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A Pilot Study of Acceptance and Commitment Therapy for Women with Disordered Eating

Saraceni, Reana

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A Pilot Study of Acceptance and Commitment Therapy
for Women with Disordered Eating

by

Reana Saraceni

A DISSERTATION SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
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Abstract

Eating disorders are generally defined by abnormal eating habits that typically involve either the insufficient or excessive intake of food to the detriment of an individual's physical and mental health. Eating disorders are amongst the most challenging disorders to treat, and even the treatment of choice, cognitive-behavioural therapy, only achieves moderate success. This study is in response to a call from experts in the field who recommend the piloting of promising therapies for these challenging disorders. Some of the reasons for treatment difficulties may be due to existing therapies failing to adequately respond to inflexible control strategies such as experiential avoidance, often seen in eating disorders. Acceptance and Commitment Therapy (ACT) directly targets *psychological inflexibility*, making it a potentially ideal treatment for disordered eating. ACT is an innovative treatment that has been applied broadly to a variety of disorders. This is the first study to examine the efficacy of a complete ACT intervention for women with clinical disordered eating. This study examines change over time on measures life quality, valued living, mindful acceptance and observing, disordered eating and psychological maladjustment. The utilization of individual growth curve analyses provides a statistical modeling technique that summarizes changes about intra-individual change while simultaneously addressing inter-individual differences in change. *Duration of illness* was utilized as a predictor to further explain the hypothesized change over time. The results of this seven week group intervention showed positive pre-test to follow-up improvements in life quality, valued living, experiential avoidance, disordered eating, and psychological maladjustment. The mindfulness results run counter to findings from mindfulness component studies for eating disorders. The results suggest that the cognitive (mindfulness) processes did not appear to add value above and beyond the commitment and behaviour change processes. No significant differences were found on any of the measures between women who reported shorter versus much longer durations of

their illness. Overall, results suggest that the commitment to living a valued-based life may be the most viable component of and ACT intervention for treating women with disordered eating. Future research is warranted to parse out the behavioural aspect of ACT's mindfulness-based behavioural approach to treatment.

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List of Abbreviations

- AAQ – Acceptance and Action Questionnaire
- ACT – Acceptance and Commitment Therapy
- AN- Anorexia Nervosa
- BED – Binge Eating Disorder
- BMI – Body Mass Index
- BN – Bulimia Nervosa
- CBT – Cognitive-Behavioural Therapy
- DBT – Dialectic Behavioural Therapy
- DSM-IV – Diagnostic and Statistical Manual of Mental Disorders
- ED – Eating Disorder
- EDI-3 – Eating Disorder Inventory-3
- EDNOS – Eating Disorder Not Otherwise Specified
- EDQLS – Eating Disorder Quality of Life Scale
- EDRC – Eating Disorder Risk Composite
- GPMC – General Psychological Maladjustment Composite
- IPT – Interpersonal Therapy
- KIMS – Kentucky Inventory of Mindfulness Skills
- MBCT – Mindfulness-Based Cognitive Therapy
- NC – Nutritional Counselling
- QL – Quality of Life
- QoLI –Quality of Life Inventory
- TAU – Treatment as Usual

CHAPTER 1:

Introduction

Throughout the past 30 years, female body dissatisfaction and weight concerns have become prevalent enough in our culture to be considered normative (Rodin, Silberstein, & Striegel-Moore, 1985) and population-based studies indicate over half of women and girls hold negative global evaluations of their bodies (Grabe & Hyde, 2006). A great majority of these individuals are actively trying to change their body through diet and exercise. For some, however, this discontent is associated with life-threatening eating and exercise behaviour and all-consuming preoccupation with food and weight, at the expense of other life values and goals.

Eating disorders (EDs) are predominantly problems that occur amongst women and preoccupation with body image disturbances are ten times more prevalent among Canadian women than men (Garfinkel et al., 1995; Hoek & van Hoeken, 2003; Hudson, Hiripi, Pope, & Kessler, 2007). Although rates for EDs are inexact due to the secretive nature of these disorders, the lifetime prevalence among adult women aged 18 and older has been reported as 0.6 - 4.5% in large population-based surveys in the United States (Hudson et al., 2007; Walters & Kendler, 1995) and Canada (Garfinkel et al.). Hudson et al. (2007) estimate the lifetime prevalence of EDs ranging from 0.6 – 4.5%, display substantial comorbidity with other DSM-IV disorders and substantial role impairment.

According to the *Diagnostic and Statistical Manual of Mental Disorders-IV-TR* (DSM-IV-TR; American Psychiatric Association [APA], 2000), anorexia nervosa (AN) is characterized by extremely low body weight and body image distortion with an obsessive fear of gaining weight such that the person refuses to maintain at least 85% of their expected body weight. Individuals with AN are known to control body weight commonly through the means of voluntary starvation, excessive exercise, or other weight control measures such as diet pills or

diuretic drugs (Keel & McCormick, 2010). The possible physical consequences of AN can lead to significant morbidity and mortality (Arcelus, Mitchell, Wales, & Nielsen, 2011) with studies reporting up to 20% of patients dying as a result of the physical effects of self-starvation or suicide (Birmingham, Su, Hlynsky, Goldner, & Gao, 2005; Steinhausen, 2002). There are also distinct gender effects with AN; AN affects females more than males, with 90-95% of cases being female (Dovey, 2010).

Bulimia nervosa (BN) is characterized by recurrent binge eating, followed by compensatory behaviours (APA, 2000). BN can cause life threatening gastric or oesophageal tears and electrolyte imbalance as a result of self-induced vomiting, diuretic or laxative use and over-exercise for weight control (Crow & Brandenburg, 2010). BN is prevalent in about 1-3% of the population at any given time, and around 20% of Western women admit to having uncontrollably binged at some point in their lives (Hoek, 2002). Of those that have binged, 3% admit to vomiting afterwards in an attempt to prevent weight gain. Like AN, BN also has a gender bias with only one in thirty people with BN being male (Fairburn & Harrison, 2003).

Unfortunately, the current diagnostic system is limited in its ability to make meaningful distinctions among variants and severity of eating pathology (Crow, Agras, Halmi, Mitchell, & Kraemer, 2002). Although the DSM-IV-TR (APA, 2000) distinguishes between these two specific ED presentations (AN and BN), diagnostic crossover is common (Fichter & Quadflieg, 2007) and the most prevalent ED is eating disorder not otherwise specified (EDNOS; Fairburn & Bohn, 2005) which includes the provisional diagnostic category of binge eating disorder [BED; currently in the appendix of DSM-IV-TR (APA, 2000)]. EDNOS is a category in the DSM-IV-TR reserved for EDs of clinical severity that do not meet diagnostic criteria for either AN or BN. Despite an inability to make diagnostic threshold, lives are significantly narrowed by the under

or over control of eating (e.g., dietary restriction, bingeing), engagement in compensatory behaviours (e.g., excessive exercise, purging), and body preoccupation (e.g., checking, hiding).

The framing of EDs has been a subject of debate in the literature (Treasure, 2007) and the characteristics of people with EDs vary considerably depending on the model to which one adheres. Some of the more commonly debated conceptualization models include (a) understanding EDs based on diagnostic criteria; (b) the emotional regulation model; (c) the interpersonal psychotherapy model; (d) the cognitive behavioural model; (e) the sociocultural model; and, (f) the feminist model. Although these models will be expanded upon in the following chapter, the next section follows with a brief review of each model.

