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Psychosocial and Familial Impairment Among Overweight Youth with Social Problems

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Abstract

Objective—Emerging research indicates that overweight children with social impairments are less responsive to weight control interventions over the long term. A better understanding of the breadth and psychosocial correlates of social problems among overweight youth is needed to optimize long-term weight outcomes.

Methods—A total of 201 overweight children, aged 7–12 years, participated in a randomized controlled trial of two weight maintenance interventions following family-based behavioral weight loss treatment. Children with HIGH ($T \geq 65$) versus LOW ($T < 65$) scores on the Child Behavior Checklist Social Problems subscale were compared on their own and their parents' pre-treatment levels of psychosocial impairment using multivariate analysis of variance. Hierarchical regression was used to identify parent and child predictors of social problems in the overall sample.

Results—HIGH ($n=71$) children evidenced greater eating disorder psychopathology and lower self-worth, as well as a range of interpersonal difficulties, compared to LOW children ($n=130$; $ps < .05$). Compared to parents of LOW children, parents of HIGH children reported greater levels of their own general psychopathology ($p < .05$). Parent psychopathology significantly added to the prediction of social problems in the full sample beyond child sex and z-BMI ($ps < .01$).

Conclusion—A substantial minority of overweight youth experience deficits across the social domain, and such deficits appear to be associated with impairment in a broad range of other psychosocial domains. Augmenting weight loss interventions with specialized treatment components to address child and parent psychosocial problems could enhance socially-impaired children's long-term weight outcomes and decrease risk for later development of psychiatric disturbances.

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Keywords

Childhood obesity; social problems; psychopathology; eating disorders; teasing

Childhood overweight affects approximately 17% of children and adolescents in the United States (1), and is associated with adverse physical health sequelae (2) and increased risk of tracking obesity into adulthood (3). Several studies have documented the myriad interpersonal difficulties encountered by overweight youth (4–7), and evidence suggests that socially impaired youth may be less successful in weight control interventions (8, 9). A better understanding of the specific nature of social problems affecting these youth, as well as other psychological and familial factors that might influence treatment outcome, is necessary to promote their optimal weight control.

Overweight children, on average, are at a social disadvantage compared to their normal-weight peers (10). Childhood overweight is associated with decreased social and health-related quality of life (11), social isolation (4, 11), and negative peer interactions (e.g., teasing) (5–7). These difficulties may be related to the elevated rates of depression and psychosocial distress observed in overweight youth (12–14), particularly those seeking weight-loss treatment (15). Psychosocial problems among overweight youth appear to be partially explained by parental psychopathology (16–18), suggesting that the confluence of pediatric overweight and psychosocial impairment occurs against a backdrop of parental distress. In addition to effects on quality of life, impaired social functioning may exacerbate overweight (19) by promoting sedentary behavior (e.g., to avoid weight-related criticism during physical activity) (5, 20, 21) or supporting overeating (e.g., to cope with loneliness) (22, 23). At a broader level, childhood social problems are associated with later psychiatric symptoms (24, 25), suggesting that early social problems may initiate a cascading trajectory of psychosocial deficits. Overall, these findings suggest that overweight youth with social problems may be at increased risk for a range of psychological comorbidities and for health problems secondary to chronic obesity.

Preliminary evidence suggests that social impairment may negatively impact weight control. An early study of family-based behavioral weight loss treatment (FBT) found that greater degrees of child social problems predicted greater weight regain at 18-months post-treatment, accounting for 15% of the variance in child percent overweight change beyond the effects of parent psychiatric symptoms (9). Similarly, we recently found (8) that weight-loss maintenance interventions subsequent to FBT yielded no additional benefits for long-term weight control in children with higher initial levels of social problems, unlike children with lower initial levels of social problems who benefited in the long-term from maintenance interventions. Interestingly, both studies found no impact of social problems on weight control immediately after treatment; rather, children with high social problems had trouble maintaining their weight loss in the long run. These children's inferior weight outcomes may be related to difficulties in obtaining interpersonal support for weight-related behaviors, a critical resource for weight maintenance (26, 27). For example, children with social problems may lack peers with whom to engage in weight maintenance behaviors (e.g., physical activity) or find it difficult to request familial support for health behaviors due to limited assertion skills. Moreover, parents with their own psychopathology may find it difficult to fully engage in treatment or to prioritize their child's weight control. To date, factors that might explain the poorer weight outcomes observed in these children, such as specific social experiences, interfering psychopathology, or parental distress, remain relatively unexplored.

