
Who Copes Well? Obesity-Related Coping and Its Associations With Shame, Guilt, and Weight Loss



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The relationship among weight-related coping, guilt, and shame was investigated in a sample of 98 obese German individuals over a 6-month period. In terms of the objectives, the study explored the kind and frequency of typical coping situations in which obese individuals become aware of being obese. Furthermore, the study sought to determine the predictive utility of weight-related shame and guilt concerning coping responses, and to establish whether there is an association between coping responses and weight change. A longitudinal examination over a 6-month period was chosen with two measurement points. As typical distressing coping situations, individuals reported mostly negative evaluations through others/self, physical exercise situations, or environmental hazards (mainly shopping for clothes). Weight-related shame at baseline was a significant negative predictor for problem-focused engagement coping, whereas

The Marburg Study "Evaluation of a counselling approach focusing on genetic factors in obesity" is funded by the German Ministry of Research and Technology (BMBF, 01GP0209). We would like to thank the people who helped with the study.

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weight-related guilt was a significant positive predictor for problem-focused engagement strategies and dietary restraint at follow-up. Although Body Mass Index showed no substantial association with the coping measures, weight loss was accompanied by a substantial drop in problem-focused disengagement coping (wishful thinking, problem avoidance). Discussion of these findings focuses on the issue of possible effects of weight-related feelings of guilt and shame on coping behavior, the link between weight loss and disengaging coping strategies, and the possible use of the findings for cognitive-behavioral therapy for obesity. © 2008 Wiley Periodicals, Inc. *J Clin Psychol* 64:1129–1144, 2008.

Keywords: overweight; obesity; emotion; stress; behavior

The aim of this longitudinal study was to determine the associations among weight-related coping responses, weight- and body-related shame and guilt feelings, and weight change over 6 months in a nonclinical sample of obese individuals. Obesity is a physiological and psychological burden for the individuals who suffer from it. In comparison to unemployed long-term sick leave patients, obese individuals estimated their weight situation as more difficult to handle (Nilsson et al., 1997). In obesity research, little information has been gathered about the psychological mechanisms involved in coping with obesity—related either to weight management (Byrne, 2002) or to emotional well-being (Doll, Petersen, & Stewart-Brown, 2000). The way of coping with weight-related issues might have a great impact on obese individuals' general well-being. In this study, the authors hypothesized that weight-related guilt and shame feelings could be prospective predictors of coping responses in obesity.

Weight-Related Coping and Emotional Well-Being

Disengaging coping strategies seem to be positively related to psychological distress. Myers and Rosen (1999) found that the frequency of experienced stigmatization was positively associated with the frequency of coping attempts ($r = .61$) in a sample of obese individuals. Furthermore, disengaging coping strategies (negative self-talk, crying/isolating, avoiding/leaving situation) were significantly associated with measures of negative psychological adjustment, even after controlling for the variance of body weight. In a study by Rydén and colleagues, the disengaging coping strategy “wishful thinking” was significantly associated with helplessness and intrusion (impact of obese state on one's life), whereas engaging strategies such as “social trust” and “fighting spirit” were negatively related to the two distress factors (Rydén et al., 2001).

Weight-Related Coping and Weight Change

Specific coping responses seem to support long-term weight loss, whereas other coping strategies may be linked to emotional distress and relapse. Kayman, Bruvold, and Stern (1990) compared coping responses to troubling issues, events, or situations, between weight relapsers, weight maintainers, and individuals of a control group. Relapsers reported significantly more disengaging strategies (escape-avoidance) than maintainers and individuals of the control group. On the other hand, maintainers and control group individuals reported significantly more

engaging coping strategies like problem solving/confronting and seeking social support. In another study, Drapkin, Wing, and Shiffman (1995) investigated the ability to generate coping responses to hypothetical high risk situations. Hypothetical situations were, for example, eating while watching TV or eating at family mealtime celebrations. The authors found that the ability to generate engaging coping responses at baseline was a predictor of weight loss after 12 months.

Weight-Related Shame- and Guilt-Based Reactions

Weight-related feelings of shame and guilt could be crucial factors for coping responses in obesity. In current conceptualizations (Lewis, 1993), shame is described as a highly negative emotional state accompanied by feelings of being exposed or worthless. Shame elicits the behavioral tendency to hide, disengage, or withdraw. Guilt is characterized as less distressing than shame (Tangney, Miller, Flicker, & Barlow, 1996), and it is likely to elicit some corrective action after a failure or a behavioral transgression. Regarding obesity, weight-related shame might elicit a more disengaging coping response including self-criticism, social withdrawal, and problem avoidance. Therefore, weight-related shame might have a significant impact on the emotional well-being of obese individuals. In contrast, weight-related guilt might elicit more engaging, corrective coping responses. These might include problem solving and weight control behaviors such as a change of eating habits. Engaging coping responses are more likely to predict weight change (Drapkin et al., 1995; Kayman et al., 1990).

