistency of the summative score was .70 (group II), .79 (total group), .82 (group III), and .83 (group I). A high score indicates a relatively disobedient, "naughty" type of behavior, whereas a low score points to a more compliant behavioral style.
 5. Finally, there is "Mood". This dimension indicates how often the child is cheerful and what may be considered its typical mood (cheerful or rather sober). In this case, too, two items (Bates' numbers 16 and 17) were used to assess this dimension, with internal consistency values of .57 (group I), .70 (total group), .72 (group III), and .74

(group II). High scores point to a rather sober, dejected mood, low scores to relatively cheerful behavior.

Especially with respect to the first three dimensions, the results of our analyses correspond strongly with those obtained by Kohnstamm and Duijvelaar. With a few exceptions, the dimensions are almost completely made up of the same items. However, Kohnstamm's fourth dimension, "Persistent", did not emerge as clearly from our varimax rotated solutions. In some subgroups it formed part of the first dimension ("Crying/Easy-Difficult"), while in another it showed a tendency to load with approximately equal strength on two different factors. In most groups, however, the unrotated factor solution pointed to the existence of a separate factor, strongly dominated by the items 28 and 29. Both items show high intercorrelations as well as low correlations with the other temperamental dimensions. On these grounds, it was decided to accept "Persistent" as the fourth dimension. The same holds more or less true for the last dimension, "Mood". In this case, too, both items used (16 and 17) were highly intercorrelated, and showed relatively low correlations with the other dimensions. Bates, Kohnstamm (and Jansen, 1984, in another Dutch study), had occasionally come across this dimension.

It should be emphasized, however, that the dimensions "Persistent" and, in particular, "Mood" are of a somewhat "artificial" nature as compared to the first three dimensions.

The first dimension, "Crying/Easy-Difficult", had a somewhat varying composition in the three age-groups. For the final analysis we chose the dimension described above, composed of items which, based on the four-factor solution, played an important role in all groups. For each age-group, however, there are some (minor) deviations from the "optimal" summative score. Therefore, we examined the correlations between the first dimension and the "optimal" summative score for each group (consisting of the 7-9 highest loading, discriminating items on the first factor). For groups I and II these correlations were .93 and .92, respectively, for group III .81 (we will return to this point later). As to "Adaptability", the other dimension with minor fluctuations in the various groups, all correlations between the abovementioned dimension and the "optimal" summative score were at least .93.

The internal consistency values of the various dimensions reported above are generally in agreement with Kohnstamm's (1984) results in similar age-groups. Although both Kohnstamm and Jansen (1984) at times found a "Mood" dimension, they did not report on its internal consistency.

Background characteristics. Apart from Perceived Security and the five Temperamental dimensions, we also included a

number of background variables in the analyses, namely the child's sex and age, the number of children in the family and the family's SES-level.

Results

Table 1 gives the means and standard deviations of the variables used in the various analyses. The high SES-score is rather conspicuous and a reason to be cautious as to the external validity of the results. The mean scores on the five temperamental dimensions are all rather low; among other things, this indicates that the children were perceived as relatively "easy". Furthermore, they were perceived as rather cheerful and adaptive.

The mean score on the Perceived Security scale lies very close to the middle of the score distribution; in the total group, this score follows a nearly perfect normal distribution. None of the variables presented in Table 1 differentiated significantly between the three age-groups (as tested by one-way ANOVA's). Sex differences were found with respect to Perceived Security in group II ($\bar{X}_{\text{boys}}=32.9$, $s.d.=6.6$, $\bar{X}_{\text{girls}}=35.5$, $s.d.=6.4$, $t=2.15$, $df=121$, $p=.033$, two-tailed), and almost found in the total group ($\bar{X}_{\text{boys}}=34.04$, $s.d.=6.6$, $\bar{X}_{\text{girls}}=35.4$, $s.d.=6.4$, $t=1.91$, $df=337$, $p=.057$, two-tailed).

Table 1
Mean scores and standard deviations (in parentheses) for background variables, Temperamental dimensions and Perceived Security

Variables	Total group (n=339)	Group I (n=97)	Group II (n=123)	Group III (n=119)
<i>Background variables:</i>				
SES	4.5 (1.5)	4.6 (1.5)	4.6 (1.5)	4.3 (1.6)
Age of child	24.4 (4.5)	18.8 (1.0)	24.2 (1.5)	29.6 (1.2)
Number of children	1.8 (.75)	1.8 (.72)	1.9 (.76)	1.8 (.76)
Sex of child ^a	174f/165m	48f/49m	74f/49m	52f/67m
<i>Temperamental dimensions:</i>				
Crying/Easy-Difficult	26.2 (6.4)	26.0 (6.9)	26.2 (6.0)	26.4 (6.5)
Adaptability	8.4 (3.4)	8.7 (3.2)	8.7 (3.4)	7.8 (3.4)
Cuddly	6.9 (2.2)	6.8 (2.4)	7.0 (2.0)	6.9 (2.3)
Persistent	7.5 (2.8)	7.8 (2.8)	7.6 (2.6)	7.1 (3.0)
Mood	4.5 (1.7)	4.2 (1.5)	4.6 (1.8)	4.5 (1.8)
Perceived security	34.7 (6.6)	34.0 (6.4)	34.5 (6.6)	35.6 (6.7)

Note. The ranges of the measures are as follows: Crying/Easy-Difficult 8-56; Adaptability 3-21; Cuddly, Persistent and Mood 2-14; Perceived Security 13-55; for the background variables, see text.

^aIn this case the values represent the number of females (f) and males (m)

In the other groups, too, boys possessed lower mean scores than girls on Perceived Security, but these differences were not significant. The finding that both sexes did not differ on the various temperamental dimensions is consonant with recent results obtained by Maziade, Boudreault, Thivierge, Capéraà, and Côté (1984) in Québec and is in line with Buss and Plomin's (1975) remark that sex differences in temperament are not to be expected before the child's fourth year.

By means of several multiple regression analyses, it was examined whether and to what extent the Perceived Security scale-scores can be explained in terms of the five temperamental dimensions. In the total group as well as in each of the three age-groups, we used hierarchical, stepwise procedures. In this context, the term "hierarchical" means that we first entered the various background variables into the analysis. Thereupon, the five temperamental dimensions were entered as a second set. The results for the various groups are presented in the Tables 2a through 2d.

Table 2

Stepwise Multiple Correlation between background variables and Temperamental dimensions (predictors) and Perceived Security (criterion), based on multiple regression analysis

2a Total group (n=339)					2b Group I (n=97)						
Step	Variable	Beta	r	R	R ²	Step	Variable	Beta	r	R	R ²
1	SES	.12	.19	.19	.04	1	Adaptability	-.71	-.73	.73	.54
2	Adaptability	-.56	-.64	.65	.43	2	Cuddly	.21	.30	.76	.58
3	Crying/Easy-Difficult	-.18	-.32	.67	.45						
4	Persistent	.13	.12	.68	.46						
5	Cuddly	.11	.15	.69	.47						
Equation: $F_{(5,331)}=59.4, p=.0000$					Equation: $F_{(2,93)}=63.9, p=.0000$						
2c Group II (n=123)					2d Group III (n=119)						
Step	Variable	Beta	r	R	R ²	Step	Variable	Beta	r	R	R ²
1	SES	.16	.33	.33	.11	1	Adaptability	-.58	-.58	.58	.34
2	Adaptability	-.46	-.63	.65	.42						
3	Crying/Easy-Difficult	-.29	-.42	.68	.46						
4	Persistent	.19	.14	.70	.49						
Equation: $F_{(4,118)}=28, p=.0000$					Equation: $F_{(1,116)}=60.1, p=.0000$						

Note: All beta weights are significant (at least $p<.05$); the same holds for R and R² increment; in group II, the correlation coefficient (r) between Persistent and Perceived Security (.14) is not significant, as contrasted with all other coefficients reported (at least $p<.05$, two-tailed).

Table 2 presents the "predictors" in the order selected by the stepwise procedure itself. Furthermore, for each "predictor" one finds, respectively, the value of the "raw" correlation (Pearson), the standardized regression weight (Beta), the value of the multiple correlation (R), and R^2 , the square of R which is about equal to the proportion of variance in the Perceived Security scale-scores to be explained by a given predictor set. The table lists only those variables which contributed significantly to R^2 and produced significant beta weights. As expected the results of the various analyses clearly show that in all the groups, the temperamental dimension "Adaptability" by far has the strongest correlation with Perceived Security. In group III none of the other variables even approached significance. After "Adaptability" (and at a rather great distance), the key concept of Bates' ICQ, "Crying/ Easy-Difficult", yields the second largest contribution, although its contribution in the total group is rather small. As to the background variables, SES plays a minor role, and only in the results of the total group: Perceived Security seems to increase with rising SES. But we are dealing here with very weak relationships.

The relationships found are mostly in the expected direction; a higher degree of Perceived Security is associated with a relatively high score on the "Adaptability" dimension as well as with a relatively "easy" temperament. Furthermore, a relatively low need of being cuddled is associated with a higher score on Perceived Security. In the total group, this relationship between "Cuddly" and Perceived Security is of little importance, but in group I, the youngest group, this relationship is somewhat more prominent. That a higher score on "Persistent" (a display of "naughty" behavior) seems to be associated with higher perceived security-scores is rather remarkable. We must add that in this case, too, the relationships found are rather weak. Actually, "Crying/Easy-Difficult" plays a role of some importance only in group II. In both the youngest and the eldest age-groups, this temperamental dimension does not make any contribution to the "prediction" of Perceived Security.³

Repeating the regression analyses with the "optimal" summative score for each age-group on the "Crying/Easy-Difficult" dimension, yielded only very small differences as compared to the results presented in Table 2. This applies, for that matter, in group III as well (cf. our comment in a previous section). It may well be that the varying composition of the "difficultness"-factor across several age-groups has some relevance from a developmental perspective (in other words, what characteristics constitute a child's temperamental "difficultness" as perceived by the caregiver), but at the same

time it may be concluded that this hardly seems to have any bearing on the relationship with Perceived Security.