Given their elevated risk for weight relapse, overweight children with comorbid social problems may be more likely to continue to be overweight as adults and consequently experience health complications associated with chronic obesity. Thus, a better understanding of the personal and familial context in which overweight and social problems co-occur is warranted to improve treatment outcome for these children. Further, it is necessary to identify factors more generally associated with social problems among overweight youth to assist with early identification. To this end, the overall purpose of the current study was to examine the clinical significance of social problems among overweight youth. The primary aim was to explore psychological and familial correlates of social problems among overweight, treatment-seeking children. It was hypothesized that children experiencing clinically significant deficits in broad social functioning would also exhibit increased eating-related psychopathology and lower self-worth, given that such symptoms may be related to interpersonal dysfunction (28, 29); and greater parental psychopathology, given the association between youth psychological adjustment and parent psychological adjustment (30, 31). The secondary aims of the study were to: 1) explore the range of interpersonal experiences of youth with high levels of social problems; and 2) determine whether child and parent psychological characteristics predict social problems in the full sample of overweight youth, beyond the effects of child demographic variables known to be related to social functioning (i.e., sex, z-BMI) (10, 32). It was hypothesized that children high in social problems would report reduced functioning on measures of interpersonal skills and interactions. It was further hypothesized that parental psychopathology would add to the prediction of child social problems beyond the effects of sex and z-BMI (30, 31), and that child psychopathology would add to the prediction of social problems beyond the effects of parental psychopathology (28, 29). The current study moves beyond existing studies on general social problems among overweight children by comprehensively exploring the range of interpersonal and psychological deficits experienced by overweight youth with broad social problems, as well as their parents.

Methods

Participants

Participants were 201 overweight children (20–100% above the median BMI for age and sex; for all participants, BMI $\geq 85^{\text{th}}$ percentile at study entry), aged 7–12, who had at least one overweight parent (BMI ≥ 25), presenting for a randomized controlled trial of two weight maintenance interventions following FBT. Data for the current study were collected between 1999 and 2002. Baseline demographic characteristics are described in Table 1.

Participants were recruited via local media outlets, community organizations, and pediatric clinics in the San Diego area (referral source was unrelated to all demographic variables; $p > .05$). Of 1,028 families recruited for the larger trial, 824 were excluded prior to the FBT phase of the study. Child and parent exclusion criteria included the presence of medical or psychiatric disturbances limiting participation in treatment; use of medications significantly affecting appetite and/or weight; and involvement in weight loss or psychological treatment. Relevant to this study, seven families were excluded prior to FBT due to severe parent or child psychiatric disturbances (e.g., parent substance abuse, child bipolar disorder). Of the 204 families who qualified for and entered the larger trial, 3 were excluded from the current study due to missing data, leaving a final sample of 201 children and parents. Detailed descriptions of the overall study flow, exclusion criteria, and the FBT and maintenance interventions are provided elsewhere (8).

Children and parents provided written informed assent and consent, respectively. The study was approved by Institutional Review Boards at San Diego State University and Southern California Kaiser Permanente, a recruitment referral source.

Procedures

Weight and height were measured using a calibrated balance beam scale and stadiometer. BMI z-scores and percentiles were determined based on age- and sex-adjusted normative data (33). Questionnaires were completed at the first assessment visit, as part of the screening process, before participants initiated treatment.

Measures

Child Psychosocial Functioning—The Social Problems subscale of the parent-reported Child Behavior Checklist (CBCL) (34) was used to broadly measure emotional (e.g., loneliness, jealousy) and behavioral (e.g., dependence, proneness to teasing) aspects of social functioning. The CBCL has demonstrated good reliability and validity (34). The Child Eating Disorder Examination (ChEDE) (35) is a semi-structured interview used to assess global severity of eating disorder symptoms (e.g., dietary restraint, weight concerns). The ChEDE has good reliability and validity (current study Chronbach's $\alpha=.83$) (35, 36). The global subscale of the self-reported Self Perception Profile for Children (SPPC) (37) was used to assess children's overall sense of self-worth. The SPPC has adequate psychometric properties (current study $\alpha=.90$) (38).

