

## **Psychosocial Concomitants of Children's Feeding Disorders<sup>1</sup>**

**Karen S. Budd,<sup>2</sup> Tami E. McGraw, Robin Farbisz, Tria B. Murphy, Darlene Hawkins, Nancy Heilman, and Mary Werle**

*Illinois Institute of Technology*

**Neil J. Hochstadt**

*LaRabida Children's Hospital, University of Chicago*

*Received August 31, 1990; accepted November 19, 1990*

---

*Compared behavior problems, child developmental skills, home environment, and parent emotional distress for 50 families of children aged 11–70 months with differing etiologies of feeding disorders (FD). Results showed that psychosocial functioning differed across FD classifications. Children with nonorganic characteristics to FD had more behavior problems compared to those with only organic FD. Children with primarily or only organic FD displayed lower developmental skills and their parents had higher emotional distress than children with primarily nonorganic FD. High parent distress was associated with older children who had poor feeding skills, less positive disciplinary practices, and higher social status. The findings imply that clinical services to families often are warranted and that service needs vary depending on the nature of FD. Mixed organic and nonorganic FD occurred in the majority of children, which supports the need for more detailed classification than an organic–nonorganic dichotomy used in prior research.*

---

**KEY WORDS:** feeding disorders; failure to thrive; psychosocial adjustment; children; eating problems.

<sup>1</sup>We sincerely thank the staff of LaRabida Children's Hospital for their assistance in referring families and providing consultation for this project. This research was funded in part by a Pletsch Venture award from IIT to the senior author.

<sup>2</sup>All correspondence should be sent to Karen S. Budd, Department of Psychology, Illinois Institute of Technology, IIT Center, Chicago, Illinois 60616.

Young children with chronic feeding disorders present a serious concern to health professionals. The term *feeding disorder* encompasses a variety of conditions characterized by insufficient or atypical food intake such as swallowing difficulties, poor appetite, selective food refusal, pica (ingestion of nonfood items), and ruminative vomiting during or after feeding (Ginsberg, 1988; Palmer, Thompson, & Linscheid, 1975; Riordan, Iwata, Finney, Wohl, & Stanley, 1984; Woolston, 1983). Overeating also can be considered a form of feeding disorder; however, it is not included as a focus in this study because overeating differs in etiology and health implications from problems of undereating or other aberrant intake (Coates & Thoresen, 1978). Chronic feeding disorders persist over a period of several months or years, as opposed to transitory feeding resistance and frequent changes in food preferences common in normal development of young children (Christophersen & Hall, 1978). Inadequate food intake can produce excessive weight loss or failure to gain weight, malnutrition, lethargy, delayed development, and, in severe cases, death (Bithoney & Dubowitz, 1985; Howard & Winter, 1984). Chronic undernutrition places children at risk for poor social, cognitive, and academic functioning (Galle, 1984; Pollitt & Thomson, 1977).

Research on feeding-related disorders has been hampered by persistent diagnostic confusion (Woolston, 1983, 1985). Most descriptive studies have concentrated on children with the label "failure to thrive" (FTT), which indicates that a child's weight, height, or growth rate is below the third or fifth percentile (Bithoney & Dubowitz, 1985). Children with poor appetites, restricted food preferences, rumination, or other feeding disorders often meet the criteria for FTT. Studies have attempted to differentiate between FTT with an organic basis (e.g., gastrointestinal disease or cerebral palsy) and FTT with a nonorganic basis (e.g., deprived home conditions or inconsistent parenting) (Hannaway, 1970; Pollitt, Eichler, & Chan, 1975). Differential diagnosis has been viewed as useful in designing appropriate interventions for children and their families. However, studies (e.g., Homer & Ludwig, 1981) indicate that many children evaluated for FTT have both organic and nonorganic features and thus cannot be categorized using a binary classification system. In addition, some children with chronic feeding problems are above the clinical cutoffs for FTT, often as a result of nutritional supplements or diets containing high-calorie "junk" foods, and thus they cannot be diagnosed in a system focusing exclusively on FTT. More sophisticated classification schemes for FTT and other child eating disorders have been proposed (Chatoor, Dickson, Schaefer, & Egan, 1985; Linscheid, 1983; Woolston, 1985), but they have not yet been evaluated with respect to clinical or research feasibility.

