

## Measuring avoidance and inflexibility in weight related problems

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### Abstract

There is growing evidence that experiential avoidance and psychological inflexibility plays a role in a variety of clinical presentations, including health problems. The present study presents preliminary data on a new measure of these processes in relation to difficult weight-related thoughts, feelings, and actions: The Acceptance and Action Questionnaire for Weight-Related Difficulties (AAQW). Data were examined from 84 participants enrolled in a weight maintenance study. The AAQW showed good internal consistency ( $\alpha=.88$ ) and correlated with other related measures, including the original Acceptance and Action Questionnaire (AAQ). The AAQW also changed when targeted by Acceptance and Commitment Therapy. The AAQW, while still in need of refinement, shows promise to become a useful measure for evaluating new intervention targets in weight control intervention, such as acceptance of difficult emotions.

Keywords: Experiential avoidance; Psychological flexibility; Acceptance; Defusion; Obesity; Acceptance and Commitment Therapy; Assessment; Weight Control

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When confronted with difficult thoughts and feelings, some people tend to try and change or avoid these private experiences in an effort to regulate behavior. There is a growing body of evidence that suggests that this process of experiential avoidance is central in the development of a range of mental health and behavioral health problems (Hayes, Luoma, Bond, Masuda & Lillis, 2006; Hayes, Strosahl, Wilson, Bissett, Pistorello et al., 2004; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996).

A number of the newer cognitive behavioral approaches to treatment such as Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999), Mindfulness Based Cognitive Therapy (Segal, Williams, and Teasdale, 2002), Mode Deactivation Therapy (Apsche, Ward, & Evile, 2003), and Dialectical Behavior Therapy (Linehan, 1993) directly target experiential avoidance by seeking to alter clients' relationship to difficult thoughts and feelings. This approach differs from traditional CBT, which has in the past focused on changing patterns of thinking and feelings themselves (e.g., Beck, Rush, Shaw, & Emery, 1979; Hollon & Kendall, 1980). In ACT, for example, clients are taught to be more accepting of emotions, defused from thoughts, and more flexibly engaged in valued-based action even when these experiences are encountered. This explicitly functional approach has resulted in positive outcomes across a range of clinical presentations, such as affective disorders (Zettle & Hayes, 1986; Zettle & Rains, 1989), anxiety disorders (Twohig & Woods, 2004; Zettle, 2003), substance abuse (Hayes, Wilson et al., 2004), psychotic disorders (Bach & Hayes, 2002), and others (for recent reviews, see Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004 or Hayes et al., 2006).

The most commonly used general measure of experiential avoidance is the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004). A recent meta-analysis of correlational studies using the AAQ found that across several thousand participants and scores of studies, the AAQ correlated between .4 and .5 with a wide variety of behavioral health problems (Hayes et al., 2006).

Despite the fact that the primary version of the AAQ yields a single factor (Hayes et al., 2004), it contains a variety of different items as its very name (acceptance and action) suggests. Some target emotional acceptance or avoidance; others address the tendency to become entangled with thoughts, to take them literally, or conversely to see them simply as thoughts; still others asks about the ability to take values-based actions in the present of difficult thoughts or the tendency to become inactive or avoidant

behaviorally. As a result, while the AAQ and related instruments are sometimes described simply as measures of experiential avoidance, they are increasingly being described as measures of “avoidance and inflexibility” (Gifford, Kohlenberg, Hayes et al., 2004), or “psychological flexibility” (Hayes, Luoma, Bond, Masuda & Lillis, 2006).

The AAQ is a broad measure, and the specific emotions addressed are anxiety and depression. This leads to problems when the AAQ is used as a measure of processes of change, particularly when specific problems are targeted. Previous research with health problems in particular has found that mediation of the impact of specific ACT protocols is better assessed by modifying the general AAQ to target the specific area. For example, a smoking specific measure of avoidance and inflexibility mediated outcomes in a recent trial of ACT for smoking as compared to Nicotine Replacement Therapy, which the general AAQ did not (Gifford et al., 2004). Similar results were found for a diabetes-specific version of the AAQ in a randomized trial of ACT for Type II diabetes management (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007), and for an epilepsy specific version of the AAQ in a randomized trial of ACT for seizure management (Lundgren, Dahl, & Hayes, in press).

