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Are Early Childhood Experiences Overrated? A Reassessment of Maternal Deprivation

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Summary. The opinion that early maternal deprivation (absence of mother, lack of stimulation, multiple caregivers) results in lasting damage to intellectual and emotional development is generally accepted. In a real-time longitudinal study 137 children, part of a representative sample of Kt. Zürich (Switzerland) who spent the first years in residential nurseries, were investigated at age 12.6 ± 8 months and again at age 14 years. In IQ and education this group at follow-up was not different from the general population. The children were no less popular than a control group of classmates. There were, however, among them two to three times more psychiatric cases than among a Swiss comparison group. Behavioral and emotional disorders were not connected with status at first examination or variables of the early environment, but with psychosocial risk factors in the environment the children lived in after leaving the nurseries: parental discord, divorce, psychosocial disorder in parents, presence of step family, abuse. This finding is confirmed by other prospective and retrospective studies. Early deprivation is almost always an indicator that an unfavorable situation will continue throughout childhood. If, on the other hand, the environment changes completely, as it does after adoption, early deprivation by itself does not appear as a risk factor. The role of the mother-child relationship and of early influences in general on personality ought to be reconsidered.

Key words: Maternal deprivation – Follow-up study – 14 year olds – DQ – IQ – Emotional/behavioral disorder

Introduction

Since the Second World War, the assumption that early childhood experiences are decisive for later psychosocial development has strongly influenced expert and public opinion. Whereas in Anglo-Saxon psychology and psychiatry criticism of this assumption started early (Pinneau 1955a, b) and has since gained in force and comprehensiveness (Rutter 1981), in Germany reassessments were sporadic (Hemminger 1982), and developmental psychology based on environmental influences during the first years of life still predominates.

One particular situation of early childhood has gained special attention: maternal deprivation, i.e., the situation of an infant that grows up in a residential nursery without individual care by mother or mother substitute. During the thirties and forties child psychologists and psychiatrists connected the absence of maternal love with lasting impairment of somatic and intellectual development and later social behavior. During the postwar period the investigations and reflections published by the psychologist William Goldfarb and the psychoanalysts René Spitz and John Bowlby gained worldwide attention. Goldfarb tried to prove that maternal deprivation in infancy leads to apathy, intellectual and linguistic retardation, and possibly an increased risk for schizophrenia (Goldfarb 1943a, b, 1944, 1947). According to Spitz (1945, 1946a, b), separation of a young child from its mother is followed by depression, catatonia, later antisocial and criminal behavior and may even lead to early death. Bowlby (1951, 1965) created an imposing and very successful theory: the infant's and young child's character is permanently imprinted by its attachment to the mother or mother substitute. Without the latter's incessant presence the capacity for attachment does not develop at all or the child's need for attachment is frustrated. Affectionless psychopathy or depression proneness are the consequence. According to Bowlby, early deprivation experiences and an insecure early attachment are the core of all neuroses and personality disorders (1977).

Goldfarb, Spitz, and Bowlby have tried to support their hypotheses by longitudinal studies on the development of infants that spent their first years in residential nurseries and sanatoriums. These studies do not conform to scientific standards, not even to those of their authors' time (O'Connor 1956; Pinneau 1955a, b; Taylor-Kräupl 1958; Howells and Layng 1955). Their investigations have engendered hypotheses on the consequences of early mother deprivation, but because of serious methodical shortcomings were unable to confirm or refute them. The present paper tries to extract refutable hypotheses from those authors' work and to examine and test them with the help of a follow-up study.

Hypotheses on the Consequences of Early Deprivation

Deprivation has three components, which should be distinguished. The first component is separation from the mother. The second component is the impoverished environment of a residential nursery with a lack of sensory, motor, and verbal stimulation. The third component consists of frequent changes of nurses, which means that a lasting and stable relationship between child and caregiver cannot be established. The following hypotheses will be examined in this investigation:

1. Children that have spent their first years of life in an institution are permanently damaged in
- their physical development (Spitz 1946a)
- their intellectual development (Spitz 1946a; Goldfarb 1943a, b
- their linguistic development (Goldfarb 1943a)
- their school achievement (Goldfarb 1943a, b).