The prevalence of mixed etiological features in feeding disorders indicates that an interaction between biological and environmental variables operates in many cases of FTT and feeding disorders. Over time, eating irregularities affect a child's physical functioning regardless of the origin of the disorder (Bithoney &

Dubowitz, 1985). Similarly, because feeding of young children occurs within a dyadic context, eating difficulties often disrupt normal parent–child interactions such as cuddling, visual attention, and vocalizations during mealtimes (Galler, Ricciuti, Crawford, & Kucharski, 1984; Spietz, 1978). Parenting patterns and stressful home conditions are assumed to play a role in the etiology of some feeding disorders (Chatoor & Egan, 1983; Gagan, Cupoli, & Watkins, 1984). The term feeding disorder itself emerged as a common label for eating problems in young children because of the presumed dyadic nature of the disorder (Woolston, 1983).

The present study examined the psychosocial concomitants of feeding disorders. The potential link between feeding-related disorders and psychosocial functioning is exemplified by Casey, Bradley, and Wortham's (1984) prospective study of families of nonorganic FTT infants and a demographically matched control group of healthy infants. They found that, compared to controls, mothers of FTT children were significantly less responsive and accepting of the children, and their home environments were more disorganized, suggesting that poor parenting patterns may have contributed to the development of FTT. However, other research has not supported a parental inadequacy hypothesis. In a review of the literature, Woolston (1985) remarked on the dearth of robust findings differentiating nonorganic FTT infants and their families from other infants and their families matched for demographic factors. In contrast to uncontrolled case studies describing severely dysfunctional caretakers of children with nonorganic FTT, he reported that recent controlled studies have found fewer and more isolated differences. Drotar (1989) observed similar inconsistent findings in studies comparing behavioral characteristics of children with organic and nonorganic FTT.

The present investigation differs from previous research on psychosocial functioning associated with feeding-related disorders in three ways. First, rather than focusing exclusively on FTT, the current study examined children who displayed evidence of chronic feeding problems, including both FTT cases and children whose growth parameters were above the clinical cutoffs for FTT. Second, in order to expand upon a binary classification system, we categorized feeding disorders into four descriptive classes: only organic, primarily organic, primarily nonorganic, and only nonorganic. Third, to enhance measurement integrity, psychosocial assessments occurred in families' homes using observers who were blind to children's feeding disorder classification, rather than the common practice of collecting data during hospital visits.

The primary purpose of this research was to determine whether differences existed between feeding disorder groups on standardized measures of child behavior problems, child developmental skills, home environment, and parent emotional distress. We also assessed demographic variables (e.g., maternal and child age, race, household composition, and social status) that might account for group differences. As a secondary purpose, we examined the proportion of

children with mixed feeding disorders compared to those with only organic or nonorganic symptoms, in light of FTT research suggesting the inadequacy of a dichotomous categorization system. Third, we examined which of the variables together predicted higher levels of parent emotional distress across all feeding disorder groups, in order to develop recommendations for clinical intervention.

## METHOD

### *Subjects and Recruitment Procedures*

The participants were 50 child outpatients and their primary caretakers. Children were referred by health professionals (pediatricians, speech pathologists, and clinical dieticians) at a university-based chronic care hospital serving predominantly urban, minority families in Chicago. Eligible children were under 6 years of age, exhibited a feeding disorder involving insufficient or atypical intake of at least 1 month's duration, and resided either with a parent, legal guardian, or in a stable foster placement (i.e., a minimum of 3 months duration). Families were excluded if they lived in high-rise housing projects due to safety concerns with home data collection. All referred children over a 20-month period from 1987 to 1989 were considered for the study.

Upon referral, children's hospital charts were screened to determine whether they met study criteria. Eligible families received an introductory letter from the referring professional and a follow-up telephone call from a research assistant (a doctoral student in clinical psychology) to describe the project and invite participation. Of 75 eligible subjects, 9 could not be reached despite numerous attempts, 16 declined, and 50 agreed to participate. Families received \$10 in return for participation.

The 50 study children ranged from 11 to 70 months (mean age of 37 months) and included 62% males and 84% black children. Feeding problems began at birth in 50% of the cases, with a mean onset age of 7 months. Significant cognitive or overall developmental delay was present in 74% of the children. Sixty-six percent of the sample had a diagnosis of FTT. The ten other most frequently cited medical conditions (which could occur singly or in various combinations for individual children) were cerebral palsy, prematurity, and seizures (each present in 38% of the children); gastroesophageal reflux (26%); iron deficiency anemia (22%); recurrent infections (16%); anoxic event in first 6 months, asthma, and bronchopulmonary dysplasia (14% each); and fetal alcohol syndrome (12%).