The current study presents a new measure of avoidance and inflexibility in relation to weight-related thoughts and feelings. Research has shown that individuals who are unable to maintain weight loss tend use avoidant (Byrne, Cooper, & Fairburn, 2003; Kayman, Bruvold, & Stern, 1990) or impulsive styles of coping (Fassino, Leombruni, Piero et al., 2002; Ryden, Sullivan, Torgerson et al., 2003) in response to stress or negative emotions; and frequently use eating to regulate emotions (Byrne et al., 2003; Ganley, 1989). Those who successfully control weight show more active, flexible, and committed styles of adjustment (Ferguson, Brink, Wood, & Koop, 1992; Westenhoefer, 2001).

ACT is beginning to be applied to weight control issues. For example, Forman and colleagues (2007) found that acceptance-based coping strategies drawn from ACT were better than emotional control based strategies in dealing with food cravings for those who were strongly impacted by food. Lillis (2007) found that a six hour ACT group lead to greater weight loss and a variety of psychosocial gains as compared to a wait list for participants who had recently completed a structured weight loss program and were now in a weight maintenance phase. Thus a weight-related version of the AAQ seems needed.

In the current study we describe the development of such an instrument, present preliminary psychometric data, examine issues of validity, and review preliminary results on the sensitivity of this measure to an ACT intervention for weight control.

## Method

### *Participants and Procedure*

Participants who had completed at least 6 months of a structured weight loss program were recruited from a local weight loss clinic and from the community through advertisements for a study designed to improve weight control ( $N = 84$ ). A majority of participants reported losing at least 10% of their body weight as a result of their most recent weight program; however few had reached their goal weight (17%). The sample consisted of mostly female ( $n=76$ , 90%), Caucasian ( $n=78$ , 93%), and middle-aged participants (mean age=50.6 +/-11), and is best described as a “weight loss seeking” sample.

Participants attended an intake session prior to random assignment to treatment conditions. Participants were weighed, using a professional grade scale, and measured for height, from which body mass index (BMI) values were calculated. They then completed a series of questionnaires (see Lillis, 2007, for more details about the outcome study procedures and sample characteristics).

### *Scale Development*

The *Acceptance and Action Questionnaire for Weight-Related Difficulties* (AAQW) is designed to measure acceptance of weight-related feelings, defusion from weight related thoughts, and the degree to which thoughts and feelings interfere with valued action. An initial pool of 30 items was generated by adapting existing items from the full version of the AAQ (Hayes et al., 2004) and the diabetes specific version of the AAQ (Greg et al., 2007). Items were modified to include issues specific to eating and being overweight. We then asked a group of 10 college students and another group of 7 people participating in a weight loss program at a local clinic to complete the scale and give feedback on items that seemed confusing. Grammatical changes were made and confusing or redundant items were eliminated.

The 22 remaining items are shown in Figure 1. Using a 7 point, Likert-type scale, the first 10 questions ask participants to rate “the truth of each statement as it applies to you”, with responses ranging from “Never true” to “Always true.” The next 12 questions ask participants to rate “How valid or believable” each statement is, with responses ranging from “Not at all” to “Completely believable.”

### AAQ-W

Below you will find a list of statements. *Please rate the truth of each statement as it applies to you.* Use the following scale to make your choice.

- | 1          | 2 | 3 | 4 | 5 | 6 | 7 |   |
|------------|---|---|---|---|---|---|---|
| Never True |   |   |   |   |   |   | Always True   |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 1. It's OK to feel fat  |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 2. When I have negative feelings, I use food to make myself feel better   |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 3. I try to suppress thoughts and feelings that I don't like about my body or weight by just not thinking them                        |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 4. I am not in control of what I eat  |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 5. I try hard to avoid feeling bad about my weight or how I look  |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 6. I am in control of how much physical activity I do   |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 7. When I evaluate my weight or my appearance negatively, I am able to recognize that this is just a reaction, not an objective fact. |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 8. In order to eat well and do physical activity, I need to feel like it  |
| 1          | 2 | 3 | 4 | 5 | 6 | 7 | 9. I need to feel better about how I look in order to live the life I want to   |

1 2 3 4 5 6 7      10. Other people make it hard for me to accept myself

Imagine that the following thoughts occurred to you right now. *How valid or believable would each be?*

For each question, please circle a number from 1 through 7.

