

A comparison of maladaptive schemata in treatment-seeking obese adults and normal-weight control subjects

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Received 8 June 2005

Abstract

Objectives: The aims of this study were to determine whether treatment-seeking obese adults display a greater severity of maladaptive schemata than normal-weight adults and to investigate the possible correlates of maladaptive schemata among obese individuals. **Methods:** The sample included 52 obese adults participating in a weight loss treatment and 39 normal-weight adults. Participants in the obese and normal-weight control groups completed standardized self-report questionnaires designed to assess attitudes and behaviors regarding eating and weight (Questionnaire on Eating and Weight Patterns–Revised and Binge Eating Scale), maladaptive schemata (Young Schema Questionnaire–Short Version), mood disturbance (Profile of Mood States–Adolseccents) and socially desirable responding

(Balanced Inventory of Desirable Responding). **Results:** The obese patients reported a significantly greater severity of maladaptive schemata (after controlling for demographic variables and binge eating disorder status) than the normal-weight control subjects. In addition, within the obese group, there were significant positive correlations between the severity of maladaptive schema scores and both mood disturbance and problem eating scores. **Conclusion:** The present findings suggest that obesity may be associated with a higher severity of maladaptive schemata, at least among those obese individuals who have sought treatment. Possible etiological and treatment implications of the findings are discussed.

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Keywords: Cognition; Maladaptive schema; Mood disturbance; Obesity

Introduction

Although there is a wealth of evidence pointing to the biologic and environmental factors associated with obesity, there has been relatively limited attention given to the psychological correlates of obesity. Moreover, psychologically oriented research in the context of obesity has tended to focus on a limited range of psychological constructs and is noteworthy for its inconsistent findings.

The limited conceptualization of psychological difficulties and inconsistent findings are perhaps most strikingly evident in the research on quality of life, which has been the most extensively investigated aspect of psychological functioning in obesity. Although some studies have found

increased psychological difficulties among obese patients as compared with normal-weight control subjects or with increasing levels of obesity within the obese population [1–7], there are still others that have not [6,8–12]. Such inconsistencies have led some to conclude that obesity is not generally associated with impaired psychological functioning [13] and that any psychological problem is likely to be caused by the presence of comorbid medical illnesses [9] or psychological conditions such as binge eating disorder (BED) [14] rather than obesity per se. However, such a conclusion may be premature, particularly given that quality-of-life instruments assess a limited range of psychological constructs. For instance, the Short-Form Health Survey [15], which is the most widely used quality-of-life questionnaire [16], includes a mental health subscale that is limited to five items assessing mood over a 4-week period. Also assessing an important albeit singular component of

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psychological functioning is the Impact of Weight on Quality of Life [3] questionnaire; its self-esteem subscale includes seven items assessing aspects of self-esteem and body esteem.

As a result of the inconsistent findings regarding psychological variables and the limited range of psychological constructs assessed, knowledge on the psychology of obesity remains underdeveloped. Given the chronicity of obesity, psychological models specifically developed for chronic behavioral problems may prove helpful in further illuminating the psychological factors relevant to obesity. One such approach is the model of early maladaptive schema developed by Young et al. [17].

According to this model, maladaptive schemata (or negative core beliefs) refer to dysfunctional cognitive frameworks for viewing the self and others that develop primarily in response to adverse childhood events and are subsequently elaborated throughout an individual's life [17]. For instance, the emotional deprivation schema consists of beliefs that an individual's need for affection, support and understanding from others will not be met. Furthermore, it is theorized that maladaptive schemata trigger a range of problematic behaviors such as overeating. One mechanism linking maladaptive schemata and behaviors is avoidance. Specifically, these behaviors may assist an individual to achieve avoidance of the negative affective states associated with maladaptive schemata. Owing to the effectiveness of these behaviors in reducing negative affect, individuals may develop extremely resilient patterns of behavior that do not respond to standard behavioral or cognitive-behavioral interventions.

