

# Child Health and Maltreatment

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SHERROD, KATHRYN B.; O'CONNOR, SUSAN; VIETZE, PETER M.; and ALTEMEIER, WILLIAM A., III. *Child Health and Maltreatment*. CHILD DEVELOPMENT, 1984, 55, 1174-1183. Children who are abused have been said to have more illnesses than children who are not maltreated. The relationship between abuse and illness has been hypothesized to function in 2 ways: (1) that abuse precedes the illnesses and children from abusive homes become ill because of the damaging environment they endure, or, conversely, (2) that the illnesses precede the abuse, with the fussy behavior of ill children eliciting abuse. This study was intended to clarify the temporal relationship between illnesses and maltreatment. Health data were collected on a sample of 80 children: 11 from abusive families, 31 with nonorganic failure to thrive (NOFT), 14 from neglectful families, and 24 from control families. Hospital records (both inpatient and outpatient) for these children from the time of birth until they were 3 years old were searched by data collectors unaware of the child's classification. Children from abusive families or with NOFT appeared to be ill more often than control children, particularly during the first few months after birth, before abuse had been reported, but not necessarily before NOFT had been discovered. Health records of neglected children were not significantly different from those of controls. In addition to the abused children studied, there were hospital records on 6 children whose siblings were abused. These 6 children also had more illnesses than control children, again particularly during the first few months after birth. Having ill children is described as a source of stress that may trigger abuse in an already stressed family.

Although some authors have suggested that child abuse results primarily from deviant parents (Bennie & Sclare, 1969; Spinetta & Rigler, 1972; Steele & Pollack, 1968), more frequently the interactive role among the environment, the abuser, and the abused child has been stressed (Gelles, 1973; Green, 1968; Helfer, 1973; Sandgrun, Gaines, & Green, 1974). A few reports have emphasized the child's contribution to the abuse, or at least ways that abused children are discriminably different from nonabused children (Friedrich & Boriskin, 1976). One character-

istic of abused children that has been mentioned is the children's health (Lynch, 1975). Abused children have been noted to become ill more often (Friedrich & Boriskin, 1976; Lynch, 1975); ill children have been hypothesized to elicit abuse because of their irritability (Elmer, Gregg, Wright, Reinhart, McHenry, Girdony, Geisel, & Wittenberg, 1977; Helfer, 1973); and children with histories of medical complications may have more serious sequelae to abuse than those without (Elmer & Gregg, 1967).

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Although abuse and ill health may be related, there is little information from which to determine the temporal relationship between the two. The literature that focuses on abuse has tended to include information summed over time, such as number of illnesses during the child's first year of life (Lynch, 1975), rather than reporting how these illnesses were distributed throughout the period examined. Information regarding the temporal distribution of illnesses would be of theoretical as well as practical interest. From the theoretical perspective, if the abuse preceded the ill health, this might contribute further evidence to the growing literature linking the experience of stress with an increased susceptibility to illness. In that literature, stress of various kinds has been related to the onset of illnesses (for reviews, see Holmes & Masuda, 1973; Johnson & Sarason, 1979) and to susceptibility to accidents (Gustafsson, 1977; Plionis, 1977). On the other hand, from the practical side, if the ill health precedes the abuse, there is the possibility of intervening with families that have ill children to provide support before there is any documented abuse.

The purpose of this study was to clarify issues regarding the temporal relationship between illness and maltreatment; that is, does abuse appear to precede illness, or does illness appear to precede abuse? The study was designed to collect information on this relationship from a subsample of children who were followed in a prospective, longitudinal study (Altemeier, Vietze, Sherrod, Sandler, Falsey, & O'Connor, 1979). Hospital clinic records were compared among children who (a) were abused, (b) were neglected, (c) had nonorganic failure to thrive, or (d) had no documented maltreatment. The ages between birth and 3 years appear to be the time when children are the most vulnerable to child abuse, according to some sources (e.g., Lauer, TenBroeck, & Grossman, 1975), and include the ages at which most lethal abuse occurs (National Center on Child Abuse and Neglect, 1981); these were the years for which data were collected.

## Method

**Subjects.**—The subjects in this study were 80 children who were divided into four groups: 11 who were abused, 14 who were neglected, 31 who had nonorganic failure to thrive (NOFT), and 24 who served as control subjects.