1	2	3	4	5	6	7
Not at all					Completely	
believable					believable	

1 2 3 4 5 6 7      11. If I'm overweight, I can't live the life I want to

1 2 3 4 5 6 7      12. If I feel unattractive, there is no point in trying to be intimate

1 2 3 4 5 6 7      13. If I gain weight, that means I have failed

1 2 3 4 5 6 7      14. I'm in control of my eating behavior

1 2 3 4 5 6 7      15. I don't have what it takes to be healthy for life

1 2 3 4 5 6 7      16. My eating urges control me

1 2 3 4 5 6 7      17. I need to get rid of my eating urges to eat better

1 2 3 4 5 6 7      18. I am a stable person

1 2 3 4 5 6 7      19. If I eat something bad, the whole day is a waste

1 2 3 4 5 6 7      20. I should be ashamed of my body

1 2 3 4 5 6 7      21. I need to avoid social situations where people might judge me

1 2 3 4 5 6 7      22. I will always be overweight

Figure 1. The Acceptance and Action Questionnaire for weight-related problems (AAQW)

Before a sum score is taken, items 1, 6, 7, 14, and 18 are reversed keyed: Lower scores indicate less experiential avoidance and more psychological flexibility. The range of possible scores is 22 to 154. Because it can be confusing to speak of a lower score reflecting “more psychological flexibility” the scoring can be changed if the clinician or user is conceptually focused on increasing acceptance and response flexibility. In this case, items 1, 6, 7, 14, and 18 would be scored as normally and all other items would be reverse scored.

### *Other Measures*

General levels of experiential avoidance and psychological flexibility were assessed by the 9-item version of the *Acceptance and Action Questionnaire* (AAQ; Hayes, et al., 2004). It has good reliability and validity (Hayes et al., 2004).

Obesity-related quality of life was assessed by the *Obesity Related Well-Being* scale (ORWELL; Mannucci et al., 1999), which is an 18-item, 4-point Likert type self-report measure of satisfaction with functioning in various areas (e.g., sexuality). It has shown good reliability and validity (Mannucci et al., 1999) in use with obese populations.

Psychological distress was measured by the *General Health Questionnaire* (GHQ; Goldberg, 1972), a 12-item, 4-point Likert type self-report questionnaire with items on somatic symptoms, anxiety, depression, and social dysfunction. It has good reliability and validity (Goldberg, Gater et al., 1997) in detecting psychiatric problems in a general population.

Finally, single item questions asked about a variety of eating and exercise patterns, such as the number of binges per week, or number of workouts per week.

## Results

### *Psychometric Characteristics*

*Scoring.* The mean score for the sample was 88.9 ( $sd=19.8$ ). Scores ranged from 49 to 124.

*Internal Consistency.* The AAQW shows good internal consistency (Chronbach's  $\alpha = .88$ ).

The average item-to-scale correlation was  $r=.52$ , with a range of .28 to .77. Table 1 shows all the item-to-scale correlations.

Table 1 Item to Scale Correlations

Item	r
1. It's ok to feel fat	.28
2. When I have negative feelings, I use food to make myself feel better	.45
3. I try to suppress thoughts and feelings about my body or weight by just not thinking	.32

them	
4. I am not in control of what I eat	.57
5. I try hard to avoid feeling bad about my weight or how I look	.30
6. I am in control of how much physical activity I do	.30
7. When I evaluate my weight or appearance negatively, I am able to recognize that this is just a reaction, not an objective fact	.58
8. In order to eat well and do physical activity, I need to feel like it	.33
9. I need to feel better about how I look in order to live the life I want to	.51
10. Other people make it hard for me to accept myself	.47
11. If I'm overweight, I can't live the life I want to	.61
12. If I feel unattractive, there is no point in trying to be intimate	.55
13. If I gain weight, that means I have failed	.65
14. I'm in control of my eating behavior	.47
15. I don't have what it takes to be healthy for life	.61
16. My eating urges control me	.72
17. I need to get rid of my eating urges to eat better	.65
18. I am a stable person	.40
19. If I eat something bad, the whole day is a waste	.53
20. I should be ashamed of my body	.77
21. I need to avoid social situations where people might judge me	.66
22. I will always be overweight	.64

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*Principal Components Analysis.* We conducted a principal component analysis as a preliminary examination of the factor structure of the AAQW. The analysis yields several factors with Eigenvalues above 1, however further examination using a scree plot indicates that a 1 factor solution (Eigenvalue = 6.3, 30% of variance) is most appropriate at this stage of scale development. Figure 2 shows the scree plot for the principal components analysis.

