

EMOTIONAL HEALTH OF FAMILIES AND THEIR MEMBERS WHERE A CHILD IS OBESE

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Abstract—A controlled study of families with an obese child showed a small but significantly greater impairment in family functioning when this was elicited and rated using clinical methods. However no significant impairment was found when functioning was elicited with standardized objective methods. Mothers of obese children rated their families as more dysfunctional than mothers of control children. Although the emotional health of individual members in obese families was not worse than in control families, significant differences in the family patterning of emotional health were found. The more overweight the obese child, the healthier the mother rated the family, and the better her own mental health as assessed by a self-report method; and in families of obese girls, the greater the degree of overweight, the worse the rated family functioning. The findings are integrated with the literature and a theoretical explanation in which obesity is seen as an identity disturbance is offered.

INTRODUCTION

OBESEITY is poorly understood and puzzling. A proliferation of biological, medical, psychological and sociological studies [1] has done little to advance understanding of its cause or improve its management; and existing research contains many paradoxes. For example, obesity has been regarded as the major health hazard of the Western world [2, 3]; but this is increasingly being challenged for the majority in whom obesity is not gross [4, 5]. The greatest hazard of obesity, especially in childhood, is social stigma [6, 7].

The family is the fundamental nurturing, socializing and health care unit in society. It is therefore surprising that the family approach to understanding and managing obesity has been largely overlooked [8]. The family is the agent or context for many aetiological factors implicated by obesity research, such as eating habits or amount and type of food eaten. It is also well-documented that obesity runs in families [9-11]. In addition, numerous studies have demonstrated that obesity in childhood often leads to obesity in adulthood [12-16]. The prevalence of obesity is rising amongst children [17-19], as well as in the adult population [20]. For these various reasons, the family seems a logical starting place to consider the aetiology, prevention and treatment of obesity.

The reason for the paucity of research rooted in family interactions and experiences may be due to the relatively recent idea of the family as a unit of study and a focus of treatment in its own right. This 'family system' approach developed in the 1960s in the U.S. and in the 1970s in the U.K. and elsewhere. The present project derived from this scientific development.

Its aim was to investigate the family context of obesity directly, taking a clinical perspective on the obese family so as to reveal, if possible, the dynamic role that obesity might play in family life. Physiological mechanisms which must underlie

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the development of obesity are not directly relevant to such study. However, insofar as clear positive findings emerged from our investigations, the likelihood of genetic factors providing more than a disposition or potentiality for obesity would diminish.

To carry out such a study, it was necessary to have methods for eliciting family interaction in a valid and clinically meaningful fashion, and also to have conceptual schemes and techniques for describing the interaction. Instruments and methods for these purposes have been developed over the past decade by our research team at the Institute of Child Health and the Hospital for Sick Children, and latterly at Brunel University.

In this paper, we report the overall design and procedures and the results of testing two hypotheses. The main hypothesis tested was the common but unsubstantiated clinical belief that families with an obese child would show more family dysfunction than control families. This belief stems partly from the frequency with which treatment of obesity in childhood fails [21, 22]; and partly from clinical work which has suggested that a disturbed family environment might play an important role causing or maintaining obesity [23–27]. From a family systems perspective, the above main hypothesis would be that obesity was an expression of family disturbance. If this is so, it might be expected that the degree of obesity would be related in some way to family disturbance. We therefore investigated this subsidiary hypothesis.

Existing findings on the family of the obese child, which have been reviewed by Loader [8], are rarely based on actual observations of the whole family, and are too often non-specific. After presenting our findings, we will discuss them in relation to the obesity and family systems literature.

METHODS

Sample

The obese groups. The subjects in this study consisted of 65 families in two main groups: 37 families with an obese index child, the 'obese families'; and 28 families without an obese index child, the 'control families'. To minimize sampling bias the obese families were recruited from different sources in the hospital and the community: (1) an out-patient obesity clinic in the Hospital for Sick Children, the 'hospital-obese' group: $N = 13$; (2) the list of a general practitioner in the local London Borough, the 'GP-obese' group: $N = 11$; (3) a primary school, also in the local Borough, the 'school-obese' group: $N = 13$.

The control groups. Control families came from two sources: (1) an out-patient clinic for children with coeliac disease at the Hospital for Sick Children, the 'hospital-coeliac' group: $N = 13$; (2) the above-mentioned primary school, the 'school-normal' group: $N = 15$. The hospital-coeliac group was chosen as a control with particular reference to the hospital obese group as both sets of children were attending the same Hospital, sometimes from far away, both had a chronic condition but were generally well, and both required a strict diet as part of their treatment. However coeliac disease is organically determined and there is no reason to suspect aetiological involvement of emotional or social factors. The school-normal group lived in the same area as the GP-obese and school-obese groups and attended the same school as the school-obese group.

Selection and recruitment. To form the hospital groups (obese and coeliac), consecutive clinic attenders were asked by their paediatrician if they would participate in the research and then introduced to a member of the research team. The GP-obese and school-obese groups were recruited from a pool of children identified by the General Practice receptionist or teachers at the school as being overweight. The parents of the children were then written to by the GP or the headmaster of the school seeking permission for us to visit the family at home. The school-normal group was randomly selected from the children on the school register and approached in the same way as the school-obese group. In all cases, we sought participation on the basis of our interest in families, and did not refer to obesity.