2. More often than controls from the general population they
- are unpopular outsiders (Goldfarb 1943a, b; Bowlby 1956)
- show symptoms of antisocial behavior (Bowlby 1944)
- show symptoms of emotional and behavior disorders (Goldfarb 1943a, b, 1944, 1947; Spitz 1945, 1946a, b; Bowlby 1944, 1956).

3. So even when risk factors intervening in later childhood are considered, early deprivation persists as an influence which explains a large part of the variance in psychiatric symptoms of later life.

Antecedents of the Present Investigation

From 1958 to 1961 a group of Swiss physicians and psychologists headed by Marie Meierhofer, renowned reformer of Swiss crèches and residential nurseries, conducted the index investigation of deprived infants at 12.6 ± 8 months (1966) and in 1971 to 1973 a follow-up at the age of 14 years. The investigators were prevented by several obstacles from publishing their data. In 1981 the data were given to the present author, who extracted supplementary information from the original protocols, made a statistical reanalysis and, as a control group was missing, tried to find comparable groups in the literature. We should like to thank Doctor Meierhofer for the generosity and Nikolaus v. Luckner for the statistical work.

Materials and Methods

Methods and Results of the Index Examination. The sample consisted of all children living in the 12 public and private residential nurseries of the Canton Zurich (Switzerland) during the years 1958 to 1961 with the following characteristics: age between 6 weeks and 33 months; absence of symptoms of a physical disorder or illness; admitted to the nursery before the age of 7 months. There were 354 children that fulfilled these conditions. They differed from Switzerland's general population: every second child was illegitimate; the parents were mostly unskilled workers and many of them had immigrated from Italy or the Federal Republic of Germany. At the time all illegitimate children were placed under guardianship. The official records described a substantial minority of their parents as alcoholics, criminals, or prostitutes. The investigation of the children's and their environment's characteristics led to the following results:

- The developmental quotient (DQ) was measured according to the method of Brunet-Lézine (1951) and found to be significantly lower than that of a comparable group of children living in their families and partaking in a Growth Study of Zurich's University Children's Clinic. The difference was largest in the language subtest (56 points vs 112 points at 24 months).
- The children's behavior was observed, but unfortunately not by strictly standardized methods. In substantial minorities the following disorders were found: passivity, restlessness, stereotypical behavior (e.g., hair twisting, rocking), excessive thumb-sucking, excessive fear of strangers, overfriendliness, inability to play.
- In comparison with the control group mentioned above, the sample did not differ in stature but was of lower weight.
- There were 2 to 8 children cared for by one nurse. In two homes nurses were helped by frequently changing students.

- The average time of individual contact between a child and a nurse varied between 0.5 h and 2 h per day.
- During their first year the infants spent the whole day in their cribs; during the second year they stayed for some hours in a play room.

The samples' DQ, the behavioral observations, and the characteristics of the environment led the authors Meierhofer and Keller (1966) to the conclusion that all conditions of deprivation were present: separation from the mother, a lack of sensory, motor, and particularly linguistic stimulation leading to an abnormally low DQ, and a lack of opportunity to form lasting and stable relationships with a nursing person.

Methods of the Follow-up Examination. In 1971 to 1973 an effort was made to contact the nursery sample again at adolescence. Of the 354 children, 105 could not be located (many of them had returned to Italy with their parents) or lived out of reach; 16 children had been interviewed at a younger age for a pilot study and were excluded. In 88 cases parents, foster or – most often – adoptive parents did not consent to an interview, and 2 children had died. As a consequence only 143 children were followed-up; 6 of these suffered from deafness or epileptic fits and their data were not comparable. In the end 137 adolescents (74 males, 63 females) remained in the study, i.e., 38.7% of the original sample. It was, however, possible to obtain information on whom 272 adolescents lived with at follow-up. In 60% they did not live with both natural parents.

Comparing the children that were followed up with those that were lost, regarding background variables and conditions at the index examination, two differences appeared: the children belonging to the former group were more often legitimate, had spent a significantly longer time in residential nurseries and were slightly more retarded in the developmental subtests of language and sociability.