All but one of the primary caretakers was female, and their average age was 31 (range = 17 to 64 years). Seventy-four percent of primary caretakers were natural parents, 24% were foster parents, and 2% were relatives. Caretakers

averaged 12 years of education (range of 3 to 20 years). A mean of two other children (range = 0 to 6) besides the target child lived in the home. The Hollingshead index (described under Assessment Procedures and Measures) was used to estimate social status. The mean Hollingshead rating of 28 (range = 11 to 61) across families falls in the second lowest status group, corresponding to semiskilled workers (Hollingshead, 1975).

### *Feeding Group Classification*

We assigned children to feeding groups based on a detailed review of their hospital chart using the Feeding Categorization Checklist (FCC). The FCC, developed for this study, contains 15 etiological and/or descriptive items related to feeding disorders. Items were derived using the feeding disorders literature and in consultation with professionals experienced in treating feeding disorders. Eight FCC items relating to suspected etiological factors in feeding disorders were used to determine feeding group classification. These items, displayed in Table I, include four items indicative of organic disorders and four items indicative of nonorganic disorders. The remaining items were not used in classifying children, because they relate to feeding characteristics (such as expels or packs food, insufficient total intake) that could occur with either organic or nonorganic disorders. After recording each item identified in a child's medical history, the

**Table I.** Summary of Etiologically Related Items on Feeding Categorization Checklist

| Classification of item | Suspected etiology   | Examples  |
|------------------------|--|---|
| Organic                | Acute illness (less than 3 months) affecting eating                              | Food allergies, malabsorption syndrome, burns                                   |
| Organic                | Chronic illness affecting eating   | Gastroesophageal reflux, heart or lung disease, short bowel syndrome            |
| Organic                | Oral-motor dysfunction due to structural, neurological, or congenital conditions | Cleft palate, cerebral palsy, Pierre Robin syndrome                             |
| Organic                | Pica associated with metabolic disorder  | Iron deficiency   |
| Nonorganic             | Psychosocial failure to thrive (FTT)   | Growth retardation with environmental deprivation before age 8 months           |
| Nonorganic             | Disruptive mealtime patterns apparently maintained by parent-child interactions  | Cries, protests, throws food, leaves feeding area                               |
| Nonorganic             | Selective eating preferences with no organic explanation                         | Eats only particular food groups, colors, or textures; refuses to try new foods |
| Nonorganic             | Psychiatric or emotional condition affecting eating                              | Severe child depression or choking trauma                                       |

research assistant selected one etiologically related item judged to be the predominant current factor based on the entire chart review. For the current sample, two of the eight etiologically related FCC items (pica associated with metabolic disorder and psychiatric or emotional condition affecting eating) were not identified as present for any children.

Children were assigned to one of four feeding disorder groups based on the FCC. The Only Organic group included children with one or more organic items and no nonorganic items. The Primarily Organic group included children who had items in both organic and nonorganic areas, and a predominant designation in the organic area. The Primarily Nonorganic group likewise included children with items in both organic and nonorganic areas, but the predominant designation was in the nonorganic area. The Only Nonorganic group had one or more nonorganic items and no items in the organic area.

Reliability of group assignment was assessed by having a second research assistant independently review charts and complete the FCC on 25% of the children. Each rater's scores were then used to classify children into groups. Raters agreed on group assignment in 85% of cases.

#### *Assessment Procedures and Measures*

A research assistant made a preliminary visit to families' homes to obtain informed consent and drop off written questionnaires. A second home visit lasting 90–120 minutes occurred approximately 1 week later, during which we interviewed the parent, observed parent–child interactions, and assisted the parent if necessary in completing questionnaires. Research assistants were trained in accurate home data collection by studying standard assessment protocols, practicing recording of interview and observation items, and accompanying an experienced researcher on home visits. Assistants were required to achieve a mean agreement level of 85% or above with experienced researchers on independently recorded measures during two home visits before they began collecting data. Measures administered to families were as follows:

*Eyberg Child Behavior Inventory.* The ECBI (Eyberg & Ross, 1978) assesses parents' perceptions of children's behavior problems. Parents indicate the intensity of 36 typical behaviors (e.g., dawdles in getting dressed, refuses to do chores when asked) on a 7-point scale from *never* (0) to *always* (6) and indicate whether or not each behavior is a problem for their child. ECBI scores have been shown to discriminate children with conduct problems and to correlate significantly with parent–child interactions and child temperament (Webster-Stratton & Eyberg, 1982). The ECBI is designed for children aged 24 months and above, so it was used only with 30 of the 50 study children.