There were two types of exclusion criteria. To meet the practical requirements for the technique to be used for whole family observation, we excluded: families without a child aged at least 4 yr; families

with more than four children at home; and families where English was not fluently spoken. To meet methodological requirements, we excluded: families in the obese groups where the index child was not obese on our criterion; families in the hospital-coeliac group where the diagnosis had not been confirmed by jejunal biopsy; families in the school-normal sample where a child proved to be obese on our criterion; and families in the hospital coeliac group who had taken part in a previous study testing our family instruments [28-30].

Excluded cases left us with a potential pool of 105 families of which 40 (38%) refused to participate in the study. The refusal rate was lower in the obese groups (30%) than in the control groups (46%). The school sample showed the main discrepancy: 24% of the obese families refused compared to 52% of controls. Information on refusers is available as 30 (75%) completed the initial interview administered at the time of attempted recruitment. Analysis of this data revealed that the refusers were similar to the participants on demographic criteria and family composition and structure. The differences in the obese refusers were a trend to girls rather than boys, teenagers rather than younger children, and the index child in the oldest position. Two families dropped out from the study: one 'school obese girl' family and one 'hospital coeliac boy' family.

Design

Within 1-4 weeks of recruiting and interviewing the families for basic information, families attended the Department of Psychological Medicine for the Family Task Interview (FTI) so that family interaction could be observed and overall family health could be assessed. The index child's height and weight were measured at this visit. The FTIs were videotaped for subsequent detailed study. Immediately following the FTI each family was rated independently for family health by three trained raters; and each family member was placed on a fatness-thinness continuum. The family members meanwhile completed a variety of self-report screening questionnaires on their individual mental health and family life, and on how they found the FTI process.

Then 6-12 weeks later all families except the school-normals were interviewed at home to assess the family's experiences and attitudes towards the condition of the index child and related issues. At the conclusion of this interview, which was audiotaped, another set of questionnaires was administered. As soon as possible after the interview, the interviewer categorised the predominant family responses to the issues he had raised and probed during the interview; and made a rating of overall family functioning. These home interview ratings were later repeated by the other researcher after listening to the audiotape recording.

Family interviews

The family interviews are instruments based on well-established research approaches to families [28], devised to elicit family interaction and discussion which must then be clinically evaluated. They are not like the interview given at recruitment whose results are the immediate information obtained.

The Family Task Interview (FTI). The FTI [29] has advantages over previous similar types of instrument [25, 30]. It is administered by tape-recorder: takes one hour; and consists of a series of seven tasks which the family are asked to do together as a family. Tasks are verbal (e.g. 'discuss the likes and dislikes of everyone in the family') and non-verbal (e.g. 'build a tower with the blocks'), problem-solving (e.g. 'sort the deck of cards provided into groups') and emotion/fantasy-oriented (e.g. the family must imagine the end of a potentially upsetting story). The family interaction revealed by the FTI was observed by three researchers using a closed-circuit TV system and recorded on videotape. With the family's consent, the recording was preserved for an intensive study of family interaction.

The Family Experience Interview (FEI). The Family Experience Interview (FEI) is a modified version of a standardized method for clinically interviewing a whole family [31, 32]. It was administered in the family home, took about 45-90 min to complete, and was recorded on audiotape with the family's permission. Two of the researchers administered this interview, with families randomly allocated to one or the other. The interview followed a semi-structured protocol designed to explore the family experiences and attitudes on issues surrounding the condition, food and mealtimes, eating behaviour and social relationships. The FEI was not appropriate for the school-normal group.

Measures

Basic information. At the time of recruitment, an interviewer collected basic demographic data on the families as well as information on issues known or suspected to be related to obesity. This interview included information on family structure and composition, details about parents and children, proximity and amount of contact with the parents' families of origin, socio-economic status, ethnic origin, religious affiliation, accommodation, and contacts with medical, psychiatric and social work agencies.

Obesity measures. We used two different assessments of individual body size. *Standardized Body weight* was used for the index child. It is a common measure, both in everyday and medical usage, of the degree of 'fatness' but one that has been criticised [33]. Obesity was defined as a weight exceeding

expected body weight by 20% or more after adjusting for height, sex and age. This is a conventional criterion; and the necessary calculations were made with the 'Cole Slide-Rule' [32]. 'Eye-ball' ratings were developed to connect with the popular definition of fatness based on visual appearance. Each individual was rated in terms of five categories of body size ordinally scaled: very fat; fat; plump; just right; thin. Correlation between eyeball ratings and degree of overweight of the index child was 0.52 ($p < 0.001$) confirming that obesity in terms of appearance is associated with but not identical to obesity in terms of physical measurement [23]. Only one obese child was rated 'just right'.