In relation to obesity, the maladaptive schema model suggests that the difficulty experienced by obese individuals in maintaining the behavioral changes adopted during behavioral treatments [18]—and, hence, the general tendency toward weight regain—may be caused by an entrenched need to overeat so as to ameliorate the negative affect associated with maladaptive schemata. In support of this contention, prospective and retrospective studies have found that dietary lapses and/or weight regain among obese individuals are associated with a limited repertoire of coping behaviors in response to life stressors and, more specifically, with a tendency to report eating in response to negative emotions [19–24]. For instance, one study found that most individuals (82%) who had regained at least half of their lost weight 7 months after attending a behavioral weight loss program reported eating in response to the negative emotions associated with daily stressors [21]. In contrast, none of the participants classified as weight maintainers reported this response.

Several findings are suggestive of the relevance of the maladaptive schemata postulated by Young et al. [17] for the psychology of obesity. For instance, although not assessing the maladaptive schemata identified by Young et al., one study found evidence of negative core beliefs (e.g., beliefs regarding one's sense of unworthiness) among

obese women, particularly those with BED (as diagnosed via self-report) [25]. Another study found that certain maladaptive schemata were elevated among obese patients with a history of childhood sexual abuse as compared with those without [26]. Unfortunately, neither of these studies included a normal-weight control group to determine whether such negative views regarding the self are elevated among obese individuals.

Other studies have found that maladaptive schemata are associated with eating disorder symptoms [27–31]. Although these studies have focused on eating disorders rather than on obesity, one study investigated maladaptive schemata in women with bulimia symptomatology (bulimia nervosa or BED) and nonclinical women matched on their body mass index ($BMI = \text{weight [kg]} / \text{height [m]}^2$) and included at least some participants in the obese weight range [28]. The patients with bulimic symptoms scored significantly higher than the weight-matched healthy control subjects on 10 of the 15 maladaptive schemata assessed. However, another study that did not control for BMI in the bulimic and control groups found that the former group reported higher scores on all but one of the maladaptive schemata assessed [31]. In combination, these results suggest that maladaptive schemata may be particularly, but not exclusively, elevated in individuals with bulimic symptoms. Although obesity may also be associated with schema disturbances (given that there are fewer differences in maladaptive schemata between women with and those without bulimic symptoms when BMI is controlled and obese women are included), to date, no study has specifically investigated possible differences in the type and severity of maladaptive schemata in obese versus nonobese individuals.

The primary aim of this study is, therefore, to examine maladaptive schemata among treatment-seeking obese individuals and normal-weight individuals. A treatment-seeking sample of obese patients was selected given the possibility that maladaptive schemata may contribute to the poor long-term outcome associated with behavioral weight loss programs and, thus, may be especially relevant to this group of obese individuals. It was hypothesized that obese individuals would report a greater severity of maladaptive schemata than normal-weight individuals, even after controlling for the presence of BED. Since maladaptive schemata are theorized to be associated with affective distress and problem behaviors, it was also hypothesized that there would be an association between the severity of maladaptive schemata and both mood disturbance and eating problems. Finally, given the hypothesized association between maladaptive schemata and eating problems, it was predicted that a greater severity of schema disturbance would be associated with a higher BMI.

This study sought to test these hypotheses while controlling for any tendency among obese individuals toward socially desirable responding, although this is rarely considered in psychological research on obesity. Obese individuals may attempt to minimize any psychological difficulty that

Table 1
Frequencies and percentages of demographic categories in the obese and control groups