Discussion

As was to be expected, we found a high degree of convergent validity between the temperamental dimension "Adaptability" and Perceived Security. Their common variance fluctuates between 31% and 54%. Moreover, the correlations between this subscale and the remaining four temperamental dimensions are considerably smaller, with the highest r reaching a value of .41 (with "Mood", in group II), or 16% of common variance. In such cases, one usually concludes that "Items which correlate higher in another cluster probably belong in that cluster, rather than in the one originally chosen" (Bohrnstedt, 1977, p.96). Applying a reverse strategy, that is characterizing the Perceived Security-items as "Adaptability"-items, seems to be rather far-fetched, since such a strategy would result in "watering-down" the construct of "temperament" by giving it too much extension. More important, however, is that such a strategy seems hardly tenable given the content of the items concerned: they have been constructed to reflect directly "natural" equivalents of the events taking place in the Strange Situation, a procedure explicitly designed to assess attachment behavior.

Starting from the validity of the Strange Situation (cf. Ainsworth et al., 1978), and taking into account the existence of a certain extent of convergent validity between the Perceived Security scale and the Strange Situation (as was demonstrated in the first validation study discussed previously), we take the line that a high correlation between one of the ICQ's subscales and Perceived Security points rather strongly in the direction of Bohrnstedt's conclusion.

Because "Adaptability" always appeared as the first temperamental dimension to be taken up in the equation, the beta weights associated with the other dimensions illustrate how much common variance remains between Temperament and Perceived Security after the entry of "Adaptability". As Table 2 shows, in the total group only 4% of common variance remains, while in the three age-groups individually this percentage runs from 7% in group II to 0% in group III. In other words, there is a high degree of discriminant validity; the two scales purport to measure two different constructs, and they very well succeed in accomplishing this goal, given the small percentages of common variance between Temperament and Perceived Security. The only exception, of course, is the "Adaptability" dimension.

Aside from the fact that the ICQ's factor structure was

largely "confirmed" in the present study, these results corroborate the construct validity of the instrument. It should be added, however, that the subscale "Adaptability" might seriously bias an empirical discussion on the relationship between temperament and attachment. For this subscale overlaps with Perceived Security to such an extent that it is hardly tenable to conceive of it as a temperamental dimension without putting at risk the ICQ's construct validity. In our view, it is therefore highly recommended that future researchers into the relationship between temperament and attachment (should they use the ICQ or a similar instrument for the assessment of temperament) eliminate the subscale "Adaptability" or similar dimensions. In view of the small number of items making up this dimension this would not, from a technical point of view, mean too great a loss either.

THE EXTENSION HYPOTHESIS AND PERCEIVED SECURITY

The samples used in the two empirical studies to be reported on in the following sections consisted of complete families (mother, father, and children living together), living in or in the neighborhood of the Dutch city of Leiden. The data collection phase of the first study took place from the late fall of 1979 to the early spring of 1980; for the second study, data were collected between April and August of 1981. The group of families participating in the second study ($n=140$) consisted, with a few exceptions, of a subsample from the 166 families investigated in the first study. In both studies, the criterion variable used was the Perceived Security scale, which was related to several different independent variables ("predictors") globally introduced at the outset of this chapter. In later sections we will dwell at greater length on the operationalization and measurement of the variables used. For now, though, we continue with a description of the group of families participating in the first study.

THE FIRST STUDY

Description of the sample

The investigation started with a group of 237 families in Leiden that met the requirements of being a married couple with at least two children between the ages of 0 and 3.5 years. After four efforts of recruitment, 183 families (over

77%) proved willing to participate in the study (an analysis of the influence of nonresponse on a number of important variables gave no reason to assume that the nonrespondents formed a systematically deviant subgroup within the population, cf. Van IJzendoorn, Tavecchio, Goossens, & Souverein, 1980, pp.93-99). The group of families ultimately investigated, however, consisted of 166 families; 17 families with twins were left out of the main analysis and were studied separately (cf. Jansen, 1980). Most of these 166 families had two children (84.9%), 9.6% had three, the rest four or more children. The age of the youngest child averaged 8.7 months (s.d.=4.6), that of the next to youngest child 29.8 months (s.d.=5.0). The mothers' ages averaged 29 years (s.d.= 3.9), the fathers 31 years (s.d.=3.6). In this group of 166 families, 28 wives (17%) worked outside the home, in nearly all cases on a part-time basis. Only three wives had full-time jobs.

From each family we selected a "target"-child to be used in the various analyses. This child had to fulfil the condition of being between 10 and 30 months of age, or of being as near to this interval as possible. The thus selected children had a mean age of 23 months (s.d.=8.4); 89 of them were boys, 77 were girls.

The families' socio-economic status, as assessed by means of the frequently used Dutch SES-index of Van Westerlaak et al. (1975), was rather unevenly distributed; the higher echelons were overrepresented (mean score 4.6, s.d.=1.4, on a scale ranging from 1 ("unskilled worker") to 6 ("academic level")). As in the second study, data of this first study were collected by means of a questionnaire sent by mail to each family in the population. In an accompanying letter it was strongly emphasized that each parent should fill in the questionnaire individually and independently (we ran across some systematic discrepancies in the answers of the spouses to questions concerning motives for parenthood, goals in rearing, etc., that would not necessarily be expected if the questionnaires had not been filled in independently of one another, cf. Van IJzendoorn & Tavecchio, 1982). For a more elaborate profile of these families the reader is referred to a detailed description of their life style, in which rather extensive attention was paid to the division of tasks and responsibilities between the spouses (cf. Tavecchio, Van IJzendoorn, Goossens, & Vergeer, 1983; 1984).

Description of variables

The criterion variable, "Perceived Security", was measured with the help of 3- and 4-point rating-scales, on which the mothers were asked to indicate to what extent their child

displays fear, anxiety or sorrow when alone, in unfamiliar surroundings, or in contacts with relative strangers, etc. (cf. the Appendix, more specifically the items indicated by "c").

In this first study with the scale eight items proved to be stable (that is, they yielded satisfactory test-retest reliability results after an interval of about 6 weeks; 20 randomly chosen families were used for the analysis). The summative score over these eight stable items reached an internal consistency value of .67 (Cronbach's alpha).

As mentioned at the outset of this chapter, perceived security scores have been related to a number of variables ("predictors") to be regarded as operationalizations of certain aspects of the "extension hypothesis". In the present study they were the following:

1. Working status of the mother ("maternal employment"), used as a dichotomous score: is she a full-time homemaker or does she have a full-time or part-time job?
2. The child's overnight separations, i.e., the number of nights the child spent away from home, for example, by staying at a friend's or relative's house;
3. The child's day care attendance; whether or not the child visits nurseries, day care centers etc., also measured dichotomously.

These three variables all concern quantitative aspects of the rearing context. We regard them as measures relating to the "quantitative density" of this context, and they have been operationalized by inquiring about direct, actual data. As we mentioned earlier, 28 wives (17%) worked outside the home, only three of them full-time. Slightly more than one-third (36%) of the children attended nurseries and/or day care centers regularly.

A second group of measures for the rearing context's "quantitative density" concerns the division of tasks and responsibilities between the spouses. Specifically, we were interested in the degree to which the father played a role in extending the rearing context. The three variables used to characterize the task division between the spouses are the summative scores on three factors emerging from a principal components analysis performed on a number of 15 items regarding the *actual* task division between the spouses (cf. Tavecchio et al., 1983, 1984, for a detailed report). These three variables are the following:

4. The "care factor", an index based on the summative score over 6 activities generally ascribed to a traditional "female" family role (e.g., "making the beds", "diapering the baby", "vacuuming");

5. A "chore factor", the summative score over 4 activities ascribed to a traditional "male" family role (e.g., fixing a flat (bicycle) tire", "changing a fuse");
6. An "interaction (or "pedagogical") factor", the summative score over 3 items which appeared to be less exclusively associated with one specific parent (e.g., "tussling with the children", "reading to the children").

Lower scores on these three variables indicate that the task concerned is performed more by the husband; higher scores point to a greater participation on the part of the wife.

Along with quantitative aspects of the rearing context, we also paid attention to qualitative aspects. Three attitudinal variables were used to characterize the "qualitative density" of the child's rearing context:

7. The attitude towards the mother's working outside the home, and
8. The attitude towards the father's working part-time, both variables measuring the degree to which the mother's working outside the home or the father's part-time employment were judged "favorable" for the raising of young children (the 5-point scale used ran from (1) "very unfavorable" to (5) "very favorable");
9. Maternal involvement with child-rearing; a measure varying between the two poles of (anxious) overconcern ("overprotectiveness") and a more relativistic or "distant" attitude towards child-rearing (which only in its most extreme form might develop into "neglect"). The items used to measure this variable originate from a study conducted by Engfer and Schneewind (1976) in Western Germany, in particular from their dimensions "*Erzieherisches Engagement*" ("commitment to child-rearing", originally composed of 8 items), and "*Verantwortung*" ("parental sense of responsibility", originally consisting of 7 items). Engfer & Schneewind's factor structure could, however, not be confirmed in the present study. Of the items that loaded on a single first factor (in our analysis, that is), 7 items remained, after removing items showing low test-retest reliability and/or low internal consistency values. The summative score over these 7 items was used for the assessment of "maternal involvement with child-rearing", a dimension reflecting the degree of "distance" versus "overconcern". The internal consistency (Cronbach's alpha) was .67. Lower scores indicate a tendency to display overconcern, higher scores on this dimension point to a more relativistic posture towards child-rearing. Examples of the items used are: "What my child does, thinks, and feels is of greater interest to me

than all other things", or "I spend every spare moment with my child" (originally belonging to Engfer & Schneewind's "*Erzieherisches Engagement*" dimension), and "With anything my child does I extend a helping hand", or "I take full responsibility for anything my child does" (originally part of Engfer & Schneewind's "*Verantwortung*" dimension).

