

# Effects of Infant Attachment to Mother and Father on Quality of Adaptation in Preschool: From Dyadic to Individual Organisation of Self

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A total of 39 children, classified in Ainsworth's Strange Situation at 12 and 18 months of age with their mothers and fathers, were observed in play groups and given a cartoon-based social perception test at 5 years of age. Children with anxious attachment histories (primarily avoidant in this sample) differed from those with secure histories on a number of single variables, and behavioural profiles based on combinations of variables showed strong significant differences in quality of play, conflict resolution, and problem behaviours. Measures of play competence, conflict resolution, and behaviour problems were significantly related to infant-mother attachment for girls, but not for boys. Overall competence, however, was significantly related to attachment to the mother for both boys and girls. Children with anxious attachment histories also showed misperceptions of cartoon stimuli, more often perceiving negative intentions than children with secure histories. Between-group differences were notably stronger using classifications with mothers than classifications with fathers. However, effects based on combined attachment information with both mother and father were more powerful for some variables.

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These data, obtained with a German sample, are comparable to findings in the United States and provide cross-cultural support to the notion of attachment-related consequences for development.

## INTRODUCTION

The present paper examines the behaviour of 5-year-old children in preschool as related to attachment classification in infancy.

The data to be presented are pertinent to two issues of current and central importance in attachment research: (1) the impact of the infant's attachment relationships with multiple caregivers (here, mother and father); and (2) the influence of attachment relationships on the child's emerging personality.

Concordance between infant-mother attachment classifications and infant-father classifications has been found in some samples (e.g. Easterbrooks, 1989), although not in others (Grossmann, Grossmann, Huber, & Wartner, 1981; Main & Weston, 1981). In their most recent research, Fox, Kimmerly, & Schafer (1991) found that in order for concordant attachment classification to reach statistical significance, the number of subjects used must be very large ( $n > 540$ ). Despite these conflicting results, it remains undisputed that attachment classifications often are discordant. Such research raises critical questions concerning developmental outcome in cases of discordant attachment. How do the attachments to the two parents interact to influence developmental outcome? Will the child's "internal working model" of self, other, and relationships (Bowlby, 1973) draw more from one or the other of these relationships or be a mixture of the two? Main and her colleagues found that both relationships were significant in predicting toddler behaviour (Main & Weston, 1981) and the behaviour of 6-year-olds (Main, Kaplan, & Cassidy, 1985), although the infant-mother relationship was notably more powerful.

Strange situation attachment assessments are both predicted by early maternal behaviour (Ainsworth, Blehar, Waters, & Wall, 1978; Belsky & Isabella, 1987; Egeland & Farber, 1984; Grossmann et al., 1985), and related to later maternal behaviour (Matas, Arend, & Sroufe, 1978). However, they are not simply assessments of parental behaviour, because they have also been shown to predict child behaviour in contexts where the parent is not present, including behaviour with peers (Elicker, Englund, & Sroufe, in press; Liebermann, 1977; Sroufe, 1983; Waters, Wippman, & Sroufe, 1979). It has been argued that aspects of what is initially a relationship are internalised by the child as the self, or personality, emerges. Behavioural strategies underlying these developing inner working models can be directly observed in infants in the standardised observation of the Strange Situation (Ainsworth et al., 1978). The developing

social self is conceived of as an expression of the inner working model (Bretherton, 1991). Conceptually, the description of this process has become the main focus among attachment researchers (Bretherton, 1985; Grossmann & Grossmann, 1991; Main et al., 1985; Sroufe & Fleeson, 1986; Sroufe, 1990). The theoretical foundation was provided by Bowlby's notion of internal working models of self and others, which are actively constructed during the early years of the child's life (Bowlby, 1973).

Recent empirical work has only begun to examine the behavioural manifestations of internal working models. Main et al. (1985), for example, reported that 6-year-olds assessed as securely attached in infancy responded to both pictorially represented separation themes and to a family photograph with more ease and openness than did 6-year-olds with anxious histories. Moreover, their family drawings depicted members as close but not clingy, differentiated, and adopting open postures (e.g. arms held out). Bretherton, Ridgeway, and Cassidy (1990) presented 3-year-olds with attachment story stems using dolls and props (e.g. hurt knee; monster in bedroom). Those children with secure histories dealt with the story issues with little hesitation and provided adequate resolutions (e.g. the parent hugged the child and applied a band-aid), which portrayed adults providing nurturance. Likewise, Rosenberg (1984) found that preschoolers with histories of secure attachment had significantly more social themes in their play and also resolved fantasy conflicts more successfully than preschoolers with anxious histories.

In the present paper, longitudinal data (Suess, 1987; Grossmann & Grossmann, 1991) will be used to examine the predictive power of attachments to both mother and father with respect to social competence in preschool and to child attributions. The preschool is an optimal setting for examining the manifestation of internal working models. Not only does it represent a major separation from parents, but it is also an observational context where child behaviour will not be directly influenced by parent behaviour. Also, internal working models of self and others should be somewhat consolidated by this age, yielding a meaningful look at individual differences. Finally, it affords an opportunity to examine play behaviour and adaptation to peers, which may be viewed as critical developmental tasks for this period (Sroufe, 1979).

