The role of avoidance-based coping in the psychosocial functioning of weight loss treatment-seeking adults

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Summary

Objective

The aim of this study was to determine the role of avoidance-based coping in the psychosocial functioning of weight loss treatment-seeking persons with obesity who report high internal disinhibition.

Methods

Participants were 162 overweight or obese adults entering a behavioural weight loss intervention programme who reported high internal disinhibition at screening. We conducted multivariate regression analyses by using mental and physical quality of life and satisfaction with relationships as dependent variables and examining the association of demographic variables, experiential avoidance (avoidance-based coping) and symptoms of depression. We hypothesized that higher levels of experiential avoidance and symptoms of depression would be associated with poorer mental and physical quality of life and relationship satisfaction. Post-hoc analyses examined results relative to non-obese norms.

Results

Both experiential avoidance and depression were significantly and independently associated with each of the three psychosocial outcome measures. Individuals who were high on both experiential avoidance and depression scored significantly below the population mean for non-clinical samples on mental and physical quality of life and relationship satisfaction.

Conclusion

In a sample of weight loss treatment-seeking adults with high internal disinhibition, elevated levels of experiential avoidance and psychological symptoms are prevalent. Adding intervention components specifically designed to address unhealthy coping could result in improvements in overall psychosocial functioning and possibly weight loss.

Keywords: Coping, depression, experiential avoidance, obesity.

Introduction

Obesity is associated with increased psychological symptoms (1) and reduced quality of life (2,3). Coping style appears to play a significant role in moderating the psychosocial functioning of persons with obesity. For example, Ryden and colleagues (4) examined a sample of 2510 persons with obesity and found that more passive and emotional styles of coping were associated with increased psychological distress, while problem-focused coping was related to reduced psychological problems connected with obesity. Another study of 2671 persons with obesity found that positive and active coping styles, as opposed to avoidant style coping, were associated with a reduced psychological impact of exposure to bias and discrimination due to weight (5). In general, individuals who show a tendency to engage in avoidant style behaviours are more likely to eat in response to emotions
(6–8), engage in binge eating (9,10) and avoid dieting and exercise (5,11,12), particularly when confronted with stressful life events (13–16). Although coping appears to play an important role in the psychosocial functioning of persons with obesity, there is little clarity and consistency in terms of how coping is characterized and studied in the obesity literature.

Experiential avoidance (EA) is a coping style characterized by the tendency to try to change or get rid of unwanted thoughts, feelings or bodily sensations (17). EA can be harmful because a rigid focus on short-term relief or comfort can sometimes come at the expense of long-term functioning. Elevated levels of EA are associated with a wide range of mental health (e.g. depression and anxiety) and behavioural health problems (e.g. smoking and chronic pain), and reducing EA mediates positive outcomes in these areas (18). For example, reducing EA mediates smoking cessation (19) and improves diabetes self-management (20). However, the role of EA in psychosocial outcomes for persons with obesity has received little attention despite its potential utility.

Experiential avoidance could be relevant particularly to persons with obesity who show evidence of disinhibition, which is the tendency to lose control over eating. A re-analysis of the widely used and well-established Eating Inventory disinhibition scale showed that it is better represented by two factors: internal disinhibition (ID), which is the tendency to eat in response to cognitive or emotional cues, a construct similar to emotional eating; and external disinhibition, which is the tendency to eat in response to environmental cues (6). In recent studies, both lower baseline levels of ID (6) and greater decreases in ID early in weight loss treatment (21) predicted better weight loss outcomes, whereas external disinhibition was not related to weight loss outcomes. Eating in response to cognitive or emotional cues is a good example of EA, where eating serves in part to regulate affect/cognition in the short term (e.g. feel better right now) at the cost of poorer health and often increased psychological symptoms over the long term. ID could be a marker for a general tendency to engage in EA.

The purpose of this study was to examine the relationship between EA and psychosocial outcomes using a sample of treatment-seeking overweight and obese adults who were selected for high ID.

**Methods**

**Participants and procedures**

Protocol approval was obtained from the Miriam Hospital Institutional Review Board, and all participants gave written informed consent. Participants were 162 overweight or obese adults entering a clinical trial of a behavioural weight loss intervention programme who reported high ID at screening. They were recruited through advertisements in local newspapers and direct mailings. Participants were excluded for medical conditions that precluded exercise, serious current psychological disorders (e.g. schizophrenia and bipolar), pregnancy or planned pregnancy, and logistical or behavioural issues that made regular attendance of group meetings unlikely. All participants completed a baseline assessment prior to entering treatment.