The parent-reported Social Skills Rating System (SSRS) was used to assess child social behaviors (39). The SSRS Assertion subscale measures such behaviors as making requests and introducing oneself to peers, and the Self-Control subscale measures aspects of behavioral impulsivity, such as ability to wait one's turn or control one's temper during conflict. This scale has good reliability and validity (current study $\alpha=.87$) (39). The child-reported Loneliness and Social Dissatisfaction Scale (LSDS) (40) assessed loneliness, appraisal of peer relationships, fulfillment of relationship needs, and social competence. This scale has demonstrated good internal consistency (current study $\alpha=.84$) (40). The child-reported Perception of Teasing Scale (POTS) (41) assessed weight-related and competency-related teasing. The POTS has good convergent validity and internal consistency (current study $\alpha=.95$) (5, 41).

Parent Psychological Functioning—The Global Severity index of the self-reported Brief Symptom Inventory (BSI) was used to measure parent psychopathology. The BSI has good psychometric properties (current study $\alpha=.92$) (42). The global score of the Eating Disorder Examination-Questionnaire (EDE-Q) (43) measured severity of parent eating disorder symptoms. The EDE-Q has adequate reliability and validity (current study $\alpha=.86$) (43, 44).

Statistical Analysis

Children were categorized as HIGH ($n=71$; 35.3%) or LOW ($n=130$; 64.7%) in social problems based on the clinical cutoff score of $T=65$ on the CBCL Social Problems subscale. Demographic differences between HIGH and LOW children were assessed using chi-square and t-tests. Given their skewness and kurtosis, POTS subscales were normalized using log transformations.

The primary study aim of examining psychological and familial functioning in overweight children HIGH in social problems was tested using MANOVA. The model, which controlled for group differences in child sex, compared HIGH and LOW children on global ChEDE, SPPC, BSI, and EDE-Q scores (absolute zero-order r range among independent variables=.08 to .31). Child z-BMI was considered as a covariate in this MANOVA; however, it did not significantly contribute to the model ($p=.32$) and was not included as a covariate in the final MANOVA.

Secondary aims were examined through two sets of analyses. Specific interpersonal experiences of children with HIGH social problems were explored using a MANOVA comparing HIGH and LOW children on SSRS Assertion and Self-Control, LSDS Loneliness, and log-transformed POTS Weight-Related Teasing and Competence-Related Teasing, controlling for child sex (absolute zero-order r range among independent variables=.08 to .72). Hierarchical regression was used to examine predictors of CBCL Social Problems as a continuous variable in the full sample. Step 1 included child sex and z-BMI; Step 2 included BSI and EDE-Q global severity scores; and Step 3 included ChEDE global severity and SPPC global self-worth scores. Parent psychological variables were included in the second step to determine if, consistent with the previous literature, parent psychopathology significantly adds to the prediction of child social problems beyond the effects of sex and z-BMI (17, 30, 31). Child psychological variables were included in the third step to expand on these previous findings, by examining whether child psychopathology further improves the prediction of social problems.

Results

Sample Characteristics

The sample was 64.2% female. The HIGH group was comprised of significantly more females (41.5%) than expected, relative to the LOW group [23.9%; $\chi^2(1, N=201)=6.22$; $p=.01$]. Analyses yielded similar results when conducted separately for boys and girls. Sample characteristics for HIGH and LOW children are reported in Table 1.

Psychological and Familial Functioning in Youth with High versus Low Social Problems

The MANCOVA model for child and parent psychological variables was significant [$F(4,173)=7.67$; $p<.001$], with HIGH children and their parents exhibiting poorer psychological functioning relative to LOW children and their parents. Table 2 reports means and standard deviations.