Family measures. Three types of family assessments were employed: (a) ratings based on direct observation or contact, such as the Family Health Scales and Home Interview Family Rating; (b) indirect self-report questionnaire measures, such as the Family Functioning Index and various assessments of individual mental health; (c) qualitative assessments.

The *Family Health Scales (FHS)* was our principal family measure [30]. The FHS is a reliable and clinically valid research instrument designed to quantify the quality of family functioning from the perspective of an external trained observer, preferably on the basis of direct observation of family interaction. The FHS has six main scales (Affective Status, Communication, Boundaries, Alliances, Adaptability and Stability, and Family Competence) each of which contains sensitizing sub-scales. Rating uses a 7-point health/dysfunction continuum with 1 indicating maximal dysfunction and 7 indicating optimal function. The scoring process provides a single figure calculated to one decimal place which represents overall family health. Rating is usually performed in about 15 min. Three independent raters were used and reliability was adequate: mainly between 0.75 and 0.90 using non-parametric tests (Spearman's rho, Kendall's coefficient of concordance [35]). Mean scores were therefore used in calculations.

The *Home Interview Family Rating (HIFR)* was a rating of overall family functioning made independently by the interviewer and the listener using the Family Experience Interview as data. The measurement was based on all the information revealed at this interview, and was made by rating the family on a 7-point continuum of family health homologous to that used in the FHS: i.e. a score of 1 indicated family breakdown, 3 clear dysfunction, 5 adequate functioning and 7 optimum functioning. Agreement was checked (see Results) but the interviewer's assessment was deemed *a priori* to have greater validity as non-verbal cues were unavailable for the listener's rating. A *Home Interview Assessment (HIA)* of the families' experiences and attitudes to eating and obesity (or coeliac disease) was also completed by the interviewer and listener. The *Family Functioning Index (FFI)* is a brief questionnaire with separate forms for mother and father which enquires into a variety of aspects of family life (e.g. time spent together, decision-making, disagreements) and into marital satisfaction [36]. It yields two scores, one for mother and one for father, on the overall quality of family functioning. The FFI was used with hospital-obese, hospital-coeliac and GP-obese groups only.

Three well-established self-report measures were used to get an estimate of the psychological health of each member of the family. The 60-item version of the *General Health Questionnaire (GHQ)* [37] was completed by each parent and any child over 16 yr. The *Rutter A Scale (Parental Rutter or PR)* [38] was given to parents to complete together for school-age children. The *Behaviour Check List (BCL)* [39] was given to parents to complete together for any pre-school age children. All these instruments have a cut-off score, above which the individual concerned is deemed a potential 'psychiatric case'. Only for the GHQ is it established that the greater the score, the greater the probability of being a case, and the more severe the mental disturbance.

Qualitative assessments. As well as formal qualitative assessments indicated above, descriptions of researcher interaction with each family were made routinely at key points during the research procedure (e.g. at recruitment, at weighing, at the interviews) as well as in relation to any unprogrammed contacts.

Data analysis

All data were coded and punched for analysis on the University of London Computer. Statistical analyses were carried out using mainly non-parametric tests [35] via the Statistical Package for the Social Sciences (SPSS).

RESULTS

Comparability between obese and control families

The first task was to check whether the obese and control groups were essentially similar in terms of basic demographic factors, and in terms of family composition and structure. Differences on such variables could confound testing of the defined hypotheses. Tables I and II list the findings which suggest that the two groups were

sufficiently similar on the most obvious factors for further analyses to be conducted with confidence. As regards family characteristics, which might be more directly relevant for our study, the two groups are nearly identical. In particular, the index child is neither in a typical sibling position, nor in a specific age group.

General features

Additional information obtained at the recruiting interview concerned (a) for each child: relationships to parent figures, residence, school status, hospitalizations, history of emotional or behavioural problems, and history of physical problems; (b) for each parent: state of physical and psychiatric health, previous marriages, length of marriage, relationships and contacts with the family of origin (parents and siblings), and employment history; and (c) for the household: type of household, type of accommodation, household moves, extra-members of the household, and recent family deaths and other major events.

An epidemiological design would be more suitable for this analysis because it is not desirable to test a large number of variables using a relatively small sample. But, comparison is essential in any case: first, because the factors listed above are also potentially confounding; and second, because major trends might well be revealed. The main finding is the virtual absence of any differences between the two groups. (Analyses here took into account the greater proportion of community vs hospital families in the obese group.) However, one or two small consistent trends were noticeable in the obese families: the families more often lived closer (within 10 min) to the mother's family of origin (39% vs 22%); and the families of origin were generally visited more often (maternal grandparents: 53% vs 44% at least weekly, 77% vs 57% at least monthly; paternal grandparents: 52% vs 36% at least weekly, 66% vs 50% at least monthly). Though not statistically significant,