In addition, data from a cartoon-based attributional task, based on research conducted by Dodge and Frame (1982), will be reported. Dodge and Frame found that aggressive elementary school-aged children more often perceived ambiguous situations as implying hostile intent, and suggested that aggression may be due, in part, to attributional errors made by these children. From a perspective emphasising internal working models, it would be postulated that such attributions are, in fact, based upon experience. Thus, children with histories of avoidant attachment, having experi-

enced chronic rebuff in the face of needs for a secure personal base (Ainsworth et al., 1978; Main & Weston, 1982), may come to expect hostility in a wide range of circumstances and to perceive even accidental trespasses as being intentional.

Because, according to attachment theory, the inner working models which develop out of the attachment relationship tend to persist under normal living conditions, a test of stability of the child-mother relationship was conducted about one year after the preschool assessments, because of the significant child-mother correlations presented later.

In sum, the data to be presented will expand upon Main's findings concerning the differential predictiveness of attachments to mother and father, replicate previous findings on the predictiveness of attachment to behaviour in settings where the caregiver is not present (notably preschool), and begin to connect emerging work on attachment-based internal working models with work on attributional style.

## METHOD

### Subjects

Forty-five of the original 51 families of the Regensburg longitudinal sample could be contacted. Of these, only 40 children attended preschool at age 5. One child was excluded from data analysis because of a chronic and debilitating illness (PKU), leaving 39 subjects for this study.

The families of these 39 children came from all social classes, the majority being middle class. Half of the mothers had no more than the required 9 years of basic education; only one mother had a university degree. Of the fathers, one-third had not gone beyond basic education, but a quarter had a university degree. The preschool sample consisted of 18 boys and 21 girls; about half of the children were firstborns.

### Procedure

The children had been observed twice in Ainsworth's Strange Situation during infancy; once at 12 months of age, with either the mother or the father, and again at 18 months, with the other parent. It was attempted to see half of the infants with the mother and half with the father at 12 months, and vice versa at 18 months. However, fathers were reluctant to be "first" in performing in the Strange Situation, resulting in the following odd distribution: 31 children were seen with the mother at 12 months, 8 at 18 months. Eight children, correspondingly, were seen with the father at 12

months, 29 at 18 months. Two fathers refused to participate. Strange Situation classifications within this age range are considered age-independent, and no statistical differences between age groups for infant-mother and infant-father Strange Situation classifications were found. Therefore the age was disregarded and infant-mother and infant-father classifications were used independent of age. For the 39 children the distribution of attachment classification for infant-mother dyads was  $n = 11$  (28%) insecure-avoidant (A),  $n = 24$  (62%) secure (B), and  $n = 4$  (10%) unclassifiable (U). For the infant-father dyads the distribution was  $n = 16$  (41%) insecure-avoidant (A),  $n = 17$  (44%) secure (B), and  $n = 4$  (10%) unclassifiable (U) or not classified ( $n = 2$ ; 5%). Nine children showed avoidant attachment (or were U) with both parents; 9 were secure with both. In the original Regensburg sample, only two children were classified C with mother and one with father. Because these children did not attend preschool, the insecure-ambivalent type of attachment classification (C) was not represented in the preschool study.

The children were distributed over 33 different preschools in various parts of the city, and attended 38 different play groups.

In addition to unobtrusive direct observation, a cartoon-based social conflict task was utilised to tap the child's attributional style of causation. In addition, the preschool teachers evaluated each child's behaviour and social functioning using Blocks' California Child Q-sort (Block & Block, 1980). The preschool assessments were done during a regular preschool day which characteristically had an open beginning and an open end. The duration of observation ranged from 1 to 2 hours, depending on the ongoing activities.

## Variables<sup>1</sup>

*Direct Observation.* In a series of pilot studies, coding categories for four behavioural domains were developed: play behaviour; interpersonal contact; conflict resolution and behaviour problems. Two pretrained observers recorded the children's behaviours, using a mixture of well-defined codes and narrative reports. Afterwards the two records were merged into one. These protocols were later coded by independent coders. All observers were unaware of the original Strange Situation data and had not seen any of the children before. The following list of categories is a modified form of the Minnesota Preschool Affect Checklist (Sroufe, 1983).

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<sup>1</sup>A more detailed observation method (in German) is available upon request.