Understanding Eating Disorders based on Diagnostic Criteria

In clinical practice, diagnostic efforts are generally guided by DSM-IV-TR criteria. Based on diagnostic criteria, clinicians place patients and their behaviours into definitive categories in order to be able to distinguish typical from non-typical behaviour. AN is characterized by the refusal to maintain a minimally normal weight, BN is characterized by repeated episodes of binge eating and inappropriate compensatory behaviours, and EDNOS is a provisional category essentially comprised of disordered eating behaviours that fail to fulfill criteria for AN or BN (APA, 2000). This categorical approach of the DSM-IV-TR has been criticized for creating artificial boundaries from what is considered ‘normal’ behaviour, as well as artificial boundaries among the various disorders themselves (Thomas, Vartanian, & Brownell, 2009). Other conceptualizations challenge the notion that ED symptoms are a function of the external environment and therefore impossible to understand without taking psychosocial context into consideration.

Emotional Regulation Model

The emotional regulation model stresses the role of maladaptive emotion regulation in the maintenance of disordered eating (Heatherton & Baumeister, 1991). This perspective suggests that eating problems are motivated by a desire to escape from aversive emotional states related to a perceived inability to meet high personal standards. In other words, the key function of ED symptoms and behaviours are seen as temporarily reducing negative affect, thus regulating aversive emotional arousal (Gupta, Rosenthal, Mancini, Cheavens, & Lynch, 2008). From this perspective, deficits in healthy emotion regulation contribute to the use of maladaptive emotion regulation strategies which often include, but are not limited to, disordered eating (Corstorphine, Mountford, Tomlinson, Waller, & Meyer, 2007).

Interpersonal Psychotherapy Model

The interpersonal psychotherapy model is based on the assumption that problems with relationships are one of the key factors that trigger ED symptoms and that the ED in turn contributes to further interpersonal difficulties. For example, relationship issues are thought to contribute to the maintenance of the ED through isolation, where the ED then persists. This model suggests that the person becomes locked into a vicious cycle of deteriorating relationship problems and ongoing disordered eating. Disordered eating behaviours are thought to occur within the context of (or exacerbated by) adverse interpersonal situations (Rieger et al., 2010) which may also lessen self-esteem, and in turn, increase the individual's effort to further control their eating, shape and weight to feel more in control (Fairburn, Cooper, & Shafran, 2003).

Cognitive Behavioural Model

According to the CBT framework, a dysfunctional system for evaluating self-worth is central to the maintenance of EDs (Fairburn, Cooper, Shafran, & Wilson, 2008). AN, BN, and most cases of EDNOS are thought to share a distinctive core psychopathology based on over-

evaluation of shape and weight including dietary restraint, various forms of body checking and avoidance, and the preoccupation with thoughts about eating, shape, and weight (Fairburn et al., 2008). The major difference between AN and BN, therefore, is the effect the disorder has on a person's weight, with the differential balance between under and over eating. Whereas most people evaluate themselves on the basis of their perceived performance in a variety of domains of life (e.g., the quality of their relationships, work, school, talents) people with EDs judge themselves largely, or even exclusively, in terms of their eating habits, shape or weight, and often all three (Fairburn et al., 2008). As a result, their lives become focused on eating, shape, and weight, with dietary control, thinness, and weight loss being actively pursued, and perceived fatness and weight gain being assiduously avoided. From a CBT perspective, this psychopathology is specific to EDs and is rarely seen in the general population. These distinctive, and highly characteristic, behavioural and attitudinal features are prominent and well recognized, as is the dysfunctional system for evaluating self-worth (Fairburn et al., 2008).

Sociocultural Model

The sociocultural model is considered paramount in the promotion and maintenance of body image disturbances among women in the West, and researchers agree that the mass media is a powerful conveyor of unattainable sociocultural ideals (Hess-Biber, Leavy, Quinn, & Zoino, 2006; Saraceni & Russell-Mayhew, 2007). The sociocultural model considers EDs within their sociocultural and economic contexts and questions not only the practices and messages generated by mass media, but also the individual motivations for engaging in disordered eating behaviours (Hess-Biber et al., 2006). In order to attain the cultural mandate of thinness, disordered eating and weight preoccupation is seen as a widely accepted way to deal with weight and body image issues and are largely considered normative behaviour for women.

Feminist Framework

The feminist perspective of EDs considers the context of women's lives, including societal oppression, culture, class, race, developmental status, and individual experiences (Kantrowitz & Balou, 1992). A feminist analysis views EDs as the consequence of external as well as internal problems, emphasizing ED behaviours as symptoms of oppression, rather than symptoms of illness. This model considers EDs as the solution and asks, 'What is the problem?' (Fallon, Katzman, & Wooley, 1994), and in so doing, feminist approaches consider disordered eating as initially reasonable and adaptive responses to otherwise insane conditions (Katzman, Nasser, & Noordenbos, 2007). In other words, this model views EDs as needing to be understood within the context of a culture which produces weight preoccupation among women (Brown & Jasper, 1993), where many ED symptoms can be understood as coping or survival strategies rather than as evidence of pathology (Worell & Remer, 2003).

Summary of Eating Disorder Conceptualization

These models represent just a few of the various ways EDs are conceptualized, and in response, there are many treatment approaches. In recent decades, treatment approaches have been developed which now demonstrate some empirical support, especially for bingeing and purging. The most prominent of these are interpersonal therapy (IPT; Agras, Walsh, Fairburn, Wilson, & Kraemer, 2000; Fairburn, Jones, Peveler, Hope, & O'Connor, 1993; Wilfley et al., 2002; Wilson, Wilfley, Agras, & Bryson, 2010), dialectical behaviour therapy (DBT; Linehan, 1993a), and cognitive-behavioural therapy (CBT; Apple & Agras, 1997; Fairburn, Marcus, & Wilson, 1993), all of which have shown clinically significant effects in randomized trials with individuals who live with BN or BED (Garner, Rockert, Davis, & Garner, 1993; Safer, Telch, & Agras, 2001; Telch, Agras, & Linehan, 2001). CBT is currently considered the first line of choice in treating BN (Pike, Devlin, & Loeb, 2004) and is based on a model that emphasizes the

critical role of both cognitive and behavioural factors in the maintenance of the disorder. CBT for AN and EDNOS has not been sufficiently studied, and its effectiveness for these two disorders remains in question. Acceptance and Commitment Therapy (ACT) is a promising new treatment approach that has been developed from CBT for other psychological issues. The following section provides an overview of the theoretical conceptualization of ACT.

Theoretical Conceptualization of Acceptance and Commitment Therapy (ACT)

During the past two decades, a number of psychotherapies have been developed under the name of ‘third wave of CBT’ [e.g., Mindfulness-Based Cognitive Therapy (MBCT), Dialectic Behavioural Therapy (DBT), and ACT]. ACT represents a relatively new intervention in that it integrates a behaviour theory perspective with an emphasis on mindfulness and acceptance of events. The overarching goal of ACT is to increase clients’ awareness of their own experiences and contingencies in the lived environment, while helping them to act in accordance with their own identified goals and values. ACT is distinct from other forms of CBT in its emphasis on the context in which clients’ distressing experiences and psychopathology arise, rather than on the specific content of their maladaptive cognitions or behaviours (Hayes, Masuda, & De Mey, 2003). ACT seeks to weaken the link between negative or unpleasant internal experiences or ‘private events’ (whether emotions, cognitions, or sensations) and subsequent maladaptive or counterproductive behaviour, without necessarily altering the private experiences themselves (Hayes Strosahl, & Wilson, 1999). Thus, clients learn to identify and mindfully observe feelings, for example, of being fat and needing to diet, without responding to them behaviourally or ‘internalizing’ them as literal truth.

