

INTERACTION IN FAMILIES WITH OBESE CHILDREN

WARREN KINSTON,* PETER LOADER,† LIZA MILLER‡ and LORIAN REIN

(Received 16 February 1988; accepted in revised form 28 June 1988)

Abstract—In a controlled study using recently developed and validated methods for eliciting and describing family interactions, a characteristic dysfunctional pattern of interaction was found in families with an obese child. The pattern differed from patterns predicted by previous workers on the basis of indirect evidence or non-systematic study. The pattern was present in all the families studied, but was more marked in the sub-group recruited from a local school, than from subgroups recruited through medical sources. This sub-group had a more positive attitude to obesity and a slightly lower degree of obesity. No common or characteristic interactional pattern was found in the controls. The results were not explainable in terms of demographic criteria, family structure or composition variables, or family emotional health. The findings are discussed in relation to a model of obesity as a family syndrome and a manifestation of psychosocial identity.

INTRODUCTION

OBESEITY runs in families. Twin and adoption studies have suggested that genetic factors may play a part [1, 2]. However, Stunkard *et al.* found in their adoption study that a 'disturbed family environment' was associated with higher body mass index, with no single measure accounting for this effect [1]. Obesity is a complex and heterogeneous problem and further understanding of environmental factors demands that recognisable sub-groups be independently studied. Childhood obesity is a likely candidate, even though 20-30% do not grow up to be obese adults [3]. The case for a family system approach to the study of childhood obesity is strong because the family is the prime mediator of social influences, and the crucible for physical, psychological and social development [4-6]. Although family factors are likely to be closely linked with the development and maintenance of obesity, there has been a dearth of family-level investigations. Standing in stark contrast to this is a plethora of studies based on physiological, biochemical, psychological, sociological and epidemiological concepts and methods [7, 8].

Although families of obese children have been studied in a variety of ways, it is not known whether or not childhood obesity should be thought of as part of a family syndrome. Loader [4] reviewed the scanty literature on family system aspects and found that childhood obesity studies fell into two groups: reconstructions of family life from detailed clinical studies of individual family members or the mother-child dyad; and descriptions based on small samples and without controls. Only controlled clinical studies based on direct observation and interaction with the family seem likely to clarify whether or not obesity should be regarded as a family system condition, and, if so, the specificity of family disturbance. Our research

*Senior Research Fellow and Director of the Family Research Programme, Institute of Organization and Social Studies, Brunel University, Uxbridge, Middlesex, UB8 3PH, U.K.; (also Honorary Consultant Psychotherapist, The Hospital for Sick Children, London).

†Consultant Child Psychiatrist at Hornsey Rise Child Guidance Clinic, London U.K.

‡Presently Social Worker at York District Hospital, York, U.K.

project was set up for this purpose. It used clinical instruments and concepts developed and validated over the past decade at the Institute of Child Health and The Hospital for Sick Children (London) and latterly at Brunel University.

The main aims of the research were: (i) to determine whether or not families with obese children ('obese families') showed poorer overall family functioning than controls, and whether the degree of obesity was a factor in emotional functioning; (ii) to identify characteristic family attitudes and experiences surrounding issues such as the cause and management of obesity, handling food and eating, and social attitudes in relation to obesity; (iii) to clarify whether there were specific patterns of family interaction.

Studies on the first two objectives, already published [5, 6], were broadly concordant with the literature. However, new findings emerged which pointed to the possibility that obesity is a family syndrome, and best understood as part of a psychosocial identity. Physiological factors still play a role in obesity but are typically subsidiary mechanisms. Occasionally they may be primary, e.g. forced immobility can cause obesity in muscular dystrophy. The family identity hypothesis could only be pursued to a limited extent in the absence of knowledge of what was actually happening in families when obesity is present. If identity were important, then it would be expected to manifest in the family in terms of a characteristic pattern of interaction. After reviewing the literature briefly, the detailed methods and findings of our controlled study of interaction in families with an obese child will be presented and discussed.

Literature review

Two issues require reviewing: first, whether or not childhood obesity is a definite clinical entity rather than a symptom; and second, whether or not it is associated with a characteristic pattern of family interaction. Bruch, in detailed psychoanalytic studies of obese adults, has suggested that developmental obesity is an entity which is distinct from reactive obesity and constitutional obesity. She described it as an identity problem with its origins in early childhood; and characterised by an inability to differentiate inner experiences, especially hunger and satiety, and by a lack of individuation or sense of separateness from the environment [9,10]. Stunkard and Mendelson [11] also consider that juvenile obesity is a recognisable entity with the objective finding of body image disturbance. More conventional (and more detached) research approaches do not support the idea of a sub-type of obesity associated with specific psychological or personality features [12, 13].

Bruch's studies of individuals and mother-child dyads identified certain family features: domineering overprotectiveness on the part of the mother, a weak father who was treated with contempt and reproach by his wife, and an overdependent, immature and passive child who is not responded to by the parents [10, 14]. Although clinical support exists [15], other researchers using a similar approach have been unable to confirm such characteristics [16-19]. Her findings are further weakened by the fact that similar family constellations have been reported for other childhood psychiatric and psychosomatic symptoms [20].

Minuchin and co-workers [21, 22] have suggested characteristic features of interaction in psychosomatic conditions, and obesity would fulfil his criteria for such a condition. These features are: over-responsiveness among family members,

overprotection of the child, rigidity of interaction, lack of conflict resolution, and use of the ill child and his condition to deal with conflict. Two small uncontrolled studies of families with an obese child, offered some confirmation of this pattern [23, 24]. However, our own studies have suggested that Minuchin's ideas, though helpful in clinical work, are too broad to be useful for systematic research [25]. Furthermore, attempts to apply the concepts have failed to confirm their specificity in psychosomatic disorders [26].

Controlled psychological studies attempting to obtain family descriptions through perceptions of its members are more common. They have the advantage of using ordinary language concepts which are immediately meaningful but do not describe family identity. For example, such studies have suggested that families with an obese adolescent are more chaotic, with the obese adolescent less involved in decisions [27]; are less unified, with the obese adolescent less able to leave [28]; and use the obese adolescent as a scapegoat for the rest of the family [29]. However, self-report methods cannot substitute for direct observation on matters of major family concern [30, 31].

METHODS

A description of the sample, design, procedures and measures has been provided elsewhere [5, 6]. This account will therefore be restricted to details which are directly relevant to the qualitative assessment.

Sample

The total sample consisted of 65 families in two main groups: 37 families with at least one obese child ('obese' families) and 28 control families which contained no obese children ('non-obese' families). Obesity in the index child was defined as a weight exceeding expected body weight by 20% or more after adjusting for height, sex and age [32]. The obese group consisted of three nearly equal sub-groups from: (i) a hospital out-patient clinic for obese children, 'hospital-obese' families; (ii) the list of a local general practitioner, 'GP-obese' families; (iii) a local primary school, 'school obese' families. The control families were made up of two nearly equal sub-groups from: (i) a hospital out-patient clinic for children with coeliac disease, 'coeliac' families; and (ii) the same local primary school, 'school-normal' families. Coeliac disease was chosen as a control condition because it is an unequivocal physical disorder which is chronic, requires strict attention to food and diet, and in which the child is generally well. The school-normal families were controls precisely because the children were not obese, and because they lived in the same area as the GP-obese and school-obese families. Selection and recruitment procedures, practical and methodological exclusion criteria, and refuser analysis for the sample have been described in [5].