I. *Play behaviour*. (a) Amount of solitary play versus play with a partner or in groups. (b) Affect during play, i.e. positive affect such as friendliness, happiness, and enthusiasm, and negative affect, such as dissatisfaction, tension, embarrassment, sadness, and crying. (c) Concentrated play as characterised by absorption in a play theme and low distractability, as well as signs of a balanced emotional state, versus uninvolved play, as characterised by detached affect expression such as boredom or daydreaming. (d) Initiating a play theme with other children, versus merely waiting for a play theme to be offered by other children. (e) Restlessness or hyperactivity with a very low attention span. (f) Energetic play, i.e. the level of energy is helpful in reaching a particular goal in play, rather than interfering, as when the child is restless. (g) Conflicts about play themes, play roles, and play materials, accompanied by strong signs of anger and frustration, with the flow of play being interrupted.

The play variables will be reported in percentages of the child's play time.

II. *Interpersonal contact* was recorded when the focus child was engaged in interaction with other children in the absence of a special play theme or interpersonal conflict. The following aspects of these interactions were coded: friendliness; enthusiasm; initiative; uninvolvedness; tension; and embarrassment.

III. *Conflict resolution* was recorded when partners showed different interests, intentions, and plans, or when social conflicts are accompanied by strong signs of frustration, anger, and interruption of the play theme. The following variables were coded: (a) Number of conflicts. (b) Negotiating, i.e. prompt and direct expression of uneasiness, discussion, willingness to compromise, and proposal of alternatives. (c) Seeking help from the preschool teacher. (d) Seeking closeness, i.e. the child is not asking in a direct way for help but seeks the proximity of the teacher. (e) Autonomous conflict resolution, i.e. the child first draws upon his own resources and turns to the teacher for help only after having met his limits in conflict resolution. (f) Dependent conflict resolution, i.e. before trying on his own, the child turns to the teacher in order to let her solve the conflict. (g) Aggressive reactions, i.e. a recognisable interpersonal frustration was preceding the aggressive act. (h) Withdrawal in the face of conflict. (i) Displacement of the anger either to other persons or to other objects.

The conflict behaviours were related to the total number of a child's conflicts.

IV. *Behavioural problems* were categorised as follows: (a) Low impulse control or "falling into pieces" in the face of emotional and/or social distress, as well as hyperactive behaviour. (b) Unusual behaviours, i.e. bizarre behaviours, stereotypes, tics, rituals, and immature and inept behaviour out of context. (c) Reactive aggression out of frustration against

a person or play-object, and temper tantrums. (d) Hostility/scapegoating were coded as two facets of one underlying process as an aggregate, following Olweus (1980, 1984 and Troy & Sroufe, 1987). Hostility, as a special form of aggression intended to harm another child, was coded only when no frustration situation anteceded. Scapegoating describes a special kind of behaviour, which finally puts the child into the role of being victimised by a hostile other child. (e) Isolation was coded when a child experienced difficulties in joining a play group, despite being highly oriented towards the others and monitoring them most of the time.

The behaviour problems were counted in absolute times of occurrence.

## Aggregation

In a second step the children were grouped according to their overall competence in play behaviour, interpersonal contact, conflict resolution, and behavioural problems. Aggregation of data was necessary, given the observations of the children across many preschools and play groups. Frequencies of each behaviour of a given child were grouped as to whether a given behaviour "did not occur (0)", and, for the rest of the data, one-third "rare occurrence (1)", one-third "average occurrence (2)", and one-third "frequent occurrence (3)". Play, for example, was considered to be "good" if a child showed frequent or at least an average occurrence of high involvement, frequent or at least average initiation of play themes, absence of restlessness, and balanced affect; or if lower involvement was combined with high enthusiasm, or if the high involvement was combined with low initiative, or if a high number of play conflicts coincided with very little negative affect. The same aggregation procedure was applied to the other categories by observers who had no knowledge of the attachment classifications.

*The Social Perception Task.* At the end of the observation period a series of 6 cartoons depicting typical social conflict situations among children was presented to 30 children; the rest ( $n = 9$ ) refused to participate. Of these 30 children, 27 had been classified A or B in the Strange Situation with their mothers, and 25 had been so classified with their fathers. The remainder had been unclassifiable (U) with one parent.

Three cartoons (Fig. 1, I–III) showed violence directed towards a child's play-objects; the other three depicted violence (Fig. 1, IV–VI) towards the child himself. Two of the six situations showed obvious hostile intentions (III, V), two showed unintentional accidents (I, VI), and two situations (II, IV) were ambiguous as to the intention. The children were asked whether the depicted violent acts were intended by the aggressor.