Intervening variables

In addition, a number of possibly intervening variables were incorporated into the analyses, namely:

1. The family's "cultural-educational" level, that is, the degree to which parents are inclined to stimulate cultural abilities deemed to foster the child's intellectual development (cf. Rupp, 1969; Meijnen, 1977). Mothers were asked to indicate on a 4-point scale (running from (1) "not at all important" to (4) "very important") the importance they attached to activities like "reading to the children", "playing games with the children" or "correcting grammatical errors in the child's speech". The summative score over 5 items reached an internal consistency value of .69 (Cronbach's alpha). Low scores point to a relatively low degree of importance, higher scores indicate a higher degree of importance attached to these activities by the mothers concerned;
2. Motives for parenthood; based on a study of Out and Zegveld (1977), the mothers were asked to rate the importance of 13 motives for parenthood. Five of these were eliminated because of low test-retest reliability results. A principal components analysis on the remaining 8 items pointed to a unidimensional factor structure. For the main analysis, we used the summative score over these 8 items, its internal consistency value being .70 (Cronbach's alpha). Examples of items are: "Having children is a new experience", "You can directly transfer your own views and ideals to your children", etc. Lower scores indicate rather strong motives, higher scores point to the reverse.
3. The parental measures to punish the child. This behavior was measured with the help of two questions, first by asking for the frequency of punishment by "leaving the child alone" (for example, in another room), and secondly by asking for the frequency of punishment by "love withdrawal". Bowlby (1975, p.388) regards these two forms of punishment as conducive to the development of insecure attachment behavior. The summative score over both items was used in subsequent analyses. Higher scores point to a

rather infrequent use of punishment, whereas lower scores indicate a relatively frequent use of these measures.

General overview of the variables used in the first study

Figure 1 presents the variables thus far discussed in a more schematic fashion. We have added some possibly relevant background characteristics, such as SES-level, age and sex of the child. From the schematic representation, it may be inferred that Perceived Security, (the maternal perception of "attachment-relevant" behavior in potentially threatening everyday situations) should be regarded as a variable to be (partially) dependent on the variables forming part of the clusters II through IV (the "predictor", and "intervening" variables). The relationships between the various variables have not been specified by lines to avoid the impression that in this first study of Perceived Security and its correlates we would be capable of achieving much more than the formulation of a number of overall expectations. The predicting variables have been arranged in such a way, however, that in going from left to right one may assume a weak causal ordering to exist among the various clusters (as indicated by an arrow). Thus, it is assumed that such background characteristics as SES, age and sex of the child are exogeneous variables which are not influenced by the other variables in Figure 1.

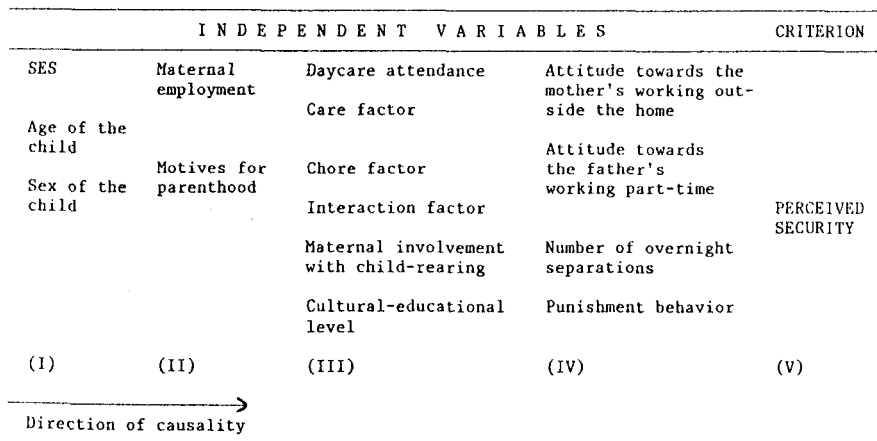


Figure 1. Schematic representation of the relationship between Perceived Security and several sets of independent variables

The mother's working status and her motives for parenthood are conceived of as characteristics which are more likely to influence the subsequent variables than the other way around. Also, in our opinion, the task division between the spouses, particularly the father's contribution, will result primarily from the mother's working status, and not the other way around. The same holds for the relationship between motives for parenthood (which manifest themselves at an earlier stage), and such characteristics as "maternal involvement with child-rearing", or "cultural-educational level" of the family, which in their turn are of a more preliminary nature than for instance such concrete child-rearing "measures" as punishment. Finally, it was assumed that attitudes towards the "mother's working outside the home" or towards "the father's working part-time", are formed primarily by concrete experiences with the actual division of tasks in the family, and by the parents' more basic child-rearing attitudes.

Results

The relationship between Perceived Security and the independent variables listed in Figure 1 was studied by performing multiple regression analyses with Perceived Security as criterion variable. The central question may be formulated as follows: In what way and to what extent can the variance in Perceived Security scores be explained from the variance in (combinations of) the predicting and intervening variables. In view of the preliminary character of the present study, then, multiple regression should be considered an explanatory rather than a predictive method of analysis (cf. Kerlinger & Pedhazur, 1973, p.49).

In order to obtain as complete a picture as possible, we started by entering all (15) independent variables into the analysis, employing a stepwise procedure without restrictions. "Number of overnight separations" and "sex of the child" were not included in the equation. The remaining 13 variables, taken together, explained 14% of the variance in the Perceived Security scores (with a significant R of .37 ($F=1.85$, $p<.05$). Among these 13 variables, the first four taken together explained about 10% of the variance, the remaining 9 taken together adding only 4%. Among the first four variables, two obtained significant beta weights ($p<.05$), namely, "maternal employment" (Beta: -.24), and "maternal involvement with child-rearing" (Beta: .21); the other two were the "interaction factor", and "attitude towards the father's working part-time (both not significant). The variables contributing significantly are of crucial importance to the extension hypothesis: "maternal employment" forms an essential aspect of

the rearing context's "quantitative density", whereas "maternal involvement with child-rearing" is the most important operationalization of the "qualitative density" of the child's rearing context. According to the sign of the beta weights, these results are to be interpreted as follows: an increasing tendency of the mothers to take a relativistic (more "distant") attitude towards child-rearing is associated with an increase in Perceived Security; secondly, "maternal employment" is associated with higher scores on the Perceived Security scale as well. The relationships, albeit significant, are relatively weak.

Another important finding is that Perceived Security hardly seems to be related to the child's age or SES-level (the beta weights concerned having values of $-.03$ and $-.07$, respectively). Therefore, it seems likely that Perceived Security is a dimension relatively independent of age and SES. In the present study, the child's day care attendance hardly explained any variance in the perceived security scores (beta weight: $-.07$). This result is in agreement with findings reported by Kagan et al. (1978), who did not find any pronounced effects of day care attendance on the development of attachment. Thus, the (preconceived) opinion regarding a negative relationship between the child's day care attendance and the quality of the emotional bond between parents and child was not supported by the results of either study.

In performing the multiple regression analysis just described, we were looking for the "best" among several potentially explanatory variables. Next, we applied a hierarchical, stepwise procedure to the data (cf. Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975, pp.336 and 344-345), starting from the weak causal ordering among the variables as depicted in Figure 1. This time, the various clusters of independent variables were entered separately into the analysis, so that along with their "direct" effects, the "indirect" effects of the independent variables could be assessed as well. Furthermore, we used a significance level of 5% for entering the variables into the equation ($PIN=.05$). Table 3 gives the results of this hierarchical, stepwise procedure. As compared to the results of the preliminary analysis just discussed, it may be concluded that the four most prominent variables have maintained their position. However, along with "maternal employment" and "maternal involvement with child-rearing", both other variables, i.e., the "interaction factor" and the "attitude towards the father's working part-time", now show a significant relationship with Perceived Security. The remaining 9 variables, together explaining only about 4% of the variance in Perceived Security, are now no longer part of the equation. The proportion of explained variance (R^2) has de-

Table 3:
 Hierarchical stepwise regression of Perceived Security on the most important independent variables ($PIN=.05$)

Variable	Beta	F	R	R ²	R ² increment	F
1. Maternal employment	-.17	4.57*	.16	.024	.024	4.27*
2. Maternal involvement with child-rearing	.21	6.88**	.22	.049	.025	4.45*
3. Attitude towards the father's working part-time	-.16	4.55*	.27	.072	.023	4.09*
4. Interaction factor	.16	4.05*	.31	.095	.023	4.09*

$R=.31$, $F=4.24$, $p<.005$, $R^2=.10$

* $p<.05$; ** $p<.01$

creased to a level of about 10% (the multiple R value of .31 has remained significant, $F=4.29$, $p<.005$). It was also examined whether each of these four variables contributed significantly to this 10%. The right part of Table 3 shows that each of them yielded a significant, albeit small, contribution of about 2.5% (cf. Nie et al., 1975, pp.337-338, for the statistical testing procedure). When we look at the values of the beta weights, the relative contribution of "maternal employment" appears to have decreased somewhat (-.17). "Maternal involvement with child-rearing" now is the variable with the highest relative contribution (.21). The interpretation of both these variables' respective contributions, of course, remains unaltered. According to the accompanying beta weights, the interpretation of the contribution of the two newly added variables is as follows: the negative relationship of "attitude towards the father's working part-time" with Perceived Security (Beta: -.16) reflects a (weak) tendency of increasing Perceived Security scores to be associated with a less pronounced preference on the part of the wives for their husband's working part-time (in view of its related favorable effects on child-rearing). The wives as a group, however, do favor their husband's working part-time, over 80% of them endorsing such a choice (cf. Tavecchio et al., 1983), but at the same time the mothers of children with higher Perceived Security scores seem to value such a development somewhat less highly. As for the "interaction factor" (Beta: .16), a possible interpretation is that children from families with a more active father feel (slightly) less secure as compared with children from families with a more traditional task division between the spouses. At first sight, then, the effect of these

two variables, both of them concerned with the father's role in extending the child's rearing context, seems contrary to the abovementioned interpretation of the effects of "maternal employment" and "maternal involvement with child-rearing". These clearly support the extension hypothesis: extending the child's rearing context is associated with an increase in Perceived Security. It may be that the father's role in extending the context is not only a positive one regarding its effect on the child's feelings of security (an interpretation which would run contrary to results obtained by Lamb, 1976, 1978, or Kotelchuck, 1976). A possibly relevant observation in this regard was made by Parke (1979, p.579), when he remarked on the more active father: "Too often 'more' is equated with 'improvement'; however, in many families, increased father participation may cause conflict and disruption as a result of the threat to well-established and satisfying role definitions". In a later section, we will return to the rather atypical results just described.