There are theoretical reasons to believe that ACT might be especially effective for those with disordered eating. Disordered eating behaviours can be conceptualized, in part, as an attempt to reduce anxiety about food and weight. For instance, clients may engage in behaviours

such as binge eating to avoid, control, or suppress other internal experiences like sadness or boredom. The ACT model focuses on the role of negative reinforcement in the maintenance of problem behaviours (i.e., experiential avoidance) where the behaviours function as avoidance or escape from chaos, uncertainty, or aversive arousal states (Merlin & Wilson, 2009). Experiential avoidance is the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioural predispositions) and then takes steps to alter the form or frequency of these events and the contexts that occasion them (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). In the long-term, these behaviours are thought not to improve quality of life (QL) nor reduce distress. ACT asks clients to evaluate the consequences of their behaviours and consider alternative ways of responding to these internal experiences. By teaching individuals with EDs how to change their relationship with distressing internal experiences and how to decrease experiential avoidance, problematic weight and eating-related behaviours might be reduced.

From a theoretical perspective, ACT describes bingeing and compensatory behaviours as functional. Heffner, Sperry, Eifert, and Detweiler (2002) describe bingeing, excessive dieting and exercise as behaviours whose *function* is the avoidance of thoughts and feelings evaluated by the individual as negative and uncomfortable (i.e., anxiety and guilt experienced after eating). From an ACT perspective, the primary issue associated with disordered eating and body dissatisfaction is not whether perception of the body is objectively distorted, or even if body related thoughts and feelings are adaptive or maladaptive. Rather, ACT is primarily concerned with the *contexts* in which body related thoughts and feelings are accompanied by behavioural excesses (excessive dieting, eating rituals) or behavioural deficits (avoidance of particular people, places, or events because of one's weight and body preoccupation) that interfere with living life in line with one's values (Merwin & Wilson, 2009). For example, one might stay home rather than going out with

friends to avoid the possibility of finding herself in a situation where she may have to eat, behaviours that only result in increased isolation.

For the person with an ED, the thought that changing one's body will lead to increased happiness and life satisfaction is taken literally and associated with extreme eating and compensatory behaviours (Merwin & Wilson, 2009). When responds literally to these thoughts do not deliver the expected outcome (i.e. weight loss), individuals with EDs commonly attribute these undesired outcomes to the idea that they have not worked hard enough, lost enough weight, or perfected their bodies. Thus, they employ a '*work harder*' strategy, a strategy that has been effective in other life areas. However, the harder they work to change their body, the *further away* they get from what they actually want their life to be about. Consequently, body size or shape becomes a prerequisite for living a full and meaningful life (Merwin & Wilson, 2009).

The use of ACT with EDs has much promise, but little empirical research has been conducted to date. This proposed study adds to the existing body of ED treatment work by implementing and evaluating a complete ACT intervention utilizing individual growth curve (IGC) analysis to test its effectiveness. IGC accommodates missing data points (Kruger & Tian, 2004), something that is often encountered in ED research with typically high attrition rates. If results of studies such as this provide preliminary evidence of efficacy, this may provide the groundwork for investigating larger trials of this new ACT treatment approach.

Problem Statement

In recent decades, several treatment approaches have been developed which show some empirical support for EDs, especially for bingeing and purging. Controlled treatment research on AN is sparse, which is attributable to serious methodological limitations and the difficulty of recruiting a sufficient number of participants. Although the most common EDs seen in clinical practice are those classified as EDNOS, with the exception of BED, EDNOS have been virtually

neglected by researchers (Wilson, 2005). The most widely researched treatment for EDs is CBT, which eliminates binge eating and purging in about 50% of participants with BN (Wilson, 2005). Because just as many participants show an incomplete response to CBT as those who recover, additional work is necessary to develop more effective treatments for EDs that can be broadly disseminated to clinical practice.

Rationale

For over 25 years researchers and practitioners have been working to find effective treatments for EDs (e.g., Cooper, 2005; Wilson, Grilo, & Vitousek, 2007). This journey has been long and research advances have been slow for several reasons: (a) attrition rates are high and often differential among treatment and control groups (Halmi et al., 2005); (b) rare diagnoses (e.g., AN) yielding small sample sizes affecting statistical power and making generalization difficult (Keel & McCormick, 2010); and, (c) difficulties in recruiting participants due to the secrecy of these disorders (Wilson et al., 2007). Despite these challenges, experts in the field are now suggesting that efforts should concentrate on the development and pilot testing of promising approaches (Fairburn, 2005) for disorders that are difficult to treat.

Some authors (i.e., Baer, 2003; Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Heffner et al., 2002; Wilson, 1996) have suggested that acceptance-based methods for treating EDs deserve increased attention, and the efficacy of acceptance-based interventions, which encourage non-judgemental acceptance of experience, is gaining increasing empirical support (Baer, 2003). ACT has proven effective with a diverse range of clinical conditions including depression, obsessive compulsive disorder, workplace stress, chronic pain, the stress of terminal cancer, anxiety, post traumatic stress disorder, heroin abuse, marijuana abuse, and even schizophrenia (Bond & Bunce, 2000; Branstetter, Wilson, Hildebrandt, & Mutch, 2004; Dahl, Wilson, & Nilsson, 2004; Twohig, Hayes, & Masuda, 2006; Zettle & Raines, 1989). Although

no randomized controlled trials have investigated the effectiveness of acceptance-based methods for disordered eating, Heffner et al. (2002) found the remission of most anorexic symptoms in a case example of AN utilizing the application of a published self-help ACT manual (Heffner & Eifert, 2004).

CBT is currently the gold standard for treating EDs and although its efficacy has been established for the treatment of BN (in particular), the mechanisms by which CBT exerts its effects less clear are (Fairburn et al., 2003). The defining feature of CBT is the assumption that therapeutic effects are mediated by changes in cognitions, including thoughts, beliefs, and schemas, and the corresponding emphasis on cognitive change efforts (Fairburn et al., 2003). Although cognitive behavioural therapists often supplement cognitive change strategies with a number of behaviour change methods, the fundamental purpose of even these strategies is to effect change in dysfunctional cognitive structures (Beck, 1993; McGinn & Sanderson, 2001). A relatively small number of studies have specifically examined the mechanisms of CBT, but the majority have failed to support hypothesized cognitive mediators. For example, studies that have compared behaviour therapy, with and without a cognitive component, have found that an exposure-only intervention was at least as effective as exposure plus cognitive therapy in the treatment of social anxiety disorder (Emmelkamp, Mersch, Vissia, & Van der Helm, 1985; Gelernter et al., 1991; Hope, Heimberg, & Bruch, 1995; Scholing & Emmelkamp, 1993) and posttraumatic stress disorder (Foa et al., 1999, 2005; Lovell, Marks, Noshirvani, Thrasher, & Livanou, 2001; Paunovic & Öst, 2001). Likewise, behavioural activation alone was found to be as effective as (Jacobson et al., 1996) or even more effective than behavioural activation plus cognitive restructuring in the treatment of depression (Dimidjian et al., 2006). Similarly, meta-analyses have suggested that exposure plus cognitive interventions offer no advantage over exposure-only treatments for generalized anxiety disorder (Gould, Otto, Pollack, & Yap, 1997)

and obsessive compulsive disorder (Feske & Chambless, 1995). Meta-analyses also suggest no benefit of cognitive therapy over behaviour therapy (Depression Guideline Panel, 1993; Glaoguen, Cottraux, Cucherat, & Blackburn, 1998).