*Pyramid Scales.* The Pyramid Scales (Cone, 1984) are a competency-based

list of progressive steps in 20 areas of basic adaptive skills. Information is obtained by interviewing parents on the child's usual performance on individual steps. We used three Pyramid subscales that assess levels of performance and independence in eating, fine motor skills, and receptive language. A sample item on the eating subscale assesses four levels of the child's ability to chew foods by including the following steps: chews at least some foods; chews foods if they have been mashed up first; chews foods if they have been chopped, mashed, or cut into small pieces; and chews all foods unassisted. An adaptive score for each subscale is computed on the percentage of total steps passed. The Pyramid Scales are well suited to assessing young children or those with developmental delays, because items begin at a minimal level and proceed in small increments. It is a criterion-referenced instrument on which higher scores are indicative of greater skill.

*Home Observation for the Measurement of the Environment Inventory.* The HOME Inventory (Caldwell & Bradley, 1984) assesses the quality of parental stimulation, affective responding, disciplinary practices, and organization of the environment via parent interview and informal observation. HOME scores have shown significant positive correlations with children's subsequent educational achievement (Bradley & Caldwell, 1984). Casey et al. (1984) found that mothers of nonorganic FTT infants obtained significantly lower HOME scores than a matched control group, which suggests that the HOME inventory may be useful in identifying parenting variables associated with FTT and other feeding disorders. One form of the HOME is used with children from birth to 36 months, and another is used with children from 36 to 72 months, so raw scores were converted to *z* scores in order to analyze findings across all children.

*Symptom Checklist 90-Revised.* The SCL-90-R (Derogatis, 1983) is a 90-item self-report inventory designed to reflect psychological symptom patterns. Respondents rate whether or not they have recently experienced each of the symptoms (hunger, dizziness, mood shifts, etc.) on a 5-point scale of distress from *not at all* (0) to *extremely* (4). The Global Severity Index is a summary measure of SCL-90-R responses, which has been shown to be a sensitive indicator of current emotional adjustment and distress across a variety of clinical and nonclinical adult populations (cf. Cyr, McKenna-Foley, & Peacock, 1985; Derogatis, 1983). The SCL-90-R yields nine symptom subscales in addition to the Global Severity Index; however, only the summary measure was used in this study because of its strong psychometric properties and because we did not predict any specific psychopathology patterns for caretakers across feeding disorder groups.

*Parent Interview.* Caretakers provided information on demographic factors (e.g., child and parents' age, race, onset of feeding disorder, parents' education level, occupation, marital status, and household composition). From interview data, a measure of social status was calculated using Hollingshead's (1975) four-

factor index, which provides a weighted summary score reflecting the educational level and occupational status of adult caretakers within a household. Possible scores on the Hollingshead index range from 8 to 66 and are categorized into five status groups ranging from menial service workers to major business and professional workers.

In addition to data obtained at the home visit, a research assistant reviewed the medical chart to complete the Feeding Categorization Checklist and to obtain information regarding the child's medical history and evidence of significant developmental delay (mental retardation, autism, etc.).

## RESULTS

The prevalence of children by feeding disorder categories was as follows: Only Organic, 26%; Primarily Organic, 40%; Primarily Nonorganic, 24%; and Only Nonorganic, 10%. The most striking finding is that both organic and nonorganic characteristics were identified for almost two thirds of the children. Approximately one fourth displayed only organic features and one tenth had only nonorganic features. The high level of mixed categorization may be influenced in part by the use of the entire medical record for classifying children's feeding disorders in this study. Because of the small number of children in the Only Nonorganic group, these subjects were combined with the Primarily Nonorganic group for analyses. For simplicity, the combined group is referred to as the Nonorganic group.