Evaluating the variables listed in Figure 1 and their interrelations in light of the results of the hierarchical analysis just described leads us to a pattern as presented in Figure 2. As can be seen, the original arrangement (the ordering among the variables as depicted in Figure 1) has changed rather strongly. Also, the first cluster, comprising the background characteristics, has disappeared completely. The pattern of relationships delineated in Figure 2 will serve as a guide-line for the discussion to be presented in the next section.

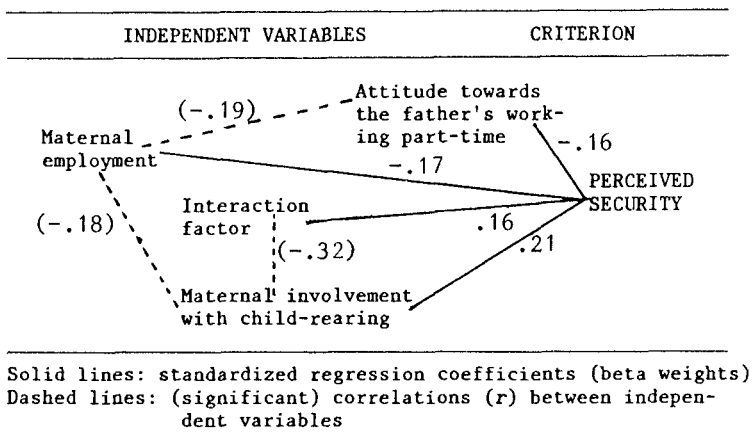


Figure 2. The pattern of relationships between Perceived Security and independent variables, based on hierarchical multiple regression

Discussion

First and foremost it should be emphasized that the results of this first study are at best tentative. Basing ourselves on parent-report measures, we attempted to study some aspects of the undoubtedly very complex relationship existing between quantitative and qualitative aspects of the child's rearing context on the one hand, and the child's Perceived Security on the other.

As for the results obtained, we take the relationships between Perceived Security and a number of potentially relevant independent variables as a starting-point for the discussion. This pattern of relationships, presented in Figure 2, suggests that Perceived Security (supposedly measuring certain aspects of the multi-dimensional attachment construct), is related to "maternal employment", "maternal involvement with child-rearing", the task division between the parents concerning certain activities in the interactive domain (the "interaction factor"), and the mother's "attitude towards the father's working part-time" (so as to increase his contribution to child-rearing responsibilities). The direction of these significant, albeit modest correlations further suggests that increasing Perceived Security scores tend to be associated with the mother's working outside the home as well as the mother's somewhat relativistic ("more distant") attitude towards child-rearing. Both results clearly support the extension hypothesis introduced at the outset of the chapter, and are in contradiction with (preconceived) opinions suggesting the existence of possible negative effects of maternal employment on the child's emotional development.

On the other hand, though, the father's role in extending the child's rearing context is less unequivocal and, possibly, not entirely positive. In view of the relationships as presented in Figure 2, it seems that fathers having higher scores on the "interactive factor" (i.e., they contribute less to "reading to the children", "tussling", "cuddling") and whose wives appreciate their husband's working part-time to a somewhat lesser degree, have children who tend to score higher on Perceived Security. For a further analysis of these "inconsistent" findings, we examined the answers on another item in the questionnaire which asked the mothers to indicate "whether the children were attached exclusively to the mother or to the father as well". In performing a discriminant analysis on two groups of children (a group attached solely to the mother and a group attached to both parents), it was examined which variables maximally differentiated between both groups (the variables used being identical to the ones used in multiple regression). The results of this discriminant analysis suggest that exclusive attachment to the mother is associated with the

child's age, the father's contribution to the "interaction factor", and the child's Perceived Security score. A closer look at these findings reveals that children attached exclusively to the mother are younger, have fathers who are less active in "interaction factor" activities, and are perceived as less secure. The reverse holds for children attached to both parents (70% of the children in the present study). These children have fathers who are more active in the "interaction factor" domain, they are somewhat older, and score *higher* on Perceived Security (cf. Van IJzendoorn et al., 1980, pp.87-88).

The discriminant analysis results therefore suggest that fathers who play a more active role in the "interaction factor" domain do have children with higher Perceived Security scores, a relationship which was at best masked and at worst contradicted in the analysis of the total group.

We call to mind that, in addition to "maternal employment", two other aspects of the rearing context's "quantitative density" had been operationalized: the child's day care attendance and the number of overnight separations (as an example of a short-term separation experience). In the present study, both variables did not contribute significantly to the "prediction" of Perceived Security. We shall return to both aspects later (in the section dealing with the results of the second study).

With respect to the validity of this first study, two comments seem relevant. First, data were collected by means of mailed questionnaires, so that the results discussed above are largely based upon opinions and attitudes of the respondents, and not on actually observed behavior. Social desirability, for example, may have biased the responses to an unknown degree.

As we discussed in a previous section, Perceived Security scores certainly do not coincide completely with Strange Situation results. Also, we strongly adhere to the point of view that observational research is a *sine qua non* for the study of attachment behavior. On the other hand, we hold the view that Perceived Security is part of the everyday reality of child-rearing and, thus, undoubtedly affects the mother-child interaction to a large extent. We therefore consider Perceived Security to be an important variable in its own right, bearing in mind the sometimes serious flaws inherent in the use of parent-report measures to assess complex phenomena.

A second comment regards the external validity of the results. As we mentioned earlier, the group investigated cannot be considered a random sample from the population of families that are intact and contain (very) young children. This is due to the overrepresentation of higher SES-levels in the present study.

To conclude this section, it should be added that the multiple regressions we performed were based on the assumptions that curvilinearity and interaction effects were absent (the so-called "linear-additive" approach). Tests on these assumptions proved them to be correct (cf. Van IJzendoorn et al., 1980, pp.115-120).

THE SECOND STUDY

Description of the sample

140 families participated in the second study. With a few exceptions, they formed a subset of the group of 166 families who took part in the first study. In this case, too, mailed questionnaires were used to collect the data. These data were collected between April and September of 1981, the mean SES-score remaining 4.6 (s.d.=1.3), as in the first study; 44% of the children were girls, 55% of them boys. The children involved in the study (the so-called "target"-children, cf. the introduction to the first study), averaged 26.2 months (s.d.=5.4); 1.4% of the families had one child, 70% had two children, 22.5% three children, and the rest four or more. As in the first study, only complete families were included. The percentage of nonresponse was remarkably low (18%); it concerned, of course, largely the same group of families as in the first study. The children involved in this second study were on the average only a few months older than their counterparts in the first study, while a period of 17-20 months had elapsed between both studies. In most cases (over 70%), the children involved in the present study were siblings of those involved in the first. Of the 140 mothers participating in the second study, 31 (22%) worked outside the home; in this case, too, it concerned in most cases a part-time job.

Description of variables

In constructing the variables of the second study, a somewhat different strategy was followed compared with the first study. For example, instead of item-analysis based on test-retest reliability data, we now used "optimal scaling" methods (cf. Gifi, 1981) for the construction of a number of important variables; thereafter, Cronbach's alpha was used to assess their internal consistency values. In some cases, this approach resulted in scales that proved to be considerably more reliable than in the first study. As a case in point, we mention the study's criterion variable, the Perceived Security

scale. The summative score over the optimally scaled Perceived Security-items now reached an internal consistency value of .84, based on 10 items (cf. the Appendix, more specifically the items indicated by "d", and Van IJzendoorn et al., 1983, for an illustration of the scaling procedure, similar to the one used in the present study). The rationale behind the Perceived Security scale has been explained previously at various places in the present chapter, and will not be repeated here. Again, higher scores on the scale point to a relatively high degree of perceived security, whereas lower scores indicate that the mothers concerned perceive their children as relatively less secure in the potentially threatening everyday life situations we described when introducing the scale.

The rationale behind the selection of the independent variables ("predictors") has remained identical to that of the first study. We therefore briefly introduce them in approximately the same order as in the first study. For the rearing context's "quantitative density", the following aspects were operationalized:

1. Maternal employment, a simple dichotomous score, used to differentiate working mothers from full-time homemakers;
 2. The number of overnight separations (for example, the number of nights the child stayed at friend's or relative's house), in this study clearly differentiated from
 3. The number of nights the child spent in a hospital, post-natally, for whatever reason ("normal" perinatal stays, of course, excluded);
 4. Non-parental care, a cumulative score of the average *number of hours* that the child, according to its mother, spent weekly in nurseries or day care centers, with neighbors, relatives (e.g., grandparents), baby-sitters, etc.;
 5. The child's daycare attendance, i.e., the *number of times a week* the child visits nurseries or day care centers, playgrounds, etc.;
- Although there is a certain overlapping between variables 4 and 5, both variables were analyzed separately, as they formed part of the first study's analyses;
6. The "care factor", an index based on the summative score over 8 activities generally ascribed to a "female" family role (cf. the first study); its internal consistency reached a value of .80;
 7. The "chore factor", as an index of a traditionally "male" family role, now based on 4 items (Cronbach's alpha .59);

8. The "interaction factor", an index of activities less exclusively associated with one specific parent, as in the first study based on three items (Cronbach's alpha .50).

With respect to the three last-mentioned indices of the spouses' task division it should be noted that these dimensions emerged from a principal components analysis yielding results virtually identical to those of the first study. Higher scores on these dimensions indicate a greater participation in these activities on the part of the wife, lower scores point to a greater participation on the part of the husband. As in the first study, these indices of the spouses' task division were used to examine the degree to which the father made a contribution to extending the child's rearing context.

To assess the rearing context's "qualitative density", we now measured four variables, the first three of which were also present in the first study:

9. The "attitude towards the mother's working outside the home";
10. The "attitude towards the father's working part-time", and
11. "Maternal involvement with child-rearing", a summative score over 11 items.