Empirical evidence points to the validity of shame- and guilt-based reactions in obesity. A primary source for shame feelings in obesity is social discrimination (Puhl & Brownell, 2003). Weight-based stigmatization is a common experience for obese individuals and a well-known source for psychological distress (Friedman et al., 2005; Kolotkin, Crosby, Kosloski, & Williams, 2001; Myers & Rosen, 1999). The more frequently stigmatizing experiences occur, the greater the reported distress; namely, depressiveness, general psychiatric symptoms, body image disturbance, and lowered self-esteem (Friedman et al., 2005; Myers & Rosen, 1999). Friedman and colleagues (2005) hypothesized that stigmatizing experiences might serve as a trigger for a body shame response in a subgroup of obese individuals. As a consequence, obese individuals who are prone to feel shame might feel worthless and tend to withdraw from society.

Sources for guilt might be transgressions like overeating or not exercising. Also, failed weight control attempts are mostly attributed internally by obese individuals (Goodrick, Raynaud, Pace, & Foreyt, 1992; Jeffery, French, & Schmid, 1990). That means that most obese individuals find the reasons for failure in themselves. In contrast, the empirical likelihood of successful weight reduction is very small and long-term weight loss maintenance is difficult (Anderson, Konz, Frederich, & Wood, 2001; Jeffery et al., 2000; Sarlio-Lähteenkorva, Rissanen, & Kaprio, 2000). Unsuccessful weight loss attempts might trigger guilt, which, in turn, might trigger corrective actions like further dieting or exercising.

Only a few studies explicitly investigate body- or weight-related shame and/or guilt. Four such studies reported body shame to be strongly associated with eating disturbance in normal weight individuals (Burney & Irwin, 2000; McKinley & Hyde, 1996; Swan & Andrews, 2003; Tiggemann & Kuring, 2004), and there is evidence for the association between body shame and depressiveness (Tiggemann & Kuring, 2004). Only one study has investigated an obese sample, although not differentiating

between guilt and shame subscales: Burk-Braxton (1996) reported on overweight individuals after successful weight loss. Based on a period of at least 8 months after the successful weight loss, she divided the sample in maintainers and nonmaintainers. Nonmaintainers reported significantly higher scores on a measure of shame and guilt compared to maintainers and normal weight control individuals.

To our knowledge, no study has evaluated the associations among coping responses, body- and weight-related shame and guilt, and weight change in a sample of obese individuals. Because weight-related shame and guilt are considered to be rather stable constructs (Kocherscheidt, Fiedler, Kronmüller, Backenstraß, & Mundt, 2002), it was hypothesized that baseline shame and guilt would explain an independent part of the variance of the coping responses at the follow-up stage, even when controlled for the variance of baseline coping responses. Furthermore, shame and guilt might have a prognostic relevance to the outcome of future weight loss trials. Objectives of the present study are therefore (a) to present a description of typical distressing situations for obese individuals, (b) to determine whether baseline feelings of guilt and shame can predict subsequent coping responses, and (c) to determine associations between coping responses and weight change. A significant prediction of weight-related coping through feelings of guilt and shame might give valuable information for therapeutic interventions.

Choice of Collateral Measures

Apart from weight-related coping responses and feelings of shame and guilt, two other constructs were measured: the construct depressiveness was included based on the theoretical and empirical finding that shame elicits the tendency to hide, disengage, or withdraw, which might simply be considered as aspects of depression (Andrews, Qian, & Valentine, 2002). To operationalize the behavioral consequences of guilt, a measure of dietary restraint was used. Restricting one's diet might be regarded as a coping effort to make up for past transgressions concerning eating.

Methods

Participants and Procedure

Participants were obese individuals recruited for a larger study for genetic counseling in Germany. They were told that the aim of the study was to find new insights about the development of obesity and to design new treatment approaches for individuals who suffer from being overweight. Inclusion criteria for the study were a Body Mass Index (BMI; kilograms per meter squared) of at least 30, an age between 18 and 70 years, and the ability to read and write German. Participants were recruited mostly through collaboration with general practitioners (GPs), but also through posters and press releases. They received 10 Euros for their participation (1 Euro = US \$1.54). The baseline survey (T1) comprised a questionnaire package and an interview ascertaining relevant information about obesity. After 6 months (T2), the interview was conducted over the telephone and the self-report measures were mailed one week before the telephone appointment. After the follow-up stage, data of 98 participants were complete and appropriate for longitudinal analyses (dropout rate: 14.8%). Seventy participants were women (71.4%). Mean age was 47.7 years ($SD = 12.3$). The mean BMI of the sample was 36.7 ($SD = 5.1$). Educational degree was conceptualized according to the standards of the German Federal Health Survey (Statistisches Bundesamt, 1998), by combining school qualification and current

occupation. Higher education was reported by 15 participants (15.3%), medium education by 31 (31.6%) and low education by 37 (37.8%), whereas 15 participants did not report their education (missing 15.3%). All participants were Caucasian. The mean number of years being obese was 21.9 ($SD = 13.2$). All participants reported that they had tried to lose weight in the past. The mean number of weight-loss attempts in the past 2 years was 4.16 ($SD = 3.67$; missing: $n = 22$). The mean maximum weight loss ever experienced was 15.6 kg ($SD = 11.1$; missing: $n = 38$). The study was approved by the ethics committee of the Medical School of Marburg.