The data of the second examination were collected with the help of

- two structured interviews with the adolescent, one at home and one at school;
- a structured interview with the natural, adoptive, or foster parents (usually the mother) or with the head of the institute the subject lived in;
- a structured interview with the subject's school teacher;
- the records of welfare offices, hospitals, school psychologists and psychiatrists;
- two ad hoc rating scales regarding the adolescent's personality, intelligence, and working attitude, one filled out by his teacher, the other by the interviewer;
- an abbreviated version of the Hamburg-Wechsler Intelligence Test for adults (Dahl 1968);
- the Children's Anxiety Test (CAT, Thurner and Tewes 1969);
- a sociogram with the subjects' class.

Two experienced psychologists, who were also fluent in Italian, conducted the interviewing and testing.

The ratings of the contents of interviews and records had two phases. In the course of the follow-up the two interviewers and two child psychiatrists rated the data for the presence of psychiatric symptoms during the last 6 months and entered the results in the slightly modified Symptom Scale by Thalmann (1971). The interrater reliability was 0.8. In 1982 two psychologists that had not been members of this group, rated the interviews again for the presence of psychosocial risk factors in the environment the adolescent had lived in after leaving the nursery. Almost all risk factors consisted of objective data.

Shortcomings of this Method.

- Only two fifths of the original sample could be included in the follow-up;
- a control group examined with the same method by blind interviewers and rated by blind raters was missing;
- reliability and validity of the interviewer's and teacher's rating scale were not controlled; neither was the validity of the Symptom Scale;
- the thoroughness of the investigation was higher for subjects with records;
- as the interviewers were also raters, a halo effect may have interfered.

Notwithstanding these shortcomings and in spite of the years that have passed since the data were collected, the author of the present paper considered it important to complete, reanalyze, and publish the findings. To our knowledge, except for the unpublished study of Hodges and Tizard (1987), this is the only real time longitudinal investigation on deprived children up to adolescence with data on both their intellectual and emotional development.

Results

Descriptive Findings of the Subset with Follow-up at Index-Examination. Table 1 presents data on the development lag of these infants at index examination in comparison with a normal mean of 100 ± 15 DQ

Table 1. Data on 137 early deprived children at index examination

Mean age	12.6 ± 8 months
Average time spent in nursery	12 ± 7 months
Rate of illegitimate children	52%
Mean birth weight	3261 ± 529 g
Developmental Quotient (DQ)	
DQ	83 ± 10 points
Subtest language	67 ± 23 points
sociability	82 ± 12 points
hand-eye coordination	86 ± 15 points
postural coordination	89 ± 13 points
Rate of children with behavioral disorders	
Fearfullness at testing	18%
Stereotypical behavior	31%
Habitual dislike of food	28%
Habitual vomiting	33%
Habitual dysphoria	12%
General passivity	20%
Passivity in social contact	11%
Features of nurseries	
Average time of daily individual contact with a nurse	58 min range 36–57 min
Average number of children cared for by one nurse	4.8 range 3–8
Contact with mother	
Average time breast fed after birth	36 days
Attitude of mother towards child (evaluated by nurses at index examination)	caring 89% ambivalent or indifferent 11%
Average number of visits by mother per month	6

Table 2. Psychosocial risk factors present in the environment of 137 early deprived children after leaving the nursery

Prevalence of broken home	49%*
Parental divorce	20%
Parental death	9%
Living with stepfather	20%
Living with half-siblings	19%
Parental chronic illness	24%
Child under social welfare	41%
Sexual abuse mentioned in records	6
Other abuse	7%
Psychosocial disorder in natural parents	18%
Psychosocial disorder in stepfather	4%
Psychosocial disorder in either parents or stepfather	20%
Serious long-lasting parental discord	18%
Serious conflict between child and parents or parent substitutes	21%
Severe corporal punishment	32%
Familial atmosphere rated by interviewer as tense or hostile	16%

* Not living with both natural parents at follow-up

points. (Z tests: $P = 0.001$). The language performance in particular was poor, and deviant behavior was frequent. The other data describe contacts with nurses and the mother or parents.

At Follow-up. Of the 137 adolescents, 74 were boys. When interviewed 90% of the subjects were 14 years old. Half of the subjects were Swiss, the others mainly Italian; 99 subjects lived with at least one natural parent, 11 with foster or adoptive parents, and 27 at an institution. In 89% of these households the head was, according to occupation and income, a member of the lower or lower-middle class.