The lack of consistent support for postulated cognitive mechanisms of CBT has led some psychotherapy scholars to question the centrality of direct cognitive change as the mechanism driving the successful outcomes of CBT (Gortner, Gollan, Dobson, & Jacobson, 1998; Jacobson et al., 1996). Such findings have set the stage for new developments within CBT that emphasize changing the context in which cognitions are experienced rather than changing cognitive content per se. The ACT approach for example, emphasizes *accepting* rather than *changing* distressing cognitions and affect (Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

ACT takes advantage of a growing body of literature that suggests that attempts to suppress or avoid negative private thoughts or events may work to reduce those negative states over the short term, but may actually worsen outcomes over the long term (Hayes et al., 2009). Although evidence is not wholly uniform, there is considerable support in the experimental literature on thought suppression (Purdon, 1999), and in the coping literature among depression, survivors of child sexual abuse, alcoholism, and recovery from traumatic events, suggesting that avoidant means of coping predict poorer long-term outcomes (Hayes et al., 1996). Rather than focusing on the *content of* what might exacerbate or maintain EDs, ACT focuses on the *function* of the ED. This, along with preliminary ACT findings, and the additional requirement to trial promising approaches and improve treatment efficacy in the area of disordered eating, provides good reason to pilot an ACT intervention program to potentially address what manual-based CBT does not.

Group work. Group therapy has been very popular as a form of treatment for EDs since the early 1980s (Fishman, 2004) and has gained support as a primary intervention as researchers

found that groups provide the opportunity to incorporate a wide array of therapeutic techniques within one format (Nevonen & Broberg, 2005). The power of the therapeutic group allows for exchange of information, where such that participants are encouraged to share their experiences and feelings which provides members with social and emotional support (Fishman, 2004).

Yalom (1995) defined curative factors as elements of the group process itself that become tools to promote change. People with EDs often live with feelings of shame and secrecy and are unaware that there are many others who also experience these difficulties (Reindl, 2001). ED group work can therefore provide an environment for being with similar others which may allow individuals to overcome feelings of shame and secrecy and to begin to express their feelings of helplessness with respect to their disordered eating.

A relative challenge when treating EDs is that they are amongst the most expensive to treat (Agras, 2001) of all psychiatric disorders. In a meta-analysis of 23 studies, McRoberts, Burlingame, and Hoag (1998) examined a variety of disorders where individual and group therapies demonstrated equivalent outcomes, except group interventions were more cost-effective. In two separate studies, researchers compared individual versus group-delivered interventions. Nevonen and Broberg (2005) compared individual and group formats for patients with EDNOS and found similar outcomes for both treatment modalities, concluding that a group approach offers an efficacious and cost-effective method of treating ED behaviours. Similarly, Chen et al. (2003) compared individual versus group-delivered CBT for women with BN. Although both groups experienced significant improvements in behavioural and psychological components of BN, the group-delivered format was found superior to the individual intervention in impulse control, state anxiety, and social functioning in the longer term. Both Novonen and Broburg (2005) and Chen et al. (2003) concluded that group therapy is a preferred method of providing support to people with EDs in a cost effective way, and should therefore be the first

line of treatment in a stepped care approach. This preliminary research provides an initial justification for proceeding with a group format for the current study.

Early intervention. Outcome studies of ED treatment have shown that good outcome is associated with a shorter duration of illness (Austin et al., 2008; Reas, Williamson, Martin, & Zucker, 2000). Reas et al (2000) found that the probability of recovery from an ED was significantly higher for participants who were initially treated within the first few years of onset. However, if participants were initially treated 15 years or more after the onset of the illness, the probability of recovery fell below 20%. This finding suggests that early identification of an ED may be a very important factor in preventing a chronic ED. In addition to investigating ACT treatment effects, this study explores whether or not any treatment effects found are a potential function of the duration of the illness. Adding a predictor such as time course of illness to the IGC analysis model, will potentially explain or allow for better prediction of group differences in changes over time

Primary Research Questions

The goal of the proposed study is to empirically investigate the efficacy and acceptability of a group-based ACT intervention for a sample of adult women with disordered eating. The study proposes to answer seven primary research questions:

1. Does participation in an ACT group intervention improve *quality of life (QL)* for women with disordered eating?
2. Does participation in an ACT group intervention improve *valued living* for women with disordered eating?
3. Does participation in an ACT group intervention improve *experiential avoidance* for women with disordered eating?

4. Does participation in an ACT group intervention improve *mindful acceptance* skills for women with disordered eating?
5. Does participation in an ACT group intervention improve *mindful observation* skills for women with disordered eating?
6. Does participation in an ACT group intervention improve *disordered eating* for women with disordered eating?
7. Does participation in an ACT group intervention improve *psychological maladjustment* for women with disordered eating?
8. Can between-person variation in the individual elevation and rate of change parameters on each dependent variable be further explained by the duration of time one has an ED?

Primary Hypotheses

The following hypotheses guided this evaluation:

1. Participants are expected to report greater improvement in *QL* features.
2. Participants are expected to report improvement in willingness to live a *values* based life.
3. Participants are expected to report improvement in *experiential avoidance*.
4. ACT encourages individuals to accept possibly upsetting cognitions, as well as other subjective internal experiences; therefore, participants are expected to report greater change in their non-judgemental, *mindful acceptance* of negative thoughts and emotions associated with weight and body dissatisfaction.
5. Mindfulness involves observing and noticing or attending to various stimuli including internal and external phenomena. Thus, participants are expected to show improvement in *mindful observation* skills.
6. By teaching clients how to change their relationship with distressing internal experiences, it is hypothesized that problematic weight and eating-related behaviours might be

reduced; therefore, it is expected that participants will report less *disordered eating* behaviours

7. Participants are also expected to report less *psychological maladjustment*.
8. Participants with shorter durations of illness are expected to have better outcomes on all variables than participants whose duration with an ED is longer.

Limitations, Assumptions and Design Controls

The original design of this research was a randomized controlled trial. Although participants had agreed to be assigned to either an intervention or a delayed control group, once the study was underway, participants assigned to the control group indicated their disappointment in having to wait several weeks to participate in the intervention. Many participants indicated they were particularly motivated by the call for participation on the news broadcasts, and expressed their apprehension about being assigned to a delayed control group. Some participants inquired if there was any possibility for their inclusion in the immediate intervention group, and some also requested individual and more immediate counselling, if it were available outside of the study. In response to the ethics of the situation, combined with the difficulty researchers often encounter in recruiting and retaining participants to ED studies, the delayed intervention group was dropped, and a *second* intervention group was created. This change was made in an effort to retain all of the participants originally assigned to the control group, as well as to ensure no participant was inadvertently harmed due to the research selection process.

Summary

This chapter presents a rationale for treating EDs with ACT, the first known empirical study conducted transdiagnostically for AN, BN and EDNOS. Overall, it is hypothesized that an ACT intervention will lead to positive changes over time with respect to ED behaviours and

psychological adjustment through the development of values based living, and mindfulness practices. The next chapter reviews the existing literature on ED treatment efficacy, as well, the existing literature on ACT for EDs is reviewed.

CHAPTER 2

Review of Related Literature

This chapter briefly reviews some of the more common ways in which EDs are characterized in the literature, followed by a review of the research on treatment efficacy. The treatment efficacy research on AN, BN and BED are each at different stages of empirical development and are therefore considered separately. This is followed by a review of ACT, its goals, and how it might mediate treatment outcome.

Eating Disorder Conceptualization

Understanding EDs based on diagnostic criteria. The clinical paradigm defines an ED as an individual pathology and rests on the assumption that EDs are diseases to be diagnosed and treated. According to the DSM–IV–TR (APA, 2000) AN and BN are the two best characterized EDs, and patients who do not meet the diagnostic criteria for either AN or BN may be diagnosed as EDNOS. BED is the most common disorder in the EDNOS category with its own specific diagnostic criteria (Wilson et al., 2007).