**Measures**

The baseline assessment, which forms the basis for this analysis, included standardized height and weight measurement and the completion of a battery of self-report questionnaires.

**Body mass index**

Height was measured to the nearest 0.1 cm using a wall mounted stadiometer. Body weight in light clothing and no shoes was measured to the nearest 0.1 kg on a digital scale.

**Acceptance and Action Questionnaire-II**

The Acceptance and Action Questionnaire-II (AAQ) is a seven-item Likert rating scale that assesses EA (22). Higher scores indicate more EA. The AAQ has good reliability and validity and is associated with a range of psychosocial outcomes (22).

**Depression, quality of life and satisfaction with relationships**

Depression, quality of life and satisfaction with relationships were assessed using standardized measures from the National Institutes of Health’s Patient Reported Outcomes Measurement Information System (PROMIS) initiative (23). The Depression-Short Form measures depression using four self-report Likert scale items. Higher scores indicate more depression. The PROMIS Global form is a 10-item self-report measure that assesses physical and mental quality of life. Higher scores indicate better quality of life. The Satisfaction with Relationships-Short Form measures relationship satisfaction using four self-report Likert scale items. Higher scores indicate greater satisfaction with relationships. PROMIS measures are well established with population norms and good validity (23).

**Analytic strategy**

The primary goal of the current study was to examine the relationship between EA and three psychosocial outcomes: physical quality of life, mental quality of life and satisfaction with relationships. We began by performing
bivariate correlations with the AAQ, depression, demographic variables and psychosocial outcome measures. Next, we conducted a multivariate regression analyses for each of the three psychosocial outcomes as dependent measures: physical quality of life, mental quality of life and satisfaction. We controlled for the effect of demographic variables (age, body mass index [BMI] and gender) in these models and examined the independent effects of both EA and depression. Given that prior studies have shown that depression is associated with EA (17,22), quality of life (24,25) and social relationships (26,27), we were interested in determining whether EA had an effect on the psychosocial measures that was independent of depression and perhaps synergistic with it.

**Results**

**Demographics and mean scores**

The sample was 85% female with an average age of 50.2 (±10.9) years and BMI of 37.6 (5.3). Twelve percent of the sample endorsed a minority race or ethnic status (6% Latino/Hispanic, 5% African-American and 1% Asian). The following are the means and standard deviations on study measures: AAQ, 21.7 (7.8); depression, 7.6 (3.4); physical quality of life, 14.6 (2.1); mental quality of life, 13.1 (2.4); and satisfaction with relationships, 15.2 (3.4).

**Bivariate correlations**

Experiential avoidance, as measured by the AAQ, showed strong negative correlations with each of the three psychosocial outcome measures: physical quality of life ($r = -0.33, p < 0.01$), mental quality of life ($-0.49, p < 0.01$) and satisfaction with relationships ($-0.47, p < 0.01$). Depression was highly correlated with EA ($r = 0.61, p < 0.01$) and was also correlated with each of the three psychosocial measures: physical quality of life ($-0.31, p < 0.01$), mental quality of life ($-0.56, p < 0.01$) and satisfaction with relationships ($-0.45, p < 0.01$).

**Multivariate regressions**

Given the strong association between EA and depression and the fact that both were associated with each of the three outcome measures, we conducted multivariate analyses to determine whether each of these variables contributed to the outcomes and whether there was an interaction between the two. Given that demographic variables, such as age, gender and BMI, have been shown to be associated with quality of life and satisfaction with relationships, we included those variables in the model. Table 1 shows the results.

Both EA and depression were significantly and independently associated with each of the three psychosocial outcome measures. In the model for physical quality of life and satisfaction with relationships, the two variables seemed to have similar strength of association, while depression was stronger in the model for mental quality of life. The interaction was not significant in any of the analyses and was thus not reported in the final models.

Higher age was associated with a more positive report of all mental quality of life and satisfaction with relationships. Gender was not significant in any model. Higher BMI was associated with lower satisfaction with relationships.