The subjects and their mothers were drawn from families in a large prospective,

longitudinal study ( $N = 1,400$ ) of the prenatal predictors of child maltreatment (Altemeier et al., 1979). The mothers were patients at a prenatal clinic in a metropolitan hospital that serves a primarily lower-income population. From the original sample of 1,400 women, two subsamples were created. Based on responses to a prenatal interview, 275 women were placed into one subsample considered at high risk for child abuse. (The prenatal interview was based on a review of child abuse literature and included such areas as interpersonal support systems among family and friends, and presence of abuse in the women's childhood.) The second subsample, 274 women, was randomly selected from the 1,400 women (and had an overlap of 50 subjects with the high-risk sample).

These two subsamples were followed fairly intensively for 3 years. The maltreated subjects in the present study were all of those found to be maltreated from either subsample who had ever attended the hospital clinic. The control subjects in this study were chosen from those subjects in the random subsample who had no record of abuse, neglect, or NOFT. The 24 control subjects were selected by a computer program that picked subjects using a random number generator.

Abuse or neglect in the subject population was determined by checking the juvenile court records from the local county or by checking the state registry for abuse or neglect during the course of the study. State criteria for abuse include evidence of physical abuse (e.g., bruises, broken bones) or sexual abuse (e.g., ano-genital damage or disease). State criteria for neglect include evidence of medical neglect (e.g., failure to seek medical attention for a disease) and caretaking neglect (e.g., leaving small children unattended). All abuse or neglect cases for whom data were included in this study were substantiated by state-employed social workers.

Five of the abuse cases were reported to the state by the hospital involved in this study, and one of the neglect cases was. The five abuse cases were reported at a mean of 6 months after the baby's birth. The only significant difference between the five subjects reported by the hospital and the six reported by someone else was that those reported by the hospital had more well baby visits than those reported by others,  $t(10) = 2.60$ ,  $p < .05$ . This occurred because hospital personnel generally require the parents to return more frequently for checkup visits after a child has experienced suspected or obvious abuse. Failure of the parents to comply re-

TABLE 1  
DEMOGRAPHIC DATA

	Abuse (N = 11)	NOFT (N = 31)	Neglect (N = 14)	Control (N = 24)
Income:				
Employment status:				
Employed.....	7	13	6	13
Unemployed.....	4	16	8	8
Federal subsidies:				
No subsidies.....	8	21	6	16
ADC, Medicaid, or welfare.....	3	8	8	5
Mother:				
Race:				
White.....	9	21	9	14
Black.....	2	10	5	10
Marital status:				
Married.....	8	18	8	17
Single/divorced/separated.....	3	13	6	7
Age.....	22.1	20.5	20.1	22.2
Education (years).....	9.4*	10.3	9.2**	11.2
Baby:				
Birthweight (grams).....	3118	3031	2983	3054
Gestational age (weeks).....	39.6	38.8	38.4	38.8
Apgar.....	7.5	7.7	7.5	7.0
Delivery complications:				
None.....	8	22	10	12
Some.....	3	7	4	11
Nursery complications:				
None.....	7	18	7	12
Mild.....	2	6	3	7
High-risk.....	2	5	2	4

NOTE.—For some measures, the number of subjects listed is fewer than in the methods section because of missing data.

\* $p < .05$ .

\*\* $p < .01$ .

sults in hospital action to have the Department of Human Services consider removing the child from the home.

Nonorganic failure to thrive (NOFT) was determined by successive criteria. First, all babies whose weight gain ever fell below two-thirds of the Harvard fiftieth percentile growth curve were selected (Vaughn, McKay, & Nelson, 1975); there were 61 such cases. Second, a determination of whether those children had failure to thrive was made; children who appeared to be small of stature but otherwise healthy were deleted at this point from the sample. Third, the 46 children who were left were divided into 10 organic failure-to-thrive cases and 36 NOFT cases. Reliability in the determination of whether a child had organic or nonorganic failure to thrive was 87%. Of the 36 NOFT cases, clinic data were available on 31; they comprised the NOFT sample in this study. Twelve of the NOFT cases were admitted to the hospital; weight gain in the absence of medical treatment, but with provision for demand

feeding, was considered diagnostic for those children. Other cases were selected as NOFT cases after observation of an irregular growth curve, unusual weight, height, and head circumference correlations, and questionable feeding history given by the parents. Several of the organic cases were defined by (a) anatomic anomalies, such as congenital heart defects or pyloric stenosis, (b) physiological problems, such as milk intolerance or polycythemia, or (c) illness, such as pneumonia or meningitis. Children who appeared to have components of both organic and nonorganic failure to thrive were considered organic cases.