AN is characterized by severely restricted food intake and refusal to maintain body weight at a normal level. AN patients have an intense fear of becoming fat despite being seriously underweight. A subset of AN patients engage in periodic binge eating and self-induced vomiting (Dovey, 2010). Severe co-morbid psychopathology is common (Halmi et al., 2005). AN is marked by life-threatening medical complications, and unlike other EDs, AN tends to be ego syntonic.

According to the DSM-IV-TR (APA, 2000), three features need to be present in order to make a diagnosis of AN: (a) the overvaluation of shape and weight such as, judging self-worth largely, or even exclusively, in terms of shape and weight. Overvaluation is often expressed as a strong desire to be thin combined with an intense fear of gaining weight and becoming fat; (b)

the active maintenance of an unduly low body weight [e.g., less than 85% of that expected for body mass index (BMI) ≤ 17.5]; and (c) amenorrhea.

BN is characterized by recurrent binge eating (the uncontrolled consumption of a large amount of food), regular extreme compensatory behaviour designed to influence body shape and weight (e.g., self-induced vomiting, laxative misuse, or excessive exercise), and negative self-evaluation that is unduly determined by body shape and weight. Individuals with BN diet in a rigid and dysfunctional manner. BN primarily afflicts young females, with a prevalence of roughly 1% to 2% in community samples (Wilson, 2005).

According to the DSM-IV-TR (APA, 2000), three features also need to be present to make a diagnosis of BN: (a) the overvaluation of shape and weight, as in AN; (b) recurrent binge eating. A “binge” is an episode of eating during which an objectively large amount of food is eaten and there is a sense of loss of control at the time; and (c) extreme weight-control behaviour, such as strict dietary restriction, recurrent self-induced vomiting, or marked laxative misuse. There is also an exclusionary criterion that the diagnostic criteria for AN should not be met.

EDNOS is a heterogeneous and poorly specified diagnostic category (Wilson, 2007). The exception is BED for which provisional diagnostic criteria are available (APA, 2000). The remaining disorders in this category consist primarily of variations of BN and AN, or *mixed* disorders containing features of both BN and AN. There are no diagnostic criteria for EDNOS; rather it is a residual category for EDs of clinical severity that do not meet the diagnostic criteria for AN or BN.

Researchers are starting to question the ways in which EDs are diagnostically classified (Fairburn et al., 2008). Fairburn et al. (2008) have developed a transdiagnostic model based on the idea that all major EDs share some core types of psychopathology which help maintain the

ED behaviour. The fact that EDs persist and evolve in form (but do not evolve into other psychiatric disorders) suggests that ‘transdiagnostic’ mechanisms play a major role in maintaining the ED. In other words, it appears that there are mechanisms that lock clients into having an ED but not one particular ED. If this is so, treatments that are capable of addressing these mechanisms should be effective with all EDs rather than just one (Fairburn et al., 2003).

Emotional regulation model. Some authors have hypothesized the role of maladaptive emotion regulation in the maintenance of disordered eating. Qualitative reports support the hypothesis that various ED behaviours function to regulate emotion. For example, Dignon, Beardsore, Spain, and Kuan (2006) suggested that individuals with AN report that control over food and eating functions, in part, as a method to stave off overwhelming negative emotions. Similarly, individuals with AN indicate the engaging in ED behaviours allows them to escape, or cope with uncomfortable emotional states (Arkell & Robinson, 2008; Federici & Kaplan, 2008). Empirical evidence supports this model as well (Crowther, Snafner, Bonifazi, & Shepherd, 2001; Hohlstein, Smith & Atlas, 1998; Jackson, Cooper, Mintz, & Albino, 2003; Stice, 2002). First, trait neuroticism (the tendency to experience negative affect) is a broad risk factor for EDs and individuals with EDs may experience negative mood states more often than those without (Stice, 2002). Second, women with BN endorse the belief that eating alleviates distress, and coping motives are positively related to food consumption (Hohlstein et al., 1998; Jackson et al., 2003). Studies using daily diary methods have found that women with binge eating problems tend to binge more on days when stressors occur, and to rate those stressors as more distressing than women who do not binge (Crowther et al., 2001).

Women who binge eat also tend to label a binge as any eating that occurs in response to negative emotion, even if the quantity eaten was not large (Telch, Pratt, & Niego, 1998). Experimental studies of mood induction show that individuals tend to eat in response to negative

affect (Agras & Telch, 1998; Stice, 2002) and have shown that a facet of impulsivity known as urgency (e.g., tendency to act rashly when distressed) is strongly correlated with binge eating (Fischer, Smith, & Anderson, 2003). In sum, individuals with disordered eating behaviour may experience more negative affect than individuals without disordered eating, tend to believe that eating will help reduce distress, and tend to eat in response to distress. These pieces of evidence support the conclusion that maladaptive attempts to regulate emotions are related to disordered eating behaviour.

Interpersonal therapy model (IPT). IPT conceptualizes interpersonal difficulties as playing an important role in the onset and maintenance of EDs and is based on the belief that EDs are closely tied to impaired social functioning (Tantleff-Dunn, Gokee-LaRose, & Peterson, 2004). EDs therefore occur when people's needs for attachment and connection are not being met. Research has shown that individuals suffering from psychological disorders often have less supportive and smaller social support networks than control groups (Gotlib & Schraedley, 2000) and similar findings exist for persons with EDs (e.g., Tiller et al., 1997).

The fundamental premise of an IPT conceptualization applied to EDs is that disturbances of the self, such as negative self evaluation (i.e., negative beliefs regarding one's worth generally or in specific domains; Tesser, 2003), which are hypothesized to trigger and maintain ED symptoms, occur as a result of inadequacies in mutual interactions between the individual and their social context. In an ED specific model of IPT, Rieger et al. (2010) contend that functions pertaining to the self (e.g., development and maintenance of self-esteem and related positive emotions), which under optimal conditions are achieved through successful individual social world relations, come to be performed by the ED. The authors suggest that in attempting to fulfill the functions of the self that are typically met through adaptive interactions within the social world, the ED acts as replacement social agent. In other words, engagement in solitary regulatory

strategies of weight control and/or binge eating behaviors replaces healthy engagement with the social environment in the individual's efforts to achieve positive self-esteem and affect (Rieger et al., 2010). An IPT model applied to EDs proposes that ED symptoms in turn exacerbate interpersonal problems, thereby further intensifying the symptoms. Given this formulation of the eating disorder as a substitute for deficiencies in the individual's relations with the social world, IPT seeks to generate healthy connections between the individual and her social environment so that the ED becomes unnecessary.

Feminist model. From a feminist perspective, EDs are not rooted in female biology, but instead, are considered a response to both the cultural stereotypes and practices that devalue women, as well as a response to social pressures to conform to certain ideals of appearance (Hess-Biber et al., 2006; Piran, Jasper, & Pinhas, 2004; Wolf, 1990). Feminists find confirmation of this view in the prevalence of girls and women in the ED population; indeed, EDs are seen as logical, initially sane responses to the social order (Fishman, 2004). A feminist ED perspective differs from medicalized models in that the latter tends to offer a decontextualized, or highly individualized explanation of EDs, where the feminist model seeks to understand the connection between women's relationship to their bodies and the conditions of their lives (Brown, 1993). Traditional approaches to working with EDs tend to focus on weight and eating with the primary intent being behavioural change. Feminists note that controlling the body has perhaps become an accessible way for women to cope with psychological distress and feelings of powerlessness. Rather than emphasizing the need to change *symptoms*, feminist therapy tries to normalize the problem acknowledging that controlling the body for women has become a viable way for women to achieve some measure of control in their lives (Brown, 1993).