Procedure

After initial recruitment and interview for basic data, the families were given an audiotape-administered task interview to reveal family interaction. The interview was videotaped. Six to twelve weeks later each family was interviewed by a researcher at home to assess experiences and attitudes. A variety of measurements and questionnaires, including assessments of family functioning and individual emotional health, were completed at the two contacts. Consent to all procedures was sought and obtained from the families.

The Family Task Interview

The Family Task Interview (FTI) is a new instrument which is based on a well-established approach to eliciting family interaction of clinical relevance [31]. Its development, construction, rationale and psychometric evaluation have been described in detail elsewhere [25, 33]. The FTI, which consists of a series of tasks for the family to perform, is administered by tape recorder, lasts 1 hr and involves the whole family throughout. Task interviews are modes for enabling observation. Clinical or research evaluation is a subsequent step based on particular research purposes. This makes them different from interviews whose results are the immediate information obtained, such as the interview given to families at recruitment.

The opening task aimed to get the family used to the FTI by asking them 'to plan something to do together as a family' for 5 min. Subsequent tasks were, in order: 'build a tower with the blocks' which was non-verbal and simple (5 min); 'discuss the likes and dislikes of everyone in the family' which was verbal but natural and easy (10 min); 'sort the deck of cards provided into groups' which called for non-verbal problem-solving and organizing skills (10 min); 'imagine the end of the following story . . .', which was potentially upsetting and evoked emotion and fantasy (10 min); and 'explain a proverb' which demanded parental interaction separate to the children but in their presence and then involved explanation to the children (10 min). The final brief task asked the family to reflect on their experience of the interview (5 min).

Family Experience Interview (FEI)

The FEI is a modified version of a standardised method for clinically interviewing a whole family [34, 35]. It was administered in the family home to the whole family, took about an hour to complete, and was recorded on audiotape. The interview followed a semi-structured protocol designed to explore the family experiences and attitudes in relation to issues like: fatness, food and mealtimes, managing the condition, eating behaviour and stereotypes of obese people. Assessments of the family were subsequently made and checked for reliability.

Qualitative assessments

During the project, the researchers made contact with the obese families at recruitment, while collecting basic demographic data, when arranging interviews, and before and after the interviews. In this type of study we believed impressions gained from a variety of such less official and possibly unguarded situations might provide useful clues. These contacts were therefore regarded as formally part of the research design. They were carefully organised and regulated and the researchers regularly reported their impressions. After all families had completed the procedure, 24 videotapes (12 obese families and 12 control families) were selected at random from those families with two parents and at least two children — the reduction in number being based on resource constraints. The selected videotapes were intensively viewed by three assessors and a consensual description was generated on a Family Description Form using a defined procedure. Assessor blindness was not possible. The content of these descriptions was subsequently analysed.

Structure of the Family Description Form. Each family had to be described under the following five headings: (A) relationship between the two parents, e.g. amount and quality of communication, emotional contact, marital atmosphere, balance of assertion, cooperation, role flexibility, conflict, support, affection. (B) Relationship of the parents with the children, e.g. parental attitudes and quality of management in terms of acceptance, responsiveness, expectations, affection, support, control. (C) Relationship between the siblings, e.g. contact, tolerance, affection, common play, conflict, rivalry. (D) Behaviour of the index child, e.g. degree and quality of involvement with other family members, participation in tasks, behaviour and mood, level of maturity, comparisons with siblings. (E) Atmosphere and alliances in the family, e.g. overall quality of interaction, family mood, who supports/attacks whom, strongest relationship, scapegoating. The examples given under each heading served as an illustrative *aide memoire* for the assessors. The descriptions required of them were to be clinical, and not constrained to a closely categorised format.

Method of describing. After viewing the first task, descriptions were made under the above headings. After each subsequent task, notes were taken on anything which added to, strengthened or replaced the original comments — again under each of the headings in turn. After the last task, the original description was reconsidered in the light of the various additional notes, and a final description of the family was agreed upon for each heading. This procedure took about 3 hr for each family, and was completed at the rate of two or three descriptions per week. The contents of these descriptions will be elaborated in detail in a later paper.

Recognising patterns. Subsequently the Family Description Forms were divided among four assessors (the three raters plus one other) and similarities between descriptions were actively sought on a section by section basis. The criterion for similarity was essentially the use of identical or near identical phrases in the final written descriptions. All striking descriptions and any possible item similarities or items noted in the literature were checked, and those that applied to four or more families were selected as potentially significant characteristics. Definitions of items were formulated and then any feature noted as common in the Family Description Forms of obese families was specifically looked for in descriptions of control families and vice versa. The 24 family descriptions were then re-checked by two assessors using the list of potentially significant items and their definitions. Agreement was very high except for one item (descriptions of affect in the parental relationship). This item was more closely defined and rechecked, and reliability was then achieved.

RESULTS

Obese and control families in the larger study were similar on demographic criteria and factors such as family composition, structure and age patterns, and in terms of family functioning and individual emotional health [5]. Analysis revealed that this was reflected in the sub-groups of families used in this study (see Table I). There were no significant differences in social class composition and other potentially confounding factors such as stage of family life cycle, cultural origin, sex, age or sibling position of the index child. 67% of the obese families had three

TABLE I.—FEATURES OF THE OBESE AND THE CONTROL FAMILIES

| Family property | Obese group (<i>n</i> = 12) | Control group (<i>n</i> = 12) |
|--|---------------------------------|-----------------------------------|
| Source of sample | | |
| Hospital | 6 (50%) | 6 (50%) |
| School | 4 (33%) | 6 (50%) |
| General practice | 2 (17%) | NA |
| Social class | | |
| I and II | 3 (25%) | 2 (17%) |
| III | 9 (75%) | 8 (67%) |
| IV and V | 0 (0%) | 2 (16%) |
| Cultural origin | | |
| Both parents British | 7 (58%) | 9 (57%) |
| One parent British | 4 (33%) | 2 (17%) |
| Both parents non-British | 1 (8%) | 1 (8%) |
| Stage of family life-cycle | | |
| Preschool | 1 (8%) | 0 (0%) |
| School to <13 years | 6 (50%) | 9 (75%) |
| Teenagers at home | 5 (42%) | 3 (25%) |
| No. of children at home | | |
| Two | 4 (33%) | 8 (67%) |
| Three | 6 (50%) | 4 (33%) |
| Four | 2 (17%) | 0 (0%) |
| Sibling position of index children | | |
| Oldest | 5 (42%) | 4 (33%) |
| Youngest | 3 (25%) | 8 (67%) |
| Middle | 4 (33%) | 0 (0%) |
| Sex of index child | | |
| Boy | 7 (58%) | 8 (67%) |
| Girl | 5 (42%) | 4 (33%) |
| Age of index child: mean (S.D.)* | 8.3 (3.) | 8.1 (3.5) |
| Pre-school | 2 (17%) | 2 (17%) |
| School | 10 (83%) | 10 (83%) |
| Obesity of index child (standardised weight) | 120–193% (median: 139%) | NA |
| Obesity in the family | | |
| Father overweight | 7 (58%) | 2 (17%) |
| Mother overweight | 55 (42%) | 4 (33%) |
| Number of obese siblings | 2 | 0 |
| Emotional health: mean (S.D.)* | | |
| Family health (FHS) | 4.3 (0.9) | 4.1 (1.0) |
| Father's mental health (GHQ) | 4.7 (6.2) | 6.4 (9.0) |
| Mother's mental health (GHQ) | 7.1 (6.8) | 5.8 (7.2) |
| Index child's mental health (PR) | 12.8 (8.4) | 11.6 (5.6) |
| Sibling's mental health (PR) | 8.2 (5.4) | 9.4 (5.4) |

*FHS = Family Health Scale [37], GHQ = General Health Questionnaire [52], PR = Rutter A Scale [53], NA = not applicable.

or four children as against 33% of the control families. The frequency of obesity in the mothers was similar, but the obese group had significantly more obese fathers ($p < 0.05$). In particular, the two groups were similar in the quality of overall family functioning and in the emotional health of the family members.