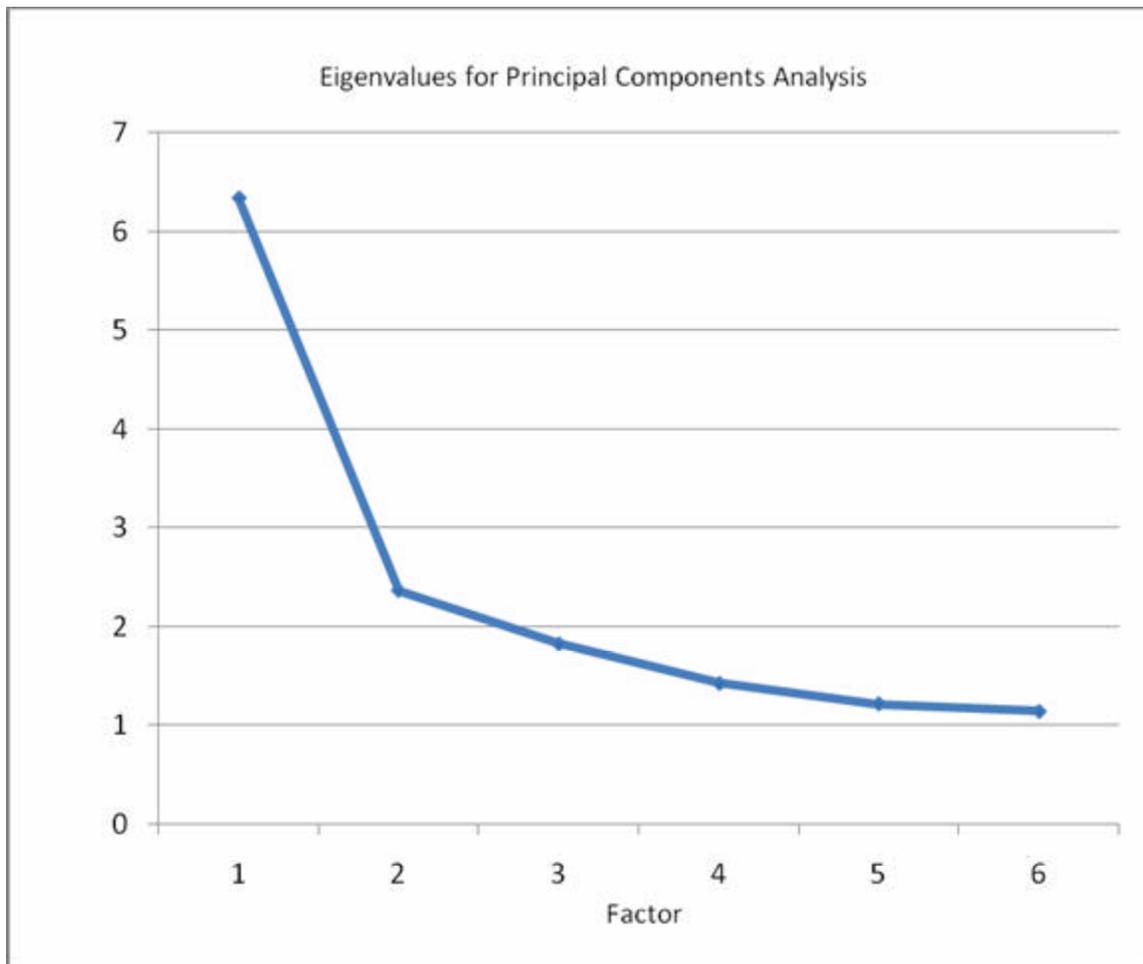


Figure 2: Scree plot for the principal components analysis.

### *Validity*

The AAQW correlated with general levels of avoidance and inflexibility as measured by the AAQ ( $r = .58, p < .001$ ), and with obesity-related quality of life as measured by the ORWELL ( $r = .64, p < .001$ ). It also correlated with general psychological distress as measured by the GHQ ( $r = .40, p < .001$ ), and with the BMI ( $r = .39, p < .001$ ). In addition, it correlated significantly with self-reported single item questions, such as the number of self-reported “binges” per week ( $r = .36, p < .01$ ), number of workouts per week ( $r = -.30, p < .01$ ), and choosing a healthy meal while eating out ( $r = -.40, p < .01$ ).

### *Utility*

The AAQW was piloted in a treatment outcome study examining the effects of Acceptance and Commitment Therapy on weight control in the sample of participants described previously in this manuscript (see Lillis, 2007, for full description of procedures and results). Participants were randomly assigned to receive a 1-day, 6-hour ACT workshop or be placed on a waitlist. All measures were given at baseline and 3-month follow-up.

The ACT workshop was designed to target avoidance of weight-related thoughts, feelings, and bodily sensations in order to promote more flexible behavior tied to values. Thus, the workshop targeted the processes that the AAQW was designed to measure.