Interpersonal Functioning in Youth with High versus Low Social Problems

The MANCOVA model for specific child social deficits was significant [$F(5,178)=13.77$; $p<.001$]. As table 2 shows, HIGH children demonstrated poorer functioning across the range of interpersonal domains compared to LOW children.

Child and Parent Psychosocial Predictors of Child Social Problems

The full regression model including child sex and z-BMI (Step 1), parent psychopathology (Step 2), and child psychopathology (Step 3) accounted for 22.7% of the variance in child social problems [$F(6,172)=8.42$; $p<.001$]. Parent psychopathology contributed an additional 12.6% of the variance in social problems beyond the effects of child sex and z-BMI [F change(2,174)=13.77; $p<.001$], and child psychopathology contributed an additional 2.5% of the variance in social problems beyond the effects of child sex, z-BMI, and parent psychopathology [F change(2,172)=2.78; $p=.07$]. Table 3 reports full regression results.

Discussion

The current study explored the specific nature of social problems and other psychological and familial characteristics of overweight children with impaired social functioning. Based on clinical cutoff scores of the CBCL Social Problems subscale, approximately 35% of youth were identified as HIGH in social impairments, similar to rates in previous studies (9). This subgroup exhibited social problems exceeding normative means for both community and weight-loss treatment-seeking children (9, 34), as well as elevated levels of eating-related psychopathology, poor self-worth, and parental psychopathology. In the full sample,

parent psychopathology predicted social problems beyond the effects of child sex and z-BMI. Results suggest that co-occurring social problems and overweight may signal increased impairment in other functional domains, and that parent psychological factors may be more important than child factors in predicting social problems in an overweight sample. As such, overweight youth with comorbid social problems may require intervention beyond the standard weight loss treatment.

It is not surprising that HIGH children experienced difficulties in a range of social domains, as different types of social problems likely perpetuate one another (e.g., social awkwardness may promote teasing by peers, which may then promote loneliness and isolation). However, the elevated levels of disordered eating symptoms and poor self-worth documented in these children suggest that their impairment extends beyond the social domain. Indeed, the levels of impairment exhibited by children HIGH in social problems exceeded those reported by both overweight and non-overweight community children across measures of disordered eating and self-concept (29, 45), indicating that the co-occurrence of overweight and social problems is a clinically significant marker for psychopathology. Although the cross-sectional nature of data collection precludes conclusions about causality, social problems as either a cause or effect of other forms of pathology is plausible (e.g., social isolation may promote low self-worth, while simultaneously low self-worth may result in withdrawal from social interactions and thereby inhibit acquisition of certain social skills) (46, 47). Notably, parents of overweight children with high social problems reported increased psychosocial impairments as well, which could contribute to their child's psychosocial and/or weight-related problems (16–18). Specifically, it could be assumed that parents experiencing psychosocial difficulties model dysfunctional behavior which their children then adopt in their own interpersonal functioning. A comprehensive model taking into account both parent and child functioning is needed to help explain the overall profile of impairments observed in overweight youth with social problems. For example, several studies suggest that social functioning predicts changes in BMI (19) and weight-related behaviors (4), however, it is unclear how other forms of personal and familial functioning may interact in the onset and/or maintenance of social and weight-related problems.

Consistent with our hypothesis and with findings from previous studies (30, 31), parent psychological difficulties significantly predicted social problems in the overall sample, beyond the effects of child sex and z-BMI. Although sex and z-BMI are generally associated with social problems in children (10, 32), these factors appear to be less useful for distinguishing socially-impaired subgroups among children who are already overweight. Interestingly, child psychological functioning did not add to the prediction of social problems beyond the effects of parent psychopathology. As opposed to a more simplistic model whereby child social and psychological problems merely perpetuate one another, these results suggest that parent psychopathology is as important, or more so, in influencing child social problems relative to other child difficulties (e.g., overweight, psychological impairment). As such, parent factors warrant consideration when identifying overweight children with social problems. It is also worth considering whether treating parent psychopathology, either alone or in conjunction with child-focused treatments, would influence child psychosocial and/or weight-related outcomes.