Demographic and psychosocial variables were examined across feeding disorder groups using one-way analyses of variance for interval data and chi-square analyses for categorical data. When a significant main effect was obtained for an analysis of variance, Tukey's honestly significant different (HSD) procedure (Hays, 1981) was used as a follow-up test. Pairwise chi-square analyses were used as follow-up tests for significant chi-square analyses across the three groups. An alpha level of .05 was used for all tests, because we were interested in identifying any differences that may exist across feeding disorder groups in this initial study.

Table II displays demographic and psychosocial variables that differed significantly across feeding groups. With regard to demographic characteristics of children and families, the only significant effect was the proportion of children evidencing developmental delay,  $\chi^2(2, N = 50) = 6.56, p < .05$ . Pairwise chi-square analyses indicated a greater prevalence of developmental delay in the Only Organic group as compared to the Nonorganic group. The Nonorganic group included more foster parents (41%) compared to the other two groups (15% each), but this difference did not reach statistical significance,  $\chi^2(2, N = 47) = 4.24, p > .05$ .



**Table II.** Significant ( $p < .05$ ) Differences Across Feeding Groups on Demographic and Psychosocial Variables

| Variable                           | Only Organic | Primarily Organic | Nonorganic |
|------------------------------------|--------------|-------------------|------------|
| Developmentally delayed            |              |                   |            |
| <i>n</i>                           | 13           | 20                | 17         |
| %                                  | 92           | 80                | 53         |
| ECBI (for children 24 months & up) |              |                   |            |
| <i>n</i>                           | 9            | 11                | 10         |
| Intensity score                    | 57           | 93                | 102        |
| No. of problems                    | 1            | 6                 | 7          |
| Pyramid Scales                     |              |                   |            |
| <i>n</i>                           | 13           | 20                | 17         |
| Eating                             | 37           | 35                | 68         |
| Fine motor                         | 31           | 35                | 58         |
| Receptive language                 | 29           | 31                | 62         |
| SCL 90-R                           |              |                   |            |
| <i>n</i>                           | 13           | 20                | 17         |
| Global Severity Index              | .77          | .66               | .30        |

With regard to psychosocial variables, Table II indicates group differences on three of the four variables. Significant main effects were obtained for the intensity of behavior problems,  $F(2, 27) = 5.78, p < .01$ , and for the total number of behavior problems,  $F(2, 27) = 4.93, p < .05$ . Post-hoc comparisons using Tukey's HSD procedure indicated that ECBI intensity scores and number of problems were significantly higher for the Primarily Organic group and Nonorganic groups as compared to the Only Organic group. Mean ECBI scores for all groups were well below clinical norms for children with conduct problems (Eyberg & Ross, 1978; Robinson, Eyberg, & Ross, 1980), which suggests that children with chronic feeding problems usually are not perceived by parents as having widespread behavioral difficulties. Examination of parents' responses on the ECBI indicates that children with organic problems often were not capable of behaviors included in items (i.e., they were not ambulatory or had no functional language). Thus, the group differences on this measure appear to reflect the fact that children in the Only Organic group have limited behavioral repertoires as a result of their medical problems.

Developmental performance levels, as indicated by the percentage of steps passed on the Pyramid Scales, differed across groups in all three skill areas: eating,  $F(2, 47) = 11.15, p < .001$ , fine motor,  $F(2, 47) = 10.08, p < .001$ , and receptive language,  $F(2, 47) = 11.05, p < .001$ . Follow-up tests indicated that developmental performance in the three areas was significantly higher for children in the Nonorganic group as compared to the other two groups. These findings suggest that organic components of children's feeding disorders are associated with global skills deficits rather than only feeding skills delays. The

finding that children in the Primarily Organic group exhibited higher behavior problem levels but similar skills deficits as compared to the Only Organic group supports the validity of more detailed classification than a dichotomous organic-nonorganic system for children's feeding disorders.

A significant main effect was obtained for parents' emotional distress as measured by the Global Severity Index of the SCL-90-R,  $F(2, 38) = 5.13, p < .05$ . Post-hoc comparisons showed distress levels to be significantly higher in the Only Organic and Primarily Organic groups as compared to the Nonorganic group. Nonorganic group parents scored near the mean (.26) for nonpatient females (Derogatis, 1983), whereas mean scores for the other two groups of parents were greater than 1 standard deviation above the normative mean. This finding is contrary to clinical hypotheses that nonorganic feeding-related disorders are linked with stressful home environments and parent psychopathology. However, the Nonorganic group included 7 children who had been removed from their natural parents, and their data reflected current placements with relatives or foster parents. Additionally, it included children with behaviorally based feeding disorders (e.g., selective food refusal), children whose feeding disorders were attributed to deprived home environments, and children with some minor organic components to their feeding disorders. Thus, it is not possible to draw conclusions about the reasons for group differences on this measure.