After the records were searched and the four groups were constituted, analyses of several demographic factors were made. The means of the demographic measures are shown in Table 1. Employment status, use of federal or state subsidies, race, marital status, delivery complications, and nursery complications were analyzed by  $\chi^2$  and the other measures by  $t$  tests. The groups did not

differ on employment status, reliance on federal or state subsidies, mothers' race, marital status, or age; nor on babies' birthweight, gestational age, Apgar score, delivery complications, or nursery complications. There were, however, some differences on mothers' educational level. The abuse and neglect groups had fewer years of education than did the control group,  $t(35) = 2.35, p < .05$ , and  $t(30), p < .01$ , respectively. Although these were statistically significant differences, all of the groups had an average educational level below completion of high school.

**Procedure.**—Data collectors who were unaware of subjects' group assignments searched the children's hospital records for 36 months after birth for the diagnoses or problems listed below. The hospital records contained information from all visits to the hospital, including clinic visits, emergency room visits, and inpatient admissions.

All visits were coded into the following categories: (1) well baby visit—a visit for immunizations or routine examinations at which no sign of illness or other problem was discovered; (2) illness—a bacterial or viral infection, such as upper respiratory disease or mumps; (3) family dysfunction—a vaguely defined category that could include comments, such as mother has trouble relating to child, poor social situation (mother says she forgets to give medicine due to distress over family quarrels), or poverty (e.g., mother says she cannot afford medicine for child, even though she appears to have about the same financial resources as other families who manage to get prescribed medicine); (4) accident—physical trauma apparently not intentionally inflicted, that is, a true accident; (5) questionable accident—physical trauma that may not have been a true accident, but that was not clear enough to be substantiated; (6) hospitalization—any time the child was admitted as an inpatient; and (7) anatomical anomalies—varying from mild and/or transient, such as umbilical hernias, to major, such as congenital heart defects.

These seven categories were not mutually exclusive, except that category 1 could only co-occur with category 3, and categories 4 and 5 were mutually exclusive. Interrater reliability averaged at or above  $r = .90$  by exact agreement for every category.

After the information was collected, it was grouped into 12 intervals for the 3-year period each child was followed. The first interval covered a 4½-month time span—for example, 0–4½ months. The other 11 inter-

vals covered a 3-month time span—that is, 4.6–7.5, 7.6–10.5, 10.6–13.5, . . . 34.6–37.5 months. For ease of presentation, these time intervals will be referred to by their approximate means—that is, 3, 6, 9, . . . 36 months.

## Results

As a precaution, an analysis was made of whether the clinic physicians might have given more careful examinations to the children in the maltreatment groups than to the control children and thus discovered more problems in the maltreatment groups. It is the policy at the city hospital where the data were collected to record unusual information about each child on the file face sheet, which is inside the cover of the child's file. This information is to enable physicians to have important information about the child without reading the entire file. Instances of maltreatment or suspicion of maltreatment would be recorded there. Therefore, the possibility existed that the attending physicians were alerted to pay special attention to the children who had suffered maltreatment and that it was the special attention that revealed more problems in the records of maltreated children. To assess that possibility, the children's files were searched to determine how many of the maltreated children's files had remarks concerning their maltreatment on their face sheets. There were face sheet comments for six children in the abused group, 19 in the NOFT group, and only two in the neglect group. No analyses were done on the neglect group since so few children had a comment on the face sheet. The data for the abused group with face sheet comments were compared with those for the abused group without comments, using analyses of variance—that is, 2 (face sheet vs. no face sheet)  $\times$  12 (time periods). None of the comparisons was significant. Comparison of the NOFT group with face sheet comments and the NOFT group without face sheet comments also yielded no significant differences. Thus, there was no indication that the attending physicians were biasing their diagnoses as a result of comments on the children's face sheets.