Previous findings that socially impaired overweight youth are more refractory to treatment may reflect their greater difficulties in maintaining treatment gains due to interfering pathology. For example, parents who are preoccupied by their own psychopathology may be less vigilant regarding their child's weight-related behaviors once treatment is discontinued. Simultaneously, children with social problems may find it more difficult to adhere to dietary and physical activity recommendations required for long-term weight maintenance due to recurring feelings of low self-worth or eating disorder symptoms, as such symptoms may

limit motivation or self-efficacy in the long-term. Thus, overweight children with social problems may benefit from expanded familial interventions focused on both weight control and psychosocial health to improve weight outcomes and general social and psychological functioning (49). Alternatively, lengthening existing treatments could allow for more individualized attention with which to assist socially impaired children in achieving weight loss maintenance, as Wilfley and colleagues propose (8).

The present study has several limitations. As noted above, the cross-sectional data preclude assumptions regarding causality. Prospective studies are needed to disentangle the timing and onset of overweight, social impairments, and psychopathology, and should inform the development of preventive interventions. Since some unknown effect of overweight aside from impaired social functioning could be responsible for the elevated rates of psychosocial difficulties in HIGH children, future studies should include a normal-weight, socially-impaired control group. Further, our sample consisted of weight-loss treatment seeking youth; thus, results should be replicated in community samples. Indeed, lack of differences in z-BMI between the HIGH and LOW groups could be due to restricted range given the sample (however, note that a small but significant relation between social problems and z-BMI emerged when social problems was analyzed continuously, perhaps due to increased power). Relatedly, the current findings may not apply to more psychologically impaired samples given that study exclusion criteria included presence of severe psychological disturbance; however, of note, very few families were excluded for this reason. Finally, many of the variables examined in the current study were reported by parents, which could lend a biased characterization of child functioning, particularly for social functioning, or reflect a tendency to pathologize oneself and others. This bias may be even more pronounced among parents with their own psychological problems, such as those who reported high social problems in their children in the current study. As all data were collected at baseline, parent reports on one measure could have influenced reports on other related measures administered in a similar timeframe (e.g., parents reporting problems across all measures); this may be particularly likely during a time of treatment seeking. On a related note, as all assessments were completed as part of the study screening process, participants and their parents could have presented an overly positive view of their psychosocial functioning to gain entry into the study, thus skewing study results.

Despite these limitations, our study had several important strengths, namely a large, ethnically diverse sample and the use of well-validated assessments delivered to multiple informants. Indeed, the convergence of our findings of elevated impairment in youth with high social problems across these multiple informants speaks to the validity of using social problems as a marker of distress. As such, the current findings have important clinical implications: given demonstrated associations between CBCL-measured social impairments and other forms of pathology in overweight youth, the Social Problems subscale represents a brief and easily accessible screening method for healthcare providers to obtain a “snapshot” profile of overweight children’s psychosocial functioning. Indeed, administering the Social Problems subscale may allow clinicians to further probe overweight youth about potentially sensitive but clinically-relevant topics, such as teasing experiences or self-esteem.

Findings from the current study suggest that overweight children with comorbid social problems tend to have increased personal and family psychopathology. Health care providers are advised to assess for social problems among overweight youth to inform clinical decision-making. Randomized controlled trials are also needed to test weight loss interventions augmented by social skills training or other interventions to address identified psychosocial problems for the subset of overweight youth experiencing difficulties in these domains. Such interventions may be necessary to improve these children’s long-term weight and psychosocial outcomes. In summary, the full range of psychosocial problems

experienced by overweight children warrants further consideration in both clinical and empirical contexts if we are to continue to make progress towards stemming the rising tide of childhood obesity.

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Table 1

Demographic variables among the full sample and social problems subgroups

Variable	Full sample (n=201)	Social Problems Subgroup	
		LOW (n=130)	HIGH (n=71)
Child age, y	9.8(1.3)	9.8(1.3)	9.9(1.3)
Parent age, y	42.1(6.4)	42.3(6.5)	41.6(6.2)
Female child, %(n) [*]	64.7(130)	58.5(76)	76.1(54)
Child race/ethnicity, %(n)	Black	10.0(20)	11.3(8)
	White/non-Hispanic	66.7(134)	67.7(88)
	White/Hispanic	20.4(41)	21.1(15)
	Other Race	3.0(6)	2.8(2)
Child z-BMI	2.22(0.30)	2.20(0.31)	2.25(0.28)
Parent BMI	35.3(6.3)	35.4(6.5)	35.2(5.9)

Note: For all values, *M(SD)* unless otherwise indicated. Race/ethnicity was unrelated to any demographic or psychosocial variables ($p \geq .25$).