Along with items stemming from Engfer & Schneewind's (1976) dimensions of "*Erzieherisches Engagement*" and "*Verantwortung*", we now also made use of items forming part of their "*Behütung*" dimension ("Protection", composed of items like "I easily reconcile myself to my child's being absent for a while", "Even though I like to be with my child, a temporary separation is immaterial to me", or "Not for one moment can I get the concern for my child out of my mind"). In this second study, too, Engfer and Schneewind's original factor structure could not be "confirmed". We therefore used the items loading on a single first factor which, after performing an optimal scaling procedure, reached an internal consistency value of .78 (based on 11 items). As in the first study, lower scores on this dimension indicate a tendency to display overconcern for the child on the part of the mother, whereas higher scores point to a more relativistic ("distant") attitude towards child-rearing.

12. The "attitude towards female social roles", a new variable based on Slade and Jenner's (1978) questionnaire, which we had previously validated on a sample of Dutch men and women (Hubbard, Van IJzendoorn, & Tavecchio, 1982). After performing an optimal scaling procedure and internal consistency checks, we used a reduced form of the scale,

made up of 14 items with an internal consistency value of .89. A high score on this scale indicates a more "liberal" view of female roles (little or no sex typing), whereas lower scores point to more traditional (perhaps "conservative") sex-typed views on "appropriate" male and female social roles. A few examples: "A good mother would not go out to work while she had a child under 5", or "A situation in which a woman works while a man stays at home and looks after the children is not right".

Remaining variables

As in the first study, a number of possibly intervening variables were analyzed as well:

1. Motives for parenthood, which, after using an optimal scaling procedure, now reached an internal consistency value of .75 (based on 11 items);
2. Parental measures for punishing. In the present study we used the scores on three frequency measures separately: 1) punishment by "love withdrawal", 2) punishment by "leaving the child alone" (both also used in the first study) and 3) punishment by "spanking the child", now added as a third instance of punishment.

As background characteristics we used SES, sex, and age of the child.

Method: canonical discriminant analysis

As in the first study, we attempted to examine in what way and to what extent maternal perceptions of the child's security in potentially threatening everyday life situations are associated with the aforementioned theoretically and practically relevant independent variables. Again, the framework of the study was provided by the extension hypothesis which, briefly, states that "extending the child's rearing context (both qualitatively and quantitatively) may increase the child's feelings of security". In this second study, however, we focused on the question whether and to what extent the various indices of an extended rearing context would discriminate between children with low and high scores on the Perceived Security scale. A technique particularly well suited to study (multivariate) differences between groups is the canonical discriminant analysis (cf. Klecka, 1980; Huberty, 1984), and it is this technique that we used in the present study.

We just mentioned that the groups to be used in the discriminant analysis were created on the basis of the maternal

perceptions of the children's security in potentially threatening everyday life situations. Considering the possibility that different mothers would use different frames of reference in assessing their children's behavior, we specifically paid attention to differences between the children scoring at the lower end of the Perceived Security scale (the "bottom" 25%, perceived as relatively insecure), and those scoring at the higher end (the "top" 25%, perceived as rather secure). It may be assumed that these two groups of children, placed at the opposite ends of the scale, have been perceived as being clearly distinct from one another. On the other hand, the position of the children belonging to the remaining middle group (the "intermediate" 50%) may well have resulted from more "casual" shifts in the mothers' rating criteria instead of being brought about by actual differences in these children's behavior as compared to those belonging to both "extreme" groups. This use of discriminant analysis to distinguish between two or three groups of children compiled on the basis of their Perceived Security scores may be criticized, inasmuch as not all available information regarding their "exact" position on the scale is utilized, as was done in the first study. In that study, Perceived Security was considered a continuous criterion variable to be used in multiple regression analysis. In this second study, though, we assume this potential loss of information to be compensated by a reduction of the risk that children with similar Perceived Security scores will be placed at different scale-points, due to their mothers' diverging frames of reference in assessing their children's behavior.

Finally, it should be noted that in the context of the present study, discriminant analysis will be used as a descriptive rather than as a predictive or classificational method of analysis (cf. Huberty, 1984; Nunnally, 1978).

Results

A canonical discriminant analysis yields one (or more) discriminant function(s) on which the predetermined groups differ. These discriminant functions are linear combinations of the original variables that form dimensions on which the groups, defined by a categorical variable (in this instance the child's being a member of low, intermediate, or high scoring groups on the Perceived Security scale), are maximally separated. The various discriminant analyses subsequently to be reported on were performed in a hierarchical fashion, that is, the three background characteristics (SES, age, and sex of the child) were regarded as exogeneous and were therefore entered first into the analysis by giving them a higher in-

clusion level. Thereupon, the so-called endogeneous variables were entered without applying any predetermined order. The program package used was SPSS, more specifically Wilks' step-wise method.

The first discriminant analysis used three groups of children, compiled on the basis of their Perceived Security scale-scores (the "bottom" 25%, the "top" 25%, and the "intermediate" 50%). Table 4 gives the results of this analysis. The discriminating variables have been ordered on the basis of the values of their standardized discriminant function coefficients (for the sake of brevity to be called "weights"). Furthermore, we have listed (as in all tables to follow) the selected variables' so-called "structure coefficients", indicating their (bivariate) correlations with the discriminant function(s) (cf. Klecka, 1980).

Table 4
Hierarchical canonical discriminant analysis performed on "insecure" (n=35), "secure" (n=32), and "intermediate" (n=58) groups

Variables	Discriminant coefficients		Structure coefficients		Mean scores		
	F1*	F2	F1	F2	"insecure"	"secure"	"intermediate"
Number of over-night separations	.64	-.28	.66	-.31	6.7	14.4	6.9
Punishment by leaving alone	-.43	.08	-.42	.18	3.7	3.4	3.6
Attitude towards the father's working part-time	-.42	.09	-.44	.13	4.1	3.8	4.1
Non-parental care	.38	.29	.49	.52	6.0	11.6	9.9
Chore factor	.14	.80	.15	.92	6.6	7.4	7.9
Eigenvalue	.17	.07					
Can. correlation	.38	.25					
Wilks' Lambda	.80	.94					
p	.002	.07					
Centroids F1					.23	-.69	.20
Centroids F2					-.48	.15	.18

* F1 = function 1; F2 = function 2

The results show that the "secure" group of children (the "top" 25%) can be differentiated from both other groups on the basis of five discriminating variables and, more specifically,

by the first function ($p=.002$). The second discriminant function is more relevant to the discrimination among the "insecure" group (the "bottom" 25%) and the rest, but its explanatory power is considerably lower ($p=.07$, not significant). The differences between the "secure" group and both other groups, described by the first function, are the following:

The "secure" group is characterized by the fact that these children experienced a greater number of overnight separations, for example at a friend's or a relative's house (actually, looking at the mean scores listed in Table 4, the differences are rather great, the secure group having spent more than twice the number of nights elsewhere as compared to both other groups). Another difference is that the "secure" group has been punished (slightly) more often by being left alone (a very small difference, though), and that these children's mothers value their husband's working part-time somewhat less highly than the mothers of the other children (in this case, too, it concerns rather small differences). The next discriminating variable, "non-parental care", seems relevant to both discriminant functions (as is testified by both the "weights" and the structure coefficients). The "insecure" children spent considerably less time in the company of other adults (neighbors, friends, relatives, or in day care) than the "secure" children (with mean scores of 6 hours and 11.6 hours a week, respectively). The last discriminating variable, the "chore factor" (reflecting activities traditionally ascribed to a "male" family role) clearly belongs to the (not significant) second discriminant function. The mothers of the "insecure" children state somewhat more often than mothers of "secure" children that the task division on the "chore factor" is more traditional. The differences are, however, rather small.

Among these 5 discriminating variables, only two - "non-parental care" and "number of overnight separations" (actually, both variables hardly show any relation to each other, $r=.12$, $p=.15$, two-tailed) - contribute rather strongly to the discrimination between the "secure" and the "insecure" groups. A number of variables which played an important role in the first study, such as "maternal employment", "maternal involvement with child-rearing", and the "interaction factor", did not contribute significantly to the differentiation between the groups. The same holds true for the "child's day care attendance" which, although operationalized more accurately than in the first study, does not belong to the discriminating variables. This result is probably best explained by its partial overlapping with "non-parental care" which, as we have seen, clearly differentiates among the groups (both variables are intercorrelated rather strongly, $r=.55$, $p=.000$, two-tail-

ed). It should be mentioned, however, that children belonging to the "secure" group attend day care centers or nurseries about twice as often as children belonging to the "insecure" group (with mean scores of 1.0 and .46 weekly visits, respectively).

In the first analysis just described, the intermediate group could hardly be distinguished from both other groups. Therefore, we repeated the discriminant analysis, this time without the children belonging to this intermediate group. Table 5 illustrates that this analysis does differentiate more saliently among both "extreme" groups (as testified by, among other things, the values of the canonical correlation and Wilks' Lambda). "Non-parental care" and "number of overnight separations" are now clearly the most prominent variables, followed at a distance by "punishment by leaving alone", and the "chore factor". The mother's "attitude towards her husband's working part-time" has disappeared from the discriminant function. The rather strong contribution of "non-parental care" to the differentiation between "secure" and "insecure" children certainly supports the extension hypothesis. This interpretation is corroborated further by the second highest contributor, "number of overnight separations" (which, as we mentioned above, hardly correlates with "non-parental care"), a variable for which the secure group has a mean score more than twice as high as that of the insecure group (cf. Table 4)

Table 5
Hierarchical canonical discriminant analysis performed on two "extreme" groups: "insecure" (n=35) and "secure" (n=32) children

Variables	Discriminant coefficients	Structure coefficients
Non-parental care	.60	.68
Number of overnight separations	.53	.56
Punishment by leaving alone	-.38	-.42
Chore factor	.36	.37
Eigenvalue	.34	
Canonical correlation	.51	
Wilks' Lambda	.74	
p	.001	
Centroids	-.54 ("insecure")	.61 ("secure")

Finally, we performed a third discriminant analysis on the data of this second study. The rationale for this third analysis was based upon the results of the first validation study with the Perceived Security scale discussed earlier in this chapter. You will recall that the results of this validation study clearly suggested that Perceived Security scale-scores seem to differentiate more specifically between Ainsworth's B4-, and C-children on the one hand, and the remaining (sub)-groups on the other (i.e., the A-, and B1- to B3-children). The B4- and C-children had a considerably less "secure" score than the other groups, which seemed virtually indistinguishable with respect to Perceived Security. Thus, the scale does not seem to differentiate between the apparently unruffled behavior displayed by the ("avoidantly attached") A-children in stressful situations and the behavior of the ("securely attached") B1- to B3-children as displayed in similar situations, reflecting confidence in the attachment figure. On the other hand, the children from the "borderline" group B4 (characterized by Van IJzendoorn et al., 1985, as "dependently" attached, cf. Sagi et al., 1985), and the C-category ("resistantly attached") show much anxiety, protest behavior, or very passive behavior in separation situations, which are the very situations described by the Perceived Security scale. We call to mind that 13 of the 62 children involved in the first validation study (21%) belonged to this B4/C-category and were perceived as considerably less secure by their mothers. In light of these findings, a third discriminant analysis was performed on the "insecure" group (those children belonging to the "bottom" 25% on Perceived Security, $n=35$) versus the "rest", based on the assumption (which in view of the validation results seems plausible) that this "insecure" group would consist predominantly of B4/C-children. It seems likely that this very dichotomy of the Perceived Security score distribution should optimize the discriminant validity of the differences to be found.