Characteristic patterns of interaction

The potentially characteristic items of interaction in the obese and the control families obtained via the family description procedure are listed below. The headings used correspond to the headings of the Family Description Form, except that Atmosphere and Alliances have been separated.

A. Parental relations

- A1. Either parent is described as being dominant during the interview or taking the lead in handling the tasks.
- A2. Parents are described as not conversing with each other or as barely exchanging a word, except perhaps briefly or mechanically in relation to the children.
- A3. The emotional relationship between the parents is described with terms like: affectless, barren, dead, devitalised, sterile, with absence of mutuality, empathy, interest or support.
- A4. There is a specific mention of mutual support, interest and/or ability to converse.
- A5. There are references to hostility between the parents — either expressed overtly through rejecting or denigrating remarks, or covertly.
- A6. Absence of conflict between the parents is specifically remarked upon.

B. Parent-child relations

- B1. Direct criticism of, attacks on and/or denigration of children is described. This item does not include references to suppression of a child's spontaneity or expression of disagreement with a child.
- B2. Inconsistency of criticism, or of attention, or of interest, or of support, associated with alteration in the parent-child relation is mentioned. Changes in behaviour which are appropriate to the situation or age of the child are excluded.
- B3. Differential handling of children, not simply based on their age or apparent needs or behaviour, is described.
- B4. Index child is said to have the worst relationship with parents of all the children.
- B5. There is mention of a specially favoured or favourite child in the family.

C. Sibling relations

- C1. Rivalry is noted between siblings.
- C2. One sibling is described as bossing the other(s) or organising their play.
- C3. Poor affiliation, lack of interaction, little conversation, little joint play or squabbling is mentioned.

D. Index child characteristics

- D1-D3. The involvement of the index child in the family and in the tasks was routinely noted. Some children were described as withdrawn and isolated throughout the interview (D1). Some were reported to show attempts to become involved which were inconsistently responded to, or which were repeatedly dismissed, mocked or otherwise rejected, and led eventually to temporary and then permanent withdrawal (D2). Some were described as involved throughout the interview (D3).
- D4. The index child's behaviour is described as odd, silly, gauche, socially clumsy or inappropriate.
- D5. The index child is referred to as insecure or anxious.
- D6. The index child is specifically described with the words 'well-behaved'.

E. Atmosphere

- E1. The atmosphere after the first task was completed is described as warm and comfortable but at the end of the interview it is described as tense or dead or in some other way as unpleasant.
- E2. Dull, flat, dead atmosphere is reported.
- E3. Tense, anxious, unsafe, dangerous atmosphere is reported.
- E4. Atmosphere is described as affected by a desire on the part of the family to make a good impression.

F. Alliances

- F1. Strongest alliance described is cross-generational and parental alliance is described as particularly weak.
- F2. One child is described as excluded or peripheral to the family.
- F3. The family is described with its members generally disconnected from each other.

Principal analysis

The above items are listed with their frequencies in Table II. The significance of differences was calculated using Fisher's exact probability test. Certain categories proved equally common in the two groups: A1. One parent dominant or taking lead; A2. Little direct communication between parents; A4. Mutual support, interest, conversation between parents; C2. Lack of sibling interaction and affiliation; D1. Index children withdrawn throughout. Three categories showed a trend to greater frequency in the obese group: A5. Overt or covert parental hostility; A6. Absence of parental conflict; C1. Marked rivalry between siblings. Thirteen categories were significantly more common in the obese families: B1. Direct criticism by parents ($p < 0.025$); B2. Inconsistency of parental attention

TABLE II.—QUALITATIVE ANALYSIS OF VIDEOTAPE DESCRIPTIONS OF THE FTI

| | Obese (<i>n</i> = 12) | Non-obese (<i>n</i> = 12) | Signif. |
|--|---------------------------|-------------------------------|---------|
| A. Parental relations | | | |
| 1 One parent dominant or taking lead | 9 | 9 | NS |
| 2 Little direct communication | 3 | 4 | NS |
| 3 Deadness, affectless, poor relation | 4 | 7 | 0.16 |
| 4 Mutual support, interest, conversation | 5 | 4 | NS |
| 5 Hostility — overt or covert | 6 | 2 | 0.08 |
| 6 Absence of conflict | 7 | 4 | 0.16 |
| B. Parent-child relations | | | |
| 1 Direct criticism, attacks, denigration | 10 | 4 | 0.025 |
| 2 Inconsistency of criticism, attention, interest or support | 6 | 1 | 0.05 |
| | 11 | 4 | 0.005 |
| 3 Differential handling of children | 9 | 3 | 0.025 |
| 4 Index child with worst relation | 7 | 2 | 0.05 |
| 5 Favoured or favourite child in family | | | |
| C. Sibling relations | | | |
| 1 Marked rivalry between siblings | 4 | 1 | 0.14 |
| 2 Lack of interaction and affiliation | 6 | 5 | NS |
| D. Index child characteristics | | | |
| 1 Withdrawn throughout | 2 | 2 | NS |
| 2 Withdrawn but tries to get involved | 6 | 1 | 0.05 |
| 3 Involved throughout in family and tasks | 4 | 9 | 0.05 |
| 4 Odd, silly, gauche or inappropriate | 7 | 0 | 0.01 |
| 5 Insecure, anxious | 7 | 2 | 0.05 |
| 6 Well-behaved | 2 | 7 | 0.05 |
| E. Atmosphere | | | |
| 1 Changed as the interview progressed | 7 | 1 | 0.025 |
| 2 Dull, flat or dead | 1 | 4 | 0.14 |
| 3 Tense, anxious or unsafe | 10 | 5 | 0.05 |
| 4 Desire to make a good impression | 7 | 1 | 0.025 |
| F. Alliances | | | |
| 1 Strongest alliance cross-generational and parental alliance weak | 9 | 4 | 0.05 |
| 2 One child is excluded or peripheral | 10 | 2 | 0.005 |
| 3 Family is generally disconnected | 1 | 6 | 0.05 |

(For detailed descriptions of items see text. Significance calculated using Fisher's Exact Probability Test.)