After nursery, 49% of the children continued to live in another institution or foster home before joining the family they were living with at follow-up. Another 29% changed institutions and/or families between 4 and 12 times. These changes were mostly due to adversities such as separation or divorce of parents, problems in foster families, behavioral disorders of the child.

Table 2 presents the subjects that were burdened by psychosocial risk factors. These were defined as conditions, which in epidemiological studies on child psychiatry, were connected with emotional and behavioral disorders (Rutter et al. 1982; Rutter and Madge 1976).

Univariate Analysis

Physical Development. Stature and weight of the Swiss adolescents among this group did not differ from those of a comparable Swiss group that had always lived with their families.

Intellectual Development. The mean IQ of the 137 adolescents at follow-up was 105 ± 13 points (range 69 to 143 points, normal distribution). DQ at age 12.6 months correlated with IQ at age 14 with $r = +0.23$ ($P \leq 0.05$). The subtests of the developmental test did not correlate with IQ. In particular the subtest "language" did not correlate with the latter.

Educational Status. In the Canton Zurich, 3 years of high school at five possible levels are compulsory. When the subjects' distribution over these levels was compared with that of lower class Swiss children and of Italian immigrant children, there was no significant difference.

Difficulties at School. Under this heading we subsumed repetition of a class, starting school at a later than normal age, examination by a school psychol-

ogist or psychiatrist, or attending a special class. The rate of adolescents that had been affected during their school years by at least one of these measures did not differ from the rate found in 1976 among 11 year olds living in a middle-sized town near Zurich (Schmid et al. 1983).

Integration in Class. At follow-up 111 adolescents were still at school. A sociogram was done in the classes of 105 subjects of this group (the others went attended institutions where it was thought that early deprived children would be in the majority). Each subject was compared with two randomly selected classmates for feeling and receiving sympathy and antipathy. There were 38 comparisons for each child. The boys, girls, the Swiss, and the immigrants did not differ from the controls.

Psychopathology. The longitudinal investigation was not extended to a control group. For comparison we used two studies on Swiss adolescents.

I. *The frequency of symptoms* entered into Thalmann's Symptom Scale was compared with that found among 130 children of the same age participating in the prospective Growth Study of the Children's Hospital University of Zurich (unpublished). In this study the children and their parents were interviewed in 1971 by a lay-person who used a questionnaire very similar to that given to our subjects. Symptoms present during the last 6 months were entered directly into Thalmann's Symptom list. The parents of these children, who had participated over 14 years in the Growth Study were exclusively Swiss and middle class. The difference in methodology and in background were both in favor of finding fewer than symptoms among our early deprived adolescents.

II. Caseness, i.e., the rate of adolescents in need of treatment, was compared to that found among a representative sample of 14-year-old school children living in the neighboring Canton Zug (Stoll et al. 1977 unpublished).

Their parents were sent a mailed questionnaire in the mid-seventies and the symptoms indicated by them were counted. Children of special schools and immigrants were excluded. Besides eliciting point-prevalence this method is far less thorough than the one used in our follow-up study.

Table 3 presents those 9 of 25 symptoms where a significant difference in prevalence in comparison with the *Growth Study* appeared. No difference was found in the prevalence of eating disorders, psychosomatic disorders, tics, nail biting, high or low sociability, extreme carefulness or carelessness, and legasthenia. In particular the antisocial syndrome (lying, stealing, truancy) was not more frequent in the deprived group.

Table 3. Significant differences in the prevalence of symptoms between 137 early deprived adolescents and 130 adolescents of the Growth Study

	Subjects		Growth Study			
	n	%	*n*	%	χ^2	*P*
Sleeping disorder	20	14	8	6	5.07	*
Allergies	8	6	17	13	4.12	*
Psychomotor activity						
– low (117 controls)	13	9	2	2	6.87	**
– lively (117 controls)	2	1	3	3	N.S.	
Language disorder	10	7	1	1	5.22	*
Attitude to authority						
– extremely submissive	25	18	7	5	10.46	***
– extremely defiant	1	1	0	0	N.S.	
Aggressivity						
– low	40	30	0	0	45.96	***
– high	4	3	8	6	N.S.	
Dysphoria	50	37	33	25	4.34	*
Extreme sensibility	67	49	10	8	103.1	***
Fearfullness	33	24	24	18	3.89	*
Antisocial syndrome						
– stealing	4	3	3	2	N.S.	
– lying	7	5	9	7	N.S.	
– truancy	4	3	1	1	N.S.	