Follow-up scores for each measure were examined using an analysis of covariance (ANCOVA) with the prescore values as covariate. Participants in the ACT condition showed significantly greater change in the AAQW as compared to wait list participants ( $F(1, 84) = 40.69, p < .0009, \text{partial } \eta^2 = .33$ , Cohen's  $d = 1.38$  - a large effect). The mean change on the AAQW was  $-25.1$  for the ACT group, and  $-1.5$  for the Control group. A similar pattern was shown for the AAQ but the effects were less strong ( $F(1, 84) = 10.5, p = .002, \text{partial } \eta^2 = .11$ , Cohen's  $d = .68$  - a medium effect).

Both the AAQ and the AAQW were then tested as a mediator of weight outcomes. Those in the ACT intervention showed a significantly greater reduction in their BMI as compared to those in the wait list ( $F(1, 84) = 9.80, p = .002, \text{partial } \eta^2 = .11$ , Cohen's  $d = .68$  - a medium effect). Mediation was tested using a Sobel test, which assessed the significance of the cross product of the coefficients for the treatment group to AAQ-W relation (the  $a$  path), and the AAQ-W to outcome relation controlling for treatment (the  $b$  path). An  $ab$  cross product test is recognized as perhaps the best all-around available method to test mediation (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Changes in BMI were mediated by pre to follow-up changes on the AAQW (Point Estimate =  $.29, SE = .13, p < .04$ ) but not by the AAQ (Point Estimate =  $.11, SE = .08, p = .17$ ).

## Discussion

The Acceptance and Action Questionnaire for Weight-Related Problems (AAQW) is the first scale designed to measure avoidance and inflexibility, or conversely acceptance and flexibility, in relation to difficult weight-related thoughts and feelings. The AAQW is brief, shows promising preliminary psychometric properties, and appears to be more useful in evaluating ACT processes when targeting weight control than general instruments.

The AAQW shows good internal consistency ( $\alpha = .88$ ), indicating promise for future application in studies related to weight control. It correlated in a coherent way with weight related self-report measures, including obesity-related quality of life, bingeing, and exercise, and with objectively measured body mass. It also correlated psychologically distress which comports with previous research on the psychological impact of avoidance and inflexibility (Hayes et al., 1996; Hayes et al., 2004).

The primary reason to develop a new measure, however, was to measure process changes in ACT and related intervention for weight control. The moderately high correlation with the original AAQ suggests that the AAQW may be measuring a similar construct, and a targeted ACT intervention for weight control changed both the AAQ and the AAQW. However, the impact on the AAQW was large, while it was medium for the AAQ, and the AAQW mediated changes in BMI, while the AAQ did not. This pattern of results shows that the AAQW is more sensitive to a targeted ACT intervention in this area and is better as a measure of process changes responsible for ACT outcomes.

There is a more general issue raised by this pattern of results. It is probably a mistake to think of experiential avoidance, cognitive defusion, valued action or any other ACT concept in a decontextualized way. People do not ultimately avoid "emotions," fuse with "thoughts," or engage in "actions" in the abstract. Avoidance, defusion, and valued action unfold with regard to particular emotions, thoughts, or behaviors, at particular times, and in particular contexts. Some measures may be broader, and some narrower, but none are devoid of particular content and particular contexts. This suggests that testing an ACT model in specific areas in a sensitive way may require the development of targeted process measures. Fortunately the present study provides additional evidence that modifying the content of other

successful process measures will accomplish that goal efficiently. In addition to the epilepsy, smoking, and diabetes measures describe earlier, that strategy also turned early versions of the AAQ into the Chronic Pain Acceptance Questionnaire, now a widely used and very successful measure in chronic pain (e.g., McCracken, 1998; McCracken, Vowles, & Eccleston, 2004). Given the consistent pattern seen across studies in mediational results, researchers applying ACT to new areas should seriously consider the need for targeted process measures rather than relying on more general measures that may prove to be insensitive to changes in a targeted domain.

Obesity and related problems is a growing epidemic. Methods to promote weight control that largely focus on behavioral modification, stimulus control methods, and ongoing treatment, are often ineffective over time as most people regain lost weight (Perri & Corsica, 2002; Wilson & Brownell, 2002). New intervention points are needed. ACT may provide such an avenue, but it is important to assess whether the putative mechanisms of change are responsible for any observed effects. The AAQW appears to be a step in that direction.

It is important to note a number of limitations on the scope of these findings. First, data were taken from a limited, non-diverse sample. Most participants were middle age, Caucasian, overweight or obese, treatment seeking women. More data needs to be collected to conduct a full refinement. The sample is too small for sophisticated psychometric analyses. Thus these data are preliminary and should not be viewed as full refinement of the scale. Some of the items had low item-to-scale correlations, and the range of correlations was relatively large. In addition, the principal components analysis yielded several factors with Eigenvalues above 1. Additional data will be needed to address these issues and to further refine the measure.

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