Scores on the HOME Inventory did not differ across groups, either for total items or two subgroups of items dealing with parents' emotional responsiveness and discipline practices. Again, the diversity of parents and children constituting the Nonorganic group may have precluded detecting differences on this measure.

A stepwise multiple regression analysis was conducted to identify demographic and psychosocial variables that together predicted parent emotional distress scores. Four commonly measured demographic variables that provide interval data were included in the analysis (parent and child age, number of other children in the household, and social status). We included all psychosocial variables measured in the study except ECBI scores, which were excluded because they were available for only 30 of the 50 children. The resulting multiple regression equation indicated that high levels of parental emotional distress on the Global Severity Index of the SCL-90-R are significantly associated with four variables: low eating skills on the Pyramid, less positive discipline practices on the HOME Inventory, older children, and higher Hollingshead scores,  $F(4, 35) = 8.39, p < .001$ . These four variables together accounted for 49% ( $R^2$ ) of the variance in parents' emotional distress scores. Sample positive disciplinary items on the HOME were that parents refrained from shouting at, spanking, or criticizing the child during the home visit. Table III shows the relative weights of variables in the regression equation. Variables that did not enter significantly in the equation are motor and language skills on the Pyramid, total scores and

**Table III.** Variables Entering in Multiple Regression Equation with Global Severity Index as Dependent Variable

| Variable                                  | <i>b</i> |
|---|----------|
| 1. Child eating skills (Pyramid Scales)   | -.56     |
| 2. Positive disciplinary practices (HOME) | -.49     |
| 3. Age of child                           | .27      |
| 4. Hollingshead index                     | .26      |

emotional responsiveness subscores on the HOME, number of other children in the household, and parents' age.

## DISCUSSION

This research identified differences in psychosocial functioning of children and parents associated with differing types of feeding disorders. Although parent ratings of child behavior problems were within normal limits for all groups, parents of children with only organic disorders reported significantly fewer behavior problems than did parents of children with some nonorganic characteristics to their feeding disorders. In cases where feeding problems were primarily or only organic in nature, children displayed lower levels of global skills performance, and their parents had higher levels of emotional distress, than in cases of mainly nonorganic feeding disorders. High parent emotional distress was associated with older children who had poor feeding skills, parents who used less positive disciplinary practices, and parents with higher educational and occupational status.

These findings imply that clinical services often are warranted to assist families of children with feeding disorders, and further that service needs vary depending on the nature of the feeding disorder. Children with organically based feeding problems usually have accompanying developmental delays that necessitate long-term care. High emotional distress scores for these parents indicate that, rather than focusing mainly on the child's functioning, clinical services also need to consider and promote parents' emotional adjustment. Family support services, respite care, and financial assistance programs are potential avenues for helping parents with the child's chronic care needs (Gallagher & Vietze, 1986).

The majority of children (64%) in this study exhibited feeding problems with both organic and nonorganic features. These results are consistent with Homer and Ludwig's (1981) findings of mixed etiology in FTT children and further support the need for a more detailed classification method than an

organic–nonorganic dichotomy. One third of the children in the current research exhibited chronic feeding disorders in the absence of a diagnosis of FTT. This finding points up the importance of developing a classification system that can be applied comprehensively across all feeding-disordered children, rather than restricting classification to children with FTT.

The results provide some unanticipated findings that raise issues for further study. The significantly lower levels of behavior problems reported for children in the Only Organic group appear to be due to their restricted behavioral repertoires (e.g., lack of functional language or ambulatory capabilities) secondary to chronic medical problems. Normative data are not available on the ECBI for handicapped children (S. Eyberg, personal communication, November 1989), and we are not aware of other instruments for assessing behavioral adjustment with this population. It may be useful to explore a revised scoring method on the ECBI for young, handicapped children by computing scores based only on items for which the child has the behavioral capacity to respond. In the absence of appropriate norms, it is of interest to note that low scores on the ECBI may signal severe behavioral limitations rather than positive behavioral adjustment in handicapped children.