($p < 0.05$); B3. Differential handling of children by parents ($p < 0.005$); B4. Index child having the worst relation with parents ($p < 0.025$); B5. Presence of a favoured child ($p < 0.05$); D2. Index child withdrawn but tries to get involved ($p < 0.05$); D4. Index child odd, inappropriate responses, etc. ($p < 0.01$); D5. Index child insecure, anxious ($p < 0.05$); E1. Atmosphere changed as FTI progressed ($p < 0.025$); E3. Atmosphere tense ($p < 0.05$); E4. Desire to make a good impression ($p < 0.025$); F1. Strongest alliance cross-generational ($p < 0.05$); F2. Once child excluded or peripheral ($p < 0.005$). Two categories showed a trend to greater frequency in the control group: A3. Deadness or lack of affect between parents; E2. Dull, flat or dead atmosphere. Two categories were significantly more common in the control group: D6. Well-behaved index child ($p < 0.05$); F3. Family is generally disconnected ($p < 0.05$). The more common involvement of the index child in the control families (D3) is the obverse of the more common withdrawal in the obese families already noted.

The significant and trend items have been laid out in Fig. 1 as they apply to each family in the study. Figure 1 makes visually apparent the two main findings: first, the obese families and control families appear to be different; second, the obese group has emerged with many more sharply characteristic items than the control group. Figure 2 illustrates the frequency with which 'obese group items' occurred in the various sub-groups. The school-obese sub-group stands out visually as possessing more features than the others.

| CODE | ITEMS | OBESE FAMILIES | | | | | | | | | | CONTROL FAMILIES | | | | | | | | | | | | |
|-------|-------------------------------|----------------|---|---|---|---|---|---|---|---|---|------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q | R | D | J | E | K | P | S | T | C | H | Z | V | A | F | X | N | L | G | Y | M | B | W |
| A-6 | Marital Hostility | . | | | | . | . | . | . | . | . | . | | | | | | | | . | . | | | |
| A-6 | Absence of Conflict | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B-1 | Direct Criticism | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B-2 | Inconsistency | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B-3 | Differential Handling | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B-4 | IC Worst Relation | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| B-5 | Favoured Child | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| C-1 | Sibling Rivalry | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D-1&2 | IC Withdrawn | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D-4 | IC Odd | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D-5 | IC Insecure | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E-1 | Atmosphere Change | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E-3 | Tense Atmosphere | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E-4 | Good Impression | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| F-1 | Cross-Gen. Strongest | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| F-2 | One Child Excluded | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| A-3 | Little Affect between Parents | . | | | | . | | | | | | . | . | . | . | . | . | . | . | . | . | . | . | . |
| D-6 | IC Well-behaved | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| E-2 | Dull Flat Atmosphere | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| F-3 | Disconnected Family | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

FIG. 1.—Family by family comparison of characteristic items of interaction (obese and controls). (CODE refers to item listings in Table I and in text.)

Detailed analysis

The exception in the obese group. The significant and trend items in Table II potentially characterise an 'obese pattern'. All families in the obese group showed aspects of this pattern. Except for one family (P) they each contained 50% or more

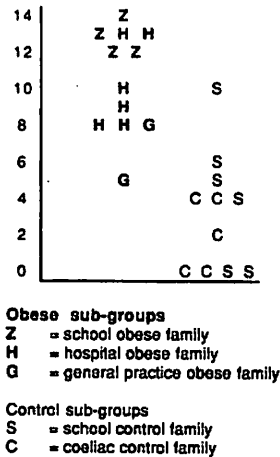


FIG. 2.—Number of 'obese pattern' items for obese and control families arranged by sub-group.

of the 16 identified characteristics. The P family may not represent a true exception to the obese pattern because it was atypical by other criteria: father was Turkish; mother had never known her parents and had experienced multiple caretakers; the children were very young; and the family was unusually child-centred and mother-dominant.

The exception in the control group. By contrast, in the 12 control families, four families showed not a single feature of the obese pattern, and only one family (M) scored significantly on the obese items. The M family, which scored ten features, was therefore studied in more detail. During observation the raters commented that the M family 'should have been obese'. Significant differences of detail, which had not emerged in the main content analysis, could be noted, however, on careful scrutiny of the description and review of the videotape. First, 'exclusion' shifted between the index child and the mother, in contrast to the obese group pattern where 'exclusion' only involved the index child. Second, there had been a recent major family change as the family had a baby of 13 weeks, and this may have affected interaction. Third, the parents used the index child to link up with each other, whereas in the obese pattern both parents independently criticised or ignored the index child. Finally, there was an absence of any items in the 'context cluster' (see Fig. 3), which is important in the obese pattern as described below.

Is there a control group pattern? The control group items seemed too few, too weakly significant, and too incoherent to be considered as a single characteristic pattern. There were only four characteristic items and two families showed none of these. Two other families only showed the item 'well-behaved'. Of the remaining eight families, only five showed two or three features. Dividing the group into coeliac and school sub-groups did not reveal any pattern. However, more detailed analysis did suggest that there might well be a small sub-set of four control families, coming from both the coeliac and the school sub-groups, characterised by repression of feeling and a disconnectedness amongst family members: F, G, V and Y families. The remaining eight families were a heterogenous group.

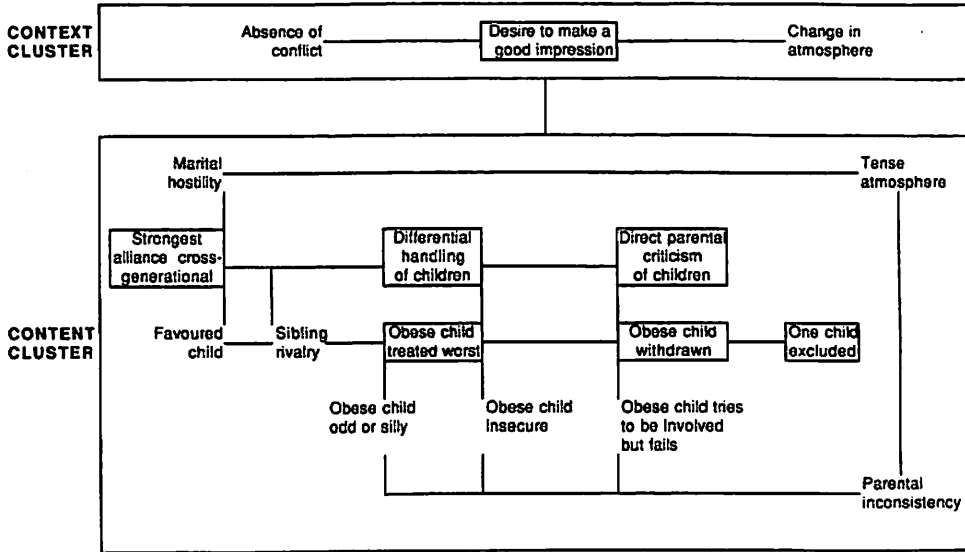


FIG. 3.—Suggested links between characteristic interaction in obese families seen in the Family Task Interview. Items are explained in text. Boxed items were noted in eight or more of the 12 obese families studied. Lines indicate likely implication, causation or inclusion.

Obese families with control items. Items in the control pattern were present in only two of the obese families — the Q and H families. These two families were deprived and had children with marked behaviour problems. The Q family child had lost weight very successfully and did not look fat at the time of the FTI.