Feminist approaches highlight that using diagnostic categories may contribute to a victim-blaming and create the impression that there is a clear and qualitative distinction between

women who are anorexic or bulimic and those who are not (Brown & Jasper, 1993). Feminists believe this impression obscures the significant similarities among all women who are preoccupied with weight and shape in our culture, pathologizing some as “ill” and rewarding and normalizing others who simply “diet” (Brown & Jasper, 1993). A feminist perspective questions the traditional model of EDs and offers a continuum framework which recognizes that there are more similarities than differences among anorexic and bulimic women than women who are less invested in controlling their bodies. Although the diagnostic criteria utilized to categorize EDs routinely frame such problems as pathological; the continuum model suggests that women’s eating problems differ only in degree, and that many women with eating problems find themselves at different places on the continuum over their lives. The feminist perspective challenges the idea that EDs can be framed as psychiatric disorders when most women, in fact, share some symptoms (Brown, 1993).

Cognitive behavioural model. CBT is the most common form of therapy used and has grown to be the treatment standard when it comes to the treatment of EDs (Wilson et al., 2007). According to cognitive behavioural theory, central to the maintenance of EDs is a dysfunctional system for evaluating self-worth (Fairburn et al., 2003). AN, BN, and most cases of EDNOS share a distinctive ‘core psychopathology’ based on over-evaluation of shape and weight (Fairburn et al., 2008). Most of the other clinical features can be understood as stemming directly from this ‘core psychopathology’, including the extreme weight-control behaviour (e.g., dietary restraint), the various forms of body checking and avoidance, and the preoccupation with thoughts about eating, shape and weight. The major difference between AN and BN therefore is the effect the disorder has on a person’s weight, with the differential balance between under and over eating. The core pathology that impairs both disorders is that individuals primarily judge

their self-worth on the basis of their appearance (overvaluation of shape and weight) and their ability to control these factors (Fairburn et al., 2003).

Whereas most people evaluate themselves on the basis of their perceived performance in a variety of domains of life (e.g., the quality of their relationships, work, school, talents, etc.), people with EDs judge themselves largely, or even exclusively, in terms of their eating habits, shape or weight (and often all three; Fairburn et al., 2003). As a result, their lives become focused on their eating, shape and weight, with dietary control, thinness and weight loss being actively pursued whilst overeating, ‘fatness’ and weight gain are assiduously avoided. This psychopathology is specific to EDs and is rarely seen in the general population. These distinctive, and highly characteristic, behavioural and attitudinal features are prominent, and well recognized, as is the dysfunctional system for evaluating self worth (Fairburn et al., 2003).

One other maintaining process highlighted in more recent accounts of cognitive behavioural theory indicates that these individuals with EDs tend to be extremely self critical (Fairburn, 1997; Fairburn et al., 1993). They set demanding standards in terms of their eating, shape and weight, and control, and when they cannot meet them, they see themselves as being at fault, rather than their seeing standards as being too harsh. The result is secondary negative self-evaluation. This too maintains the ED since it leads individuals to strive even harder to achieve ‘success’ in the area of life that is most important to them; that is, controlling their eating, shape and weight. In this way a further vicious circle serves to maintain the ED (Fairburn et al., 2003).

The *transdiagnostic* cognitive behavioural model highlights additional processes that need to be tackled in treatment (Fairburn, 2008; Fairburn et al., 2003). In certain patients, the model proposes that one or more of four additional maintaining processes interact with the core ED psychopathology, and when this occurs, it is an obstacle to change. These include: a) clinical perfectionism, that is, perfectionism of clinical significance that is defined as the over-evaluation

of the striving for, and achievement of personally demanding standards despite adverse consequences; b) chronic low self-esteem which is referred to as an unconditional and pervasive negative view of oneself which is seen as part of one's permanent identity; c) mood intolerance—an inability to cope appropriately with certain emotional states; and, d) interpersonal difficulties—that is, the inability to cope with interpersonal events or relationships which undermine self-esteem. Individuals with EDs have many of these features in common, most of which are not seen in other psychiatric disorders, and studies of their course indicate that patients tend to migrate between these diagnoses over time; a temporal migration that appears to be more the norm rather than the exception (Fairburn et al., 2003).

Out of the variety of ways EDs have been conceptualized comes a similar array of treatment options. This next section presents the research outcomes associated with these various conceptual models.

Treatment Efficacy

The efficacy of treatment of AN, BN and BED are at different stages of empirical development. For this reason, each distinct ED will be reviewed separately with respect to the research groundwork.

Anorexia nervosa. The most salient fact about psychotherapy research on AN is that there is remarkably little evidence to review (Wilson, 2005). The lack of controlled treatment research with this disorder is attributable to distinctive features of the disorder which include its rarity, the presence of medical complications that sometimes require inpatient management and the extended period of treatment necessary for full symptom remission in established cases (Wilson et al., 2007). Clients' ambivalent mind-set about recovery compound these challenges at every phase of research, making it more difficult to recruit samples, prevent attrition, and secure involvement in follow-up assessments (Agras et al., 2004).

A review of CBT for AN (Wilson, 1999) noted only two controlled outcome studies, one published (Channon, de Silva, Helmsley, & Perkins, 1989) and one unpublished (Ball, 1998). Both studies showed that individuals receiving CBT had gained weight. However, some researchers (e.g., Vitousek, 1995; Wilson 1999) have pointed out the methodological shortcomings. For example, the same therapist conducted CBT and the comparison behavioural treatment in the Channon et al. (1989) study which may limit interpretation of the findings. As well, the Ball (1998) study, which found CBT to be similarly effective as behavioural family therapy, was limited by a small sample size.

Three studies have compared CBT with one or more alternative psychotherapies for AN (Ball & Mitchell, 2004; Channon et al., 1989; McIntosh et al., 2005). In each, no clear differences were found between CBT and the comparison conditions. Across trials, the general pattern was for individuals in most conditions to improve to some degree without achieving full recovery from AN. Unfortunately, each of these studies implemented a version of CBT for AN that has not been described or recommended in the literature. All offered truncated courses of treatment that differ from those specified by CBT experts (Fairburn et al., 2003; Garner, Vitousek, & Pike, 1997).

More recently, Pike, Walsh, Vitousek, Wilson, and Bauer (2003) randomly assigned 33 AN patients either to one year of outpatient CBT or to nutritional counselling (NC) following completion of inpatient treatment. The overall treatment failure rate (relapse and dropout combined) was significantly lower for CBT (22.2%) than for NC (73.3%). More CBT than NC patients met criteria for “good outcome.” This study provides the first empirical documentation of efficacy for any psychological therapy in relapse prevention for adult AN (Wilson, 2005).

Collectively, the disappointing findings of treatment research for AN are the result of the individuals rejecting treatment, dropping out prematurely, and/or sustaining few behavioural

changes in the absence of external contingencies (Stein et al., 2001). These outcomes are linked to the individuals' attitudes about their symptoms, which often include the belief that thinness and restraint are more important and somehow more 'acceptable' than recovery (Walsh, 2004). The influence of such overvalued ideas helps to explain perhaps in part why AN remains strikingly resistant to various interventions.

Bulimia nervosa. Manual-based CBT is the most researched evidence-based treatment for BN IPT has also received empirical support (Agras et al., 2000; Fairburn et al., 1993) however, controlled outcome research on alternative forms of psychotherapy for BN is lacking. CBT has been shown to be more acceptable and effective than antidepressant medication, especially in producing a complete cessation of binge eating and purging (Wilson, Fairburn, Agras, Walsh, & Kramer, 2002). It is important to note that in contrast to CBT's enduring clinical effects, evidence of the long-term efficacy of antidepressant medication is still conspicuously lacking. Manual-based CBT for adults has proven superior to other psychological treatments with which it has been compared, at least in the short term (Wilson et al., 2002).