TABLE I.—DEMOGRAPHIC DETAILS OF OBESSE AND CONTROL GROUPS

	Obese	Control
Sample size	37	28
Source of sample		
Hospital	13 (35%)	13 (46%)
School	13 (35%)	15 (54%)
GP practice	11 (30%)	
Social class		
I	0 (0%)	4 (14%)
II	10 (27%)	3 (11%)
III	21 (57%)	13 (46%)
IV	5 (13%)	4 (14%)
V	1 (3%)	4 (14%)
Type of accommodation		
Council-rented	25 (68%)	12 (43%)
Owner-occupier	7 (19%)	12 (43%)
Other	5 (14%)	4 (14%)
Religious affiliation	22 (59%)	11 (39%)
Cultural origin		
Both parents British	25 (68%)	18 (64%)
One parent British	6 (16%)	6 (21%)
Both parents non-British	6 (16%)	4 (14%)

TABLE II.—FAMILY COMPOSITION, STRUCTURE AND AGES OF OBESE AND CONTROL FAMILIES

	Obese (<i>n</i> = 37)	Control (<i>n</i> = 28)
Family type		
Two natural parents	29 (78%)	20 (72%)
One parent family	7 (19%)	5 (18%)
One natural/one step-parent	1 (3%)	2 (7%)
Foster parents	0 (0%)	1 (4%)
Stage of family life cycle		
Pre-school	1 (3%)	0 (0%)
School and below 13 yr	22 (59%)	20 (71%)
Teenagers and home	11 (30%)	8 (29%)
Oldest child left home	3 (8%)	0 (0%)
No. of children at home		
One	8 (22%)	6 (21%)
Two	15 (41%)	16 (57%)
Three	11 (30%)	5 (18%)
Four	3 (8%)	1 (4%)
Sibling position of index child		
Only child	7 (19%)	6 (21%)
Oldest	15 (41%)	14 (50%)
Youngest	11 (30%)	7 (25%)
Middle	4 (11%)	1 (4%)
Sex of index child		
Boy	17 (46%)	14 (50%)
Girl	20 (54%)	14 (50%)
Age of index child		
Mean (SD)	9.3 (2.8)	8.6 (2.8)
Age range of index child		
Pre-school	3 (8%)	1 (4%)
School	33 (89%)	27 (96%)
Work	1 (3%)	0 (0%)
Age of parents: mean (SD)		
Mother (<i>n</i> = 37, 36)	36.5 (6.7)	35.9 (5.4)
Father (<i>n</i> = 36, 25)	38.6 (6.2)	37.9 (6.1)

these findings are mentioned because they were specially included as possibly associated with obesity: this lowers the likelihood of the findings being no more than a chance occurrence.

Combining the sub-groups

It was necessary to check whether the three obese sub-groups and two control sub-groups could be combined for the purposes of analysis. For example, it might be expected that the hospital group would contain the most severely obese children. Analyses revealed the hospital-obese and GP-obese groups to be almost identical: the hospital-obese mean standardized weight was 148% with SD 26%, and range 120–193%; the GP-obese mean standardized weight was 149% with SD 25%, and range 120–194%. However the school-obese group had fewer of the most severely obese children (range 120–167%); and therefore had a significantly lower mean standardized weight of 131%, with SD 14% ($p < 0.05$; *t*-test). In the light of this difference other potentially confounding variables mentioned above were examined, the most important being social class, sex distribution, age of family members, and

obesity of family members. We found no significant differences. The substantive measures yet to be presented were also checked for sub-group differences, particularly to avoid confounding of analyses associated with the degree of obesity. As nothing of significance emerged, the analyses presented below routinely take the three groups of families together. A similar analysis of the control groups indicated that combining them was reasonable too.

Obesity in the family

Only index children were actually weighed. The obese children were confirmed as more overweight, using % standardized weight, than control children: Mean 142, SD 23 vs Mean 97, SD 9 ($p < 0.0001$; t -test). The obese children were also rated as more obese than the controls on visual appearance ($p < 0.01$; χ^2). Correlation between % overweight and the eyeball ratings in the obese children was 0.52 ($p < 0.001$; Spearman's rho). The existence of an obese child within an overweight family, previously was confirmed in that a trend was found for each category of family relative to be rated more often obese in the obese group than in the control group. However, the father is the only relative for whom this difference was statistically significant (63% vs 29%, $p < 0.01$ χ^2).

Family functioning

Table III lists the findings using the various measurements of family functioning. The obese families were rated as significantly more dysfunctional than control families at the home interview (HIFR), but not on their interaction elicited by the task interview (FHS), although the trend is in the same direction. The 0.5 point difference in the HIFR is statistically significant ($p < 0.05$; Mann Whitney) and probably corresponds to a discrepancy in quality of functioning noticeable to a trained family therapist [34]. Mothers in obese families, but not fathers, rated their family on the FFI as significantly more dysfunctional than did those in control families ($p < 0.05$; Mann Whitney).

TABLE III.—EMOTIONAL HEALTH OF FAMILIES IN
OBESSE AND CONTROL FAMILIES

Family health measures	Obese mean (SD)		Control mean (SD)
FHS ($n = 37, 38$)	4.1 (0.89)		4.3 (0.88)
HIFR ($n = 33, 12$)	4.5 (0.75)	*	5.0 (0.83)
FFI ($n = 22, 11$)			
Father	29.2 (3.6)		30.6 (3.2)
Mother	27.8 (4.8)	*	31.3 (3.4)

* $p < 0.05$ Mann Whitney

Family health measures: FHS = Family Health Scales; HIFR = Home Interview Family Rating; FFI = Family Functioning Index. See text for details. The n values refer to the number of family ratings done with each instrument, the first value for the obese families, the second for the control families.