Measures

At baseline, medical staff assessed weight and height of the participants. At the follow-up stage, the current weight was only assessed via telephone interview.

Coping behavior was assessed with the Coping Strategies Inventory—Short Form (CSI-S; Tobin, Holroyd, Reynolds, & Wigal, 1989). This is a 32-item self-report questionnaire designed to assess coping thoughts and behavior in response to a specific stressor. It has eight subscales: problem solving, cognitive restructuring, express emotions, social contact, problem avoidance, wishful thinking, self-criticism, and social withdrawal. In the present study, four higher-order subscales named problem-focused engagement (PE; subscales 1 and 2), emotion-focused engagement (EE; subscales 3 and 4), problem-focused disengagement (PD; subscales 5 and 6), and emotion-focused disengagement (ED; subscales 7 to 8) were used. The instructions were altered by asking participants to describe a typical event or situation in the past 6 months when they became aware of being obese. Tobin (2001) noted that users have the option of requesting a particular type of stressor. Also, an alteration of instructions is not necessarily damaging to the instrument's psychometric properties and reliability (Weyers, Ising, Reuter, & Janke, 2005). Further, it should be noted that participants were only given the option of providing a single nomination; therefore, the questionnaire did not ask how frequently a typical event or situation was experienced. After providing a short description of their specific event or situation, respondents were asked to indicate for each item on a 5-point scale (*never, rarely, sometimes, often, always*) how often they performed a particular coping response in dealing with the previously described typical situation. After filling in all items, participants were asked to rate the distress experienced in the formerly described stressful situation on a 4-point scale (1 = *not at all*; 2 = *a little*; 3 = *somewhat*; 4 = *much*). In our sample, some of the four higher-order subscales were significantly correlated with each other: PE \times EE ($r = .51$; $p < .01$), PE \times PD ($r = -.29$; $p < .01$), PE \times ED ($r = .10$; *ns*), EE \times PD ($r = -.04$; *ns*), EE \times ED ($r = .14$; *ns*), PD \times ED ($r = .26$; $p < .05$). Scores of the four scales can range from 0 to 32. Former analyses of factorial structure of the CSI-S (translated into German) with altered instructions confirmed the results of Tobin et al. (1989) in another obese sample of 305 participants (data available from first author). In a sample of 801 college students, Tobin (2001) reported good Cronbach alpha coefficients for the subscales ranging from .81 to .92. Two-week test-retest reliability ($n = 354$) ranged from .69 to .82.

Guilt and shame associated with obesity were assessed by using the Weight- and Body-Related Shame and Guilt Scale (WEB; Conradt, Dierk, Schlumberger, Rauh, Hebebrand, & Rief, 2007). This is a 12-item scale with two subscales assessing the frequency of experiencing shame concerning the body and the weight in front of real and imagined others (WEB-shame), and guilt concerning eating habits, exercising,

and weight control (WEB-guilt) during a 6-month period. Subscale scores can range from 0 to 24, with higher scores indicating more frequent feelings of shame or guilt. In a sample of 331 obese individuals, scale consistency for the German version was high for both subscales ($\alpha_{\text{shame}} = .92$; $\alpha_{\text{guilt}} = .87$). Also, the subscales proved to provide a possible differentiation between behavioral and emotional consequences associated with either weight-related guilt or shame.

Depressive symptoms were assessed with the Center for Epidemiological Studies Depression Scale–Short Form (CES-D-S; Hautzinger & Bailer, 1993; Radloff, 1977). It consists of 15 items and scores can range from 0 to 60. Higher scores indicate a more depressed mood. The mean score of the short form in a general population sample ($N = 1205$) was 10.72 ($SD = 8.03$; Hautzinger & Bailer, 1993). For the German version, good internal consistency ($\alpha = .90$) and split-half reliability ($r = .90$) were reported. Further, the CES-D-S showed high correspondence (97%) with the CES-D in detecting individuals with clinically relevant depression scores.