Table 6 gives the results of the analysis, and it can be seen that they partly confirm the results of both preceding analyses: the B4/C-group (or "insecure" group) differs from the "rest" primarily by "non-parental care", followed at a distance by the "chore factor", two variables which also discriminated in the preceding analyses. Again, children belonging to the "insecure" B4/C-group score remarkably lower on "non-parental care" than the children from the "rest"-group (see the mean scores in Table 6). A somewhat more traditional task division with respect to traditionally "male" activities (in the opinion of the mothers of the "insecure" B4/C-children) is the other aspect on which the groups differ from one another. Although there is a difference between the means of

both groups on "number of overnight separations" (6.7 and 9.6 for B4/C and the "rest", respectively), this variable did not contribute significantly to the discriminant function in this analysis.

The interest of this third analysis, however, lies more in the fact that in the analysis, two variables contributed to the differentiation between the groups which also played a role in the first study, i.e., "maternal involvement with child-rearing" and, to a lesser extent, the "interaction factor". The mean scores on "maternal involvement with child-rearing", the most important index for the rearing context's "qualitative density", show that mothers of the "insecure" B4/C-children are more strongly involved with child-rearing than the mothers of the "rest"-group children (we call to mind that a higher score on this variable indicates a more relativistic posture towards child-rearing), a result consonant with that found in the first study. As the mean scores testify, the results with respect to the "interaction factor" also coincide with those found in the first study. Again, the fathers of the "insecure" B4/C-group are perceived by their wives as playing a slightly more active role in the "interaction factor" domain than the fathers of the "rest"-group. Although the results presented in Table 6 indicate that the differences concerned are rather small, at the same time such a result seems at variance with the extension hypothesis, i.e., the role played

Table 6
Hierarchical canonical discriminant analysis performed on the
"B4/C-group" (n=35) versus the "rest" (n=100)

Variables	Discrimi- nant coef- ficients	Structure coeffi- cients	Mean scores	
			B4/C group	"rest" group
Non-parental care	.60	.72	6.0	11.0
Chore factor	.44	.71	6.6	7.8
Maternal involvement with child-rearing	.42	.45	26.2	28.1
Interaction factor	.29	.24	9.1	9.4
Eigenvalue	.11			
Canonical correlation	.32			
Wilks' Lambda	.90			
p	.009			
Centroids			-.56	.19

by the father in extending the child's rearing context. In the following section, in which we will attempt to make a synthesis of the findings with respect to Perceived Security, we will return to this apparently inconsistent result.

EXTENSION OF THE CHILD'S REARING CONTEXT AND PERCEIVED SECURITY: A TENTATIVE SYNTHESIS

Once again, it should be emphasized that results based on parent-report measures cannot yield complete and accurate descriptions, let alone conclusive evidence, with respect to the complex relationships existing between quantitative and qualitative aspects of the child's rearing context on the one hand, and the child's Perceived Security on the other. So whatever statements will be made regarding these relationships, they can only be of a preliminary nature.

Yet, comparing the results of both empirical studies shows that the greater part of the relationships found has proved able to stand up against variations in analytic techniques and operationalization strategies. Undoubtedly, the most important result is that in both studies our expectation regarding the existence of a positive relationship between the rearing context's "quantitative density" and Perceived Security was confirmed. In the first study, multiple regression results gave evidence of a significant and positive relationship between "maternal employment" and Perceived Security, while in the second study a closely related aspect, "non-parental care" was found to contribute significantly to a differentiation between "secure" and "insecure" groups (compiled on the basis of their Perceived Security scores) in all three discriminant analyses performed. Furthermore, "number of overnight separations", another aspect of the rearing context's quantitative density, differentiated significantly between "secure" and "insecure" groups in the second study (as opposed to the results of the first; but, at that time, "overnight separations" also included "number of hospital stays", a variable more likely to exert a negative influence on young children's "Perceived Security" cf. Löschenkohl, 1981).

Another important aspect of the extension hypothesis, the rearing context's "qualitative density", also proved to be related to the child's Perceived Security in the expected direction. Mothers characterized by a relatively strong "involvement with child-rearing" perceived their children as less secure in potentially threatening everyday life situations when compared to mothers with a more relativistic or "distant"

attitude towards child-rearing. This result was found in both studies, although in the second study "maternal involvement" made a significant contribution only in the third discriminant analysis (cf. Table 6). It may well be that a more convincing outcome could be obtained with the help of a more direct data collection method such as observation. In that case, the gap between attitude and actual behavior might successfully be bridged. This of course holds much less for the various operationalizations of the rearing context's "quantitative density", such as "non-parental care" or "number of overnight separations", for which the mothers were asked to produce *actual* data concerning their children's contacts and whereabouts.

In both studies, a number of variables directly or indirectly related to the role of the father in extending the child's rearing context at times showed more or less unexpected relationships with Perceived Security. As a case in point we mention the finding that fathers who were less active (in their wives' opinion, that is) in the "interaction factor" domain (fathers contributing less to activities like "reading to the children", "tussling", "cuddling", etc.), seemed to have children with higher Perceived Security scores. The mean score for the various groups as presented in Table 6 illustrate, however, that the differences concerned are rather small.

As contrasted with the first study, the results of the second study revealed another aspect of the father's family role to be of some relevance, namely the spouses' task division concerning traditionally "male" activities, i.e., those belonging to the "chore factor" (e.g., "fixing a flat (bicycle) tire", "changing a fuse", etc.). From all discriminant analyses performed in this study it was apparent that a less traditional task division in this area (that is, a greater participation on the part of the wife) was associated with higher scores on Perceived Security.

The discriminant analysis performed on three groups (cf. Table 4) further revealed that a third variable (more indirectly) related to the father's family role, the wife's "attitude towards her husband's working part-time", yielded results consonant with those found in the first study. Mothers of the "secure" children (i.e., the "top" 25% on the Perceived Security scale) indicated that they value their "husband's working part-time" somewhat less highly than the mothers of the other children (in this case, too, it concerned rather small differences, cf. Table 4). Two explanations are possible: (1) it may well be that to the mothers of "secure" children, the fathers in these families already did participate rather actively in child-rearing tasks; (2) these mothers more or less "endorse" the view of Parke, cited earlier in

this chapter, that "... increased father participation may cause conflict and disruption and threaten well-established and satisfying role definitions". As for the seemingly "inconsistent" results with respect to the "interaction factor" and the mother's "attitude towards her husband's working part-time", the reader is referred to the post-hoc analysis performed on the results of the first study, which suggested that children attached to *both* parents (that is, not exclusively to the mother) do have fathers who are more active in the "interaction factor" domain and also score higher on Perceived Security. We assume this result to hold for the second study as well since its sample consisted, with a few exceptions, of a subset from the one used in the first study.

Finally, the results of the second study suggested that parental punishment behavior was associated with the difference between "secure" and "insecure" groups (cf. Tables 4 and 5), a result not found in the first study. Although parents seem, in general, to punish their children rather infrequently by "leaving them alone", this punishment seemed to occur slightly more often in the "secure" group than in the "insecure" group. Slight as the difference may be, such a finding seems at variance with Bowlby's view that punishing by (a threat to) separation renders a child less confident of the caregivers' accessibility in case of need and is therefore conducive to the development of insecure attachment relationships. To the best of our knowledge, this somewhat puzzling result has not been found before, so that it seems very premature to attach too much value to it; in any case, the results are not strong enough to invalidate Bowlby's point of view. It may well be that such punishment is used more frequently with "secure" children simply because they are better able to cope with it. It should be emphasized that the use of parent-report questionnaires in this very case prevents us from making a more conclusive judgment on this matter; admitting to the use of punishment may well be liable to "social desirability", tendencies conducive to disguising a sometimes painful reality (due, for instance, to a social taboo on the use of punishment in bringing up children). Bowlby, for example, assumes threats of separation in particular to be as wide-spread as they are concealed. At any rate, punishment behavior seems a phenomenon which is very difficult to operationalize. Even, for that matter, with the help of observational techniques, because, in that case too, the researcher's or the camera's presence will probably result in the suppression of socially undesirable behavior. We are dealing then with a methodological problem that is as interesting as it is complex.