**Post-hoc analyses**

As EA and depression were both significantly associated with psychosocial functioning, we examined the separate

| Table 1 Regression results |
|---------------------------|
| **Step** | **Variable** | **Quality of life: physical** | **Quality of life: mental** | **Satisfaction with relationships** |
| | | $b$ | $\Delta R^2$ | $R^2$ | $\Delta F$ | $b$ | $\Delta R^2$ | $R^2$ | $\Delta F$ | $b$ | $\Delta R^2$ | $R^2$ | $\Delta F$ |
| 1 | Age | 0.16* | 0.14** | 6.54** | 0.19** | 0.28** | 14.85** | 0.21** | 0.27** | 15.42** |
| | Gender | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| | BMI | 0.13 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| | AAQ | 0.31** | 0.48** | 18.51** | 0.19* | 0.17 | 0.16** | 0.17 | 0.16** | 0.17 | 0.16** | 0.17 | 0.16** |
| 2 | Age | 0.14 | 0.03 | 0.17 | 0.16** | 0.09 | 0.37 | 18.51** | 0.06 | 0.33** | 14.93** |
| | Gender | 0.02 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | BMI | 0.13 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| | AAQ | 0.21* | 0.23** | 18.51** | 0.21* | 0.23** | 18.51** | 0.18** | 0.18** | 0.18** | 0.18** | 0.18** | 0.18** |
| | Dep | 0.19* | 0.40** | 18.51** | 0.19* | 0.40** | 18.51** | 0.18** | 0.18** | 0.18** | 0.18** | 0.18** | 0.18** |

*p < 0.05; **p < 0.01

AAQ, Acceptance and Action Questionnaire-II; BMI, body mass index; Dep, depression.
and combined association of being above established
clinical norms. We first split our sample into “low” or “high”
on the AAQ and depression using established norms
(“high” = AAQ > 18.5; depression > 5), creating four catego-
ries: low AAQ/low depression (n = 37), low AAQ/high depression
(n = 24), high AAQ/low depression (n = 21) and high AAQ/high depression (n = 80). Next, we ex-
amined mean scores in the four categories against published
non-clinical norms for quality of life and satisfaction with
relationships and plotted the scores out graphically.
Figure 1 shows the results with the straight line showing
the norm for non-clinical populations for each psychoso-
cial outcome variable. As shown, individuals who were
low on both AAQ and depression were on average
reporting at non-clinical population means. Those who
were high on both AAQ and depression were two-thirds
of a standard deviation below the population mean for
non-clinical samples on the quality of life measures and
one-third of a standard deviation below for satisfaction
with relationships.

**Conclusions**

The current study was a novel examination of the role of
EA in the psychosocial functioning of overweight or obese
persons who report high ID. EA showed strong, negative
associations with physical quality of life, mental quality of
life and satisfaction with relationships. Although the effects
were reduced after adding depression into the model, EA
continued to contribute significantly to all three measures
even after controlling for depression. Depression was
more strongly associated with mental quality of life than
was EA, which makes sense given that mental quality of
life is in part measuring the same construct. Thus, EA ap-
ppears to play a strong role in psychosocial functioning of
overweight and obese treatment-seeking individuals and
has even more adverse associations with psychosocial
functioning when combined with depression.

In this sample of persons with obesity who reported
high ID, about one-fourth scored low on both depression
and EA. These individuals were reporting quality of life
and relationships that were on average about equivalent
with the population mean for non-clinical samples. How-
ever, 49% of the participants scored high (above the
norm) for both measures, thus reporting that both high
levels of depression and EA occur quite frequently in this
population. Overall, being high on both EA and depres-
sion was associated with substantial decrements in qual-
ity of life and satisfaction with relationships. Given the
high prevalence and the impact, it is not a surprise that in-
dividuals who report high ID have shown worse outcomes
in weight loss trials. This may be in part due to increased
psychological symptoms and ineffective coping styles.
Individuals with high ID may require additional interven-
tion strategies focused specifically on reducing EA.

Currently, EA is not a target of treatment in standard
weight control interventions. However, treatment technol-
gies that effectively target EA exist (28), most notably
acceptance and commitment therapy (ACT) (29). ACT
produces positive behavioural health outcomes in areas
such as smoking cessation, diabetes management and
pain disability by reducing EA (18). Given that EA appears
to be playing a role in the functioning of weight loss
treatment-seeking individuals with high ID, ACT tech-
niques could prove useful for enhancing outcomes. In ad-
dition, ACT is effective for treating depression (30,31),
making it particularly relevant to a high ID sample. Prelim-
inary evidence suggests that ACT techniques might be
useful in augmenting weight control outcomes (32,33).