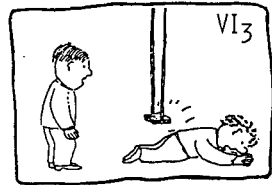
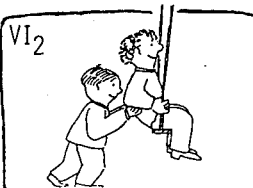
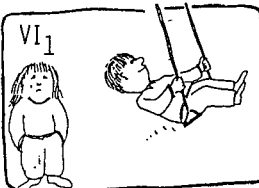
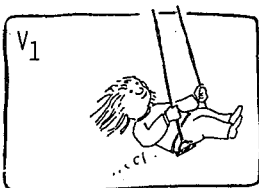
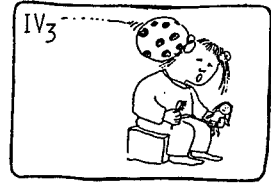
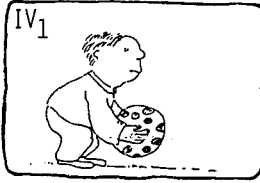
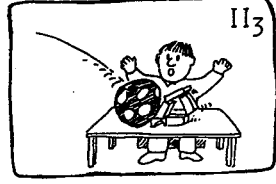
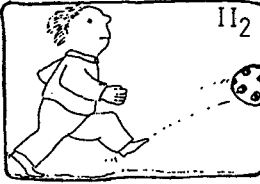
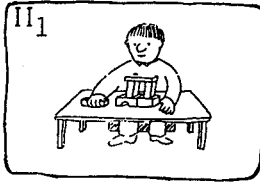
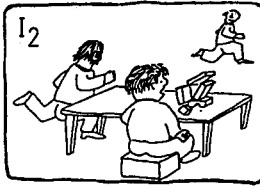
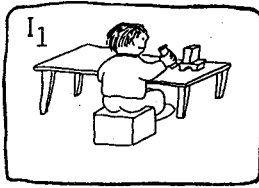


FIG. 1. Pictorial stimuli used to illustrate aggression (negative consequences) toward objects (I-III) or persons (IV-VI), which is accidental (I, VI), intentional (III, V), or ambiguous (II, IV).

*Reliability.* The protocols were evaluated by two coders. Inter-rater reliabilities were calculated on the basis of point-by-point comparisons for 10 protocols, using the following formula: number of agreements times two, divided by number of codes for coder 1 plus coder 2. Agreement was high for both presence and absence of behaviour. Overall, agreement for the codes ranged between 82% (withdrawal, isolated) and 100% (hostility, unusual behaviour). The algorithm used to identify individual infants as (I) good or poor players, (II) competent or incompetent conflict resolvers, (III) having only marginal or substantial behaviour problems, and (IV) having either a realistic/positive or an unrealistic/negative social perception was based on the codes in an unequivocal manner.<sup>2</sup> Observations of personal contact were also reliable but dropped because of insignificant results (see Table 1). The observers/coders were unaware of all attachment classifications.

## RESULTS

### Behavioural Differences as Related to Attachment Classification to Mother or Father

Differences in various single variables in preschool as related to both infant-mother and infant-father attachment classification (A vs. B) are shown in Table 1. The non-classifiable children were omitted from this comparison. The number of children for each variable, as indicated in parentheses in Table 1, differs because not all children showed the relevant behaviour during the observations.

Secure, as compared to avoidant, attachment to mother was significantly related to periods of concentrated play (twice as long), whereas differences on variables play time, hyperactive play, and involvement in conflicts during play did not reach conventional levels of significance.

Secure father attachment was significantly related to less negative affect during play, whereas differences in play initiative, again did not reach conventional levels of statistical significance. In summary, on the level of single variables or behaviour counts, only two reached a conventional level of significance: Concentrated play for infant-mother attachment ( $P < 0.004$ ), and negative affect for infant-father attachment ( $P < 0.04$ ).

In addition to a tendency for securely attached children to have fewer social conflicts, in about half as many, secure mother attachment was found to be strongly related to autonomous conflict resolution; the children managed to solve the conflict by themselves, rather than turning the responsibility for resolution over to the teachers ( $P < 0.002$ ). The auton-

<sup>2</sup>The algorithm, based on 4 conversion tables, used to attribute individual children to a high/low intensity of the individual variables of each of the 4 behaviour domains is available from K.E. Grossmann on request.

TABLE 1

Differences in the 4 Behavioural Domains observed in Preschool at Age 5 as Related to Attachment Classification to Mother or Father in Infancy. Mean Score Values for A and B Infant-Mother and Infant-Father Attachment Classification are given. U-test (One-sided, Corrected for Ties)