Individual mental functioning

The incidence of psychiatric cases in the obese and control families was analysed. The two groups were found to be reasonably similar. Incidence in mothers and index children in the two groups is almost identical — approximately 25 and 40% respectively. However, in the obese group, there is a trend to less disturbance in fathers — three cases (10%) vs five cases (20%); and to more sibling disturbance — 10 cases (37%) vs four cases (24%). A similar result is found when the scores on the various instruments are regarded as indicating a continuum of disturbance. Published research had suggested that there might be little or no difference in the incidence of psychiatric disturbance between obese and control groups. We used these measures because it was suspected that there might be differences in the *patterns of disturbance*. The above findings could be described as indicating a similar disturbance in mothers and fathers of the control group, but lesser paternal disturbance in the obese group. The index child-sibling pattern also appears to indicate a difference between the groups but is complex to interpret because of a variety of confounding factors including group differences in size of family, position of the index child, and age of the child, as well as the smaller numbers.

The various measures were inter-correlated to examine patterns further. In the obese families, the only substantial association was between the scores of disturbance of the obese child and of the oldest sibling ($r = +0.59$; $p < 0.002$). Cross-generational associations were non-significant and varied between -0.03 and $+0.23$. In the control families, by contrast, the only significant association was cross-generational: between scores of disturbance of the mother and of the index child ($r = +0.55$; $p < 0.002$). The remaining correlations varied between -0.20 and $+0.29$ and were again non-significant.

We examined associations between FHS scores and measures of individual disturbance on our screening questionnaires. In the control group, correlations were found in the expected direction, with both the index child (-0.32 ; $p < 0.1$) and the sibling (-0.63 ; $p < 0.01$): the more dysfunctional the family, the more disturbed the children. In the obese group, however, no association with deviance of the obese child was found, and the association with the sibling was in the reverse direction ($+0.38$; $p < 0.05$) i.e. the more dysfunctional the family, the healthier the child.

We examined this finding in another way by comparing the congruence between family health as indicated by an FHS score of over 4.5, and as indicated by the presence of at least one family member scoring as a case on the screening questionnaires. 75% of the control families showed congruence, being either healthy or unhealthy on both criteria, whereas 51% of the obese families showed incongruence — healthy by one criterion but unhealthy by the other. The difference between the groups was statistically significant at $p < 0.06$ (χ^2 Test).

Degree of overweight and family factors

The degree of overweight of the index child was correlated with the various measures of individual emotional health and family functioning and significant findings emerged. Among the individual measures, the most marked finding was: the fatter the child, the less mentally disturbed the mother ($r = 0.45$; $p < 0.01$). A similar trend, not reaching statistical significance, was found for the index child

and sibling, but not for the father: i.e. the fatter the index child, the psychologically healthier the index child and the sibling. Re-analysis by sex of the index child suggested that obese girls contributed somewhat more to these correlations.

Associations of overweight with family measures were also revealing. The objective rating of family functioning (FHS) showed a significant correlation — the fatter the index child the more dysfunctional the family was rated ($r = -0.28$; $p < 0.05$). This finding is almost solely due to the obese girl sub-group: $r_{\text{girls}} = -0.42$; $r_{\text{boys}} = -0.09$. The mother's FFI self-report measure of family functioning complemented but reversed the objective family health assessments, but was independent of the sex of the obese child: i.e. the fatter the index child, the better functioning the mother reported the family ($r = 0.37$; $p < 0.05$).

All correlations were examined further to check whether results may have been produced by the various sample sub-groups. No specific effects were found. We also looked for correlations of overweight with key family variables which may have provided a simple explanation. Again nothing substantial was found.

DISCUSSION

The results show some new and potentially important features of family functioning and emotional health in families with obese children. The striking finding from the present analyses is that both obesity and its degree seem to be factors in the patterning of family and individual emotional health. Simple differences between the degree of disturbance in the obese and control groups were absent or not substantial. It does seem likely that the families in our sample were functioning somewhat less than adequately — but so indeed were our controls. The families with obese children may have been minimally more dysfunctional, but the difference would not be substantial enough to be recognized by the average physician. If physicians do believe that families of obese children are particularly disturbed, our findings suggests that this belief must be based on the type of disturbance rather than on its severity. Similarly, existing research findings (based on questionnaires not direct observation) that the obese families are more chaotic or less unified than controls [40, 41] may need to be interpreted as referring to type rather than degree of disturbance. Our results will now be reviewed in more detail, interpreted in the light of the literature, and a tentative conclusion offered.