* $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$

A comparison with the *Zug sample* for symptoms is even more questionable because of differences in methodology. Our subjects appeared more often as withdrawn and oversensitive. In accordance with the first comparison group no difference appeared for eating disorders, psychosomatic disorders, nail biting, legasthenia, and the antisocial syndrome.

With all due caution each comparison leads to the conclusion that the early deprived adolescents suffered more often than controls from a depressive syndrome characterized by high sensitivity, dysphoria, inhibition, anxiety, language disorder, and insomnia.

The following reflections concerning *the rate of cases* are tentative. Among the school children of control group II 10% had at least five symptoms according to the questionnaire and were considered cases. The same cut-off defined 60% of the early deprived adolescents as cases. Reducing the number of symptoms of the latter group by one-third because of differences in background, method, and period of prevalence, a cut-off of five to six symptoms led to 20%–25% of cases. Thus among the adolescents of the index group there may be twice to three times as

Table 4. Variables at index and follow-up examination and psychiatric disorder

+ presence related to an increase symptoms − presence related to a decrease in symptoms r, EV: $P \leq 0.05$	Rating scale				Thalmann's scale		CAT
	Emotional disorder		Behavioral disorder		Emotional disorder	Behavioral disorder	
	teach.	interv.	teach.	interv.			
Gender			+			+	
− male		+			+		+
− female							
Social class							−
Legitimacy of birth							
Mother's attitude							
− to child at first examination						+	
− to birth at follow-up		+		+			
Contact with mother							
− age at separation							
− duration of breast feeding		−					+
− visits in nursery/month				−	−		
Condition of child at first examination							
− general behavior (active, passive)							
− sociability			−				
− apathy	−			−			
− fearfulness		+				−	
− stereotypical behavior	−						+
− feeding disorders			+				
− allergies							+
− DQ, or results in subtests	+		+			+	
Features of nurseries							
− number of children/nurse						−	
− time per child/day		−				+	
− average DQ of all children a nursery							
Conditions after leaving nursery							
− changes up to age 7				+			
− age at definitely entering family				+	+		
− number of institutions					+		
− number of foster families							
Psychosocial risk factors							
− family atmosphere tense							
− parental discord					+	+	+
− parental death							
− parental divorce					+	+	+
− stepparents, half-siblings	+		+	+	+	+	+
− psychosocial disorder in parents		+	−		+		+
− psychosocial disorder in stepfather					+	+	+
− chronic illness in parents					+		+
− sexual abuse				+	+		
− other abuse		+			+	+	
− child under welfare						+	
− severe conflicts with parents			+	+	+	+	+
− living in institution at follow-up						+	
− living with both natural parents at follow-up			+				
− severe corporal punishment			+	+	+		+

many subjects in need of treatment than among comparable Swiss school children.

The Relationship of Psychopathology with Environment in Early and Later Childhood: As the teacher's and the interviewer's ratings of the same child had on an item level low interrater reliability ($r = 0.5$) the items of the teacher's and the interviewer's rating scale were submitted to factor analysis. This led to a two-factors solution with sufficient inner consistency (Cronbach's alpha). One factor was described as emotional disorder (passivity, dependency, depression, inhibition), the other as behavior disorder (laziness, restlessness, superficiality, lability, lack of concentration).

The Thalmann Scale was not validated. By factor analysis two factors of quite similar content (and sufficient Cronbach's alpha) were found and given the same names: emotional disorder (sleep disorder, depression, tics, fearfullness, headaches, high sensitivity) and behavior disorder (high or very low aggressitivty, low or extreme carefulness, defiance or extreme submission, overactivity or apathy, intrusiveness or withdrawal, legasthenia, language disorder).