Structuring the obese pattern

On clinical grounds, the items in the obese pattern appeared to form two distinct clusters, based on the likelihood that the various items are related to each other or partially include each other. In Fig. 3 the more obvious links between different items have been suggested. All obese families except one (the E family) had items in both clusters. In the first cluster were three items associated with the wish to keep up family appearances despite the existence of family problems: E4 — desire to make a good impression; A6 — absence of conflict; E1 — change of atmosphere as interview progressed. All three were present in 59%; at least one was present in 92%. In the second cluster were items that described the family problems. The principal problems were: E3 — a tense atmosphere in 83%; B1 — direct criticisms of children in 83%; B3 — differential handling of children in 92%; F1 — strongest alliance cross-generational in 75%; D4 and 5 — the obese child is overtly disturbed in 83%; B4 — the obese child is treated worst in 75%; D1 and 2 — the obese child is peripheral and withdrawn though often attempting to become involved, in 67%. Less frequently noted but possibly fundamental features were: A5 — marital hostility in 50%; B2 — inconsistency of relating in 50%.

Other determinants of the obese pattern

The obese patterns may be dependent on various factors. The influence of sub-group membership has already been mentioned. Three other factors required investigation: sex of the index child; degree of overweight; and degree of family health. Numbers were very small for the sex analysis, but there was a trend for the families of obese girls to show more hostility (girls 80% vs boys 14% $p = 0.11$, χ^2 test). The degree of overweight was not significant. The quality of family functioning as measured by the Family Health Scales [5, 37] was also not significant. Demographic characteristics did not appear to have any influence on the findings.

Impressions of obese families

We reviewed the reports of impressions gained from routine interaction of the researchers with the families. All descriptions of obese families below are provided in the light of a comparison with the control families.

Recruitment and general contact. Obese group families were eager to please. This contributed to a lowered refusal rate (obese, 30%: control, 46%), most marked in the school sub-groups (obese, 25%: control, 52%). They asked few questions and made few objections to procedural requirements. The researchers believed that a question like presence or absence of religious affiliation was more often answered in the affirmative (obese, 60%: control, 39%) because the family imagined this would look better, not because of greater religiosity. The frequency of religious affiliation was lower in the families which refused to participate, but the obese-control difference remained (obese, 40%: control, 23%). Obese group families gave the impression of agreeing in order to avoid incurring the researcher's displeasure or disapproval.

Family Task Interview. Both children and adults were concerned about the right or wrong way of doing tasks and tried hard to do tasks 'correctly'. This is not a requirement of the FTI, nor is it a typical response.

Family experience interview. The obese group were rated significantly lower than the non-obese group for their degree of cooperativeness ($p < 0.05$), family consensus on family issues ($p < 0.05$), and overall consistency of responses ($p < 0.005$) [6]. On exploring these results with the interviewers, it emerged that the poor cooperativeness related paradoxically to efforts to comply. Families appeared to give what they thought was the expected answer or to answer in a way intended to please, and the necessary spontaneous answers, personal opinions and inter-member interaction were difficult to obtain. Such spontaneity did often emerge when the interview was officially over. Interviewers were therefore left with a sense of not having met the family properly in the context of the research interview and not having recorded their real views. Interviewers were welcomed, and made to feel wanted by the obese families; and sometimes found it difficult to leave.

Self-report assessments of the research method. The impression of the obese families as being overly compliant was investigated through their responses to a self-report questionnaire in which they were asked to evaluate their experience of the two interviews on various dimensions. The obese families responded significantly more favourably than did the control families on most aspects, with the following exception. Although the obese families were either neutral or positive

about most FTI tasks, they generally expressed dislike of the Affect and Fantasy Task and did so more frequently and intensely than did the controls ($p < 0.05$).

DISCUSSION

The specific pattern of interaction uncovered in this study not only confirms the likelihood that stress in the rearing environment may be significant for the development of obesity, it also provides a clinically-oriented qualitative account of this environment in families with an obese child. However, the research represents a new approach to this topic and therefore replication is essential.

The findings in no way contradict previous quantitative findings which showed minimal differences between obese and control groups in terms of overall family health [5]. The present study identifies *types and patterns* of interaction which exist *irrespective of the overall quality* of family functioning. In the earlier study too, *significant quantitative differences in the family patterning* of emotional disturbance were found [5].

Because the pattern found differs from that suggested in previous studies, an examination of the possible objections and limitations to the study is necessary. The findings will then be examined in more detail, linked to the literature, and some theoretical interpretations offered.

Limitations

The general problems of the study in relation to the sample, design, controls and measures have been discussed in the earlier papers and, with some modification, these apply here. For example, additional controls with various other disabilities would be useful. Such features have implications for similar or replicative studies. Here, the principal issue is the confidence which can be placed on the descriptions produced, and on the analyses of the qualitative data. Our chief criticism of other family system studies in the literature has been their lack of validity, sensitivity and specificity, and their bias in favour of Minuchin's family system model. These issues therefore need to be directly addressed.

Bias. The FTI is a powerful, valid and increasingly used method for eliciting and observing clinically-relevant family interaction. However, in the present study, the validity of the descriptions obtained from the FTI may be questioned because of the possibility of observer bias. For example, it could be argued that continuing exposure to the obese families had built up preconceptions in the assessors, particularly as the assessors were never blind to which group any family belonged to. Bias may also have crept in because the assessors necessarily shared cultural views about obesity. The use of the assessors for the content analysis may also have biased the results. The arguments for validity and against attributing the findings to deliberate or involuntary intrusion of pre-determined ideas about obesity are several. First, the researchers were deeply sceptical until the very end that there was any pattern to be found. Indeed, the belief that, despite sustained disciplined effort, no findings were emerging was strong enough to create a morale problem for the research team during the assessments that eventually revealed the pattern. At no point during the descriptive process was the picture that eventually emerged foreseen by the researchers. Second, some of the items presumed from initial

impressions and from the literature to be characteristic of the obese families (such as A1: one parent dominant; or A2: little direct communication between parents) were found to be equally present in the control families. Other characteristics initially believed important such as 'disqualification of the child' did not appear in the research descriptions. Third, frequently used descriptive phrases generated by routine contact (such as: compliant, willing to please, passive) also did not appear in FTI descriptions. Fourth, though the findings have links to previous research they are not part of the research or cultural consensus about obesity. In the light of these arguments, it seems unlikely there was substantial conscious, semi-conscious or unconscious bias in the sense of finding what was already known or believed.

Other sources of error. Other sources of error were either guarded against or may be considered unlikely. (1) *Halo effects* were reduced by the focused and systematic method of describing; and by viewing the videotapes at periodic intervals separated by many other activities. (2) *Memory effects* were further reduced by avoiding an easily repeatable or memorisable format of description. Instead each family demanded its own idiosyncratic specific clinical-style descriptions based on consensus agreement as to the presence of repeated patterns of interaction. (3) *Collusion effects* were unlikely because the assessors did not share a joint view on obesity. Both male and female assessors were used; they had different educational backgrounds (psychiatry, social work, and arts); they came from three different Western countries; and they varied considerably in fatness. Nevertheless, it is possible that the views of the group were unconsciously dominated by the highest status rater. (4) There is a ubiquitous human *tendency to see patterns everywhere*. However, this is unlikely to be responsible for the results because the most strenuous attempts to find a pattern in the control group resulted in no overall pattern and only weakly specific items. (5) *Expectancy error*. It might be presumed that families who knew obesity was being studied would take a defensive position, accounting for the 'context' finding and might be irritable and uncomfortable accounting for the 'content' finding. However, the school group, which showed the most marked features, had only been informed that they were involved because they had no ill children.