Dietary restraint was assessed using the Dutch Eating Behavior Questionnaire (DEBQ-R; Van Strien, Frijters, Bergers, & Defares, 1986). The scale comprises 10 items describing intentions to restrict food intake for weight reasons. In a study conducted by Laessle, Tuschl, Kotthaus, and Pirke (1989), the German version proved to have good internal consistency ($\alpha = .89$) and to measure the actual restriction of food intake rather than the drive to be thin. Like Laessle et al. (1989), a 5-point scale from *never* to *sometimes* to *always* was used in this study; therefore, scores can range from 0 to 40, with higher scores indicating more restrained eating.

At baseline, the intention to lose weight in the following 6-month window was also assessed by an interview question (“In the near future, do you want to reduce your weight?” Yes/No).

Statistical Analyses

Levels of obesity refer to grade I ($30 \leq \text{BMI} < 35$), grade II ($35 \leq \text{BMI} < 40$), and grade III obesity ($\text{BMI} \geq 40$). Relative weight change (%) over the 6 months was calculated by the formula: $[(\text{weight}_{T2} - \text{weight}_{T1}) / \text{weight}_{T1}] * 100$. Therefore, negative values indicate the percentage of body weight lost over 6 months compared to the weight at T1, whereas positive values indicate the percentage of body weight gained.

Concerning the classification of stressful situations, three clinically experienced researchers (two psychologists, one medical doctor) classified the short descriptions of the typical stressful situations reported in the CSI-S by using six categories (see Table 2). Categories were adapted from the scales of the Impact of Weight on Quality of Life Questionnaire (Kolotkin et al., 2001) as the only known empirical categorization of weight-related situations in the obesity literature. Pairwise kappa coefficients were calculated to approximate the convergence of the judgments. Discrepancies between the raters' judgments only ever emerged as a 2:1 split. The final classification was determined based on the category chosen by at least two of the researchers in each situation.

To compare the frequencies of stressful situations per level of obesity, a Fisher's exact test (Fisher, 1922) was calculated to see whether the reported frequencies differed from the expected frequencies in case of independence of the levels of obesity. Furthermore, Kruskal-Wallis tests were calculated to compare mean distress ratings of the typical situations between levels of obesity as well as between categories of situations. For the psychometric evaluation, mean scores, standard

deviations, and Cronbach alpha coefficients (Cronbach, 1951) were calculated for the baseline data only. To estimate retest reliability, Pearson product-moment correlations between scores of T1 and T2 were calculated. Kolmogorov-Smirnov tests indicated that all scores were normally distributed. The differences in scores between T1 and T2 were tested by *t* tests for repeated measures with Bonferroni corrected significance levels.

To estimate the predicting effects of guilt and shame on coping responses, hierarchical regression analyses were calculated. First, demographic variables, the T1 equivalent coping measure, and the measure of depressive symptoms were entered. In a second step, guilt and shame followed. Variables within each step were entered simultaneously. The coding of gender was “1” for male and “0” for female. Standardized betas were reported, as multicollinearity was low (with tolerances $>.10$). To estimate differences in coping responses between levels of obesity, repeated measure ANOVAs were calculated. Finally, the sample was divided into weight gainers ($4\% \leq$ weight change; $n = 16$), weight maintainers ($-4\% <$ weight change $< 4\%$; $n = 60$), and individuals who lost weight (weight change $\leq -4\%$; $n = 22$) to calculate repeated measure ANOVAs for coping measures (including restrained eating). The cutoff of 4% was chosen as it has shown to be a reasonable and realistic goal in weight loss programs (Anderson et al., 2001). Furthermore, the sizes of the groups were still large enough to employ variance analysis. Data were analyzed by using the Statistical Package for Social Sciences (SPSS Version 12.0).

Results

At baseline, 96 participants (97.9%) indicated that they planned to reduce their weight in the near future. At the follow-up stage, 76 participants (77.5%) stated that they had tried actively to lose weight in the past 6 months. The majority reported that they were dieting and exercising ($n = 32$; 32.7%), with the second largest group of participants indicating that they were only dieting ($n = 28$; 28.6%). Eight participants reported exclusively using exercise to lose weight (8.2%), 4 participants reported changing their eating habits without dieting (4.1%). Only four of the participants took medication to lose weight (4.1%). No invasive methods (e.g., gastric banding) were reported. Mean relative weight change for the whole sample was $-.55$ ($SD = 5.44$).

Psychometric Properties of the Measures

Table 1 gives an overview of the psychometric properties of the measures. Mean scores and standard deviations at T1 indicated adequate sample variance for all measures. Pairwise *t* tests for repeated measures with Bonferroni adjusted alpha levels ($\alpha < .0125$) indicated significant differences in the regularity with which coping strategies were performed: PE was performed significantly more frequently than the other coping subscales, $t_{(97), PE-PD} = 5.41, p < .001$; $t_{(97), PE-ED} = 6.02, p < .001$; $t_{(97), PE-EE} = 2.81, p < .01$. The mean scores and standard deviations of depressiveness and dietary restraint were slightly higher than those found in other nonclinical samples (Hautzinger & Bailer, 1993; Laessle et al., 1989). Internal consistency (Cronbach's alpha) was good for almost all measures ($\alpha > .75$), except for the scales PE- and PD-coping for which the coefficients were only moderate. To compare stability indices, product-moment correlations were provided for all repeated measures (r_{tt}). The WEB-shame and the WEB-guilt were found to be the most