However, there is another reason to consider interven-
tion techniques designed to reduce EA. Average weight
loss in a standard behavioural intervention is roughly
7% (34), which leaves the majority of participants over-
weight or obese at the end of treatment. In addition,
weight regain is common. Given how hard it is to lose
and maintain weight loss, it could be helpful to include in-
tervention components that can improve psychosocial
functioning to help ease the lives of people who remain
overweight or obese after treatment. It is possible that ad-
ressing issues of coping could also improve weight
maintenance, as one pilot study has suggested (32).

It is important to note that age was significantly associ-
ated with mental quality of life and satisfaction with rela-
tionships, both in the positive direction. This result is
consistent with literature findings that quality of life can increase with age in the absence of severe health problems and disability (35,36). These results are most likely influenced by the age cut-off for our sample, which excluded elderly participants (above 70 years old). BMI is known to impact quality of life; however, our sample was selected for a weight loss study and thus has a restricted range of BMI, making it difficult to detect an effect for BMI. Despite our restricted range, BMI was still significantly associated with satisfaction with relationships. These findings are not surprising given that the social stigma of body shape increases with weight (37), and the consequences are more severe for women (38), which compromise 85% of our sample.

The primary limitation of this study is the use of cross-sectional data. Causation cannot be inferred from the reported analyses. In addition, we did not use “gold standard” measures of some constructs of interest (e.g. the Beck Depression Inventory-II for depression). The use of PROMIS measures was in part due to their brevity and in part due to the extensive normative data available to evaluate scores. Future research should use samples that include a broader range of disinhibition scores, examine the role of EA in a longitudinal study and also examine the effectiveness of reducing EA and depression in the context of a weight control intervention for individuals with high ID.

Conflict of Interest Statement

No conflict of interest was declared.

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References

1. Luppino FS, de Wit LM, Bouvy PF, et al. Overweight, obesity, and depression a systematic review and meta-analysis of longitudinal studies. Arch Gen Psychiatry 2010; 67: 220–9.
2. Fontaine KR, Bartlett SJ, Barofsky I. Health-related quality of life among obese persons seeking, and not currently seeking treatment. Int J Eat Disord 2000; 27: 101–5.
3. Doll HA, Peterson SE, Stewart-Brown SL. Obesity and physical and emotional well-being: associations between body mass index, chronic illness, and the physical and mental components of the SF-36 questionnaire. Obes Res 2000; 8: 160–70.
4. Ryden A, Karlsson J, Persson LO, Stjørost L, Taft C, Sullivan M. Obesity-related coping and distress and relationship to treatment preference. Br J Clin Psychol 2001; 40: 177–88.
5. Puhl R, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese adults. Obesity 2006; 14: 1802–15.
6. Niemeier HM, Phelan S, Fava JL, Wing RR. Internal disinhibition predicts weight regain following weight loss and weight loss maintenance. Obesity 2007; 15: 2485–94.
7. Carels RA, Douglass OM, Cacciapaglia HM, O’Brien WH. An ecological momentary assessment of relapse crises in dieting. J Consult Clin Psychol 2004; 72: 341–8.
8. Carels RA, Hoffman J, Collins A, Raber AC, Cacciapaglia H, O’Brien WH. Ecological momentary assessment of temptation and lapse in dieting. Eat Behav 2001; 2: 307–21.
9. DeZwaan M, Nutzinger DO, Schoenbeck G. Binge eating in overweight women. Compr Psychiatry 1992; 33: 256–61.
10. Yanovski SZ, Gormally JF, Leser MS, Glwtzman HE, Yanovski JA. Binge eating disorder affects outcome of comprehensive very-low-calorie diet treatment. Obes Res 1994; 2: 205–12.
11. Myers A, Rosen JC. Obesity stigmatization and coping: relation to mental health symptoms, body image, and self-esteem. Int J Obes (Lond) 1999; 23: 221–30.
12. Vartanian LR, Shaprow JG. Effects of weight stigma on exercise motivation and behavior: a preliminary investigation among college-aged females. J Health Psychol 2008; 13: 131–8.
13. Byrne S, Cooper Z, Fairburn C. Weight maintenance and relapse in obesity: a qualitative study. Int J Obes (Lond) 2003; 27: 955–62.
14. Gormally J, Rardin D. Weight-loss and maintenance and changes in diet and exercise for behavioral-counseling and nutrition education. J Couns Psychol 1981; 28: 295–304.
15. Gormally J, Rardin D, Black S. Correlates of successful response to a behavioral weight control clinic. J Couns Psychol 1980; 27: 179–91.
16. Grilo CM, Shiffman S, Wing RR. Relapse crises and coping among dieters. J Consult Clin Psychol 1989; 57: 488–95.
17. Hayes SC, Strosahl K, Wilson KG, et al. Measuring experiential avoidance: a preliminary test of a working model. Psychol Rec 2004; 54: 593–78.
18. Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: model, processes and outcomes. Behav Res Ther 2006; 44: 1–25.
19. Gifford EV, Kohlenberg BS, Hayes SC, et al. Acceptance-based treatment for smoking cessation. Behav Ther 2004; 35: 689–705.
20. Gregg JA, Callaghan GA, Hayes SC, Glenn-Lawson JL. Improving diabetes self-management through acceptance, mindfulness, and values: a randomized controlled trial. J Consult Clin Psychol 2007; 75: 336–43.
21. Butryn ML, Thomas JG, Lowe MR. Reductions in internal disinhibition during weight loss predict better weight loss maintenance. Obesity 2009; 17: 1101–3.
22. Bond FW, Hayes SC, Baer RA, et al. Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: a revised measure of psychological inflexibility and experiential avoidance. Behav Ther 2011; 42: 676–88.
23. DeWalt D, Rothrock N, Yount S, Stone AA. Evaluation of item candidates: the PROMIS qualitative item review. Med Care 2007; 45: S12–21.
24. Pyne JM, Patterson TL, Kaplan RM, Gillin JC, Koch WL, Grant I. Assessment of the quality of life of patients with major depression. Psychiatr Serv 1997; 48: 224–30.
25. Strine TW, Mokdad AH, Ballew LS, Berry JT, Gonzalez O. Impact of depression and anxiety on quality of life, health behaviors, and
asthma control among adults in the United States with asthma, 2006. J Asthma 2008; 45: 123–33.