Data from the seven categories were analyzed by analyses of variance. (Group means for four of the categories are presented in Table 2 in 3-month intervals from birth to 3 years. Data from the other three categories, which were omitted from the table because of low frequencies, particularly during years 2 and 3, are available from the authors upon request.) First a MANOVA was computed on the seven variables, with one

TABLE 2  
MEAN FREQUENCIES OF CLINIC DIAGNOSES, 3 TO 36 MONTHS

	3	6	9	12	15	18	21	24	27	30	33	36
Well baby visit:												
Abuse (N = 11).....	1.09	.36	.00	.18	.09	.27	.18	.09	.00	.00	.00	.00
NOFT (N = 31).....	1.64	.48	.39	.32	.19	.06	.06	.16	.06	.16	.13	.03
Neglect (N = 14).....	1.57	.43	.07	.14	.14	.14	.14	.00	.07	.07	.00	.00
Control (N = 24).....	1.54	.46	.04	.08	.08	.17	.00	.00	.00	.04	.00	.00
Infectious illnesses:												
Abuse.....	2.00	1.55	.91	.82	.45	.82	.27	.45	.27	.18	.09	.18
NOFT.....	2.54	1.16	1.06	1.13	.55	.52	.26	.35	.48	.26	.32	.03
Neglect.....	.71	.29	.21	.00	.36	.14	.14	.14	.07	.14	.29	.07
Control.....	.62	.54	.46	.46	.25	.25	.12	.29	.12	.08	.00	.00
Accidents:												
Abuse.....	.11	.00	.00	.09	.00	.36	.27	.45	.00	.00	.09	.09
NOFT.....	.03	.00	.00	.06	.06	.00	.03	.06	.06	.13	.06	.03
Neglect.....	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00
Control.....	.00	.04	.00	.00	.04	.00	.00	.08	.00	.04	.00	.00
Anatomical anomalies:												
Abuse.....	1.09	.27	.27	.45	.09	.09	.27	.00	.09	.18	.00	.09
NOFT.....	1.42	.35	.26	.13	.06	.13	.06	.06	.13	.10	.06	.13
Neglect.....	.29	.21	.14	.00	.00	.14	.00	.00	.00	.00	.00	.00
Control.....	.75	.37	.25	.08	.17	.12	.08	.04	.08	.12	.00	.00

between and one within factor—that is, 4 (three maltreatment groups plus control) × 12 (time periods). Group was significant at  $F(21,201) = 2.50, p < .001$ , as determined by Wilk's likelihood ratio. On the principal components analysis, the largest root accounted for 77% of the variance (Roy's largest root [ $S = 3, M = 1.5, N = 34$ ] = .63,  $p < .001$ ). Time periods was also significant,  $F(77,4981) = 7.71, p < .001$ , as determined by Wilk's likelihood ratio. On the principal components analysis for period, the largest root accounted for 89% of the variance (Roy's largest root [ $S = 7, M = 1.5, N = 414$ ] = .78,  $p < .001$ ). The interaction of group × period was also significant at  $F(231,5708) = 1.30, p < .001$ , as determined by Wilk's likelihood ratio. On the principal components analysis for group × period, the largest root accounted for only 43% of the variance (Roy's largest root = N.S.). Since the MANOVA was significant on the main effects of group and period, it was appropriate to compute ANOVAs on each measure. These ANOVAs all had the same design, which included one between factor and one within factor—that is, 4 (three maltreatment groups plus control) × 12 (time intervals during the 3 years of data collection). Post hoc comparisons were Fisher's LSD. In addition to the ANOVAs,  $\chi^2$  analyses were computed on all the data to determine whether the significant mean differences found were supported by differences in the frequencies of children diagnosed according to the seven categories.

The  $\chi^2$  results derived from (a) comparing each group with control for each year of data, and (b) comparing all four groups with data collapsed over the 3-year period, are presented in Table 3. All comparisons were made between people who ever were recorded for that measure and those who never were.

Both ANOVA and  $\chi^2$  results indicated no significant differences on well baby visits. (Most children in all groups were brought in one to three times.)

There was an overall significant difference on the ANOVA on illnesses,  $F(3,76) = 4.23, p < .01$ , with post hoc tests indicating that both the abuse and the NOFT groups were significantly different from the control group. On this analysis, as on every other analysis, the neglect group was not significantly different from the control group. Inspection of the data in Table 2 indicates that the abuse and NOFT groups were most different from the control group during the first few months after birth. However, because the first data interval is actually 4.5 months long, it could be that the children in the abuse and NOFT groups only became ill more often after a few months of poor treatment at home. To examine this point, data from only the first 6 weeks after birth were analyzed. The NOFT group still had significantly more illnesses than the control group,  $F(1,53) = 4.99, p < .05$ . The abuse group, although not significantly different from control, did have a mean rate of illness twice as high as controls.