Table 1
Psychometric Properties of the Measures

	Time 1 <i>M</i> (<i>SD</i>)	$T_{T2-T1,df=97}^a$	α^b	r_{tt}^c	$r(BMI)^d$
Problem-focused engagement	15.3 (4.09)	1.48	.61	.65	.16
Emotion-focused engagement	13.0 (5.30)	1.32	.80	.58	.21*
Problem-focused disengagement	14.1 (4.80)	-1.48	.64	.51	.00
Emotion-focused disengagement	12.8 (5.25)	-1.49	.77	.69	.05
Depressive symptoms	12.7 (8.52)	-1.64	.91	.57	.02
Dietary restraint	18.0 (6.42)	1.60	.86	.62	-.02
Shame	11.4 (6.53)	-1.24	.92	.79	.11
Guilt	14.4 (5.01)	-1.64	.86	.73	.07

^a*t* Tests for repeated measures of Time 1 and Time 2 scores.

^bCronbach's alpha coefficient.

^cPearson correlations between Time 1 and Time 2 scores.

^dPearson correlations with Body Mass Index.

* $p < .05$.

Table 2
Frequencies of Typical Situations (%) and Mean Distress Ratings at Time 1

Categories	All	30 ≤ BMI < 35	35 ≤ BMI < 40	40 ≤ BMI	Mean distress ratings (<i>SD</i>)
	<i>N</i> = 98	<i>n</i> = 47	<i>n</i> = 31	<i>n</i> = 20	
Negative evaluation by others/self	37 (37.8)	20 (42.6)	8 (25.8)	9 (45.0)	3.30 (.78)
Physical functioning	24 (24.5)	11 (23.4)	7 (22.6)	6 (30.0)	3.25 (.74)
Difficulty with eating	2 (2.0)	1 (2.1)	1 (3.2)	- (0.0)	3.50 (.71)
Disease or illness	3 (3.1)	2 (4.3)	- (0.0)	1 (5.0)	3.33 (.58)
Environmental hazards	16 (16.3)	6 (12.8)	7 (22.6)	3 (15.0)	2.88 (.81)
Other	2 (2.0)	1 (2.1)	1 (3.2)	- (0.0)	2.00 (.00)
Missing	14 (14.3)	6 (12.8)	7 (22.6)	1 (5.0)	2.71 (.73)
Mean distress ratings (<i>SD</i>)	3.11 (.79)	3.00 (.75)	3.10 (.79)	3.40 (.82)	

Note. BMI = Body Mass Index.

stable scales. All other scales showed lower retest correlations, indicating greater variation between T1 and T2. Furthermore, mean scores of all measures (T2-T1) did not differ significantly over time. In the last column, Pearson correlations between BMI and coping/collateral scores indicated no significant associations, except for the coping subscale EE.

Distressing Situations

Table 2 shows the distribution of the typical situations reported at baseline. The categorization for each level of obesity is presented separately. The mean paired kappa coefficient for the three classification judgments was .87 ($p < .001$), underlining good convergence of the researchers.

The first category, negative evaluation by others or self, was reported most frequently (e.g., comments or looks by others/evaluating own body in mirror), followed by the category physical functioning (e.g., trouble breathing, moving, or exercising). The two categories, eating difficulties and illness/disease were reported only rarely. The category environmental hazards consisted mainly of trouble with

shopping for clothes, and it was unclear whether individuals' distress stems from the missing sizes or from the interaction with the sales personnel. Two participants' answers could not be fitted into either category (e.g., "I am a widow"). Fourteen (14) participants did not specify their situation, but indicated its distressing nature by filling in the distress rating item.

Regarding the three levels of obesity, a Fisher's exact test indicated that the frequencies of situations did not differ significantly from the independence frequency distribution ($P = .869$, Fisher's exact test). For example, the authors had expected the physical functioning category to increase markedly with a BMI over 40. However, the levels of obesity did not differ significantly in terms of relative frequency of situations. Furthermore, a Kruskal-Wallis test was calculated to compare the mean distress ratings of the three levels of obesity, which indicated no significant differences, $\chi^2(2) = 4.58, p > .10$. A second Kruskal-Wallis test to compare the mean distress ratings of the categories did not indicate any significant difference either, $\chi^2(5) = 8.22, p > .14$. It should be noted that none of the reported situations was rated as being not at all distressing. Spearman correlations between the distress ratings and the shame and guilt subscale scores revealed significant associations (Distress \times Shame: $r = .59, p < .001$; Distress \times Guilt: $r = .53, p < .001$).