Wildes JE, Harkness KL, Simons AD. Life events, number of social relationships, and twelve-month naturalistic course of major depression in a community sample of women. Depress Anxiety 2002; 16: 104–13.

Murphy E. The impact of depression in old-age on close social relationships. Am J Psychiatry 1985; 142: 323–7.

Hayes SC, Masuda A, Bissett R, Luoma J, Guerrero LF, DBT, FAP, and ACT: how empirically oriented are the new behavior therapy technologies? Behav Ther 2004; 35: 35–54.

Hayes SC, Strosahl K, Wilson KG. Acceptance and Commitment Therapy: An Experiential Approach to Behavior Change. New York: The Guilford Press, 1999.

Zettle RD, Rains JC. Group cognitive and contextual therapies in treatment of depression. J Clin Psychol 1989; 45: 436–45.

Zettle RD, Rains JC, Hayes SC. Processes of change in acceptance and commitment therapy and cognitive therapy for depression: a mediation reanalysis of Zettle and Rains. Behav Modif 2011; 35: 265–83.

Lillis J, Hayes SC, Bunting K, Masuda A. Teaching acceptance and mindfulness to improve the lives of the obese: a preliminary test of a theoretical model. Ann Behav Med 2009; 37: 58–69.

Forman EM, Butryn ML, Hoffman KL, Herbert JD. An open trial of an acceptance-based behavioral intervention for weight loss. Cogn Behav Pract 2009; 16: 223–35.

Butryn ML, Webb V, Wadden TA. Behavioral treatment of obesity. Psychiatr Clin North Am 2011; 34: 841–859.

Netuveli G, Blane D. Quality of life in older ages. Br Med Bull 2008; 85: 113–26.

Netuveli G, Wiggins RD, Hildon Z, Montgomery SM, Blane D. Quality of life at older ages: evidence from the English longitudinal study of aging (wave 1). J Epidemiol Community Health 2006; 60: 357–63.

Puhl R, Brownell KD. Bias, discrimination, and obesity. Obes Res 2001; 9: 788–805.

Puhl R, Heuer CA. The stigma of obesity: a review and update. Obesity 2009; 17: 941–64.