	<i>Infant-Mother Attachment Classification</i>			<i>Infant-Father Attachment Classification</i>		
	<i>A (n=11)</i>	<i>B (n=24)</i>	<i>P (U-test)</i>	<i>A (n=16)</i>	<i>B (n=17)</i>	<i>P (U-test)</i>
<i>Play</i>						
Total time in play	57.66 (11)*	65.87 (24)	0.08	61.32 (16)	65.74 (17)	n.s.
Time/Solitary play	5.54 (8)	11.69 (20)	n.s.	25.16 (13)	19.09 (13)	n.s.
Positive affect	25.21 (11)	19.37 (23)	n.s.	18.83 (16)	25.49 (17)	n.s.
Negative affect	23.13 (11)	17.10 (24)	n.s.	26.15 (16)	19.09 (17)	0.04
Concentrated play	18.63 (11)	40.33 (24)	0.004	31.68 (16)	36.78 (15)	n.s.
Initiator/Play	7.20 (10)	7.87 (16)	n.s.	5.68 (13)	9.71 (13)	0.09
Enabler/Play	11.13 (10)	8.15 (21)	n.s.	9.60 (15)	8.08 (16)	n.s.
Hyperactive play	4.24 (3)	0.35 (3)	0.09	1.92 (4)	1.54 (3)	n.s.
Energetic play	12.76 (10)	11.48 (24)	n.s.	9.45 (15)	12.76 (17)	n.s.
Conflict/Play	9.67 (10)	6.57 (18)	0.08	9.76 (12)	9.12 (15)	n.s.
<i>Interpersonal Contact</i>						
Friendly	14.49 (6)	25.74 (21)	0.09	18.63 (11)	20.89 (12)	n.s.
Tension	14.63 (6)	6.78 (9)	n.s.	20.04 (11)	9.79 (7)	0.04

TABLE 1 (cont.)

	Infant-Mother Attachment Classification			Infant-Father Attachment Classification		
	A (n=11)	B (n=24)	P (U-test)	A (n=16)	B (n=17)	P (U-test)
<i>Social Conflicts</i>						
Mean frequencies	11.26 (11)	6.95 (21)	0.06	11.12 (15)	9.80 (16)	n.s.
Autonomous conflict resolution	2.20 (3)	23.12 (14)	0.002	7.32 (6)	16.40 (10)	0.05
Withdrawal	7.48 (6)	0.53 (1)	0.03	4.52 (7)	2.65 (2)	n.s.
<i>Behaviour Problems</i>						
Low impulse control (1)	3.00 (5)	0.21 (3)	0.01	1.50 (5)	0.88 (4)	n.s.
Unusual behaviour	3.18 (5)	0.58 (4)	0.03	2.19 (6)	0.65 (3)	0.10
Reactive aggression	9.18 (10)	6.71 (22)	n.s.	9.44 (15)	8.23 (17)	n.s.
Hostility/Scapegoating	2.45 (4)	0.29 (3)	0.04	1.50 (4)	0.76 (4)	n.s.
Isolated	1.27 (5)	0.54 (6)	0.09	0.87 (5)	0.59 (6)	n.s.

\*The number of children for which each variable was observed at least once is indicated in parentheses.

omous conflict resolution was also seen more frequently in children with a history of secure father attachment ( $P < 0.05$ ). Although withdrawal from the conflict was seen in only one child securely attached to the mother and two children securely attached to the father, it was observed in 6 of the 11 children avoidant with the mother and 7 of the 16 avoidant with the father. It was not observed in any of the children securely attached to both parents, but in 4 of the 6 children avoidantly attached to both parents.

Being tense in interpersonal encounters without a play theme was more often observed in children insecurely attached to father.

Only a few children showed behaviour problems in preschool. If they did, insecure-avoidant (A) attachment to mother was significantly related to problems concerning impulse control ( $P < 0.01$ ). In stressful situations these children tended to "fall to pieces" and to lose their emotional organisation. Secure mother attachment was also related to fewer unusual behaviours, such as bizarre behaviours or stereotypes, and less hostility/scapagoating, whereas differences in social isolation did not reach conventional levels of statistical significance.

For infant-mother attachment classification, 6 out of 33 tests were below the 5% level of statistical significance, and one test was lower than 1%. An additional 6 tests showed a level of significance below the 10% level. According to Feild and Armenakis (1974) the probability of obtaining 6 significant differences by chance in a group of 33 tests is lower than 0.0057.

For infant-father attachment groups, only 3 out of 33 tests reached the 5% level of statistical significance. According to Feild and Armenakis (1974) this ratio does not reach statistical significance. However, the probability that 9 significant differences out of a total of 66 tests for infant-mother and infant-father attachment groups was due to chance is still lower than 0.0049.

In summary, the differences reported in Table 1 between children with different infant-mother and infant-father attachment histories were all consistent with predictions derived from the attachment concept. The reported number of significant differences on the basis of 33 single variables is high, and supports the validity of the attachment classifications made 3 to 3.5 years earlier.

Table 2 shows the distribution of children on aggregate outcome variables with respect to quality of attachment to mother and father. The children were identified for each domain on the basis of the single variables as shown in Table 1, using objective criteria (see footnote 2) by the first author when he was still unaware of the Strange Situation classification, as exemplified for play in the method section.

Children with secure attachment to mother were highly represented in the group of children with "good" play patterns in preschool, as compared to children with an avoidant attachment history ( $P < 0.009$ ).

A similar attempt at coherent group formation with respect to the single variables of "interpersonal contact" failed; no combination yielded a theoretically meaningful pattern.