Predicting Coping Responses From Shame and Guilt

Table 3 presents Pearson correlations between coping and collateral measures at T1. The coping subscales PE and EE did not show any significant associations with any of the collateral measures, although there was a tendency of PE to be positively related to the guilt subscale ($r = .19; p < .07$). The subscale PD showed significant associations with shame and guilt scores. The correlation indices between the subscale ED and shame and guilt scores were even higher. Also, ED showed a significant correlation with depressive symptoms, indicating that both constructs share commonalities (self-criticism, social withdrawal). Finally, there was a small positive correlation between restrained eating and guilt scores.

A series of linear regression analyses was separately conducted to predict T2 coping measure scores from T1 guilt and shame scales (Table 4). Hierarchical regression procedures were employed. In the first step, age, gender, T1 BMI, the T1 equivalent coping scale, and the T1 depressive symptom measure were entered. In a second step, the T1 weight-related shame subscale and the T1 weight-related guilt subscale were entered. The depressive symptom measure was included to control for general (but not weight-related) negative affectivity. Only the PE subscale and restrained eating scale were significantly predicted by T1 shame or guilt. Regarding the coping subscale PE, the standardized betas of the shame ($\beta = -.26$) and guilt

Table 3
Product-Moment Correlations Between Coping and Collateral Measures at Time 1

	Depressive symptoms	Shame	Guilt
Problem-focused engagement	-.16	.04	.19
Emotion-focused engagement	.12	.06	.11
Problem-focused disengagement	.12	.42**	.22*
Emotion-focused disengagement	.47**	.62**	.69**
Dietary restraint	.03	.03	.25*

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

Table 4
Hierarchical Regression Analyses Predicting Coping From Shame and Guilt

	Time 2				
	Problem-focused engagement	Emotion-focused engagement	Problem-focused disengagement	Emotion-focused disengagement	Dietary restraint
Step 1					
Gender	-.10	-.12	.00	.15	-.14
Age	.01	-.12	-.02	.12	.14
T1 BMI	.00	.01	-.03	.05	.08
T1 Subscale	.60**	.58**	.50**	.72**	.56**
T1 Depressive Symptoms	-.20*	.05	.11	.03	-.04
R^2 adjusted	.47	.36	.27	.51	.42
Step 2					
T1 Shame	-.26*	-.12	.04	-.12	-.04
T1 Guilt	.25*	.06	.17	.14	.26*
R^2 change	+.05*	-	+.03	+.01	+.05**

Note. T1 = Time 1; BMI = Body Mass Index. Standardized betas are reported.

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

subscale ($\beta = .25$) at T1 made a significant contribution to explain further variance of T2 PE subscale scores. It should be pointed out that the shame subscale was negatively associated to the PE subscale. For the prediction of restrained eating at T2, only the T1 guilt subscale showed a significant beta weight ($\beta = .26$) with a significant increase of explained variance.

Associations Between Coping Responses, BMI, and Relative Weight Change

It has already been stated that no significant correlative association between BMI and any coping measure (including restrained eating) was found, except the rather small, but significant correlation between the subscale EE and BMI (see Table 1). To check for possible nonlinear associations, repeated measure ANOVAs were calculated for every coping measure (including restrained eating) to compare mean scores between levels of obesity. None of the repeated measure ANOVAs showed a significant interaction effect (Time \times Level of Obesity).

With a chosen cutoff of 4% of body weight, the sample was divided into weight gainers ($n = 16$), weight maintainers ($n = 60$), and individuals who lost weight ($n = 22$) during the 6-month period. Age, gender, or BMI at T1 did not differ significantly between groups. To test for possible differences of coping scores between these groups, repeated measure ANOVAs were calculated. Only the coping subscale PD showed a significant main effect time, $F(1,94) = 8.95, p < .01; \epsilon^2 = .09$, as well as a significant interaction effect, Time \times Group, $F(2,94) = 8.06, p < .001; \epsilon^2 = .16$. Post hoc t tests for repeated measures with Bonferroni adjusted alpha levels ($\alpha < .0167$) revealed that only the weight loss group showed a significant drop on the PD subscale, weight loss group: $M_{T1} = 14.36, M_{T2} = 10.14; t(21) = -4.12, p < .001$; maintainer group: $M_{T1} = 13.52, M_{T2} = 14.27; t(59) = 1.36, p < .18$; weight gainers: $M_{T1} = 16.03, M_{T2} = 14.50; t(15) = -1.17, p < .26$. To test for possible differences regarding the employed weight loss strategies (dieting+exercising, dieting, exercis-

ing, medication), the frequency of reported methods were compared between weight change groups. A Fisher's exact test indicated no significant differences ($P = .271$, Fisher's exact test).

Discussion

The aim of the present study was (a) to present a description of typical distressing situations for obese individuals, (b) to determine whether baseline feelings of guilt and shame can predict subsequent coping responses at follow-up, and (c) to determine associations between coping responses and weight change.