Two other unanticipated findings of this study were the lower levels of emotional distress reported by parents in the Nonorganic group and the lack of differences between groups on home environment indices as measured by the HOME Inventory. In contrast to clinical hypotheses that nonorganic feeding-related disorders are linked with stressful home environments and parent psychopathology (Casey et al., 1984; Chatoor & Egan, 1983; Gagan et al., 1984), the current results imply that nonorganic feeding disorders should not automatically be viewed as resulting from parents' emotional problems or disorganized home environments. The diversity of parents (foster and natural) and child feeding problems (psychosocial FTT and/or behaviorally based feeding problems, and both primarily nonorganic and only nonorganic etiologies) within the Nonorganic group limits conclusions about the reasons for these findings. However, only one demographic variable differed significantly across feeding groups in the current sample: More children were developmentally delayed in the Only Organic group than in the Nonorganic group. This fact, together with the multiple regression findings that high parent emotional distress was predicted in part by older children with poor feeding skills, suggests that emotional distress for parents in this study related more to caring for a child with pervasive developmental handicaps that impair feeding than to other measured variables.

The four diagnostic feeding categories (Only Organic, Primarily Organic, Primarily Nonorganic, Only Nonorganic) employed in this study represent a step toward more precise classification, which was reliably accomplished from medical chart review using the Feeding Categorization Checklist. However, the current research is limited by the fact that the small number of children classified as

Only Nonorganic precluded comparison of all four groups. The current classification system, as well as other multifaceted diagnostic schemes for FTT and children's eating disorders (Chatoor et al., 1985; Linscheid, 1983; Woolston, 1985), need further evaluation to determine their usefulness in clinical practice and research. It seems likely that diagnostic systems entailing direct observation and interview procedures may have particular utility in clinical practice, in order to evaluate components of feeding problems in detail and monitor treatment progress. By contrast, the current classification system may have greater versatility in applied research, because the categories have broad generality across child feeding problems and can be assigned from medical chart review. Refinement of classification issues remains an important prerequisite to improve our understanding of feeding problems and the psychosocial factors accompanying feeding disorders.

## REFERENCES

- Bradley, R. H., & Caldwell, B. M. (1984). The relation of infants' home environments to achievement test performance in first grade: A follow-up study. *Child Development, 55*, 803-809.
- Bithoney, W. G., & Dubowitz, H. (1985). Organic concomitants of nonorganic failure to thrive: Implications for research. In D. Drotar (Ed.), *New directions in failure to thrive: Implications for research and practice* (pp. 47-68). New York: Plenum Press.
- Caldwell, B., & Bradley, R. (1984). *Home Observation for the Measurement of the Environment*. Little Rock: University of Arkansas.
- Casey, P. H., Bradley, R., & Wortham, B. (1984). Social and nonsocial home environments of infants with nonorganic failure-to-thrive. *Pediatrics, 73*, 348-353.
- Chatoor, I., Dickson, L., Schaefer, S., & Egan, J. (1985). A developmental classification of feeding disorders associated with failure to thrive: Diagnosis and treatment. In D. Drotar (Ed.), *New directions in failure to thrive: Implications for research and practice* (pp. 235-258). New York: Plenum Press.
- Chatoor, I., & Egan, J. (1983). Nonorganic failure to thrive and dwarfism due to food refusal: A separation disorder. *Journal of the American Academy of Child Psychiatry, 22*, 294-301.
- Christophersen, E. R., & Hall, C. L. (1978). Eating patterns and associated problems encountered in normal children. *Issues in Comprehensive Pediatric Nursing, 3*, 1-16.
- Coates, T. J., & Thoresen, C. E. (1978). Treating obesity in children and adolescents: A review. *American Journal of Public Health, 68*, 143-151.
- Cone, J. D. (1984). *The Pyramid Scales: Criterion-referenced measures of adaptive behavior in severely handicapped persons*. Austin, TX: Pro-Ed.
- Cyr, J. J., McKenna-Foley, J. M., & Peacock, E. (1985). Factor structure of the SCL-90-R: Is there one? *Journal of Personality Assessment, 49*, 571-577.
- Derogatis, L. R. (1983). *SCL-90-R: Administration, scoring, and clinical procedures manual—II*. Towson, MD: Clinical Psychometric Research.
- Drotar, D. (1989). Behavioral diagnosis in nonorganic failure-to-thrive: A critique and suggested approach to psychological assessment. *Journal of Developmental and Behavioral Pediatrics, 10*, 48-55.
- Eyberg, S. M., & Ross, A. W. (1978). Assessment of child behavior problems: The validation of a new inventory. *Journal of Clinical Child Psychology, 7*, 113-116.
- Gagan, R. J., Cupoli, J. M., & Watkins, A. H. (1984). The families of children who fail to thrive: Preliminary investigations of parental deprivation among organic and non-organic cases. *Child Abuse and Neglect, 8*, 93-103.