TABLE 3  
 $\chi^2(1)$  VALUES AND SIGNIFICANCE LEVELS FOR CLINIC  
 MEASURES, WITH EACH GROUP COMPARED WITH CONTROL

	Year 1	Year 2	Year 1-3
Illnesses:			
Abuse .....	12.01***	N.S.	7.30***
NOFT .....	5.38**	N.S.	5.79**
Neglect .....	N.S.	N.S.	N.S.
Family dysfunction:			
Abuse .....	9.29***	N.S.	9.29***
NOFT .....	5.32**	N.S.	5.32**
Neglect .....	N.S.	N.S.	N.S.
Accidents:			
Abuse .....	N.S.	4.95*	4.38*
NOFT .....	N.S.	N.S.	N.S.
Neglect .....	N.S.	N.S.	N.S.
Questionable accidents:			
Abuse .....	4.1*	N.S.	6.59**
NOFT .....	N.S.	N.S.	N.S.
Neglect .....	N.S.	N.S.	N.S.
Hospitalizations:			
Abuse .....	4.38*	N.S.	9.36**
NOFT .....	N.S.	N.S.	6.10**
Neglect .....	N.S.	N.S.	N.S.
Anatomical anomalies:			
Abuse .....	N.S.	N.S.	N.S.
NOFT .....	4.23*	N.S.	5.44**
Neglect .....	N.S.	N.S.	N.S.

NOTE.—There were no significant differences for year 3 data, nor on the measure "well baby visits"; these are not included in the table.

\*  $p < .05$ .

\*\*  $p < .025$ .

\*\*\*  $p < .01$ .

The  $\chi^2$  results were similar. There was a significant  $\chi^2$  for abuse and NOFT groups over the 3-year period and during year 1, when children who were ever ill were compared with those who never were. None of the groups was significantly different from control during the second or third years. Thus, the timing of the comparisons is crucial. Abuse and NOFT were also significantly different from controls during the 0-3-month period, respectively,  $\chi^2(2) = 11.2$ ,  $p < .005$ , and  $\chi^2(2) = 12.70$ ,  $p < .005$ . Even at the 0-6-week period, NOFT was significantly different from control,  $\chi^2(1) = 3.80$ ,  $p < .05$ . The abuse group showed a tendency to be different from controls at 6 weeks,  $\chi^2(1) = 3.31$ ,  $p < .07$ .

Because the pattern of illnesses was of primary interest and because educational level was significantly different from control for two of the maltreatment groups, it was necessary to determine whether the educational differences were related to the illness differences. Correlations were run between educational level and illness rate for (a) the

11 abuse subjects in this study, (b) all 80 subjects in this study, and (c) all 498 subjects on whom clinic data were available. None were close to being significant.

There was an overall group difference on the family dysfunction category,  $F(3,76) = 3.83$ ,  $p < .025$ . The abuse group was significantly different from the control group on post hoc tests, but the other groups were not. On the  $\chi^2$  there was a difference across groups when the children were arranged into those whose mothers ever received a comment on family dysfunction and those who did not. Both the abuse group and the NOFT group were significantly different from control during the first year and over all 3 years.

Accidents showed an overall significant effect,  $F(3,76) = 5.59$ ,  $p < .005$ , as did questionable accidents,  $F(3,76) = 3.69$ ,  $p < .025$ . According to post hoc tests, the abuse group was significantly different from control on "accidents" but not on questionable accidents. No other group differed from control. On the  $\chi^2$  the abuse group showed a signif-

icant difference when children were grouped into those who never had an accident or a questionable accident versus those who had had accidents. The abused group had more questionable accidents in year 1, more accidents in year 2, and more of both types of accidents over all 3 years. No other group differed from control.

There was an overall significant group effect on "hospitalizations" on an ANOVA, but no single group differed from any other on post hoc tests. On the  $\chi^2$ , on the other hand, not only did abuse and NOFT show a significant difference across all 3 years when the children were arranged into those who were ever hospitalized and those who never were, but also abuse was significantly different from control during year 1.