Limitations and confounding factors

The conclusiveness of the study is limited by a number of problems. Sampling bias may have occurred although differences found between the groups did not seem to be linked to any demographic factors or obvious type of family structure or composition, sibling position or age patterns. The associations to degree of overweight were vulnerable to the finding that the school-obese sub-group was significantly less overweight. However, as indicated in the 'Results', the sub-groups within the experimental and control groups were checked for differences on all available factors and measures as part of a search for confounding factors, but none emerged. In particular, the school-obese sub-group did not present differences on the key measures of family and individual health. Instrument validity needs considering: for example, the screening questionnaires used are not as satisfactory as

standardized psychiatric interviews, and the measures of individual mental health, though widely used (in the U.K. at least), have not been specifically standardized for use with obese families. The Rutter A scales are known often to miss boys with conduct disorder; however, given the base rate, this is unlikely to have affected results, and informal observations suggested that missed cases would have been more likely in the controls, rather than the obese group. Only two types of control groups were used, and this limits the possibility of generalizing. Families with children suffering from other psychosomatic disorders or psychogenic eating disturbances might have been usefully included. Although the refusers were similar on many counts, they may still have differed from those investigated. There were more older girls among the obese refusers, but the main sex-based finding linking greater obesity with greater family disturbance is unlikely to be upset as these refusers would be expected to be more obese (due to their age) and be more disturbed (as this is a usual feature of refusers). Finally, the raters were not blind to the families. Some of these problems and others will be examined further in what follows.

Family dysfunction

Our main hypothesis was that obese families were more dysfunctional than control families. In reviewing our findings, there are two sets of perspectives that must be untangled. First, the outsider ratings (researchers' assessments) must be distinguished from the insider ratings (mother's and father's assessments). Second, the more objective and standardized method (FHS on the Family Task Interview in a special family room) must be distinguished from the more subjective and less standardized method (HIFR on the Family Experience Interview in the home setting).

Family health assessments

Both the obese and control groups of families were rated as functioning less adequately when the researchers used the FHS than when they used the HIFR. However in both situations the obese group was rated as less healthy than the controls. This was only statistically significant in the case of the HIFR. The degree of dysfunction found in both cases was not great.

The FHS-FTI is the prime research tool, and it was necessary to determine whether the HIFR might need to be wholly discounted. We first examined the agreement on the HIFR between the interviewer and listener (the researcher who rated independently from audiotapes) and found, to our surprise, that this was high ($r = 0.80$) for obese but low ($r = 0.35$) for non-obese families. However checking the size and statistical significance of the difference in rating between the groups by using just one rater at a time gave the same result; and checking by using just the interviewer or just the listener also gave the same result. This suggested that the HIFR and the group difference in scores might well be valid, and prompted further analyses.

The problem now had three parts: why was the HIFR revealing families as healthier than the FHS? Why did the obese families look less healthy than the controls on the HIFR? Why was there a marked difference between the two groups in inter-rater agreement on the HIFR? The answers lie in the differences between the two types of interview and rating method.

The main difference between the FTI and FEI is the involvement of the researcher with the family. In the FEI, family interaction must be helpfully structured by the interviewer, and experience has shown that, while it is possible to rate families reliably, the interviewer's contribution may systematically obscure a family's dysfunction [29, 32, 42]. Further it seems likely that the more specific the focus to be maintained by the interviewer, the more likely will the family's character be obscured; and the FEI used here was of necessity a focussed interview. The FTI by contrast is specifically designed to leave the family to its own devices, and the researcher is kept fully external to the interaction. Although the FTI is not designed to tap into specific problems, formal studies have demonstrated that clinical dysfunction is usually revealed [42, 43]. It is likely, therefore, that the FTI dispassionately and unambiguously elicited family dysfunction, while the FEI did not.

The rating methods are also different. The FHS is a sophisticated, complex instrument which keeps the rater's mind focussed on the realities of observed family interaction and minimizes halo effects [34]. The FHS contains 26 subscales and over 100 anchoring descriptions all of which must be considered to produce one final score. This usually requires 15 min or more of concentrated work. The HIFR by contrast is a single simple visual analogue-type scale with four global descriptors. It is completed in a minute or two. The HIFR, in the hands of expert clinicians, may well be reliable, but it may also be prey to systematic subjective distortion. It is necessary therefore to examine whether such systematic bias might have occurred.

To reveal bias, and so to understand the differences between obese and control families with the HIFR, it is necessary to turn to the interviewers' regular reports of their experience of carrying out the FEI. Interviews with obese families were repeatedly found to be more difficult to conduct. The interviewers reported that the interaction between themselves and the family was excessively formal and compliant, and that this interfered with the interview process which demanded a certain spontaneity. Obese families generated the sense that 'all is not as it seems'. Similar characteristics had been noted in other phases of the research (to be published), and are unlikely to have been artefacts. This experience of difficulty in interviewing obese families would very likely have influenced the ratings.

The obese-control discrepancy in agreement (0.80 vs 0.35) between interviewers' and listeners' HIFRs can be explained on the same basis. The obese families related in a predictable, compliant and non-spontaneous way. As a result, the loss of non-verbal behaviour and the distancing produced by rating from an audiotape had relatively little effect, and the listener judged the family much like the interviewer — leading to high agreement. By contrast in the non-obese families, audiotaping resulted in a substantial loss of information for the listener and so the degree of agreement in ratings was low.