Sensitivity. Our categories are, in general, more detailed than provided in previous studies. Nevertheless, the descriptive categories provided in the Results are still rather crude and vague. Because all definitions of interaction had to match written descriptions closely, the content-analytic method was limited in sensitivity. However, our primary aim was to determine unambiguously whether there was a definite difference between obese and control groups or not. The statistical significance of differences between obese and control groups varied considerably, and at this stage it is not possible to be certain as to which exact categories of interaction contribute to the characteristic dysfunctional pattern. The clinical sensitivity of the descriptions could be substantially improved. More sensitive detailing of the characteristic pattern (which is currently under way) requires a different approach to the videotapes. An example of what can be done to detail differences clinically was provided in our deeper examination of the M family.

Specificity. In the absence of more specific control groups it is impossible to say how far the pattern is characteristic of obese families in particular. However some items were striking in relation to the previous 300 or so FTIs carried out as part of

other research. For example, the typical family presents itself essentially the same way during each task and the phenomenon of a change in interaction as the FTI progressed was new. The research method used is sufficiently straightforward to make it likely that further similar systematic research could provide a final answer to the question of specificity. For example, a similar study using the FTI and the Family Description Form has been carried out with families containing a child who was refusing to attend school. This revealed certain similarities and differences: for example, the strongest alliance was also cross-generational; however, a major distinguishing feature was the oppositional behaviour found between index child and parent [38]. Family patterns would be expected to exist in a hierarchy. Some characteristics would be very general in disturbed families, e.g. predominant cross-generational alliances; others would characterise recognisable groups of families, e.g. perhaps 'addictive' or 'psychosomatic' disorders; and other would define a specific condition. What these groupings might be, and where obesity might fit in, is not yet clear.

A note is appropriate to explain why specificity should be found when the current trend of thinking is away from specificity. Specificity customarily refers to one or a few items linked to a condition, the items being obtained using superficial instruments or broad vague concepts [7, 20]. Specificity as referred to here is a system of interactions which forms the identity of the family. Previous studies have lacked a method for looking objectively and closely inside the family system. The finding of specificity is concordant with the conclusion that juvenile obesity is an entity. Again, this view was reached using methods that probed deeply into the individual — depth psychotherapy [9, 10] and body image studies [11]. Specificity may have emerged, therefore, because obesity is primarily an interactional and familial disorder: an expression of a particular set of experiences and relationships in a particular culture.

Interpreting the findings

The characteristics revealed. A variety of highly specific characteristics were identified which appeared clinically to fall into two distinct clusters: a *context cluster* based on an urge to present well, and a *content cluster* of specific dysfunctional interaction.

What distinguished the obese families most immediately seemed to be their sense that the family's needs and problems must be covered up and hidden from themselves and others. This coloured their interaction during the research process, and interfered with the natural administration of the home interview. In these situations, the family as a whole looked all right, but felt wrong because it behaved somewhat too passively and carefully, was too concerned with appearances, complied wherever convenient to them, and desired approval.

However, given a situation where compliance was difficult and where observation was prolonged, like the FTI, the family's façade slowly disintegrated. The rate and degree of disintegration varied from family to family. By the end of the FTI, the inner interactional characteristics, the content of the family's difficulties, were revealed. In some families this inner interaction was part of a dysfunctional family life, in others the interaction was in the context of adequately functioning family life [5].

The most obvious features of the inner pattern were a weak marital alliance and a stronger cross-generational alliance (but not to the obese child); direct criticism of children, especially the obese child; differential handling of children; obese child with the worst relation to parents; and persistent attempts by the obese child to make parental contact interspersed with and finally leading to withdrawal. The index child appeared odd and silly or anxious and insecure (or both). Parental inconsistency towards the children and inter-parental hostility were common and may possibly be the more primary bases for these characteristics. These two phenomena may be linked in that inconsistency refers to a lack of capacity for sustained attention to the emotional needs and experiences of an other. If this is present in a marriage, then hostility is likely. These two features then lead to a tense atmosphere, and the disturbances in nurturance and socialisation of children described above.

Links to family descriptions in the literature. The context-content distinction has been revealed by the study methods and appears to be new. The content cluster is consistent with views reported in the review of the literature [10, 14, 28-30], but our findings are more detailed and direct. For example, our quantitative analyses suggested that the mother may have a key role [5, 6] as so often found before. However, in terms of interaction, our research design enabled the activity of the father to show up clearly, and his role was not peripheral or weak. Remarkably no specific distinction between his behaviour in the family, and that of the mother was noted. Our findings directly contradict Minuchin's popular psychosomatic hypothesis [21, 22] in that we found overt rejection of the obese child rather than the postulated overprotection, little prominence of enmeshment or rigidity, and obesity was rarely if ever used to detour conflict.

Links to theories of obesity. The family pattern can be easily linked to the various postulated, but not validated, early experiences of obese adults such as insecurity, lack of effectiveness, inactivity and lack of autonomy; and to possible psychological characteristics of certain obese adults such as excessive narcissism, passivity, attitudes of entitlement, preoccupation with power, low self-assertion, unusual difficulties in personal relationships and immaturity [10, 39, 40]. The findings are also consistent with the idea of obesity being due to lack of sensitivity to internal cues, or an inability to distinguish inner sensations and experiences, together with a hypersensitivity to external cues [10, 41, 42]. Because the parents are unable to give their attention consistently to the child, his capacity to appreciate internal cues is weakened; and because rather than maintaining a benign and helpful attitude they attack and criticise without provocation, the child becomes sensitised to external cues. The findings are neutral with regard to theories emphasising overeating or lack of exercise [43, 44] as these explanations concern the physiological and simple behavioural mechanics of overweight rather than the reason for obesity as a social and personal act.

Obese families recruited from school. The school-obese sub-group was distinct from the GP-obese and hospital-obese sub-groups in the results presented and in our earlier analyses. As the school families are the closest in the study to a random sample of the general population of obese children, they merit more scrutiny. The school-obese children were significantly less overweight than children in other sub-groups (5), but their families showed the obese family pattern more prominently

than the other obese families. The school-obese families emphasised the advantages of obesity; did not believe that obese people ate too much for their needs; and showed a positively-toned preoccupation with meals and eating [6]. However, only in these families did the index child appear possibly more aware of his obesity and its causes than his parents [6]. Together these findings suggest that many obese children are in a sad situation. They are in what must be an intensely unhappy position at home as well as at school, the family will not admit to this, and action to improve their lot (or reduce their weight) will probably not be taken.

Theoretical explanations

It is necessary to explore possible relationships between obesity and the interactional pattern found, and then to speculate on the relationship that appears most promising. The possibilities are: (1) The pattern could be a chance finding with no relation to obesity. (2) The pattern could be caused by the obesity. (3) The obesity could be caused by the family interaction. (4) The obesity could be part of the interaction, i.e. obesity is maintained by the family pattern and the family pattern is maintained by the obesity.

1. Given that a substantial number of the postulated characteristic interactional items occurred in every single family, it is unlikely that the pattern is a chance finding. It is also unlikely that the pattern is indeed present but due to some extraneous unnoticed variable. The most common social variables were checked and found to be similar in the two groups, and there were no obvious commonalities. In addition, the obese group consisted of three distinct sub-groups obtained in different ways and this makes a hidden common factor more unlikely.