Competent "conflict resolution" was seen more frequently in B to mother children, and less often in A to mother children. Children were defined "competent conflict resolvers" if they showed independent resolution and/or negotiation. "Incompetent" conflict resolution strategies, in contrast, were characterised either by the absence of any such attempts, or by dependent solutions, withdrawal and/or by displacement of conflicts.

TABLE 2

Comparison of Children in Preschool in Terms of Play, Conflict Resolution, Behaviour Problems, Social Perception, and Total Number of Competent Domains as Compared to Early Infant-Mother and Infant-Father Attachment Classification

Domain		Quality of Attachment to:					
		Mother			Father		
		A	B	P*	A	B	P*
Quality of play in preschool	Good	4	20	0.009	9	12	n.s.
	Poor	7	4		7	5	
Conflict resolution	Competent	3	14	0.04	4	9	0.07
	Incompetent	8	7		11	6	
Problem behaviours	None or only marginal	2	18	0.002	7	10	n.s.
	Definite problems	9	6		9	7	
Social perception	Realistic/Positive (1)	3	14	0.03	5	9	n.s.
	Unrealistic/Negative (2)	6	4		5	6	
Total no. of competent domains	In at least 3 domains	1	17	0.0008	5	9	n.s.
	In 2 or less domains	10	7		11	8	

\*Fisher's Exact.

A, nonsecure-avoidantly attached; B, securely attached.

Fourteen out of 21 children with a secure attachment history with mother showed competent conflict resolution strategies in preschool, and 8 of 11 children with insecure attachment history with mother showed incompetent conflict resolution strategies in preschool ( $P < 0.04$ ). Quality of conflict resolution failed to reach conventional levels of significance for infant-father attachment classification ( $P < 0.07$ ).

In the domain of "problem behaviours", children without any behaviour problems were combined with children who showed only minor problems into a group with "no or only marginal" problems. Children with problems were characterised by isolation or by hostility or by multiple behaviour problems. They were combined into a group "definite problems". As shown in Table 2, infant-mother attachment history significantly differentiated ( $P < 0.002$ ) between problem groups in preschool, although father

attachment history did not. Only two out of 11 children from A infant-mother dyads showed no or marginal problems in preschool, as compared to 18 out of 24 children from B infant-mother dyads.

### Social Perception Task

The response of each child to the social perception task (Fig. 1) was coded “+” for damage to objects and for violence to persons if it corresponded to the depicted reality, and was coded “-” if it did not. For example, in pictures I<sub>1</sub> and I<sub>2</sub> (e.g. one child chases another one, runs against a table without looking, and the brick building on the table collapses) the response, “done purposely”, was coded “-”; “not done on purpose”, or “it happened by accident” was coded “+”.

Subsequently, the children were grouped as follows: Children of group 1 ( $n = 9$ ) attributed intentions correctly in each of the 6 series. Children in group 2 ( $n = 9$ ) in no case attributed malign intentions; i.e. they did not see any intent of aggression in series III and/or V of Fig. 1. Children of group 3 ( $n = 3$ ) misjudged the aggression directed at the toy structure (III) as well as unintended object damage (I); i.e. they misjudged the intentional as well as the unintentional character of social conflict situations. Children of group 4 ( $n = 2$ ) saw aggressive intentions in series IV, which is characterised by ambiguity. Children of group 5 ( $n = 7$ ) showed a predominantly hostile attributional style. They saw aggressive intentions in ambiguous cases as well as clearly non-intentional cases (series I and/or VI, and II and/or IV).

Groups 1 and 2 were termed “realistic or well meaning” ( $n = 18$ ), and groups 3 to 5 were termed “unrealistic or negative” ( $n = 12$ ). As shown in Table 2, for “social perception”, infant-mother attachment classification differentiated significantly between children with realistic or well meaning social perception and children with unrealistic or negative social perception on the cartoon test ( $P < 0.03$ ). More children from B infant-mother dyads attributed intentions to social conflict situations in a competent or positive way. This was not true for children from infant-father attachment classifications. No assumption was made as to whether one or the other would be more advantageous, only the difference in response to the same cartoon material is emphasised here.

### Overall Competence

The summation score of competencies from all above areas—observed play, conflict management, behavioural problems, and tested social perception—yielded two children competent in no domain, 10 in 1 domain, 8 in 2 domains, 8 in 3 domains, and 11 in all 4 domains.

In Table 2, children with competencies in at least 3 domains and children with only 2 or less competencies are compared with regard to infant-mother and to infant-father attachment classification. The competency identification was significantly related to infant-mother classification ( $P < 0.0008$ ), but not to father attachment.

### Attachment Classification to Mother and Father ("Double-classification")

Whereas mother attachment *per se* was a better predictor of single variable outcomes, differences could also be shown by considering attachment to both parents (see Table 3).

Following the results of Main and Weston (1981), who showed a hierarchy in the importance of attachment with a preponderance of mother attachment, we grouped children into the four attachment combinations: secure to both parents (BB); secure to mother and insecure to father (BA); insecure to mother and secure to father (AB); and insecure to both parents (AA).