*
 $p = .036$

Table 2

Subgroup differences on child and parent psychosocial variables

Variable	LOW (n=130)	HIGH (n=71)	Test statistic	Effect size (Cohen's d)
Child and parent psychopathology MANCOVA	---	---	$F=7.45^{***}$	---
Child Symptoms				
ChEDE Global Score	0.8 (0.5)	1.1 (0.6)	$F=12.86^{**}$	0.5
SPCC Global Self-Worth	2.3 (0.6)	2.1 (0.7)	$F=4.75^*$	0.3
Parent Symptoms				
BSI Global Severity	45.7 (10.0)	52.8 (9.8)	$F=20.72^{***}$	0.7
EDE-Q Global Score	1.9 (0.8)	2.1 (0.8)	$F=1.98$	0.3
Child interpersonal functioning MANCOVA ^a	---	---	$F=13.77^{***}$	---
Parent Report				
CBCL Social Problems	56.0 (4.8)	72.0 (4.6)	$t=22.94^{***}$	3.4
SSRS Assertion	16.5 (2.7)	13.8 (3.0)	$F=27.21^{***}$	0.9
SSRS Self-Control	14.3 (3.1)	11.7 (2.9)	$F=29.68^{***}$	0.9
Child Report				
LSDS Loneliness	4.0 (1.2)	5.0 (1.7)	$F=21.08^{***}$	0.3
POTS Weight-Related Teasing	8.7 (3.9)	10.2 (5.2)	$F=6.79^*$	0.3
POTS Competence-Related Teasing	6.6 (3.1)	7.8 (3.9)	$F=9.48^{**}$	0.3

Note. For all values, $M(SD)$. ChEDE=Child Eating Disorder Examination (range=0 to 6); SPPC=Self-Perception Profile for Children (range=0 to 4); BSI=Brief Symptom Inventory (range=0 to 80); EDE-Q=Eating Disorder Examination-Questionnaire (range=0 to 6); CBCL=Child Behavior Checklist (range=0 to 100); SSRS=Social Skills Rating System (range=0 to 60); LSDS=Loneliness and Social Dissatisfaction Scale (range=0 to 32); POTS=Perception of Teasing Scale (Weight-Related Teasing range=0 to 30; Competency-Related Teasing range=0 to 25). Cohen's d effect size ranges: 0.2=small; 0.5=medium; 0.8=large. Both MANCOVA models controlled for child sex.

^aThe child interpersonal functioning MANCOVA model included all parent- and child-reported interpersonal variables except for CBCL Social Problems, which was analyzed in a separate t-test. Although POTS Weight- and Competence-Related Teasing were log-transformed for the MANCOVA, raw means and standard deviations are reported for ease of interpretation.

* $p<.05$;
 ** $p<.01$;
 *** $p<.001$

Table 3

Hierarchical regression results for child social problems

Variables	B	SE B	β	R ²	ΔR^2
Step 1: Child Demographics					
Child sex	3.72	1.36	.20*	.08	.08*
Child z-BMI	6.63	2.14	.23*		
Step 2: Parent Psychopathology					
BSI Global Severity	.29	.06	.35**	.20	.13**
EDE-Q Global Severity	.37	.78	.03		
Step 3: Child Psychopathology					
ChEDE Global Severity	2.02	1.19	.13	.23	.03
SPPC Global Self-Worth	-1.12	1.00	-.08		

Note: BSI=Brief Symptom Inventory; EDE-Q=Eating Disorder Examination-Questionnaire; ChEDE=Child Eating Disorder Examination; SPCC=Self-Perception Profile for Children

* $p<.01$;
** $p<.001$