Distressing Situations

Findings suggested that obese individuals became most frequently distressed of being obese in evaluative situations, either through self-evaluation or evaluation by others, and in situations that were related to physical functioning and the inability to perform (moving, exercising) like a normal weight individual. Also, obese individuals often reported being distressed about finding or shopping for the right clothing. The latter finding makes sense because one becomes very aware of the body when trying to fit into clothes. These results are in line with other studies (Friedman et al., 2005; Myers & Rosen, 1999), although our findings are based on individuals' recall of significant situations rather than the recognition of situations on a presented list. Surprisingly, situations related to eating or illness were reported very rarely. This could be due to a minor impact of these situation categories on individuals' awareness of being obese or due to a very healthy sample. From a public health perspective, this may suggest that obese persons are less likely to be swayed by messages conveying the health risks of obesity. They may be more likely to be reached by messages that relate to physical functioning, movement, or clothing.

When considering the differences between the three levels of obesity, it was somewhat unexpected that observed frequencies of the situations did not differ from an independence frequency distribution. In other words, the group of individuals with grade 3 obesity ($BMI \geq 40$) did not report a higher number of distressing physical functioning situations compared to those individuals with grade 1 obesity ($30 \leq BMI < 35$). To illustrate the difference in weight between the two grades, one could imagine the same person, 1.70 m (~5.6 ft) in height, weighing 90 and 120 kg (198 lbs and 265 lbs). However, it should be emphasized that each individual was only asked for a single situation. Individuals could not indicate how often they experienced the typical situation. Although the distribution of nominated situations did not differ between the three groups, there may have been significant differences if one had considered the frequency at which they encountered such situations.

Additionally, the mean distress ratings neither differed significantly between levels of obesity, nor between situation categories. Such findings, namely the independence of relative frequencies of situations and mean distress ratings from the levels of obesity, confirmed an independence of weight-related distress and body weight as reported by other studies (Friedman et al., 2005; Myers & Rosen, 1999). Obese individuals' distress about weight-related issues therefore might not be primarily influenced by their current weight. The significant and substantial correlation of the distress ratings with the shame and guilt subscale scores (.59 and .53, respectively) supported the hypothesis of Friedman et al. (2005) that stigmatizing or evaluative experiences might serve as a trigger for a body shame response and cause psychological distress. Body shame itself was found to be not associated to BMI

in our study. Thus, weight might play a minor role as a factor for psychological distress in obesity. More likely, the interaction of three variables is crucial for the development of psychological distress in obesity: the frequency of experienced evaluative and distressing situations, internalized anti-fat attitudes, and feelings of weight-related body shame and guilt.

Coping Responses, Weight-Related Feelings of Shame and Guilt

At baseline, weight-related feelings of shame were substantially and positively correlated with disengaging coping responses (PD, ED). The association between body shame and disengaging coping strategies is a result in accordance with other studies in which global shame was strongly related to indices of psychopathology (Harder, 1995; Harder, Cutler, & Rockart, 1992; Tangney, Burggraf, & Wagner, 1995; Tangney, Wagner, & Gramzow, 1992). Our findings are also in line with the association between stigmatizing experiences (resulting in shame) and certain coping strategies (negative self-talk, cry/isolate myself, avoid or leave situation) reported by Myers and Rosen (1999). Taking the validity of the theory of shame-based reactions (e.g., Lewis, 1993), this result was expected because shame is supposed to be associated with avoiding, disengaging strategies. Our findings confirmed that this might be also true for weight-related shame. Weight-related guilt showed small positive associations to problem-focused disengaging coping and restrained eating, but also a substantial correlation with emotion-focused disengagement coping responses. The association with restrained eating and the tendency to be associated with problem-focused engagement strategies ($r = .19, p < .07$) confirmed theoretical considerations that guilt might be more strongly linked to engaging, corrective strategies for past transgressions than shame (Lewis, 1993; Lindsay-Hartz, De Rivera, & Mascolo, 1995).

For obesity, weight-related feelings of guilt might therefore elicit more engaging coping responses than feelings of shame. In fact, hierarchical regression analyses revealed that weight-related guilt was a significant positive predictor for problem-focused engagement (problem solving, cognitive restructuring) and restrained eating, whereas weight-related shame was found to be a negative predictor for problem-focused engagement. All other coping subscales (EE, PD, ED) were not significantly predicted by weight-related guilt or shame. Even though the standardized beta weights for the guilt and shame measures were rather small, one has to consider our conservative approach to control for depressive symptoms as well as the criterion-equivalent T1 coping scale. Taking this into account, the predictive effects of weight-related guilt and shame on coping responses were confirmed in our study. Whereas weight-related shame seems to be related to a decrease in problem-focused coping, weight-related guilt might have a positive effect on the employment of more active coping strategies. As this study is of correlational nature, the associations identified may also suggest that some individuals, for example, are actively dieting and therefore feel guilt for minor transgressions, or that individuals who decrease their efforts in problem-focused coping feel more shame. Independent of the causal nature of these associations, these distinct, but associated feelings should be discussed separately in counseling sessions (cognitive behavioral therapy) about weight issues.