TABLE 3  
Behaviour Categories (Means of Percentages of Total Observation) as Related to Quality of Attachment to Both Parents

Significant Behaviour Categories in Preschool	Quality of Attachment to Mother (M) and Father (F)				Kruskal-Wallis $Chi^2$	P
	MF	MF	MF	MF		
	BB (n=11)	BA (n=8)	AB (n=5)	AA (n=6)		
Concentrated play	46.66	39.49	19.90	17.57	13.20	0.004
Tension during interpersonal contact	9.99	6.62	1.33	25.72	6.96	0.07
Autonomous conflict resolution	25.98	12.74	1.82	2.51	11.20	0.01
Unusual behaviours	0.27	0.12	0.40	5.50	9.80	0.02

A, nonsecure-avoidantly attached; B, securely attached.

TABLE 4  
 Conflict Management as Related to Double Attachment Classifications to Mothers  
 (First Letter) and Fathers (Second Letter)

<i>Double Att. Class</i>	<i>Self-reliant (Group 1)</i>	<i>Bargain with Help (Group 2)</i>	<i>Aggressive no Bargain (Group 3)</i>	<i>Displacing, Retreat (Group 4)</i>	$\Sigma$
<i>BB</i>	6	1	1	1	9
<i>BA</i>	1	2	1	3	7
<i>AB</i>	–	2	1	2	5
<i>AA</i>	1	–	1	4	6
$\Sigma$	8	5	4	10	27

*B*, securely attached; *A*, nonsecure-avoidantly attached.

Results showed a hierarchy with a clear dominance of secure mother attachment for higher “concentration play” (Kruskal–Wallis:  $P < 0.004$ ) and for “autonomous conflict resolution” (Kruskal–Wallis:  $P < 0.01$ ). “Tension during interpersonal contact” did not reach conventional levels of significance (Kruskal–Wallis:  $P < 0.07$ ) and “unusual behaviours” (Kruskal–Wallis:  $P < 0.02$ ) were shown mainly by children with insecure attachment to both parents.

Table 4 shows hierarchies in the distribution of number of children among attachment classifications for conflict management. Six children with secure attachment to both parents were grouped “self-reliant” as compared to one child with insecure-avoidant (A) attachment history. The reverse distribution is seen in conflict management group 4, children who retreated evasively and showed displaced behaviour, with 4 AA, 2 B to father and A to mother, 3 B to mother and A to father, and only 1 child B to both parents.

### Is the Quality of Attachment to Mother or Father of Different Importance to Boys and Girls for their Competence in Preschool?

Neither at the age of 1 year nor at the age of 6 years have boys and girls been found to have different proportions of attachment quality to their mothers or fathers (Bretherton, 1985; Main & Cassidy, 1988), which is also true for the present sample (Wartner, 1987). Concerning domains of

competency in preschool, only in the domain of conflict management did the difference between boys and girls reach significance ( $P \leq 0.026$ ). Boys were more competent in their conflict resolutions. On the single variable level, a few more differences emerged: Boys were more energetic in play ( $P < 0.02$ ); and the three children who were scapegoated were all boys.

The relation of attachment quality to mother or father and sex of child yielded some differential effects. The effect of mother attachment quality was only significant for girls and did not reach significance for boys in the areas of competence in play ( $P < 0.0008$ ) and conflict resolution ( $P < 0.03$ ). Girls securely attached to the mother had significantly fewer behaviour problems ( $P < 0.004$ ) than girls anxiously attached although this difference was not quite as marked for boys ( $P < 0.031$ ). However, the frequency of behaviour problems as well as the overall competence grouping of the children with respect to all domains held up for both sexes.

## DISCUSSION

A total of 39 children were observed in 38 different play groups in 33 different preschools in an attempt to replicate and extend results obtained in Berkeley (Main et al., 1985) and in Minneapolis (Sroufe, 1983). In the Berkeley sample, 6-year-old children observed in a laboratory with and without their mothers present showed persuasive differences in a variety of behaviours which were found to be significantly related to their attachment history. In the Minneapolis study, peer behaviour was negatively affected by low quality of attachment for children from a poverty sample, who were observed in an artificially constructed play group, composed only of the experimental subjects themselves. In contrast, our subjects were selected/taken from a "normal" population and were observed in interactions with familiar peers during a normal preschool session.

Our findings on the predictive power of attachments to mothers and fathers are in remarkable agreement with those of Main and Weston (1981) and Main et al. (1985). Although there were occasional significant relations with the father attachment predictor, and father and mother attachments taken together did predict somewhat better than mother attachment alone, infant-mother attachment was clearly a more powerful predictor.