2. The usual criticism of this type of study is to suggest that obesity causes the interaction, possibly via its evocation of self-disparagement [45] or parental blame or some other consequence of stigma. Certainly, the criticism of the obese child could be seen as a reaction to his or her obesity. Although the families themselves did not believe that they operated in this way [6], they may have done so unconsciously. It was very noticeable, however, that the presence of obesity was rarely mentioned during the FTI and criticism and rejection of the obese child was not judged to be overtly or covertly based on its obesity. Furthermore, other children were often maltreated or excluded, sometimes to a greater degree; and an obese child was the favourite in some cases. Other items would require a more complex explanation, e.g. the marital hostility and strong cross-generational bonding could just possibly be regarded as a reaction of one spouse to the obesity in the child, blaming the other for it or feeling intense self-blame and then forming a close relation with a sibling. Items like parental inconsistency and episodic participation and withdrawal by the index child are more difficult to explain as a secondary effect of stigma but possibly links to peer stigmatisation outside the home might be argued.

3. An alternative hypothesis is that the interaction causes obesity. But this seems even more unsatisfactory. It is not obvious, for example, why a desire to make a good impression should cause obesity which has the opposite effect. Similarly, direct criticism of a child would not be expected to cause him to become obese — a result which would be expected to reinforce criticism. If it were argued that the child desired to provoke criticism, then there are far easier and more direct ways

for him to do this. Although speculative psychodynamic hypotheses as to the function of obesity in the family are numerous, from our evidence obesity does not appear to be a 'compromise formation' symbolically solving some of the family problems.

4. The previous two possibilities, though rejected, do, however, suggest links between obesity and the interactional patterns, and indeed between these and wider social attitudes. These two hypotheses depend on the notion of *cause*. Such a notion (which dominates most psychological and medical research in obesity) is inappropriate for activities which are primarily purposeful or voluntary, and which are *produced* or flow from decisions based on *reasons*. A family systems approach would consider obesity as part of the interaction, or see interaction as playing a part in maintaining obesity in the child. Stigma is also highly relevant, but again not causative. In this conception, obesity does not need to link directly to every aspect of the interaction, but rather to the whole system, including the family's stigmatising social context.

Looked at from the perspective of hypothesis 4, a meaningful question to ask is: would the children in these families have become obese if society highly prized and valued obesity? The plausible answer which emerges from our investigation is: No — something not valued would have developed instead. Obesity, if it occurred, would develop in different sorts of families. In other words, childhood obesity, family interaction and social attitudes are all *inter-related aspects and expressions of a whole*, and not causes or effects of each other. Obesity can easily be seen to play a key role in meaningfully linking the two clusters. Given a prominent desire by the family to make a good impression through compliance and proper appearances, a criticised and rejected child might be expected to have an urge to undermine that good impression. Becoming obese does that in a silent, omnipresent, unmistakable way. The face value judgement that the family desires of society — approval and acceptance — stands in stark contrast with the face value judgement that society places on the obese child — disapproval and rejection. The child can show the world that all is not well in this family which so desires to present itself well.

Reconstructing family life. It is now possible to speculate on how obesity may fit into family life. Obesity can be seen to maintain the family pattern at both the context level (public presentation) and the content level (inner nature). It is to be expected that the more obese the child, the more strenuously must the family attempt to overcome the evidence of the child's body size and shape when it makes public contact. However, these attempts to present well are based primarily on trying to look normal and trying to comply with outsiders, not on actual achievements or on constructive self-assertion. The presentational efforts of obese families cannot relieve inner disturbances and would be expected to exacerbate family dysfunction by draining energies and by encouraging private denial of genuine disturbance. Clearly a vicious circle may be set up, because the worse the inner discord the greater the effort required for presenting well. In this model, obesity is not a primary element of the inner family dysfunction, but obesity may still on occasions or in particular families serve as a ready focus for strife-ridden inter-member interaction, for example in association with eating, clothing or social relationships.

The family façade and inner interaction must powerfully affect the self-image.

self-esteem and self-protective (i.e. narcissistic) structures developed by children in the obese families. For the obese child, the obesity will also lend itself to narcissistic use. Reconstructions of family life from the psychoanalytic treatments of obese adults now appear in a new light. For example, Bruch [9,10] has emphasised the 'goodness' of the obese child and repeatedly reconstructs a childhood of compliant accommodation and of fulfilling other people's expectations which is refuted, or at least not confirmed, by our direct observations. We observed obese children asserting themselves repeatedly; their compliance was not marked: and they were not noticeably good. Indeed the control group children were the ones specifically described as 'well-behaved'.

Bruch's findings can, however, be rescued. Other psychoanalytic research has indicated that the pattern she describes is a typical non-specific psychodynamic response to lack of parental attention to needs [46-48]; and our findings suggest that *such lack may well be present in families of obese children*. We also noted that *the child did comply as a member of the family to support its public presentation*. The argument then runs: in so far as the endless search for approval is specific to juvenile-onset obesity, it is a property of the family — not of the child; and this family façade becomes adopted or internalised by the child to become a way of dealing with the world in later life. Such a façade could well lead to the paradoxical appearance of normality on contentional psychological and psychiatric instruments [49], as well as to Bruch's findings of childhood goodness and compliance in adult patients with developmental obesity.

CONCLUSION

Indirect evidence in our previous research raised the possibility that childhood obesity was part of a family syndrome and a manifestation of psychosocial identity [5, 6], rather than a consequence of genetic or simple behavioural factors. This paper offers direct evidence based in observation of family interaction that obesity in childhood reflects a family identity. This interaction has two components: a readily observed context component whose primary characteristics are non-spontaneous compliance and attempts to please and present well; and a partially hidden content component of specific and patterned dysfunctional interaction. Interaction is the behavioural aspect of family identity, but the identity of any human system also has an ideational aspect. It is therefore assumed that the observed interactions are associated with family meanings [50], and that these embody assumptions or myths which link into family history and cultural values and norms. Geneticists working in the behavioural sciences now recognise the significance of cultural transmission and its role in prevention [51]. We are therefore pursuing this line of inquiry by examining the obese identity in more detail and exploring the onset of obesity.

Acknowledgements—The investigators appreciated encouragement and assistance from Emeritus Professor Otto H. Wolff, Institute of Child Health, University of London. Practical help was also provided by Dr Olga Stark. Statistical advice was provided by Mr Charlie Owen, Thomas Coram Research Unit, University of London. Members of the Department of Psychological Medicine contributed to the work and the smooth running of the project. Generous financial support from the Leverhulme Trust is gratefully acknowledged.