The overall pattern of findings are difficult to account for simply on the basis that the researchers were not blind. However, the results curiously and unexpectedly mirrored existing disputes in the literature in an important respect. The two modes of family assessment embodied the two poles of existing research studies: one objective and detached (FTI-FHS), the other subjective and involved (FEI-HIFR). In the literature objective assessments of psychological aspects of obese individuals have typically generated negative results: either finding no or minor differences, or finding that obese individuals are 'superstable' or healthier than normal [44, 45].

By contrast, subjective and intimate assessments by those practically or personally involved with the obese, like clinicians [46, 47], the general public [48], and research-oriented therapists [49–51], repeatedly suggest that something is psychologically wrong about the obese — perhaps very seriously wrong — particularly in individuals whose obesity has commenced in childhood and in those who come for treatment. Further evidence for this is provided in the present study in that the mothers of obese children rated their families as significantly more dysfunctional than did mothers of control children. Fathers, usually less involved than mothers, did not make a similar assessment.

Our research design was based on the supposition that both insider and outsider, objective and subjective, points of view were needed; and that *the discrepancy between these perspectives is itself a basic research finding*. Furthermore, *impairment in the obese families is more noticeable and disturbing from a subjective-insider vantage point*. The most noticeable thing from the objective-outsider vantage point is the presence of an obese child.

Individual emotional health

As expected, there was no overall difference between the emotional health of the index child or of other members in obese and control families [1, 52]. However intrafamilial patterns in the obese did show specific characteristics when looked at in four ways. First, the fathers of obese children showed a trend to a lesser degree of disturbance than did the mothers, whereas the parents showed equal disturbance in the controls. This suggests that fathers may be protected. Second, whereas our control group reflected the usual finding that the family pattern of emotional disturbance shows a cross-generational correlation to the mother [38, 53–55], the only significant correlation in the obese group was between siblings. This suggests some disconnection between the mother and her children.

Third, a disconnection was also found between family functioning and child disturbance. In the obese group, the quality of family functioning showed no significant association with the emotional health of the index child, and a significant negative association with the emotional health of the sibling. Control families, on the other hand, showed the expected positive association between quality of family functioning and emotional health of the children. A possible explanation for the disconnection may be found in the fact that one criterion is outsider-generated (FHS), while the other is insider-generated (self-report mental health ratings) and amenable to bias by a family wishing to present well or to conceal itself. From our informal observations throughout the project, we independently concluded that the obese families showed such characteristics to a marked degree — probably sufficient to resist conventional standardized psychiatric interviewing (which would therefore validate the screening questionnaire results), but not sufficient to block psychodynamic interviewing.

Fourth, a further paradoxical result emerged from comparing family and member indicators to decide whether a family should be categorized as 'healthy' or 'unhealthy'. The obese families appeared 'healthy' on one criterion and 'unhealthy' on the other significantly more often than control families. Studies with other non-obese groups, including psychiatric families, has revealed that congruence is the rule [34]. This suggests that the desire to present well is not a sufficient explanation because

in half the cases incongruence was based on the family being classified as 'healthy' by outsiders; and 'unhealthy' by member self-report.

In summary, we conclude that differences in emotional health have been found between families with an obese child and control families. However *these differences are not primarily differences in amount, but differences in the patterning of disturbance*. We further suspect that the findings indicate an abnormality in the families' relation to their social environment.

Effect of degree of obesity

The main finding within the obese group itself, was that the more overweight the index child, the healthier the mother rated the family (FFI), and the healthier she was on the GHQ. There was also a definite trend for the greater obesity to be associated with better individual health for the index child and the sibling. The low base rate of psychiatric disturbance in fathers in the obese group meant that correlations with obesity were unlikely to show up, but these fathers are noteworthy on two counts: they had significantly more obesity than the control fathers and less psychiatric disturbance. These findings cohere and lead to two main and possibly complementary explanations.

One explanation may be found in the instruments, none of which were specifically standardized for obese individuals. We observed that usually mothers took the lead in completing the various questionnaires (except fathers' GHQ and FFI). The mother may have therefore actively chosen to complete the various forms so as to make her and her family appear more 'normal'. It would be consistent with the finding mentioned above of an unusually strong tendency to wish to present well. If this were the sole explanation, then the finding could be restated as follows: the desire to present as normal increases with increasing overt evidence of abnormality i.e. the obesity of the child.

Analyses according to sex of the obese child revealed that in girls families only, the increasing obesity was associated with worse actual family functioning as judged by trained outsiders. This sex difference in relation to the correlation of two important objective measures makes a general explanation of findings in terms of an increased desire to appear normal less likely.

If the findings are accepted as they stand, then a causative link may have been uncovered. The obesity of the index child may be *directly* serving the function of maintaining the emotional health and functioning of the mother, the father, and hence the children and the family as a whole (or be directly linked with some other factor which has this function). In this scenario, as the child becomes more obese, the experienced tensions in the individual members, particularly the mother, reduces; while as the child succeeds in keeping his obesity under control, the emotional state of family members deteriorates. This is consistent with findings in adult obesity which have suggested that loss of obesity by an individual can be associated with appearance of severe disturbance, not only in the obese individuals themselves, but in those close to him or her [51, 56-60].

