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Childhood Body-Focused Behaviors and Social Behaviors as Risk Factors of Eating Disorders

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Key Words

Body-focused behaviors · Social behaviors · Childhood · Risk factors · Anorexia nervosa · Bulimia nervosa · Eating disorders

Abstract

Background: The risk factors for adolescent eating disorders are poorly understood. It is generally agreed, however, that interactions with one's body and interactions with others are two important features in the development of anorexia and bulimia nervosa. Therefore, we assessed a variety of childhood body-focused behaviors and childhood social behaviors in eating-disordered patients as compared to non-eating-disordered subjects. ***Method:*** We compared 50 female inpatients with eating disorders (anorexia or bulimia nervosa), 50 female inpatients with polysubstance dependence, and 50 nonpatient female control subjects with no history of eating or substance abuse disorders (all defined by DSM-IV criteria), using a semi-structured interview of our own design. We asked questions about (1) childhood body-focused behaviors (e.g. thumb-sucking) and body-focused family experiences (e.g. bodily caresses), and (2) childhood social behaviors (e.g. numbers of close friends) and family social styles (e.g. authoritarian upbringing). ***Results:*** Many body-focused measures, such as feeding problems, auto-aggressive behavior, lack of maternal caresses, and family taboos regarding nudity and sexuality, characterized eating-disordered patients as opposed to both comparison groups, as did several social behaviors, such as adjustment problems at school and lack of close friends. However, nail-biting, insecure parental bonding, and childhood physical and sexual abuse were equally elevated in both psychiatric groups. ***Conclusion:*** It appears that eating-disordered patients, as compared to substance-dependent patients and healthy controls, show a distinct pattern of body-focused and social behaviors during childhood, characterized by self-harm, a rigid and 'body-denying' family climate, and lack of intimacy.

A large body of literature has examined the associations between family functioning, child rearing practices, and the development and course of eating disorders [1–9]. Many of these studies have described a 'disordered' family system, characterized by an emphasis on dieting and physical appearance, conflict avoidance, motherly over-

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protection, absence of the father, and presentation of an intact family to outsiders [10–18]. In particular, recent case-control studies of subjects with bulimia [19] and anorexia nervosa [20] have demonstrated that these individuals exhibited greater childhood exposure to factors likely to increase the risk of dieting, and greater negative self-evaluation, even when compared to individuals with other psychiatric disorders.

Another body of studies has noted an elevated prevalence of various psychiatric disorders in individuals with eating disorders [21] and their relatives [22–30]. Furthermore, adverse childhood events appear associated with the development of eating disorders [31–34] and other psychiatric disorders [19, 20, 35].

Finally, research on the causes of eating disorders has also pointed to certain personality traits [36–41], such as low self-esteem, which may trigger eating disorders at a later age.

A review of this literature suggests that many of the risk factors for eating disorders might be grouped into childhood *'body-focused' behaviors* (including both the child's interaction with its own body and the family's attitude toward body issues) and childhood *social behaviors* (including both intrafamilial and extrafamilial social interactions). It remains unclear, however, whether these factors were specific to the development of eating disorders, or nonspecific risk factors for psychiatric disorders as a whole. Accordingly, we assessed a range of childhood body-focused and social behaviors in women with eating disorders, in women with polysubstance dependence (PSD), and in a control group of women.

Methods

We interviewed three groups of Caucasian women aged 18–36. The first group consisted of 50 inpatients with a current eating disorder (anorexia nervosa, n = 27; bulimia nervosa, n = 23). We recruited two comparison groups. The first one was composed of 50 inpatients with current PSD. None of these patients reported a history of eating disorder. Conversely, none of the patients with eating disorder reported a history of any substance abuse. Our choice of a comparison group with PSD was prompted by our recent family study [42], which demonstrated that substance abuse showed no significant familial coaggregation with eating disorders. The second comparison group was composed of 50 healthy controls with no history of eating disorder or PSD. All clinical diagnoses were based on the Structured Clinical Interview for DSM-IV.