There were no group differences on anatomical anomalies on an ANOVA. The NOFT group, however, had more anatomical anomalies during the first year and across all years than the control group.

## Discussion

These data indicate that the abused and NOFT children's frequencies of illness are most dissimilar from the control children's during the first 6 months of life and become more similar during the next several months.

Although it is impossible to know when maltreatment actually began for these children, the mean age of documented non-organic failure to thrive for children in this study was 3 months, and the mean age of documented abuse was 13 months. Although NOFT may be documented fairly early and intervention measures initiated fairly early, abuse is usually documented later, allowing the problems to continue and be magnified. Thus, the potential for using early differences in rate of illness as part of a pattern of data for identifying potential abuse victims warrants attention.

In addition to having more illnesses, the abused and the NOFT children had more notations of "family dysfunction" in their records than did the control children. Most of these notations occurred early in the child's life—that is, 3–9 months—and only occurred at a negligible rate over the next 2 years. Although this is an interesting measure and differentiates among groups, it requires examination in future research to clarify exactly what it is measuring.

Although the abused and NOFT children's records look fairly similar on the mea-

sures of illnesses and family dysfunction, they differed on other measures. Only the abused children had more accidents and more questionable accidents than the control children did; NOFT and neglected children did not. It might have been expected that neglected children would have more accidents because of their lack of supervision. That does not appear to be the case. Nor does it appear that neglectful parents simply did not bring their children in when they had accidents. Neglected children were brought to the hospital after sustaining accidents at about the same rate as control children; they did not have fewer documented accidents.

The timing of the different types of physical trauma can be seen in Table 2. Questionable accidents, which appeared primarily in abused children's records, occurred most frequently during the first year of life, when the children would least logically have contributed to their own accidents, then declined in frequency. Coincident with that decline, "true" accidents increased during the second year of life. While true accidents do occur, they are remarkably frequent in the abused group.

Although our data provide supportive evidence for other studies that have noted the increased rate of accidents in abused children, such data can be viewed as being of limited use. By the time the accident rate for a given child has been noticed, the child is old enough to have sustained abuse.

Despite reports that abusive mothers bring their babies into hospital clinics or emergency rooms, saying their babies are sick or have some other problem, when they appear to be well to attending physicians (Kempe, 1978), the data from this study do not demonstrate any such general tendency. None of the maltreated groups had a significantly higher frequency of well baby diagnoses than did the control group (except for those five children reported by the hospital as abuse cases who had to report more often).

Also, despite reports that children who are different in some way are more often abused than are "normal" children (e.g., Glaser & Bentovim, 1979; Hunter, Kilstrom, Krayhill, & Loda, 1978; Kempe, 1978), our data on anatomical anomalies do not support that idea. This may have occurred because our anatomical anomalies category included both minor and serious problems. However, it is interesting that there is not even a trend for the abused children to have more anatomical anomalies than the control group.

The relationship between anomalies and NOFT in this study is surprising because any child with serious anomalies was considered to have organic failure to thrive and was not included in the NOFT group. Children with such serious anomalies were, however, included in any other group. Thus, NOFT children should have had the fewest anomalies. That they did not indicates that this relationship warrants further investigation.

Overall, these data suggest that there are noticeable differences between the clinic records of abused or NOFT children and control children, but that there are not really any noticeable differences between the clinic records of neglected children and control children. This might be viewed as support for the conclusion that characteristics of the parent and/or child may help to predict abuse or be correlated with abuse, while the same characteristics are not as clearly related to neglect (Giovannoni & Becerra, 1979; Pelton, 1981). Neglect, according to Giovannoni and Becerra, is best predicted by the family's poverty level. Their hypothesis is supported to some extent in the present study by the greater tendency of the neglecting families to rely on federal or state subsidies to supplement or comprise the family income than did the other maltreatment or control families. In the neglect group, a majority of the families (57%) relied on subsidies. In other groups, only 19%–27% relied on subsidies.

Although there were clearly observed differences between the abused or NOFT children and the control children during the first few months of life, it is not clear how to interpret those differences. It might be that ill children in potentially abusive families elicit abuse because of their fussiness and need for extra attention. As Lynch (1975) suggested, it might be anticipated that the ill children in families with the potential for maltreatment will become maltreated, while their healthier siblings escape less scathed. On the other hand, it might be the case that only some ill children in families with the potential for maltreatment actually are maltreated.