	Obese group (n=52)		Control group (n=39)		Total (n=91)	
	n	%	n	%	n	%
Sex						
Male	14	26.9	10	25.7	24	26.4
Female	38	73.1	29	74.3	67	73.6
Age (y)						
25–35	8	15.4	15	38.4	23	25.3
36–45	14	26.9	16	41.0	30	33.0
46–55	11	21.2	1	2.6	12	13.2
56–65	18	34.6	6	15.4	24	26.3
>65	1	1.9	1	2.6	2	2.2
Annual household income						
<\$20,000	16	30.8	2	5.1	18	19.8
\$20,000–\$49,000	14	26.9	15	38.5	29	31.9
\$50,000–\$89,000	16	30.8	7	17.9	23	25.2
>\$89,000	6	11.5	15	38.4	21	23.1

they are experiencing to avoid an exacerbation of the stigmatization associated with their obese status [32]. This tendency toward providing socially desirable responses would in turn obscure any possible psychological difference between the obese and nonobese groups.

Materials and methods

Participants

Obese participants were recruited from a pool of new attendees at group weight loss sessions held by the Metabolism and Obesity Services of the Royal Prince Alfred Hospital (Sydney). Eligibility criteria for inclusion in the obese group of the study included being at least 18 years old, being within the obese weight range ($BMI \geq 30$) [33], having no severe mental illness or substance-related disorder as noted by the referring medical practitioner, having no full or subclinical eating disorder (other than BED) [34] and having a sufficient grasp of the English language to comprehend standardized self-report questionnaires. Permission to conduct the study was granted by the relevant ethics committee.

In an attempt to match the obese and nonobese groups in their socioeconomic status, normal-weight control participants were recruited from among the employees of three businesses in the same locality as the Metabolism and Obesity Services. Eligibility criteria for inclusion in the control group of the study included being at least 18 years old, being within the normal-weight range ($BMI = 18.5$ – 24.9) [33], having no full or subclinical eating disorder [34] and having a sufficient grasp of the English language to comprehend standardized self-report questionnaires.

A total of 91 individuals participated in the study (52 were obese and 39 were of normal weight). The mean BMI of the obese group was 43.6 (S.D.=6.21; range=33.4–57.0);

73.1% of this group were female. Nine participants in the obese group were diagnosed with BED or subclinical BED. There were 39 normal-weight control participants. The mean BMI of the control group was 22.8 (S.D.=1.78; range=18.7–24.9); 74.4% of these participants were female.

The demographic characteristics of the two groups are shown in Table 1. The obese and control groups were found to be comparable in sex ratio ($\chi^2=0.019$, $df=1$, $P=.891$). However, the groups did differ in their age distribution ($\chi^2=15.49$, $df=4$, $P=.004$) and household income distribution ($\chi^2=16.788$, $df=3$, $P=.001$).

Measures

Each participant completed a demographic questionnaire that was designed for the present study and provided information regarding sex, age, household income and level of education. In addition, all the participants completed six standardized self-report questionnaires.

Questionnaire on Eating and Weight Patterns–Revised

The Questionnaire on Eating and Weight Patterns–Revised (QEWP-R) [35] is a 28-item self-report questionnaire designed to assess eating disorder symptoms from which *DSM-IV* [34] eating disorder diagnoses can be derived. It was used in the present study to diagnose BED and subclinical BED in the obese participants and to screen for the possible presence of other eating disorders in all the participants. The QEWP-R was initially developed and has been primarily used in research on BED, which has provided support for its reliability (e.g., the 8 items assessing binge eating have been found to have an acceptable internal consistency) and validity (e.g., significant relationships with other measures of eating disorder symptoms and general psychopathology among obese individuals) [35–37].