CBT typically eliminates binge eating and purging in roughly 30% to 50% of all cases (Wilson et al., 2007). Substantial evidence exists to support its efficacy for the reduction of binge eating and purging behaviours (Wilson et al., 2002), improvements in attitudinal and cognitive distortions (Lewandowski, Gebing, Anthony, & O'Brien, 1997), and decreased general psychological distress (Garner et al., 1993). Both qualitative reviews (e.g., Peterson & Mitchell, 1999; Wilfley & Cohen, 1997) and meta-analyses (e.g., Ghaderi & Anderson, 1999; Lewandowski et al., 1997; Whittal, Agras, & Gould, 1999) suggest potent effects of CBT for BN. First, CBT has better long-term effects than other psychological treatments (e.g., behaviour therapy; Fairburn et al., 1991, 1995; Fairburn et al., 1993) and supportive expressive psychotherapy (Garner et al., 1993), except for being equivalent to ITP (Agras et al., 2000).

Second, comprehensive CBT also seems to be more efficacious than singular cognitive or behavioural components (e.g., Cooper & Steere, 1995). Finally, the addition of other components to existing, empirically validated CBT treatments does not necessarily improve efficacy (e.g., Wilson, Eldredge, Smith, & Niles, 1991).

IPT for BN emphasizes helping patients to identify and modify their current interpersonal problems that are hypothesized to be maintaining their ED (Tantleff-Dunn et al., 2004). The evidence in support of IPT is modest however. One study showed IPT and CBT to be equally effective at a one-year follow-up (Fairburn et al., 1993) and both therapies were significantly superior to a basic behavioural treatment. A second study similarly found that manual-based CBT was significantly superior to IPT at post-treatment; there was no statistically significant difference at one-year follow-up (Agras et al., 2000). In the absence of a comparison treatment to control group for nonspecific effects, however, conclusions about specific treatment effects of IPT cannot be drawn from this study.

EDNOS. The disorders within EDNOS tend to be no less clinically severe than BN and AN (Fairburn & Bohn, 2005) however, with the exception of BED, there have been no other published controlled treatment trials of these disorders despite the prevalence and clinical severity. Overall, in controlled trials of CBT for BED, substantial reductions in binge eating have been observed; these reductions have been found to be significantly superior to those of controls (Wilfley et al., 1993) and are well-maintained through 12 months of follow-up (Agras, Telch, Arnow, Eldredge, & Marnell, 1997; Wilfley et al., 2002).

In two randomized controlled trials for BED, group IPT showed similar results to CBT with more than half of the participants abstinent from binge eating following treatment, marked reductions in binge eating maintained over the 1 year follow-up, but small yet statistically significant increases in average rates of binge eating over follow-up (Wilfley et al., 1993, 2000).

IPT was also similar to CBT in producing only modest weight loss. But IPT effects on psychopathology were broad-based, as individuals receiving IPT demonstrated significant improvement in ED and general psychopathology during treatment and maintained these improvements throughout the follow-up period (Wilfley et al., 2000). In addition, IPT participants did significantly better than individuals assigned to a wait-list control group (Wilfley et al., 1993). Overall, IPT could be considered a viable alternative to CBT, with equivalent efficacy at reducing the core BED feature of binge eating and similarly impacting the other symptoms of BED.

In a recent BED study, Wilson, Wilfley, Agras and Bryson (2010) found that IPT and guided self-help based on CBT (CBTgsh) were both significantly more effective than behavioural weight loss treatment in eliminating BED after a two year follow-up. Arguably, the findings suggest that CBTgsh should be the leading first-line treatment of choice for BED as it is relatively simple to administer and reasonably effective (Wilson et al., 2010).

Alternative Approaches to ED Treatment

The efficacy of evidenced-based treatments is good news for some individuals seeking relief from EDs. Nevertheless, given that neither CBT nor IPT is effective for a large percentage of those living with EDs, other forms of treatment need to be explored.

Readiness for change. The Readiness for Change Model and motivational approaches to treatment are being explored in the literature with some success. Geller, Drab-Hudson, Whisenhunt, and Srikameswaran (2004) showed that readiness to change dietary restriction was associated with a better outcome in an intensive inpatient AN treatment program. In another study (Geller, Cockell, & Drab, 2001), those who dropped out of treatment were found to have higher pre-contemplation scores (according to the Stages of Change model) at admission than those who completed intensive treatment.

Motivation to change ED behaviours has also been shown to predict the amount of weight gained during the first four weeks of intensive treatment (Rieger et al., 2000). Cassin, von Ranson, Heng, Brar, and Wojtowicz (2008) explored the use of motivational interviewing with BED clients and found that the strength of motivational interviewing lied in its ability to enhance confidence for change and self-efficacy for these individuals. Compared to controls, individuals in the control group reduced their binge eating to a greater extent at all three follow-up points.

Family therapy approaches. Family approaches have also been widely studied in the ED literature (e.g., Eisler et al., 2000; le Grange, Eisler, Dare, & Russell, 1992; Lock, Agras, Bryson, & Kraemer, 2005) and results have been encouraging. Traditional family approaches see the person as developing an ED in response to external factors such as traumas, poor parenting, genetic propensities, and cultural stresses (Stein et al., 2001). Family treatment employs the family to counteract the effects of these external causative factors. The best studied approach is a specific form of family therapy known as the Maudsley Model (Dare & Eisler, 1997; Lock & le Grange, 2005). One confirmed study has shown that symptom duration is a strong predictor of response to family therapy; individuals who attained a good outcome had shown ED symptoms for just eight months at the start of treatment compared with 16 months for those with intermediate or poor outcomes (Eisler et al., 2000). Subsequent studies indicated that family therapy was similarly effective to ego-oriented individual therapy combined with a family component in an adolescent sample (Robin, Siegel, Koepke, Moye, & Tice, 1994), and equivalent to CBT in a mixed sample of adolescents and young adults (Ball & Mitchell, 2004).

Dialectical behaviour therapy. Researchers have also reported successful use of DBT for both BN and BED (Safer et al., 2001; Telch et al., 2000) and DBT has potential to be a promising stand-alone treatment for EDs (Safer et al., 2001). Specific DBT strategies have also been incorporated within CBT for BN, for example, training in mindfulness, distress tolerance,

and emotional regulation have been found to be well-suited to treating the high levels of negative affect that frequently characterize BN (Fairburn et al., 2003; Stice & Agras, 1999). It is no coincidence that evolving CBT has drawn on the principles and strategies of Linehan's (1993a) DBT (Wilson, 2004). The blend works because DBT is a variation of behaviour therapy and has shown empirical support (Lieb, Zinarini, Schmahl, Linehan, & Bohus, 2004) for borderline personality disorder, which is a common comorbid condition of BN (Chen, Matthews, Allen, Kuo, & Lineham, 2008; Sansone, Levitt, Sansone, 2005). DBT has also demonstrated efficacy (relative to wait-list controls) and impressive durability of effects, with 56% remission rates observed six months after treatment completion (Telch et al., 2001).