One reason this replication of Main's findings is important is that it is not subject to a methodological problem that poses a difficulty for the interpretation of the earlier findings. Because Main and Weston's (1981) outcome assessment was obtained with the mother present, the stronger predictive power of mother attachments may have been due to some mediation by the mother of the child's behaviour. Outcome measures obtained by Main et

al. (1985) were obtained with each parent present also allowing for parental mediation. However, the preschool behavioural data in the present study were obtained with neither parent present, discrediting the interpretation that the child's behaviour was influenced by the parent's presence (see also Cohn, 1990).

For several reasons, however, one should not conclude from these findings that fathers are of less importance than mothers. Father influences may show up more at later ages or in other domains of functioning, as suggested by the strong relationship between father attachment and the child's negative affect and tension. Fathers may also influence children indirectly through the social support and relationship stability they provide in the family (e.g. Crockenberg & McCluskey, 1986; Erickson, Sroufe & Egeland, 1985). Finally, the Strange Situation may not assess infant-father relationships as adequately as infant-mother relationships.

These data from a middle and working class sample also replicate in considerable detail the previous work by Sroufe (1983) with a poverty sample. The same affective and social variables were found to be linked to attachment history in both studies. Again, summary variables and behavioural profiles were found to be the most powerful. The overall adaptation of children to the challenges of preschool was strongly related to attachment history. Aggregated data revealed that a majority of children with secure histories functioned competently and manifested few behaviour problems, while this pattern characterised only a small portion of those with anxious (here avoidant) histories. Such a finding has great importance, in part, because there is a setting in which the parent is not present and, in part, because the finding holds up across social classes as well as cultures.

The issue of differential effects of attachment quality to mother for boys and girls cannot be resolved in a simple way. We found no gender difference in the predictive power of attachment for overall competent functioning in preschool, although for most specific variables girls appeared to be more affected than boys by the attachment quality to their mothers. This is in accord with the findings of LaFrenier and Sroufe (1985) with the Minneapolis poverty sample.

Finally, our data supplement previous information on the manifestation of internal working models in young children and offer an interpretive context for viewing individual differences in attributional style (Doge & Frame, 1983; Doge, Pettit, McClaskey, & Brown, 1986). In accord with the work of Main, Bretherton, and Rosenberg, we found that young children with histories of anxious attachment viewed the social world differently than children with histories of secure attachment. Children with anxious attachments more often view others as less available and more

threatening or even hostile. These social expectations are likely to influence the child's behaviour as well as the consequent reactions of others in an ongoing feedback loop. We would interpret these differential expectations, following Bowlby (1973), as "tolerably accurate reflections" of experiential history, rather than as indications of any inherent cognitive deficit. Having experienced hostility or rejection, some children come to expect hostility and/or to view aggression as intentional when it occurs. Their attributions lead them to behave as though others are malevolent, and the result seems to be that they are ultimately rejected by other children and teachers (Sroufe & Fleeson, 1988).

The theoretical implication is that in preschool, behavioural differences can no longer be explained by dyadic features, but by the notion of an "inner working model of self and others" (Bowlby, 1988). The observed behaviour of 5-year-old children with secure (B) versus insecure-avoidant (A) attachment histories support the notion that differences do indeed exist, and that, because the results were obtained in the absence of both parents, these behavioural differences are to some extent "attributable to the child's inner organization" and not as much to "the effect of the mother's (or father's) behavior in the immediate situation" (Ainsworth, 1985, p. 784).

It has been suggested that data such as those presented here may be more related to current rather than to early relationships. On the basis of our own assessments (Wartner, 1987) it seems that the relationships at both ages are relevant (Wartner, Grossmann, Fremmer-Bornbik, & Suess, in prep.). In terms of attachment theory, however, the question appears to be less meaningful. It is assumed that maternal sensitivity in the first year influences the formation of behaviour strategies in infants as seen in the Strange Situation. These strategies, according to the theory eventually become internalised, which can then partially account for the behavioural differences found in the studies of Main et al. (1985) and Sroufe (1983), as well as in the present paper. In this regard, the data presented here provide additional support for Bowlby's notion that inner working models become increasingly resistant to change (Bowlby, 1988; Bretherton, 1991). What the conditions of change might be is suggested in terms of economic pressure by Sroufe and Cooper (1988), and in retrospective studies using the Adult Attachment Interview developed by Main and Goldwyn (1985), such as reflective reorientation (Main et al., 1985) or resolved mourning (Main & Hesse, 1990; Ainsworth & Eichberg, 1991).

The preschool data reveal an underlying structure of differences in emotional organisation with respect to the challenges of social situations. The longer concentration times of the B-to-mother children have been found by others (see Bretherton, 1985, for a summary; Main, 1973). The

differences in conflict resolution indicate individual differences in the desire to work out discord on a personal level, rather than escaping or letting the teacher do the job. The number of behavioural problems observed indicates differences in social adaptation, and the social perception task provides a glimpse into why that may be so. The child needs to develop a realistic or positive view of others' intentions, along with a desire to resolve conflicts through direct and skilful reconciliation with the people involved, in order to be well adapted socially and emotionally.

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