Young Schema Questionnaire–Short Version

The Young Schema Questionnaire–Short Version (YSQ-S) [38] is a 75-item self-report questionnaire designed to measure 15 early maladaptive schemata and to provide a total score reflecting the overall level of maladaptive schemata. The 15 subscales are as follows: emotional deprivation (the belief that one's emotional needs will not be met by others), abandonment (the belief that others are an unreliable source of support or connection), mistrust/abuse (the belief that one will be hurt by others), social isolation (the belief that one is different from others), defectiveness/shame (the belief that one will be rejected by others as a result of certain defects), failure to achieve (the belief that one has failed to achieve relative to others), dependence/incompetence (the belief that one is unable to cope without considerable support from others), vulnerability to harm (the belief that some form of crisis is imminent), enmeshment (the belief regarding the need for excessive closeness in relationships), subjugation (the belief that one is coerced

Table 2
Means and standard deviations of the 15 subscale and total scores of the YSQ-S in the obese and control groups

YSQ-S scale	Obese group (n = 52)		Control group (n = 39)		ANOVA	
	Mean	S.D.	Mean	S.D.	F	P
Emotional deprivation	2.97	1.43	2.25	1.24	6.230	.014
Abandonment	2.23	1.13	1.75	0.89	4.759	.032
Mistrust/Abuse	2.41	1.12	1.91	0.89	5.151	.026
Social isolation	2.59	1.25	1.77	0.83	12.682	.001 ^a
Defectiveness /Shame	2.09	1.13	1.51	0.80	7.360	.008 ^a
Failure to achieve	2.21	1.19	1.53	0.74	9.692	.002 ^a
Dependence/Incompetence	1.72	0.90	1.59	0.64	0.548	.461
Vulnerability to harm	2.34	1.21	1.77	0.78	6.559	.012
Enmeshment	1.72	0.84	1.59	0.82	0.571	.452
Subjugation	2.26	1.07	1.71	0.93	6.675	.011
Self-sacrifice	3.52	1.27	3.23	1.13	1.260	.265
Emotional inhibition	2.45	1.13	2.04	1.05	3.104	.082
Unrelenting standards	3.42	1.24	3.52	1.22	0.147	.702
Entitlement	2.57	0.98	2.36	0.80	1.235	.269
Insufficient self-control	2.87	1.10	2.31	0.87	6.714	.011
Total	2.49	0.74	2.06	0.61	8.743	.004 ^a

^a Indicates a significant result at the .01 level.

into meeting the needs of others at the expense of one's own), self-sacrifice (the belief regarding voluntarily meeting others' needs over one's own), emotional inhibition (the belief that emotional expression should be avoided), unrelenting standards (the belief regarding excessively high standards of personal performance), entitlement (the belief that one is entitled to special privileges) and insufficient self-control (the belief regarding a lack of control over one's impulses). The YSQ-S has been found to be comparable with the longer YSQ, which has extensive support for its psychometric status, including factor analytic support for the 15 subscales, acceptable reliability of the subscales and significant relationships with measures of psychological distress [31,38].

Binge Eating Scale

The Binge Eating Scale (BES) [39] is a 16-item self-report questionnaire that was originally intended to assess the behavioral and cognitive/emotional characteristics of binge eating among obese individuals. However, subsequent research suggests that the BES does not provide an accurate assessment of objective binge eating but instead appears to primarily index a loss of control over eating (regardless of the amount of food consumed) [37,40,41]. As such, it was deemed to be a particularly appropriate measure for measuring the eating problems that may be associated with maladaptive schemata.

Profile of Mood States–Adolescents

The Profile of Mood States–Adolescents (POMS-A) [42] is a 24-item self-report questionnaire designed to assess six dimensions of mood (i.e., anger, confusion, depression, fatigue, tension and vigor) and an aggregated index of total mood disturbance. It has been found to possess sound psychometric properties, including factorial validity for the

six subscales and significant relationships with other measures of mood disturbance (including the extensively evaluated longer POMS upon which it is based) [42,43].

Balanced Inventory of Desirable Responding

The Balanced Inventory of Desirable Responding (BIDR) [44] is a 40-item self-report questionnaire designed to measure the tendency to provide socially desirable responses. The BIDR is composed of two subscales, self-deception (i.e., the tendency to give positively biased yet honestly believed self-descriptions) and impression management (i.e., the tendency to engage in deliberate self-enhancement before others), yielding two subscale scores as well as a total score. Research supports the reliability and validity of the BIDR (e.g., acceptable internal consistency coefficients, significant correlations between the BIDR and other measures of social desirability and factor analytic support for the multidimensional nature of the social desirability construct) [44].