In the data bank from which our subjects were selected, there were six children who were siblings of abused children. Their medical records were already available, having been searched for the seven measures described in this study. If these siblings were healthy, that would substantiate Lynch's (1975) observations. If not, it would imply that something in addition to ill health targets particular children for abuse.

The six siblings of abused children were compared with the 24 control children included in this study on frequency of illness at 6 weeks and 3 months, using *t* tests. The results showed that these siblings had had more illnesses than control children at both ages,  $t(29) = 3.16, p < .005$ , and  $t(29) = 3.73, p < .002$ . Over the entire first year of life, siblings of abused children had more illnesses than control children as measured by a two-factor ANOVA—that is, 2 (siblings vs. controls)  $\times$  4 (3, 6, 9, 12 months)— $F(1,21) = 4.78, p < .05$ . The decline in siblings' illnesses over the year in comparison with the more stable low rate of illnesses seen in control children led to a significant group  $\times$  age interaction,  $F(3,84) = 5.04, p < .005$ . When data were considered over the entire 3-year period in a two-factor ANOVA, the siblings of abused children were no longer ill significantly more often than control children. Thus, the timing of the illnesses in the siblings of abused children was similar to the timing of illnesses in the abused children themselves; they had more illnesses within the first few months after birth than they did later on.

It appears then that a child's high frequency of illnesses, in and of itself, does not target a child for abuse, since some children were both ill and members of abusive families, but were not themselves abused. It may be that having ill children does increase the family's stress, which increases the potential for abuse (Justice & Justice, 1976); the recipient of abuse, however, is not necessarily the ill child, but perhaps a sibling who is perceived as more difficult. (In a similar fashion, having children very closely spaced, with the extreme being twins, has been shown to increase families' stress and to be related to abuse [Groothuis, Altemeier, Robarge, O'Connor, Sandler, Vietze, & Lustig, 1982]. Again, the victim of abuse may be a sibling of the twins as often as one or both of the twins.)

While these data have answered some empirical questions (e.g., Are maltreated children more ill than nonmaltreated children, and, if so, does the illness primarily precede or follow the maltreatment?), they have raised many more questions. Why does the children's illness rate decline instead of remaining high, given their questionable rearing conditions? What does target a child for abuse? Is there any contribution of the mother's health pattern? Does the relationship among illness, abuse, and NOFT in this lower socioeconomic sample hold true for a middle- or upper-class sample? Why are the ne-



glected children so similar to the control children on health measures?

### Summary and Conclusions

The high level of illness in abused children appears early and declines over time, a pattern seemingly incompatible with the abuse causing the ill health. The NOFT sample also has a high rate of illness shortly after birth, which subsequently declines. This relationship between NOFT and illness requires more attention as it was not predicted and has not been studied previously. It is somewhat surprising that the pattern of NOFT seems more similar to that of the abused sample than the neglect sample (although there have been previous reports suggesting that NOFT can be a precursor to abuse [Koel, 1969], or that NOFT, as well as abuse, represents a failure in the mother/child relationship [Gelles, 1973; Haynes, Cutter, Gray, O'Keefe, & Kempe, 1983]). Given the co-occurrence of NOFT and the higher incidence of illness (i.e., both appear within the first year and then decrease in frequency), illness cannot be as useful as a predictor of NOFT as it can for abuse. Data need to be collected over the first week or two of life to be predictive, rather than descriptive, of NOFT.

As for neglect, this study provides little information that could be used to predict or even describe neglect in contrast to control families. Other types of data would appear to be more helpful in understanding neglect as a form of maltreatment.

In conclusion, child maltreatment is complex and transactional (Kadushin & Martin, 1981; Werner & Smith, 1982). It will not suffice to examine whether premature or handicapped children are abused more often or whether illegitimate children or even ill children are abused more often than other children (Elmer et al., 1977; Friedrich & Boriskin, 1976; Lynch, 1975; Smith, Hanson, & Noble, 1975). What must be emphasized is the constellation of factors concerning the family as a whole that lead to abuse. This constellation is known to include the parents' rearing experiences, recent stressful events, family mobility, and feelings of isolation, among others. Children's illnesses are part of that constellation.

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