Patients were recruited from consecutive inpatient admissions to the Psychosomatic Unit in Innsbruck, Austria, healthy controls among students by advertisement. All subjects signed informed consent.

Since there are no standardized questionnaires, we interviewed all subjects using a semi-structured instrument of our own design. Body-focused behaviors were assessed by questions asking whether or not subjects had experienced the following behaviors: use of a pacifier, thumb-sucking, feeding problems (defined as childhood picky eating, digestive problems or recurrent vomiting), nail-biting, bed-wetting, and auto-aggressive behavior (defined as two or more of the following: self-mutilation, hair-pulling, self-biting or scratching). To assess the experienced environment with regard to body behaviors, we asked whether or not they were breast-fed as a baby, received bodily caresses from parents, experienced nudity as a taboo and talked about sexuality in their families. Subjects were also asked about experiences of childhood physical and sexual abuse. Childhood physical abuse was defined as having been severely slapped, kicked, or beaten with an object by an adult prior to age 18. Childhood sexual abuse was defined by (a) the victim was under the age of 18 at onset of abuse, (b) sexual contact of a physical nature occurred or was attempted, and (c) the abuser was 5 or more years older than the victim, or the abuse was unwanted [43, 44].

All of the above measures were assessed as dichotomous categorical variables to be answered by yes or no.

Childhood social behaviors were assessed by questions covering primarily social interactions with parents, siblings, and friends, such as 'Did you start crying when your parent left the room?' (termed 'insecure parental bonding'); 'How did you experience your relationship to your parents?'; 'Did you experience separation anxiety from parents when you entered primary school?' (termed 'adjustment problems at school'); 'How many close friends did you have as a child?'; 'Who was your person of trust?'.

Familial environment with regard to social behaviors was assessed by asking about parental divorce, authoritarian upbringing, and rigid eating rules, such as 'Did you have to finish all food on the plate?'.

For questions with dichotomous answers, only one answer is presented in the tables. For categorical questions, either all or the most striking answers are presented in the tables.

Within the eating disorder group, the subgroups of subjects with anorexia and bulimia nervosa did not differ on most measures. Although we present results for patients with anorexia nervosa and bulimia individually in the tables below, these two subgroups were combined for statistical comparisons with the other two groups.

Statistics

For comparisons of continuous variables among the three groups, we used one-way ANOVA, followed by the post hoc Tukey's test when the overall F test was statistically significant. For comparisons of binary variables, we used the χ^2 test for 2×3 tables, followed by Fisher's exact test for 2×2 tables when the test for 2×3 tables produced a significant result. We performed analyses using SPSS [45]. Because many of the measures were correlated, it was difficult to calculate an appropriate correction for the effects of multiple comparisons. Therefore, the results are presented without correction, with alpha set at 0.05, two-tailed. Accordingly, the reader should bear in mind that some findings, especially those of marginal significance ($0.01 < p < 0.05$) may represent chance associations.

Table 1. Background characteristics

	Subject groups					p value for comparison				
						overall[1]		pairwise		
	AN (n = 27)	BN (n = 23)	ED (1) (n = 50)	PSD (2) (n = 50)	CO (3) (n = 50)	AN vs. BN	ED vs. PSD vs. CO	ED vs. PSD	ED vs. CO	PSD vs. CO
Age, years	22.3 (3.5)	23.0 (4.2)	22.6 (3.8)	24.7 (4.9)	22.0 (4.6)	n.s.	0.01	0.057	n.s.	0.011
Age at onset of disorder, years	17.0 (2.7)	16.5 (2.9)	16.8 (2.8)	15.9 (2.3)		n.s.	n.s.			
Body mass index	17.3 (2.1)	20.4 (2.7)	18.7 (2.8)	20.6 (3.2)	21.8 (2.9)	<0.001	<0.001	0.004	<0.001	n.s.
Educational level						n.s.	<0.001			
College or postgraduate	14 (52)	11 (48)	25 (50)	6 (12)	19 (38)					
High school or lower	13 (48)	12 (52)	25 (50)	44 (88)	31 (62)					

Values are shown as mean (SD) for continuous variables and n (%) for categorical variables. AN = Anorexia nervosa; BN = bulimia nervosa; ED = eating disorder; PSD = polysubstance dependence; CO = controls.