REFERENCES

1. STUNKARD AJ, FOCHT TT, HRUBECK Z. A twin study of human obesity. *J Am med Ass* 1986; **256**: 51-54.
2. PRICE RA, CADORET RJ, STUNKARD AJ, TROUGHTON E. Genetic contributions to human fatness: an adoption study. *Am J Psychiat* 1986; **144**: 1003-1008.
3. STARK O, ATKINS E, WOLFF OH, DOUGLAS JWB. Longitudinal study of obesity in the National Survey of Health and Development. *Br med J* 1981; **283**: 13-17.
4. LOADER P. Childhood obesity: the family perspective. *Int J eat Disord* 1985; **4**: 211-225.
5. KINSTON W, LOADER P, MILLER L. Emotional health of families and their members where a child is obese. *J psychosom Res* 1987; **31**: 583-599.
6. KINSTON W, LOADER P, MILLER L. Talking to families about obesity: a controlled study. *Int J eat Disord* 1988; **7**(2): 261-275.
7. KALUCY RS. Obesity: an attempt to find a common ground among some of the biological, psychological and sociological phenomena of the obesity/overeating syndromes. In: *Modern Trends in Psychosomatic Medicine 3* (Edited by HILL O). London: Butterworths, 1976.
8. STUNKARD AJ, STELLAR E. *Eating and Its Disorders*. New York: Raven Press, 1984.
9. BRUCH H. *The Importance of Overweight*. New York: Norton, 1957.
10. BRUCH H. *Eating Disorders: Obesity, Anorexia Nervosa and the Person Within*. London: Routledge & Kegan Paul, 1974.
11. STUNKARD AJ, MENDELSON M. Obesity and the body image. II. Age at onset of disturbances in the body image. *Am J Psychiat* 1967; **123**: 1443-1447.
12. RODIN J. Current status of the internal-external hypothesis for obesity. What went wrong? *Am Psychol* 1981; **36**: 361-372.
13. MCREYNOLDS WT. Towards a psychology of obesity: review of research on the role of personality and life adjustment. *Int J eat Disord* 1982; **2**: 37-57.
14. BRUCH H, TOURAINE G. Obesity in childhood: V. The family frame of obese children. *Psychosom Med* 1940; **11**: 139-206.
15. GASTINEAU CF, RYNEARSON EH. Obesity. *Ann intern Med* 1947; **27**: 883.
16. IVERSON T. Psychogenic obesity in children I. *Acta Paed* 1953; **42**: 8-19.
17. TOLSTRUP K. On psychogenic obesity in childhood IV. *Acta Paed* 1953; **42**: 289-304.
18. OSTERGAARD L. On psychogenic obesity in childhood V. *Acta Paed* 1954; **43**: 507-521.
19. ZAKUS G, SOLOMON M. The family situation of obese adolescent girls. *Adolescence* 1973; **8**: 33-42.
20. KAPLAN HI, KAPLAN HS. The psychosomatic content of obesity. *J nerv ment Dis* 1957; **125**: 181-201.
21. MINUCHIN S, BAKER, ROSMAN BL, LIEBMAN R, MILMAN L, TODD T. A conceptual model of psychosomatic illness in children: family organization and family therapy. *Arch gen Psychiat* 1975; **32**: 1031-1038.
22. MINUCHIN S, ROSMAN BL, BAKER L. *Psychosomatic Families: Anorexia Nervosa in Context*. Cambridge, MA: Harvard University Press, 1978.
23. BOWERS J, FAULKNER B, MICHEL S. Obesity in children, an ecological approach. *J Contin Educ Nurs* 1979; **July-Aug**: 40-49.
24. HARKAWAY JE. Obesity: Family Systems Perspective. Doctoral dissertation, University of Massachusetts, 1982.
25. KINSTON W, LOADER P. The Family Task Interview: a tool for clinical research in family interaction. *J marit fam Ther* 1988; **14**: 67-87.
26. LOADER P, KINSTON W, STRATFORD J. Is there a 'psychosomatogenic' family? *J fam Ther* 1978; **2**: 311-326.
27. BROMBERG DR. Family dominance patterns and the decision-making process in obese and nonobese families. *Diss Abstr Int* 1977; **37**: 3597.
28. BULLEN BA, MONFELLO LF, COHEN H, MAYER J. Attitudes towards physical activity, food and family in obese and nonobese adolescent girls. *Am J clin Nutr* 1963; **12**: 1-11, 1963.
29. HAMMAR SL, CAMPBELL MM, CAMPBELL A, MOORES NL, SAREEN C, GAREIT FJ, LUCAS MPH. An interdisciplinary study of obesity. *J Pediatr* 1972; **80**: 373-380.
30. BROWN GW, RUTTER M. The measurement of family activities and relationships: a methodological study. *Hum Rel* 1966; **19**: 241-263.
31. CROMWELL RE, OLSON DH, FOURNIER DG. Tools and techniques for diagnosis and evaluation in marital and family therapy. *Fam Proc* 1976; **15**: 1-49.
32. COLE TJ. A method for assessing age-standardized weight-for-height in children seen cross-sectionally. *Ann hum Biol* 1979; **6**: 249-268.
33. STRATFORD J, BURCK C, KINSTON W. The influence of context on the assessment of family interaction: a clinical study. *J fam Ther* 1982; **4**: 359-372.

34. KINSTON W, LOADER P. Eliciting family interaction with a standardised clinical interview. *J fam Ther* 1984; 6: 347-363.
35. KINSTON W, LOADER P. Preliminary psychometric evaluation of a standardised clinical family interview. *J fam Ther* 1986; 8: 351-369.
36. SIEGEL S. *Non-Parametric Statistics for the Behavioural Sciences*. New York: McGraw-Hill, 1956.
37. KINSTON W, LOADER P, MILLER L. Quantifying the clinical assessment of family health. *J marit fam Ther* 1987; 13: 49-67.
38. SEVITT M, HUFFINGTON M. Family interaction in school phobia. Unpublished manuscript, 1986.
39. WERKMAN SL, GREENBERG ES. Personality and interest patterns in obese adolescent girls. *Psychosom Med* 1967; 29: 72.
40. GLASS DC, LAVIN DE, HENCHY T, GORDON A, MAYHEW P, DONOHUE P. Obesity and personality. *J Person* 1969; 37: 407.
41. SCHACHTER S. Obesity and eating: internal and external cues differentially offset the eating behaviour of obese and normal subjects. *Science, NY* 1968; 161: 751-756.
42. NISBETT R. Eating behaviour and obesity in man and animals. *Adv Psychosom Med* 1972; 7: 173.
43. CAHN A. Growth and caloric intake of heavy and tall children. *J Am Diet Ass* 1968; 53: 476.
44. WAXMAN M, STUNKARD AJ. Caloric intake and expenditure of obese boys. *J Paediatr* 1980; 96: 189-193.
45. STUNKARD AJ. *The Pain of Obesity*. Palo Alto: Bull, 1976.
46. MILLER A. The drama of the gifted child and the psychoanalyst's narcissistic disturbance. *Int J Psychoanal* 1979 60: 47-58.
47. KINSTON, W. An intrapsychic developmental schema for narcissistic disturbance. *Int Rev Psychoanal* 1982; 9: 253-261.
48. KINSTON W, COHEN J. Primal repression: clinical and theoretical aspects. *Int J Psychoanal* 1984; 67: 337-356.
49. SALLADE J. A comparison of the psychological adjustment of obese vs non-obese children. *J psychosom Res* 1973; 17: 89-96.
50. KINSTON W, BENTOVIM A. Creating a focus for brief marital or family therapy. In: *Forms of Brief Therapy* (Edited by BUDMAN F). New York: Guilford Press, 1981.
51. EARLS F. On the familial transmission of child psychiatric disorder. *J child Psychol Psychiat* 1987; 28: 791-802.
52. GOLDBERG D. *The Detection of Psychiatric Illness by Questionnaire*. Maudsley Monograph No. 21. London: Oxford University Press, 1972.
53. RUITER M, TIZARD J, WHITMORE K. *Education, Health and Behaviour*. London: Longmans, 1970.