Procedure

Participants in the obese group were administered each of the self-report questionnaires at the commencement of the weight loss program. At the same time, their height and weight were measured by a member of the treating team. Measures of height and weight in the control group were based on self-report.

Statistical analyses

Preliminary analysis was conducted to ascertain whether any group difference was apparent in the tendency to give socially desirable responses. The group means for the obese and control groups on the overall BIDR score,

self-deception subscale score and impression management subscale score were compared via a two-tailed one-way ANOVA at a significance level of $P < .05$.

The group means of the obese and control groups on the total maladaptive schema score from the YSQ-S were compared via a one-way ANOVA at a two-tailed $P < .05$ significance level. Exploratory analysis was conducted to compare the scores of the obese and control groups on all 15 subscales of the YSQ-S. Because multiple comparisons were analyzed, a significance level of $P < .01$ was used. Linear regression was used to model the scores of the obese and control groups on the total maladaptive schema score calculated from responses on the YSQ-S, using a two-tailed $P < .05$ significance level, with the addition of BED/subclinical BED status as a covariate (given previous research indicating higher levels of maladaptive schemata among binge eating samples). Participant age and annual household income were also entered as covariates in the model (given the significant differences between the obese and control groups on these variables).

To investigate the association between maladaptive schemata and mood disturbance, eating problems and weight status, we calculated correlation coefficients between total scores on the YSQ-S and the POMS-A scores, BES scores and BMI within the obese and control groups.

Results

Socially desirable responding in the obese and control groups

No difference was apparent in the tendency to engage in socially desirable responding between the obese and normal-weight control groups [total score: $F(1, 89) = .073$, $P = .788$; self-deception subscale score: $F(1, 89) = 1.263$, $P = .264$; impression management subscale score: $F(1, 89) = .350$, $P = .556$]. Therefore, it was deemed unnecessary to control for this variable in the main analyses.

Maladaptive schemata in the obese and control groups

Results from the one-way ANOVA indicated that the obese group obtained a significantly higher total score on the YSQ-S as compared with the normal-weight control group [$F(1, 89) = 8.743$, $P = .004$], indicating an overall greater severity of maladaptive schemata among the obese. Exploratory analyses using a series of one-way ANOVAs on all 15 subscales of the YSQ-S indicated that obese status was associated with significantly higher scores on 3 subscales at a significance level of $P < .01$: social isolation [$F(1, 92) = 12.682$, $P = .001$], defectiveness/shame [$F(1, 92) = 7.360$, $P = .008$] and failure to achieve [$F(1, 92) = 9.692$, $P = .002$]. The mean total maladaptive schema scores on the YSQ-S for the obese and control groups (together with the YSQ-S subscale scores) are shown in Table 2.

Linear regression analysis was used to assess whether obese versus normal-weight status was associated with total scores on the YSQ-S after controlling for BED/subclinical BED diagnosis, age and household income. The results of the regression model indicated that obese status was significantly associated with the severity of maladaptive schemata ($P = .003$) after controlling for BED/subclinical BED status, age and household income. Age and household income were also found to significantly predict the severity of maladaptive schemata, with older age and higher household income associated with a significant decrease in the severity of maladaptive schemata ($P = .030$ and $P = .025$, respectively). BED/subclinical BED status was not significantly associated with the severity of maladaptive schemata ($P = .341$).

Correlates of maladaptive schemata: mood disturbance, eating problems and weight status

The correlation coefficients between total scores on the YSQ-S and POMS-A scores were calculated within the obese and control groups to assess the association between severity of maladaptive schemata and mood disturbance. A significant positive correlation of a large effect size was obtained between the YSQ-S and POMS-A scores within the obese group ($r = .607$, $P < .001$) and the control group ($r = .566$, $P < .001$).