[1] F test for continuous variables: d.f. = 2, 147. χ^2 test for binary variables: d.f. = 2.

Results

Background Characteristics

The groups differed significantly in age, but the magnitude of this difference was only a few years (table 1). Due to the selection criteria of the three groups, there were significant differences in educational level and body mass index. Eating-disordered patients and healthy controls were more highly educated than the PSD group. As expected, body mass index was significantly lower in the eating disorder group than in both others.

Body-Focused Behaviors

The three groups differed significantly in most of the measures of body-focused behaviors, both in their self-reports and in their description of their environment (table 2). Eating-disordered patients reported significantly more frequent feeding problems, nail-biting, and auto-aggressive behavior than healthy controls, and there is a trend towards significant differences as compared to the other psychiatric group.

Eating-disordered patients, however, described a familial environment that was significantly less body-focused than those of controls and PSD. Anorexic and bulimic subjects were significantly less likely to report 'having taken baths together with their mothers' as children or 'receiving bodily caresses by their parents'. They also described significantly more 'familial taboos against nudity' and significantly less 'familial discussions on sexuality' than both other groups.

By contrast, childhood physical and sexual abuse were equally elevated in both psychiatric groups as compared to the healthy comparison subjects.

Childhood Social Behaviors

Childhood social behaviors also differed among the three groups (table 3). Eating-disordered patients significantly exceeded healthy controls in reported 'insecure parental bonding' and in negative quality of relationship to their fathers. The measure 'no person of trust' showed almost a threefold higher rate in both psychiatric groups compared to the healthy group, but did not reach statistical significance because of the small numbers. However, two factors were specifically elevated only in patients with anorexia nervosa and bulimia nervosa – 'adjustment problems at school' and 'no close friends'.

Eating-disordered patients reported a familial environment that was characterized by the lowest rate of parental divorce and the highest frequency of 'having to finish all food on the plate'.

Discussion

We assessed a range of childhood body-focused and social behaviors in patients with eating disorder and compared them to psychiatric and nonpsychiatric comparison groups. Certain factors appeared specifically associated with patients with eating disorder, comprising a distinct pattern of body behaviors and social behaviors characterized by self-harm, a 'body-denying' family environment, and lack of intimacy.

Table 2. Childhood body-focused behaviors

	Subject groups					p value for comparison				
						overall[1]		pairwise		
	AN (n = 27)	BN (n = 23)	ED (1) (n = 50)	PSD (2) (n = 50)	CO (3) (n = 50)	AN vs. BN	ED vs. PSD vs. CO	ED vs. PSD	ED vs. CO	PSD vs. CO
Self										
Use of pacifier	20 (77)	19 (83)	39 (79)	39 (80)	41 (82)	n.s.	n.s.			
Thumb-sucking	5 (19)	3 (13)	8 (16)	11 (23)	10 (20)	n.s.	n.s.			
Feeding problems	6 (22)	11 (48)	17 (34)	8 (16)	7 (14)	0.057	0.027	0.063	0.034	n.s.
Nail-biting	15 (56)	12 (53)	27 (54)	22 (46)	12 (24)	n.s.	0.007	n.s.	0.004	0.033
Bed-wetting	4 (15)	4 (17)	8 (16)	9 (18)	6 (12)	n.s.	n.s.			
Auto-aggressive behavior	14 (52)	11 (48)	25 (50)	15 (30)	12 (24)	n.s.	0.017	0.066	0.012	n.s.
Familial environment										
Breast-fed	18 (72)	9 (43)	27 (59)	35 (76)	29 (62)	0.044	n.s.			
Received bodily caresses from										
Mother	11 (41)	10 (44)	21 (42)	38 (76)	40 (83)	n.s.	<0.001	0.001	<0.001	n.s.
Father	7 (27)	5 (23)	12 (25)	22 (44)	34 (71)	n.s.	<0.001	0.058	<0.001	0.009
Nudity as a familial taboo	19 (70)	10 (44)	29 (58)	17 (34)	15 (31)	n.s.	0.01	0.027	0.008	n.s.
Sexuality – no topic in family	26 (96)	22 (96)	48 (96)	32 (62)	29 (58)	n.s.	<0.001	<0.001	<0.001	n.s.
Had baths together with mother	2 (7)	3 (13)	5 (10)	16 (32)	23 (48)	n.s.	<0.001	0.007	<0.001	n.s.
Had baths together with father	4 (15)	4 (18)	8 (16)	11 (22)	21 (42)	n.s.	0.011	n.s.	0.005	0.039
Familial and other environment										
Sexual abuse[2]	13 (48)	11 (48)	24 (48)	23 (47)	5 (10)	n.s.	<0.001	n.s.	<0.001	<0.001
Physical abuse[2]	7 (27)	6 (26)	13 (27)	20 (41)	5 (10)	n.s.	0.002	n.s.	0.040	<0.001