The factor emotional disorder of the rating scale correlated ($r = 0.3$) with the total number of symptoms in the Thalmann Scale. The factors behavior disorder in either scale correlated with each other with $r = 0.28$. The factor emotional disorder correlated with the CAT score with $r = 0.35$. These corre-

Table 5. Results of a multivariate regression analysis

Dependent variables: Factors/Symptoms: Test		Explained variance	Association with	Partial correlation v	Partial correlation *P*	Zero order correlation $P \leq 0.05$
Thalmann's scale: emotional disorder		24%	– severe conflict with parents	0.23	**	
			– female gender	0.18	*	
			– presence of stepfather, stepsibs			0.26
			– presence of half-siblings			0.25
			– psychosocial disorder in stepfather			0.33
Behavioral disorder		17%	– male gender	0.19	*	
			– high value of DQ			0.29
						0.38
			– presence of stepfather, stepsibs			0.29
			– abuse			
			– severe conflict with parents			0.27
Rating scale: emotional disorder	teacher	12%	– high value of DQ	0.28	**	
	interviewer		– no significant data			
Rating scale: behavioral disorder	teacher	22%	– presence of stepfather, stepsibs	0.22	*	
			– severe conflict with parents	0.26	*	
	interviewer	23%	– mother's ambivalent attitude to birth (retrospectively)	0.33	**	
			– number of visits/months	0.30	**	
			– active behavior at index examination	0.28	**	
			– corporal punishment	0.17	*	
CAT		18%	– stereotypical behavior at first examination	0.26	**	
			– average duration breast feeding	0.22	**	
			– presence of stepfather, stepsibs	0.17	*	
General symptom score (resulting from adding present symptoms)		20%	– severe conflict with parents	0.35	***	
			– divorce			0.30
			– psychosocial disorder in stepfather			0.29
			– older when definitely entering family			0.32
			– presence of stepfather, stepsibs			0.25

lations were considered as indicators of a certain content validity of the scales.

Table 4 connects the supervariables found by factor analysis and the CAT score with data from earlier and later childhood. The t values and correlations were generally low: the explained variance was in the range from 7% to 17%, the correlations in the range from $r = 0.15$ to 0.45.

The following independent variables were significantly associated with symptoms in at least two different tests:

- Gender: being male was consistently connected with behavior disorder, being female with emotional disorder and anxiety. The difference is well-known from the literature on gender psychology and a further indicator of the validity of these scales.
- Mother's Visits to Nursery: a higher number was connected with a reduction in symptoms.
- DQ: a higher score was connected with an increase in symptoms.
- Age at Definitely Entering a Family: higher age was connected with an increase in symptoms.
- Psychosocial Risk Factors Present After Leaving the Nursery: three variables were consistently associated with an increase in symptoms on all three tests: presence of stepparents, severe conflict with parents, severe physical punishment. Seven variables were associated with an increase in symptoms on two different tests: parental discord, parental divorce, psychosocial disorder in parents, psychosocial disorder in step father, sexual abuse, other abuse, chronic illness in parents.

While the independent variables of early childhood were weakly associated with emotional and behavior disorder, the bulk of the relationship appeared in the context of psychosocial risk factors present after leaving the nursery.

Multivariate Analysis

With the help of multiple regression analysis we tried to elicit the weight of the independent variables present in early and later childhood on emotional and behavioral disorder measured by the rating scale and the Thalmann Scale, and on anxiety measured by the CAT. The analysis was made more difficult by the fact that the risk factors present after the children had left the nursery, are interrelated.

Divorce of parents or illegitimacy, living with a stepfather, presence of half-siblings were situations that tended to appear in one and the same biography. The groups where only one of these variables appeared were small, and partial correlations tended to become insignificant. The variables of early childhood, on the other hand, were more independent of each other. Mother's attitude to the birth of the child was independent of the number of nurses per child, and the average duration of breast feeding was independent of the average DQ of all children at one nursery. So the probability of finding significant partial correlations for these variables was higher.

Table 5 presents the evidence that even under these conditions the risk factors of later childhood have considerable weight. Gender of the child explained some variance in two scales, variables of early childhood in three scales, psychosocial risk fac-

Table 6. Comparison of the quartile of adolescents with the highest with the quartile of adolescents with the lowest symptom scores