- Gallagher, J., & Vietze, P. M. (Eds.). (1986). *Families of handicapped persons: Current research, programs, and policy issues* (pp. 115-127). Baltimore, MD: Paul Brookes.
- Galler, J. R. (Ed.) (1984). *Nutrition and behavior*. New York: Plenum Press.
- Galler, J. R., Ricciuti, H. N., Crawford, M. A., & Kucharski, L. T. (1984). The role of the mother-infant interaction in nutritional disorders. In J. R. Galler (Ed.), *Nutrition and behavior* (pp. 269-304). New York: Plenum Press.
- Ginsberg, A. J. (1988). Feeding disorders in the developmentally disabled population. In D. C. Russo & J. H. Kedesdy (Eds.), *Behavioral medicine with the developmentally disabled* (pp. 21-41). New York: Plenum Press.
- Hannaway, P. J. (1970). Failure to thrive: A study of 100 infants and children. *Clinical Pediatrics*, 9, 96-99.
- Hays, W. L. (1981). *Statistics* (3rd ed.). New York: Holt, Rinehart and Winston.
- Hollingshead, A. B. (1975). *Four factor index of social status*. Unpublished manuscript, Yale University, New Haven, CT.
- Homer, C., & Ludwig, S. (1981). Categorization of etiology of failure to thrive. *American Journal of Diseases of Childhood*, 135, 848-851.
- Howard, R. B., & Winter, H. S. (1984). *Nutrition and feeding of infants and toddlers*. Boston: Little, Brown.
- Linscheid, T. R. (1983). Eating problems in children. In C. E. Walker & M. C. Roberts (Eds.), *Handbook of clinical child psychology* (pp. 616-639). New York: Wiley.
- Palmer, S., Thompson, R. J., & Linscheid, T. R. (1975). Applied behavior analysis in the treatment of childhood feeding problems. *Developmental Medicine and Child Neurology*, 17, 333-339.
- Pollitt, E., Eichler, A. W., & Chan, C. K. (1975). Psychosocial development and behavior of mothers of failure-to-thrive children. *American Journal of Orthopsychiatry*, 45, 525-537.
- Pollitt, E., & Thomson, C. (1977). Protein-calorie malnutrition and behavior: A view from psychology. In R. J. Wurtman & J. J. Wurtman (Eds.), *Nutrition and the brain* (Vol. 2). New York: Raven.
- Riordan, M. M., Iwata, B. A., Finney, J. W., Wohl, M. K., & Stanley, A. E. (1984). Behavioral assessment and treatment of chronic food refusal in handicapped children. *Journal of Applied Behavior Analysis*, 17, 327-341.
- Robinson, E. A., Eyberg, S. M., & Ross, A. W. (1980). The standardization of an inventory of child conduct problem behaviors. *Journal of Clinical Child Psychology*, 9, 22-28.
- Spietz, A. L. (1978). Why look at feeding? In *Manual for Nursing Child Assessment Feeding Scales* (pp. 5-15). University of Washington, Seattle: NCAST Publications.
- Webster-Stratton, C., & Eyberg, S. (1982). Child temperament: Relationship with child behavior problems and parent-child interactions. *Journal of Clinical Child Psychology*, 11, 123-129.
- Woolston, J. (1983). Eating disorders in infancy and early childhood. *Journal of the American Academy of Child Psychiatry*, 22, 114-121.
- Woolston, J. (1985). Diagnostic classification: The current challenge in failure to thrive syndrome research. In D. Drotar (Ed.), *New directions in failure to thrive: Implications for research and practice* (pp. 225-233). New York: Plenum Press.