Values are shown as n (%). Note that in some cases the denominator is less than 50 because of missing data. AN = Anorexia nervosa; BN = bulimia nervosa; ED = eating disorder; PSD = polysubstance dependence; CO = controls.

[1] F test for continuous variables: d.f. = 2, 147. χ^2 test for binary variables: d.f. = 2.

[2] Values are shown as mean (SD) for continuous variables and n (%) for categorical variables. Note that in some cases the denominator is less than 50 because of missing data.

Interestingly, it was not pleasant body-focused behaviors, such as the use of a pacifier, that characterized women with eating disorder, but rather nail-biting, auto-aggressive behavior, and noxious forms of eating during childhood. This finding appears consistent with Harbauer [46] who describes nail-biting as a form of auto-aggressiveness that in some cases develops into an eating disorder later. This result also agrees with Schulze et al. [47], who found onychophagia in 27% and scars in 12% of eating-disordered patients. Although nail-biting is described as an antecedent or comorbid factor of eating disorders [48], it does not appear to be specific for anorexia or bulimia nervosa, since our patients with PSD reported similarly high rates.

The findings of childhood feeding problems in anorexic and bulimic women accords with recent results [17, 49, 50] that showed an association between digestive problems, picky or 'neophobic' eating in childhood, and severe malnutrition and eating disorders in adolescence. Furthermore, some studies describe an association between insecure attachment, ineffective family functioning, and childhood eating problems that did not improve with maturity [49, 51, 52]. Nevertheless, reports on childhood feeding should be regarded carefully because of potential recall bias.

The familial environments experienced by the subjects also differed significantly: most strikingly, eating-disordered patients reported significantly fewer parental bodily caresses than healthy controls. This climate is best illustrated by the measures 'nudity as a familial taboo' and 'sexuality not discussed in the family', both of which were reported by the majority of eating-disordered patients. Although the literature describes dysfunctions, motherly overprotection, and conflict avoidance in families with eating disorder [1–7, 11, 18, 53–55], there are almost no studies looking at specific body-focused behaviors within the family.

This body-denying family climate seems to be a specific risk factor for eating disorder, since patients with PSD were similar to healthy controls on these familial