Similarly, correlational analyses were conducted between total scores on the YSQ-S and BES scores within the obese and control groups to assess the association between maladaptive schemata and dysfunctional eating tendencies. Within the obese group, a significant positive correlation of a medium effect size ($r = .487$, $P < .001$) was obtained between YSQ-S and BES scores. The association between YSQ-S and BES scores within the control group was not significant ($r = .172$, $P = .295$).

Finally, correlation coefficients were calculated between total scores on the YSQ-S and BMI within the obese and control groups to assess the association between maladaptive schemata and weight status. There was no significant correlation between YSQ-S scores and BMI within the obese group ($r = -.089$, $P = .531$). However, a significant positive correlation of a medium effect size ($r = .339$, $P = .035$) was obtained between YSQ-S scores and BMI within the control group.

Discussion

This study primarily sought to ascertain whether treatment-seeking obese individuals experience a greater severity of maladaptive schemata than normal-weight individuals. As hypothesized, the obese group reported a significantly greater overall severity of maladaptive schemata than the control group. This group difference remained significant after controlling for BED/subclinical BED status, age and household income. Although, contrary to previous

research [28,30,31], BED status was not significantly associated with schema severity in the present study, this was most likely due to the fact that there were insufficient obese participants with BED or subclinical BED ($n=9$) in the present study to assess this relationship adequately.

It was also found that higher schema severity scores on the YSQ-S were significantly correlated with higher mood disturbance scores on the POMS-A and problem eating scores on the BES within the obese group. Because items on the BES appear to primarily index uncontrolled eating behavior (e.g., “I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily”), the results are suggestive of the possibility that maladaptive schemata trigger a loss of control over eating, which may have a negative impact on weight control. However, offering only partial support of the hypotheses, we found the association between schema scores and BMI to be significant in the control group alone. This finding may be akin to results regarding body image dissatisfaction in obesity. That is, although obese individuals have generally been found to have greater body image dissatisfaction than their normal-weight counterparts, body image dissatisfaction and BMI do not appear to be correlated within the obese population [45]. Such findings may be indicative of a threshold effect whereby the existence of obesity (rather than its severity) is associated with psychological difficulties such as body image dissatisfaction and maladaptive schemata.

Concerning the types of schemata that were elevated among the obese compared with the control group, only mean scores on the social isolation, defectiveness/shame and failure to achieve subscales were significantly higher in the obese group when the stricter $P<.01$ level of significance was applied. These exploratory findings suggest that few specific schema domains are associated with obesity. Instead, dysfunction in any schema domain may trigger overeating in an attempt to reduce the associated negative affect. This is in accordance with the maladaptive schema model [17] whereby behaviors such as “overeating...can be ways of avoiding the [emotional] pain of almost any schema” (p. 240). However, Young et al. [17] also suggest that overeating may be elicited by specific schemata with which it is meaningfully linked. For instance, they describe the case of a woman seeking weight loss treatment who endorsed the emotional deprivation schema; in this case, eating may have functioned as an attempted means of meeting unmet emotional needs. Although the present study provides stronger support for a general schema dysfunction among obese individuals, further investigation of specific schemata that may be linked with obesity is warranted.

Thus far, it has been proposed that elevated maladaptive schemata may be causally related to the development of problem eating and, hence, obesity. However, a range of alternative interpretations is consistent with the correlational findings. For instance, the greater overall severity of maladaptive schemata (and some specific schemata) apparent

in the obese group may be a result of the pervasive social stigma suffered by obese individuals [32]. Consistent with such an interpretation, it is of interest that the only significant differences between the obese and control groups regarding specific maladaptive schemata were on the social isolation, defectiveness/shame and failure to achieve subscales of the YSQ-S. These schemata refer to beliefs that one is different from other people, is defective in some important aspects and has failed relative to others, respectively; such beliefs could develop in response to the well-documented stigma associated with obesity [46]. Although the maladaptive schema model proposes that schemata primarily develop during childhood, it also acknowledges that maladaptive schemata are elaborated throughout life and can be exacerbated by later experiences [17]. Thus, experiences of obesity-related teasing during childhood and/or prejudice and discrimination as an adult could be among the adverse events that contribute to the development or elaboration of maladaptive schemata [47]. These schemata could in turn increase the likelihood of engaging in self-defeating behaviors such as overeating and, hence, further weight gain [46].