Before concluding this chapter we will briefly dwell on a

third study, the results of which will be reported elsewhere. For this third study we used an entirely different sample, consisting of 384 families; the data were collected between May and September of 1982. At the moment these data are being analyzed with the help of LISREL to assess the goodness-of-fit of several different models describing the relationships between Perceived Security and a number of independent variables, these models being further refined versions of the original model as presented in Figure 1. It is interesting to note that the results of a number of preliminary analyses performed on these data largely confirm the picture presented thus far. As a case in point we will briefly describe the results of a discriminant analysis performed on two groups of children, compiled on the basis of their Perceived Security scores (the "bottom" 25% and the "top" 25%, cf. Table 5). This analysis clearly shows that, again, these groups are maximally separated by, among other things, "non-parental care" and "number of overnight separations". The "insecure" children spent on the average 7.1 hours a week in non-parental care, whereas for the "secure" group the mean score was 11.8 hours a week. As for the "number of overnight separations", the mean scores for the "insecure" and the "secure" groups are 9.1 and 16.1, respectively. It should be added that these results, based on the mothers' responses, are highly consonant with those based on the fathers' responses, which were analyzed separately. Furthermore, the results of the other discriminant analyses (similar to those discussed in Tables 4 and 6) all point in the same direction. In the near future, we will present a more detailed account of the results of the LISREL analysis as well as some of the more interesting preliminary analyses (Bakker & Tavecchio, in prep.).

In summary, it may be concluded that an extension of the child's rearing context (both quantitatively and qualitatively) seems to be associated with a higher degree of Perceived Security of children in potentially threatening everyday life situations. At the same time, however, it should be emphasized that the relationships found are not (yet) impressive; only when comparing two rather "extreme" groups (as compiled on the basis of their scores on Perceived Security), do the discriminating variables explain about 25% of the variance of the differences between these groups (cf. Table 5). As for the rest, the proportions of explained variance range from about 10% to 15% in the various studies. The relationships that were found do, however, stand up against variations in sample, operationalization strategies, and analytic techniques. On the other hand, they do not supply information about the way in which parents and children experience an extension of the rearing context. Establishing the fact that increasing the

child's contacts with other persons than its parents does not necessarily result in a decrease of the child's Perceived Security does, however, make clear that an exclusive mother-child bond is not a necessary condition for the development of a secure attachment relationship.

Future research efforts will have to focus on the nature and the quality of children's relationships with several different persons outside the family. In our view, the child's experience of these contacts (with nurseries and day care centers, or with neighbors, relatives, friends or baby-sitters) is at least as important as assessing or measuring their frequency and duration.

Notes:

1. This chapter is partly based on previous publications which include the following:
 - Tavecchio, L.W.C., & Van IJzendoorn, M.H. (1982). Dichtheid van het opvoedingsmilieu en attachment: Een vooronderzoek [Density of the rearing context and attachment: A pilot study]. *Pedagogische Studiën*, 59, 1-15.
 - Tavecchio, L.W.C., Van IJzendoorn, M.H., & Hubbard, F.O.A. (1983). Dichtheid van het opvoedingsmilieu en waargenomen veiligheid: Een tweede vooronderzoek [Density of the rearing context and perceived security: A second pilot study]. *Kind en Adolescent*, 4, 45-68.
 - Tavecchio, L.W.C., Van IJzendoorn, M.H., Goossens, F.A., & Vergeer, M.M. (1983). Initiatief tot validering van aspecten uit de Bowlby-Ainsworth gehechtheidstheorie: De Strange Situation vergeleken met "Waargenomen Veiligheid" [Validation of aspects of the Bowlby-Ainsworth attachment theory: The Strange Situation and "Perceived Security" compared]. In P.J.D. Drenth, W. Koops, J.F. Orlebeke & R.J. Takens (Eds.), *Psychologie in Nederland. Enkele ontwikkelingen in 1982* (pp.246-262) [Psychology in the Netherlands. Some developments in 1982]. Lisse: Swets & Zeitlinger.
 - Tavecchio, L.W.C., & Van IJzendoorn, M.H. (1985). Discriminante validiteit van schalen voor Temperament en Waargenomen Veiligheid [Discriminant validity of scales for Temperament and Perceived Security]. *Gedrag. Tijdschrift voor Psychologie*, 13 (3/4), 79-95.
2. It should be noted that given the subject-matter of these four studies (i.e., the children's Perceived Security,

their (perceived) Temperament, the children's contacts and whereabouts, etc.), mothers will, in general, be better informed about these matters than the fathers. Therefore, these studies' data are based primarily on the answers of the *mothers* to the various questions asked, a choice made mainly for the sake of the validity of the data to be used in the analyses. It should not be taken to mean that we are not interested in the fathers' point of view regarding these matters. Elsewhere, we reported extensively on the opinions of both parents concerning the division of family tasks between the spouses (cf. Tavecchio, Van IJzendoorn, Goossens, & Vergeer, 1983; 1984). Moreover, in a third "extension hypothesis" study, reported on in brief at the end of this chapter (to be reported on at greater length in the near future, cf. Bakker & Tavecchio, in prep.), we will explicitly compare the answers as given by both parents. In that study, it will be examined to what extent taking the "family" as the unit of analysis leads to different (or "better") results than the "traditional" choice, which prefers the maternal point of view regarding matters having to do with early childhood (research).

In writing this chapter, we chose to first present the results of both validation studies to allow the reader to evaluate the validity of the Perceived Security scale as used in both "extension hypothesis" studies. Actually, the first validation study was conducted after the conclusion of the first "extension hypothesis" study and ran parallel to the second one, while the second validation study is the latest of the four studies reported on. This means that the order in which the studies are presented is "logical" rather than chronological.

3. Repeating the various multiple regressions *without* "Adaptability" shows "Crying/Easy-Difficult" to be the "best" predictor of Perceived Security among the remaining temperamental dimensions, followed at a distance by "Persistent". With respect to "Crying/Easy-Difficult", this result is consonant with the (bivariate) correlations between this dimension and Perceived Security (ranging from $-.23$ to $-.42$ in the various groups); these correlations lag far behind those found between "Adaptability" and Perceived Security (with values ranging between $-.58$ and $-.73$). On the other hand, "Persistent" shows the lowest (bivariate) correlations with Perceived Security (between $.09$ and $.18$), but in the regressions *without* "Adaptability" it always ranks second after "Crying/Easy-Difficult". "Mood", showing (bivariate) correlations between $-.21$ and $-.30$ with Perceived Security, does not play a role of any importance multivariately.

REFERENCES

- Ainsworth, M.D.S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale NJ: Erlbaum.
- Bakker, B.J., & Tavecchio, L.W.C. (1987). [Perceived Security and the Extension Hypothesis: A LISREL approach]. Manuscript in preparation. Department of Education, University of Leiden, the Netherlands.
- Bates, J.E. (1980). The concept of difficult temperament. *Merrill-Palmer Quarterly*, 26, 299-319.
- Bates, J.E., & Bayles, K. (1984). Objective and subjective components in mothers' perceptions of their children from age 6 months to 3 years. *Merrill-Palmer Quarterly*, 30, 111-130.
- Bates, J.E., Freeland, C.A., & Lounsbury, M.L. (1979). Measurement of infant difficultness. *Child Development*, 50, 794-803.
- Bohrnstedt, G.W. (1977). Reliability and validity assessment in attitude measurement. In G.F. Summers (Ed.), *Attitude Measurement* (pp.80-99). London: Kershaw.
- Bowlby, J. (1971). *Attachment and Loss. Vol. I: Attachment*. Harmondsworth: Penguin.
- Bowlby, J. (1975). *Attachment and Loss. Vol. II: Separation, anxiety and anger*. Harmondsworth: Penguin.
- Bowlby, J. (1979). *The making and breaking of affectional bonds*. London: Tavistock.
- Bowlby, J. (1980). *Attachment and Loss. Vol. III: Loss, Sadness and depression*. London: The Hogarth Press.
- Bronfenbrenner, U. (1979). *The ecology of human development: experiments by nature and design*. Cambridge, MA: University of Harvard Press.
- Buss, A.H., & Plomin, R. (1975). *A temperament theory of personality development*. New York: Wiley
- Duijvelaar, L. (1983). *Ouderperceptie in Temperamentsonderzoek* [Parental perception in research on Temperament] Unpublished master's thesis. Department of Developmental Psychology, University of Leiden, the Netherlands.
- Engfer, A., & Schneewind, K.A. (1976). Ein Fragebogen zur Erfassung selbstperzipierter elterlicher Erziehungseinstellungen [A questionnaire for the assessment of self-per-

- ceived parental attitudes towards child-rearing]. Unpublished manuscript (Arbeitsbericht 9, EKB-projekt), University of Trier, FRG.
- Gifi, A. (1981). *Non-linear multivariate analysis*. Leiden, The Netherlands. Department of Data-Theory, University of Leiden.
- Goldsmith, H.H., & Campos, J.J. (1982). Toward a theory of infant temperament. In R.N. Emde & R.J. Harmon (Eds.), *The development of attachment and affiliative systems* (pp.161-193). New York: Plenum Press.
- Goossens, F.A. (1986). *The quality of the attachment relationship of two-year-old children of working and nonworking mothers and some associated factors*. Unpublished doctoral dissertation, University of Leiden, the Netherlands.
- Goossens, F.A. (1987). [The quality of the attachment relationship of young children to professional caregivers, father and mother], Manuscript in preparation. Department of Education, University of Leiden, the Netherlands.
- Hubbard, F.O.A., Van IJzendoorn, M.H., & Tavecchio, L.W.C. (1982). Validation of a questionnaire measuring attitudes toward females' social roles for a Dutch population. *Psychological Reports*, 51, 491-498.
- Huberty, C.J. (1984). Issues in the use and interpretation of discriminant analysis. *Psychological Bulletin*, 95, 156-171.
- Huitt, W.G., & Ashton, P.T. (1982). Parents' perception of infant temperament: A psychometric study. *Merill-Palmer Quarterly*, 28, 95-109.
- Jansen, K. (1980). *Attachment bij tweelingen* [Attachment and twins]. Unpublished master's thesis. Departments of Education and Orthopedagogy, University of Leiden, the Netherlands.
- Jansen, T. (1984). *Tweelingen: een paar apart?! Verslag van een vergelijkend onderzoek naar de mentale ontwikkeling, het temperament, en de leefsituatie van 42 tweelingen en 1 drieling* [Report on a comparative study into mental development, temperament, and the everyday life situation of 42 twins and 1 set of triplets]. Unpublished manuscript, Department of Developmental Psychology, University of Leiden, the Netherlands.
- Kagan, J. (1982). *Psychological research on the human infant: An evaluative summary*. New York: W.T. Grant.
- Kagan, J., Kearsley, R.B., & Zelazo, P.R.. (1978). *Infancy: Its place in human development*. Cambridge MA: Harvard University Press.