Variables of index examination		
Reason for entering nursery	N.S.	
Attitude of mother toward child	N.S.	
General behavior (active, passive)	N.S.	
Stereotypical behavior	N.S.	
Duration of breast feeding	N.S.	
Average of all DQs of children present at nursery	N.S.	
Average duration of daily contact with nurse	N.S.	
Average number of children cared for by one nurse	N.S.	
Age of separation from mother	N.S.	
Number of visits in nursery/month	N.S.	
DQ	N.S.	
Variables of the follow-up examination		
Personality		
IQ	N.S.	
More often diagnosis of minimal brain dysfunction	$\chi^2 = 5.59$	$P = 0.05$
More often reported as physically ill	$t = 2.08$	$P = 0.04$
Higher score on CAT	$t = 2.30$	$P = 0.03$
More popular in the sociogram	$t = 3.90$	$P = 0.00$
Biography		
More changes of institutions	$t = 3.51$	$P = 0.002$
More changes of environment	$t = 2.57$	$P = 0.01$
Later age at definite entry in a family	$t = 1.78$	$P = 0.08$
Psychosocial risk factors		
Parental divorce	$\chi^2 = 4.52$	$P = 0.03$
Presence of stepfather	$\chi^2 = 4.94$	$P = 0.03$
Presence of half-siblings	$\chi^2 = 3.90$	$P = 0.05$
Severe parent-child conflict	$\chi^2 = 11.60$	$P = 0.0007$
Psychosocial disorder of stepfather	$\chi^2 = 3.90$	$P = 0.05$
Abuse of child	$\chi^2 = 3.51$	$P = 0.06$
Severe corporal punishment	$\chi^2 = 2.75$	$P = 0.10$

tors of later childhood in five scales. The latter were overrepresented among the significant zero order correlations. In a sample with larger subgroup the role of these factors might have appeared more clearly. The explained variance, on the other hand, was small: 76% to 88% of differences in scores on emotional and behavioral disorder and in anxiety remain unexplained.

Supplementary Analysis

Background and Early Development of Low and High Scoring Adolescents. Table 6 compares 34 children that on the Thalmann Scale had a score of 1 to 3 symptoms with 37 children that had a score of 8 to 19 symptoms. They represented the lowest and the highest quartile of the cumulative symptom distribution. Associations of symptoms at 14 years of age with conditions in early childhood were missing. Symptoms were connected instead with risk factors present *after* the children had left the nurseries.

Discussion

Refutation of Hypotheses on the Consequences of Early Maternal Deprivation

The First Hypothesis (early deprivation permanently damages physical development, IQ, and school achievement) is refuted. Though the situation at the nursery the adolescents lived in at index examination was marked by all criteria for deprivation, at follow-up their stature, weight, IQ, and school achievment corresponded to data of the general population.

The Second Hypothesis (early deprivation is connected with later unpopularity, antisocial symptoms, and emotional and behavioral disorders) is partially refuted. The adolescents enjoyed the same degree of popularity as their classmates and – in comparison with two groups of Swiss children – were not different in the prevalence of the antisocial syndrome. The second hypothesis is not refuted in that the adolescents at follow-up presented symptoms of anxiety, inhibition, and depression.

The Third Hypothesis (that early deprivation persists as an influence explaining a large part of the variance in psychiatric symptoms of later life) is refuted. Risk factors of later childhood (such as parental discord, divorce, living with a stepfamily) were far more strongly connected with symptoms of emotional and behavioral disorder than variables of development in and conditions of early childhood. The weight of these risk factors appeared very clearly in the comparison of adolescents that were psychologically healthy with the most severely impaired group.

The Literature on the Subject

The methodological short-comings of this follow-up study have been explained. We stress again that the connections between childhood variables and disorder at adolescence were low. Better tests might give different results. The refutation of the hypotheses on early deprivation is, however, largely supported by the literature. That DQ during the first 18 months of life is irrelevant for later IQ is confirmed by the large variations between aboriginal cultures (e.g., Uganda, vs Guatemala) in the environment infants live in and in the latter's DQ. In several large studies the correlations of DQ at 18 months of age with later IQ amounts to $r = 0.2$, which corresponds exactly to the value found in the present study. There is no evidence that early stimulation or lack of stimulation have a lasting effect on intelligence. The acquisition of language does not depend on the presence of a mother: deprived and nondeprived small children learn the code of their surroundings, which may be elaborate at an institution and undifferentiated in a family (Ernst and Luckner 1985).