Explaining the findings

Our research commenced from the view that the family might be as significant as the individual in explaining obesity, because the family shapes psychological

development and mediates social influences. The problem of obesity, from a family perspective, is to determine how the family's functioning involves or requires the maintenance of one or more individual members with an above-average body-weight.

Our findings suggest that families with an obese child are perceived more negatively by the mother, are rated as more dysfunctional by outsiders who become involved with them, and show abnormalities in the patterning of emotional health. In addition, the degree of obesity may play a part in maintaining the mental health of family members, and in supporting the mother's positive perception of her family, even though, for girls' at least, the degree of overweight is associated with deterioration in family functioning as assessed objectively. This would suggest that if obesity decreased, the members might become more disturbed and the mother more dissatisfied. Such emotional changes would be a powerful family influence leading to weight-gain. There is support for this hypothesis in the literature. Crisp and Stonehill [64] concluded that obesity in a family member was useful for the family in reducing their 'neurotic difficulties'. Furthermore the idea that a disturbance in a child might regulate and reduce tension in the family is a common clinical assumption in family therapy [65, 66]; and has been documented for psychosomatic conditions within families [25, 67], and in an uncontrolled family study of obese children [27].

Family relationships are the crucible in which a child's identity is formed. It might be expected on theoretical grounds that a fat child would link his size to his self-image and to his relations with others. Our findings clarify the nature and strength of this linkage. Empirical evidence exists to support the hypothesis that obesity is primarily an identity disturbance: the only characteristic found by Sallade [52] in a large controlled objective investigation of obese children was that their self-concept (i.e. individual identity) suffered. The degree of obesity may be a fixed point for the child, set by the tension in the family.

The literature on obese adults suggests that each individual seems to strive towards a 'desired' weight, his 'set point' for obesity [61]. It is well established that an individual has a weight that is 'normal' for him: he feels uncomfortable when he falls below this weight, and does not drift above it. This weight is regulated by an absence of satiety, not by hunger. The set-point is usually assumed to be biologically determined, i.e. based on genetic predisposition combined with the biological effects of early experiences [62, 63]. The set-point, though higher than average in the obese, may be said to be 'normal' in the sense that it is part of the obese individual's constitution [50].

Psychological experiences associated with deviation from the set-point are then argued to be simply reactions to a biological state. However, as Kalucy [1] pointed out, it is hard to explain simply on biological grounds why most obese adults should desire to reduce weight, why so many fail to seek help despite this desire, why there is such a high drop-out from treatment programmes, why emotional turmoil sometimes of psychotic proportions develops around weight loss, and so on. If such observations are given their due weight, social and psychological factors are seen to be inherent in body-weight maintenance, and not secondary or reactive manifestations. And set-point for an adult individual is, therefore, a manifestation of personal identity, not just of physical constitution. Its origins would then be expected

to be found in early family relationships. The converse also holds: if staying obese is a characteristic of the family (as our study suggests), then in later life it would be expected to become a characteristic of the individual. Such propositions do not deny the reality of metabolic and physiological processes to mediate physical changes.

Obesity, as a physical phenomenon, will only be significant for personal identity insofar as the individual and society gives the visible manifestation of body-size and body-shape specific meaning. This line of argument suggests that the task of obesity research should involve determination of the basis for a personal identity rooted in maintaining an above-average body-weight. However, there are serious limitations to such a purely individual-oriented approach characteristic of the literature, as illustrated in the following study: Crisp *et al.* [58] found that when one family member lost weight in hospital, the increased weight of the remaining family members (including the family dog) resulted in weight balance in the family as a whole. Identity is formed in the family in the context of societal values, so explanations of obesity based on personal identity would be expected to lead back to the family.

The argument can be taken further in that we found positive indications that obesity in a child may be part of a characteristic patterning of the family (i.e. its system identity); and others have pointed to the cultural variations in the meaning of obesity and its prevalence in children [20]. The hypothesis of obesity as an identity disturbance would imply significant sex differences, and a role for father as well as mother in family pathology. Although evidence on these factors are noticeable in the literature by their absence [1, 50, 52], some sociologically-oriented research suggests the importance of sex differences [7]. Our study found that increased obesity is associated with greater family dysfunction only in the families of obese girls; and suggested that fathers may be involved — being more obese, and more in contact with their family of origin.

In conclusion, our findings suggest that obesity may well be an overt public symptom of a specific as-yet-undescribed family abnormality. In other words, the obesity of a child might best be understood as a constituent of the identity of its family, as well as of the obese child itself. If so, its development must be understood in terms of obesity as a cultural expression (societal identity). Common observation suggests, and social science research confirms, that individuals and social units (families, organizations, societies) dread and intensely oppose identity change. Seeing obesity as part of the identity of interlocking human systems (the child, the family, the society) offers a direct and powerful explanation for its notorious resistance to treatment.

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