Coping Responses, BMI, and Weight Change

Regarding the reported weight loss strategies, less than half of the participants tried to lose weight with a combined strategy of dieting and exercising. The other

participants reported adopting a single strategy. This was a surprising finding because the recommendation of a combined strategy is widely advertised and recommended. Furthermore, the preferred single strategy was dieting, which contradicts the empirical finding that long-term weight loss is unlikely when engaging in dieting alone. The finding may suggest that the distribution of obesity-related public health messages alone does not provoke healthier behavior. More important, no significant differences were found between weight change groups regarding the weight loss strategies. Alternative factors other than the employed strategy (e.g., a self-motivated cognitive style) might prove to be more important for weight loss, although our interview did not discriminate between different types of diets/exercise. Therefore, the appropriateness of the employed diets/exercise cannot be judged.

Another unexpected result of the study was that BMI did not show any substantial linear association to any of the coping measures. This could mean that the individuals' way of coping with distressing situations related to being overweight might be independent of the level of obesity. This finding was supported by the study of Rydén et al. (2001), where intrusion (impact of obese state on one's life) was related to helplessness, but not to weight itself. On the other hand, we found via group comparison of weight maintainers, weight gainers, and individuals who lost weight a substantial nonlinear effect; that is that the weight loss group reported to have experienced in the 6-month period a significant decrease in strategies such as wishful thinking and problem avoidance (problem-focused disengagement). This is an interesting finding, since Kayman and colleagues (1990) found that weight relapsers reported more disengaging strategies (escape-avoidance) than weight maintainers. Also, other studies pointed out that disengaging coping strategies (wishful thinking, avoid or leave situation) were associated with negative psychological adjustment (Myers & Rosen, 1999) as well as helplessness and intrusion (Rydén et al., 2001). If weight-related shame and guilt are also considered as measures of psychological adjustment, the results of the study confirmed the association between disengaging coping strategies and measures of psychological adjustment. Thus, disengaging coping, specifically problem focused, might influence obese individuals in two ways: if wishful thinking or problem avoidance is employed frequently, obese individuals might experience more distress about their obese state in the form of guilt and shame, but on the other hand, might not be able to generate or focus on more engaging coping strategies, which, in turn, might foster weight loss.

Limitations

The current study has several limitations. Weight at follow-up was assessed by self-report (over the telephone) rather than by objective measures, so interpretation of the results about weight change should be made with caution. Although self-report measures are recommended for assessing emotional states, they only provide information about conscious and recalled experiences of past feelings of shame and guilt, for example. Also, one has to take self-selection of the recruited individuals into account because they were mostly recruited in GP practices. The recruitment of the participants may have also been biased by monetary incentives or the willingness to take part in a study run by a psychological department. Additionally, the BMI was defined to be above 30, thus the study lacked a comparison with normal weight ($BMI < 25$) or overweight ($25 < BMI < 30$) individuals. Regarding the employed methods, although longitudinal, the results can only be considered as correlational,

so no conclusions can be drawn regarding causality or the developmental sequence of shame or guilt and related coping strategies in obese individuals. Future studies may address this issue by applying experimental designs to determine the causal effects of these variables, possibly through inducing short-term ways of coping. A general limitation is the generalizability of the results. Investigating a German sample, it is unclear whether the findings would be confirmed in other Western cultures. However, it is unlikely that associations between weight-related guilt, shame, and coping differ fundamentally between Western countries.

Conclusions

First, the current study found that distressing situations were mostly linked to negative evaluation, physical functioning, and environmental obstacles like buying clothes. The mean distress about these situations did not differ between obesity levels and the situation categories themselves. Second, weight-related shame and guilt were substantially and positively associated with disengaging coping responses. Weight-related shame showed some overlap with depressive symptoms, whereas guilt was also associated with engaging coping responses like restrained eating. Predicting coping subscales (and restrained eating) at follow-up from collateral measures, shame and guilt showed opposing predictive effects on problem-focused engagement, with guilt feelings being a positive and shame feelings being a negative predictor. Third, weight loss was accompanied by a substantial drop in disengaging coping responses, namely wishful thinking and problem avoidance. The findings might be of good use for clinical practice. Weight-related guilt and shame might be discussed in a more differentiated way in the therapeutic process. The differentiation could underline the possible positive function of guilt by fostering engaging coping responses. Also, one might focus on the role of disengaging coping strategies (especially wishful thinking and problem avoidance) and their adverse effect on psychological well-being and future weight loss.

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