That later delinquency and criminal behavior are not the consequence of maternal deprivation, is an insight which is slowly gaining ground. The evidence is overwhelming: repeated separations in infancy and early childhood are not in themselves risk factors for a later antisocial syndrome but rather indicators for familial conditions that put a child at risk: economic stress parental criminality, divorce, separation, parental discord. West (1982) found in his follow-up of London schoolboys that early separations were connected with later crime only when caused by parental discord.

A large amount of research has discussed the association of childhood loss of parents with later depression and suicide. It leads to the conclusion that divorce and parental discord are risk factors for depression. If death of parents is not followed by a disruption of the home and worsening conditions for a child, it is surprisingly well supported (Ernst and Luckner 1985; Perris et al. 1986; O'Neil et al. 1986).

In 1981 Rutter discussed the possibility that after early deprivation impaired capacity for attachment appears, in that early deprived and later adopted children at 8 years of age were unpopular with their school friends (Tizard and Hodges 1978). On the other hand, a representative study of such children showed that in adolescence they were rated as entirely inconspicuous by their teachers (Bohman and Sigvardsson 1980).

The former study was done on children adopted after staying for at least 2.5 and at most 4.7 years in residential nurseries. The second study was done on

children adopted at a much earlier age after staying for an average of 5 months in residential nurseries. In a further unpublished follow-up of the former group (augmented by children adopted after living in an institution for up to 9 or 10 years) Hodges and Tizard (1987 unpublished) found that these adolescents still had more difficulties at school with their peers than matched controls. This difference regarding the results of Bohman et al. (1980) and ours may arise from difference in length of stay at a friendly but impersonal institution (in some cases until late to middle childhood), or from the well-known differences between the early and later adopted concerning biological background (Ernst and Luckner 1985), or from interaction of both factors. The sociogram done in the classes of the subjects of this follow-up supports the Bohman et al. (1980) study.

Difficulties in attachment arising from early deprivation were operationalized in several studies as marital problems and difficulties with one's children. A survey of these studies showed that the problems mentioned were not associated with maternal deprivation per se but with unfavorable conditions in the family of origin (Birtchnell and Kennard 1984; Ernst and Luckner 1985).

Need for Reassessment of Early Childhood Development

Early childhood may be the period of human life that is least susceptible to lasting psychological consequences of various environmental conditions (Kagan 1980; Mellbin et al. 1985; Darbellay 1985). Human infants are born into cultures where amount of stimulation, contact with mother, and the number of caregivers vary widely. It is difficult to conceive how the human species could have survived if psychological normality were possible only under a very restricted number of early childhood environments.

There is no evidence that basic trust as a guarantee for a later psychological health is developed in early childhood. There is no evidence either that maternal deprivation in childhood leaves lasting traces. The follow-up of early deprived adolescents and a large number of corresponding studies demonstrates, on the other hand, the moulding force of long-lasting, unstable and anxiety provoking familial relationships (Ernst and Luckner 1985). Very often an atypical situation in early childhood (as living in Switzerland during the fifties in a residential nursery) indicates that later childhood will also be spent under unfavorable conditions.

There is no evidence that being nursed in early childhood by *one* person is a necessary condition for the later capability of attachment. This is no excuse for letting infants and small children go from pillar to post or develop apathy and stereotypical behavior because of understimulation. Children evidently suffer in such an environment, even if they are not permanently damaged. There is no reason, on the other hand, to sustain the argument, that being permanently cared for by the same three or four persons impairs later psychological health.

Mother have for a long time been psychiatry's scapegoats. Their power for protection and destruction has been widely overrated. Today, there is a growing awareness of the extraordinary transformation of women's life course; since the beginning of this century their life expectation has doubled and the number of children per woman has sharply decreased. At the age of 40 the average woman is without serious caregiving obligations and has another 40 years of life before her. Occupations change rapidly and taking up a job after an interruption of several years may become increasingly difficult. A more realistic attitude towards the influences on psychological development during early and later childhood could help those women that want to be mothers and continue a career.

A more realistic attitude could also help caregivers that are responsible for formerly deprived children. There have been several studies showing the strong influence of the temperamental outfit and durable situations on psychopathological status but a negligible influence of what happened during the first years of life (Chess and Thomas 1984; Knorring et al. 1982; Bohman and Sigvardsson 1980). All other conditions being equal there is no reason for particular pessimism in regard of a child because it has spent its first year in a nursery. This knowledge may help to avoid self-fulfilling prophecies.

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