In addition to its correlational design, the present study has a number of limitations. First, the recruitment of obese individuals from a treatment setting means that the results may not necessarily generalize to community samples of obese individuals, with research demonstrating generally higher rates of psychological morbidity among the former group as compared with the latter group [4,48]. Attempts to reduce this possible bias in the present study entailed the exclusion of individuals in the obese group who had a severe mental illness or substance-related disorder and statistically controlling for the presence of BED or subclinical BED. The latter adjustment is particularly important given that BED is associated with psychological problems among obese individuals [49]. Nevertheless, the study requires replication using a community sample of obese individuals to determine whether the current finding of schema disturbances extends beyond a clinical sample.

The second limitation of the study pertains to the use of a self-report questionnaire to diagnose BED. Although the QEWP-R is a widely used instrument for the assessment of BED in obese populations [14,26,35,36], the use of self-report questionnaires to ascertain BED diagnoses has been criticized on the grounds that, in contrast to interview-based methods, it does not permit clarification regarding an individual's responses [50,51]. Such clarification may be especially important for individuals with BED because their binge eating often occurs against a background of general overeating [52] and is not clearly terminated by engagement in compensatory behaviors such as self-induced vomiting. In comparison with individuals with bulimia nervosa, therefore, the self-assessment of binge eating episodes by those with BED may be particularly difficult. It should be noted that at least some research has found a good agreement between interview and self-report questionnaire methodologies in the assessment of binge eating episodes in individuals with BED

[53]. Nevertheless, in the present study, individuals with subclinical BED were included among those with BED to minimize any tendency for the questionnaire approach to result in an underreporting of binge episode frequency [51] and, thus, to more confidently ensure that the results reflected obesity rather than BED.

The third limitation of the present study is the use of self-reported height and weight among the control participants, which may have resulted in some underestimation of BMI (given the tendency for individuals to underestimate their weight and overestimate their height) [54]. If anything, however, such inaccuracies would have obscured the ability to detect significant differences between the obese and control groups.

The findings of the present study are indicative of an association between schema-level dysfunction and obesity. Prospective and experimental studies are required to further clarify the nature of this relationship so that more conclusive statements can be made regarding the potential causal and/or maintenance role of maladaptive schemata in triggering eating problems and, ultimately, weight gain. For instance, of benefit would be prospective research investigating whether a higher level of maladaptive schemata predicts less favorable outcomes—in terms of the amount of weight regained, time taken to regain weight or number of weight cycles—after weight loss treatment. Such research should address the potential role of general schema disturbance as well as specific schemata and investigate the multiple pathways through which schemata may have a negative impact on weight control behaviors (since, according to schema theory, avoidance of negative affect is only one of the possible mechanisms linking maladaptive schemata and problematic behaviors) [17]. To give but one example, the failure to achieve schema may be associated with beliefs that one will not succeed in achieving long-term weight loss (i.e., low self-efficacy) and, thus, will predict a poorer response to treatment [18]. Also of interest would be research determining whether certain subgroups of the obese population (such as those with a comorbid eating disorder) are more prone to schema disturbances. Ultimately, further investigation into the role of maladaptive schemata in obesity may provide a rationale for the implementation of schema-based interventions as a component in the treatment of obese individuals.

Acknowledgments

We wish to thank the staff at the Metabolism and Obesity Services of the Royal Prince Alfred Hospital for their support and assistance throughout the study.

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