- Kerlinger, F.N., & Pedhazur, E.J. (1973). *Multiple regression in behavioral research*. New York: Holt, Rinehart & Winston.
- Klecka, W.R. (1980). *Discriminant analysis*. Beverly Hills, CA: Sage.
- Kohnstamm, G.A. (1984, April). *Bates' Infant Characteristic Questionnaire (ICQ) in the Netherlands*. Paper presented at the fourth Biennial International Conference on Infant Studies, New York.
- Kotelchuck, M. (1976). The infant's relationship to the father: Experimental evidence. In M.E. Lamb (Ed.), *The role of the father in child development* (pp.329-344). New York: Wiley-Interscience.
- Lamb, M.E. (Ed.) (1976). *The role of the father in child development*. New York: Wiley-Interscience.
- Lamb, M.E. (1978). Qualitative aspects of mother- and father-infant attachments. *Infant Behavior and Development*, 1, 265-275.
- Lamb, M.E., Thompson, R.A., Gardner, W., & Charnov, E.L. (1985). *Infant-mother attachment: The origins and developmental significance of individual differences in Strange Situation behavior*. Hillsdale, NJ: Erlbaum.
- Löschenkohl, E. (1981). Umweltbewältigung bei Kindern im Krankenhaus. Ein integratives, teilweise verifiziertes kognitives Modell auf der Basis einer Theorie der Bindung und der Angst vor neuen Situationen [Children's competence in coping with the hospital environment. An integrative, partly verified cognitive model based on a theory of attachment and fear of new situations]. *Psychologie der Erziehung und des Unterrichts*, 28, 161-174.
- Main, M., & Weston, D.R. (1981). The quality of the toddler's relationship to mother and to father: Related to conflict behavior and the readiness to establish new relationships. *Child Development*, 52, 932-940.
- Maziade, M, Boudreault, M., Thivierge, J., Capéraà, P., & Côté, R. (1984). Infant Temperament: SES and gender differences and reliability of measurement in a large Quebec sample. *Merrill-Palmer Quarterly*, 30, 213-226.
- Meijnen, G.W. (1977). *Maatschappelijke achtergronden van intellectuele ontwikkeling* [The influence of family characteristics on the development of intelligence in children from 6 to 8 years]. Groningen: Wolters-Noordhoff.
- Nie, N.H., Hull, C.H., Jenkins, J.G., Steinbrenner, K., & Bent, D.H. (1975). *SPSS, Statistical Package for the Social Sciences, second edition*. New York: McGraw-Hill.

- Nunnally, J.C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Out, J.J., & Zegveld, P. (1977). Motivatie voor ouderschap: een onderzoek [Motives for parenthood: An investigation]. In R. Veenhoven & E. van der Wolk (Eds.), *Kiezen voor kinderen?* (pp. 26-47). [Children: yes or no?]. Amsterdam/Assen: Intermediair/Van Gorcum.
- Parke, R.D. (1979). Perspectives on father-infant interaction. In J.D. Osofsky (Ed.), *Handbook of infant development* (pp. 549-590). New York: Wiley.
- Rupp, J.C. (1969). *Opvoeding tot schoolweerbaarheid*. Groningen: Wolters-Noordhoff.
- Sagi, A., Lamb, M.E., Lewkowicz, K.S., Shoham, R., Dvir, R., & Estes, D. (1985). Security of infant-mother, -father, and -metapelet attachments among Kibbutz-reared Israeli children. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50 (1-2, Serial No. 209), 257-275.
- Slade, D., & Jenner, F.A. (1978). Questionnaire measuring attitudes to female social roles. *Psychological Reports*, 43, 351-354.
- Smith, P.K., (1980). Shared care of young children: Alternative models to monotropism. *Merrill-Palmer Quarterly*, 26, 371-389.
- Sroufe, L.A., & Waters, E. (1982). Issues of temperament and attachment. *American Journal of Orthopsychiatry*, 52, 743-746.
- Stern, D. (1977). *The first relationship: infant and mother*. London: Fontana/Open Books.
- Tavecchio, L.W.C., Van IJzendoorn, M.H., Goossens, F.A., & Vergeer, M.M. (1983). *Task division between mothers and fathers with young children: A study of contemporary family life-style in the Netherlands*. Unpublished manuscript, Department of Education, University of Leiden, the Netherlands. (Available on request from the first author.)
- Tavecchio, L.W.C., Van IJzendoorn, M.H., Goossens, F.A., & Vergeer, M.M. (1984). The division of labor in Dutch families with preschool children. *Journal of Marriage and the Family*, 46, 231-242.
- Thomas, A., & Chess, S. (1977). *Temperament and development*. New York: Brunner/Mazel.

- Van den Berg, J.H. (1958). *Dubieuze liefde in de omgang met het kind* [Dubious love in interacting with the child]. Nijkerk: Callenbach.
- Van IJzendoorn, M.H. (1979). Operationaliseringsproblemen bij onderzoek naar de affektieve relatie tussen ouders en kind [Operationalization problems associated with research on the affective relationship between parents and child]. *Pedagogische Studiën*, 56, 358-368.
- Van IJzendoorn, M.H., Tavecchio, L.W.C., Goossens, F.A., & Souverein, C.R.M. (1980). *Empirisch- en historisch-pedagogisch onderzoek naar attachment* [Empirical and historical research on attachment]. Unpublished manuscript, Department of Education, University of Leiden, the Netherlands.
- Van IJzendoorn, M.H., & Tavecchio, L.W.C. (1982). Ouderschapsmotieven en opvoedingsdoelen. Sexe- en milieuverschillen [Motives for parenthood and goals in rearing. Sex and SES differences]. *Pedagogisch Tijdschrift*, 7, 18-25.
- Van IJzendoorn, M.H., Tavecchio, L.W.C., Goossens, F.A., Vergeer, M.M., & Swaan, J. (1983). How B is B4? Attachment and security of Dutch children in Ainsworth's Strange Situation and at home. *Psychological Reports*, 52, 683-691.
- Van Westerlaak, J.M., Kropman, J.A., & Collaris, J.W.M. (1975). *Beroepenklapper* [Occupational Index]. Nijmegen: Instituut voor Toegepaste Sociologie.
- Vergeer, M.M., & Van IJzendoorn, M.H. (1979). Naar een symmetrisch gezin. De rol van de vader in de gehechtheidsontwikkeling van het jonge kind [Towards a symmetrical family. The role of the father in the development of the young child's attachment]. *Psychologie en Maatschappij*, 16, 340-365.
- Waters, E., & Deane, K.E. (1982). Infant-mother attachment: Theories, models, recent data, and some tasks for comparative developmental analysis. In L.W. Hoffmann & R.J. Gandelman (Eds.), *Parenting: Its causes and consequences* (pp. 19-54). Hillsdale, NJ: Erlbaum.
- Waters, E., & Deane, K.E. (1985). Defining and assessing individual differences in attachment relationships: Q-methodology and the organisation of behavior in infancy and early childhood. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50, (1-2, Serial No. 209), 41-65.

APPENDIX

Perceived Security Items¹

1. How frightened is your child usually in surroundings unfamiliar to it? (1 = very frightened; 2 = somewhat frightened; 3 = a little frightened; 4 = not at all frightened); a, b, c, d.
2. Can you indicate how frightened your child usually is of being alone? (cf. item 1); a, b, c, d.
- *3. Does your child move freely in unfamiliar surroundings?² (1 = very freely; 2 = somewhat freely; 3 = not very freely; 4 = not at all freely); a, b, c, d.
- *4. How shy is your child usually with strangers visiting you at home? (1 = not shy at all; 2 = not particularly shy; 3 = somewhat shy; 4 = very shy); a, b, c, d.
5. How often is your child frightened? (1 = very often; 2 = fairly often; 3 = occasionally; 4 = (hardly) ever); a, b, c, d.
- *6. Imagine that you and your partner take a few days holiday. During this time, your child stays with friends. Would your child be homesick? (1 = not at all; 2 = a little; 3 = considerably; 4 = a great deal); a, b, c, d.
7. How unpleasant does your child find it to be left alone in surroundings unfamiliar to it? (1 = very unpleasant; 2 = somewhat unpleasant; 3 = makes no difference; 4 = not particularly unpleasant); a, b, c, d.
- *8. How quickly does your child usually feel at ease with strangers visiting you at home? (1 = immediately; 2 = after 5 minutes; 3 = after 15 minutes; 4 = after an hour; 5 = not at all); a, b, d.
- *9. Does your child enjoy being left alone for half an hour with a visitor it does not know? (1 = very much; 2 = somewhat; 3 = makes no difference; 4 = not very much; 5 = not at all); a, b, d.
- *10. Is your child out of sorts when you return after having been absent for half an hour? (1 = no change noticeable;

2 = a little change noticeable; 3 = change rather noticeable; 4 = change very noticeable); a, b.

- *11. Is your child out of sorts when you return after an absence of an hour or two? (cf. item 10); a, b.
- *12. Is your child out of sorts when you return after a day's absence? (cf. items 10 and 11); a, b.
- 13. Imagine that your child is in the living room and you are busy in the kitchen. Imagine further that there is a door between the kitchen and the living room. This door is closed. How often would your child try to get your attention by approaching you, crying, yelling, etc.? (1 = very often; 2 = fairly often; 3 = occasionally; 4 = (hardly) ever); c, d.
- 14. Can you indicate how frightened your child usually is of the dark? (cf. item 1); c.
- 15. How often did your child cry during its first year? (1 = very often; 2 = fairly often; 3 = little); c.

¹ After each item we have indicated in which of the various studies reported on in this chapter that item formed part of the Perceived Security scale:

- a = items used in the first validation study;
- b = items used in the second validation study;
- c = items used in the first "extension hypothesis" study;
- d = items used in the second "extension hypothesis" study.

² In the second validation study, item 3 was split up in two versions, both of them forming part of the Perceived Security scale used in that study:

- Does your child move freely in unfamiliar surroundings when you are present?
- Does your child move freely in unfamiliar surroundings when you are not present?

* items to be recoded