Table 3. Childhood social behaviors

	Subject groups					p value for comparison				
						overall[2]		pairwise		
	AN (n = 27)	BN (n = 23)	ED (1) (n = 50)	PSD (2) (n = 50)	CO (3) (n = 50)	AN vs. BN	ED vs. PSD vs. CO	ED vs. PSD	ED vs. CO	PSD vs. CO
Self										
Insecure parental bonding	13 (48)	12 (54)	25 (51)	30 (64)	14 (29)	n.s.	0.002	n.s.	0.038	0.001
How was your relationship to[1]										
Your mother						n.s.	0.069	n.s.	n.s.	0.078
Very good/good	19 (70)	19 (82)	38 (76)	29 (59)	38 (81)					
Moderate	5 (19)	4 (17)	9 (18)	14 (29)	6 (13)					
Bad/very bad	3 (11)		3 (6)	6 (12)	3 (6)					
Your father							0.002	n.s.	0.001	0.061
Very good/good	11 (42)	13 (59)	24 (50)	29 (62)	37 (79)	n.s.				
Moderate	9 (35)		9 (19)	7 (15)	8 (17)					
Bad/very bad	6 (23)	9 (41)	15 (31)	11 (23)	2 (4)					
Envy of sibling	19 (70)	16 (76)	35 (73)	15 (33)	31 (62)	n.s.	0.001	<0.001	n.s.	0.013
Adjustment problems at school	13 (48)	7 (30)	20 (40)	10 (20)	6 (12)	n.s.	0.003	0.049	0.003	n.s.
No close friend	13 (48)	6 (26)	19 (38)	2 (4)	1 (2)	n.s.	<0.001	<0.001	<0.001	n.s.
Nobody as person of trust	6 (22)	2 (9)	8 (16)	8 (16)	3 (6)					
Familial environment										
Parental divorce[1]	2 (7)	3 (13)	5 (10)	20 (40)	13 (26)	n.s.	0.003	0.001	0.066	n.s.
Authoritarian upbringing	21 (81)	19 (83)	40 (82)	29 (60)	37 (79)	n.s.	0.038	0.026	n.s.	0.053
Had to finish all food on the plate	18 (67)	9 (39)	27 (54)	16 (32)	13 (26)	n.s.	0.010	0.043	0.008	n.s.
Had meals together with family	26 (96)	22 (96)	48 (96)	41 (82)	48 (96)	n.s.	0.016	0.051	n.s.	0.051

Values are shown as n (%). Note that in some cases the denominator is less than 50 because of missing data. AN = Anorexia nervosa; BN = bulimia nervosa; ED = eating disorder; PSD = polysubstance dependence; CO = controls.

[1] ANOVA one-factor analysis, post hoc Tukey; χ^2 test for binary variables.

[2] By χ^2 test, d.f. = 2.

indices. By contrast, nonspecific factors included childhood physical and sexual abuse, which were reported almost equally by both of the two psychiatric groups – a finding consistent with other studies [19, 20, 29, 33, 56, 57].

Findings of childhood social behaviors in eating-disordered patients confirm the literature: insecure attachment, defensive behavior, and low individual autonomy [1–9, 54, 55, 58].

The frequency of patients reporting 'no close friends as a child' accords with previous studies [19, 20], although our rates were twice as high. This factor, reflecting social withdrawal [59] and a possible impairment in social skills [60], sharply distinguished eating-disordered patients from both the psychiatric and nonpsychiatric comparison groups.

Another factor also apparently specific to eating disorder is the rigid eating rule 'having to finish all of the food on a plate'. This childhood environment may possibly contribute to the low self-esteem [19, 20], negative body image [19, 20, 61], and problems with identity [62] reported in adult patients with eating disorder.

Several limitations of this study should be recognized. First, we had to rely on retrospective reports. Second, subjects were assessed by an unblinded rater. Third, our sample of eating-disordered patients was of modest size. Fourth, we did not formally assess psychiatric comorbidity in the patient groups and the nonpsychiatric control group, thus it might be argued that certain risk factors noted in the eating-disordered group might actually be risk factors for other disorders that were comorbid with eating disorders. A subsequent study should take this point into consideration. Fifth, our semi-structured interview was not a validated or standardized measure, although the items covered and questions used were partly derived from previously established instruments.

In summary, it appears that eating-disordered patients show a distinct pattern of body-focused and social behaviors even during childhood, characterized by self-harm, a body-denying and rigid family climate, and lack of inti-

macy. Importantly, this pattern appears specific to eating disorders, rather than to psychiatric disorder in general, since it was not present in the comparison subjects with PSD.

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