Feminist approaches to ED treatment. Feminist therapies have been suggested as another potentially efficacious ED treatment (Stein et al., 2001). Although few controlled randomized efficacy studies have been conducted, some theoretical and empirical basis exists for this alternate approach. Given the breadth of feminism as an intellectual construct (Wooley, 1995), the feminist perspective offers a theoretical approach to the broad-based treatment of EDs rather than serving as a stand-alone intervention or being specific to any individual ED. Feminist influences on ED treatment include a recognition of (a) sex differences in power and opportunities, (b) pressures to meet expected female gender roles, and (c) the culture's differential regard for feminine versus masculine developmental paths and personal qualities, and the ways these factors impact psychopathology and its treatment (Sesan, 1994; Wooley, 1995). Clinicians are also encouraged to examine the potential impact of unequal female versus male power in family members of, and multidisciplinary treatment teams for, clients with EDs (Wooley, 1995) and to challenge the underlying assumptions of sociocultural ideals for the drive for thinness (Saraceni & Russell-Mayhew, 2007). More generally, feminist-influenced therapy

emphasizes interpersonal relationships (e.g., family, group, and IPT approaches), emotional expression, and empowerment (Sesan & Katzman, 1998).

Therapeutic relationships are proposed to be more egalitarian rather than hierarchical (Sesan, 1994; Wooley, 1995). Feminist therapists educate clients in the ways in which societal pressures can engender a sense of hopelessness. The links between EDs and issues concerning more direct personal victimization (e.g., sexual abuse) have resulted in therapeutic formulations that address the ED and other issues concurrently (Kearney-Cooke & Striegel-Moore, 1996). Finally, by instructing clients about the cultural components of loss of control over eating and the “inherent contradictions in prescribed societal roles” (Sesan, 1994, p. 255), therapists help clients lessen guilt about eating and gain confidence about what they can control.

To summarize, the most widely researched treatments for EDs are based on cognitive-behavioural procedures and have focused largely on BN and BED, and less for AN. For BN, the literature suggests that cognitive-behavioural therapy (CBT) eliminates binge eating and purging in about 30 - 50% of participants, and reduces it in many others (Wilson, 2004). CBT for BED also has strong empirical support (Apple & Agras, 1997; Fairburn et al., 1993), as does IPT (Klerman, Weissman, Rounsaville, & Chevron, 1984) for both BN and BED. However, as many participants show incomplete response to treatment, additional work seems necessary to find more broadly effective interventions. Wilson (1996) has suggested that acceptance-based methods for treating EDs deserve increased attention.

The following section introduces ACT (Hayes et al., 1999), a recently developed cognitive, behavioural, acceptance based program. ACT is based on an experiential avoidance model (Hayes, Pistorello, & Levin, 2012) which suggests that disordered eating is an attempt to avoid or escape aversive internal experiences (Sandoz, Wilson, & Dufrene, 2010). ACT

emphasizes nonjudgmental acceptance of thoughts and feelings while changing overt behaviour to work toward valued goals and life directions.

Acceptance and Commitment Therapy

ACT is a promising alternative therapy that combines cognitive and behavioural change strategies with Eastern philosophies of mindfulness and acceptance. ACT is increasingly popular in clinical settings (Bond & Bunce, 2000; Branstetter et al., 2004; Dahl et al., 2004; Twohig et al., 2006; Zettle & Raines, 1989) and recently has been adapted for the treatment of AN (Heffner & Eifert, 2004; Heffner et al., 2002). The principles and procedures of ACT are part of a broader development that is often referred to as the *third wave* of behaviour therapy (Hayes et al., 2003). A defining feature of this approach is the balancing of the traditional focus of behaviour change towards value ones values, creating an acceptance context, and the relationship between the two. ACT is a mindfulness based behavioural therapy that utilizes an eclectic mix of metaphor, paradox, and mindfulness skills, along with a wide range of experiential exercises and values-guided behavioural interventions (Harris, 2006). It emphasizes non-judgmental acceptance of thoughts and feelings while changing overt behaviour to work towards valued life directions (Harris, 2006; Hayes & Smith, 2005).

Psychological Flexibility

In general, ACT can be described as a combination of acceptance and mindfulness strategies with overt behavioural change efforts to help clients increase what ACT refers to as psychological flexibility. *Psychological flexibility* is defined as “the ability to contact the present moment more fully as a conscious human being, and to either change or persist when doing so serves valued ends” (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004, p. 5). In other words, healthy psychological functioning is proposed to be related to a person’s ability to adaptively

respond to changing environmental contingencies. In contrast, psychological *inflexibility* is theorized to be the result of what ACT calls experiential avoidance and cognitive fusion.

Experiential avoidance. Hayes et al. (1996) describe experiential avoidance as occurring “when a person is unwilling to remain in contact with particular private experiences (e.g. body sensations, emotions, thoughts, memories, behavioral predispositions) ...” (p.154). It is defined as “the attempt to escape or avoid the form, frequency, or situational sensitivity of private events, even when the attempt to do so causes psychological harm” (Hayes et al., 2004, p. 27).

Experiential avoidance has been described as a functional diagnostic dimension amongst EDs (Heffner & Eifert, 2004) where bingeing, compensatory behaviours and excessive dieting are considered behaviours whose function is avoidance of thoughts and feelings evaluated by the individual as negative and discomforting (e.g., anxiety and guilt experienced after eating).

Cognitive fusion. Cognitive fusion is defined as “the tendency of human beings to live in a world excessively structured by literal language” (Strosahl, Hayes, Wilson, & Gifford, 2004, p. 39). For example, when a person is fused with a thought (“I am fat”), she is experiencing that thought literally (“I” = “fat”). This cognitive fusion permits the literal content of thinking to dominate over the person’s behavior (“I cannot go to the party tonight because I am fat”). Cognitive fusion is thought to foster experiential avoidance. When engaged in experiential avoidance, the person attempts to avoid or suppress undesirable private experiences such as thoughts, memories, emotions, and bodily sensations as if they were inherently harmful, even though doing so can paradoxically worsen these problems long term (Wenzlaff & Wegner, 2000). The co-processes of fusion and experiential avoidance result in the narrowing of a person’s behavioral repertoire (i.e., psychological inflexibility), which is believed to lead to and maintain disordered eating behaviours.

ACT Goals

ACT has two major goals: (a) fostering acceptance of problematic unhelpful thoughts and feelings that cannot and perhaps need not be controlled and (b) commitment and action toward living a life according to one's chosen values (Harris, 2006). ACT is therefore about acceptance *and* it is about change at the same time. Applied to EDs, individuals learn to end the struggle with their eating-related discomfort *and* take charge by engaging in actions that move them closer to their chosen life goals ("values"). Rather than teaching 'more', 'different', 'better' strategies to change or reduce unwanted thoughts and feelings, ACT teaches skills that help clients acknowledge unpleasant thoughts and feelings just as they are. This less avoidant and more flexible way of responding to the emotional discomfort is thought to create space for individuals to act in ways that move them in the direction of chosen life goals despite the presence of unwanted or unpleasant private experiences (Hayes & Smith, 2005).

ACT targets six core processes to foster psychological flexibility: (a) promoting acceptance of distressing internal experiences, (b) practicing cognitive de-fusion so the literal content of thought does not dominate over a person's behavior, (c) fostering awareness of ongoing present moment experiences, (d) establishing a stable sense of self that is broader than merely its evaluative content, (e) developing personal valued life directions to guide behavior, and (f) committing to actions that are consistent with these personally chosen values. The first four processes (defusion, acceptance, contact with the present moment, self-as-context) are various aspects of mindfulness processes and are interrelated as they all interact with one another. The remaining processes (values and committed action) are seen more as globally desired life directions that follow from the mindfulness work (Fletcher & Hayes, 2005). The following section expands on each of these core processes, as they relate to EDs.

Six Core ACT Processes

Experiential Avoidance Versus Acceptance

As described above, experiential avoidance is a term used within ACT to describe rigid and inflexible efforts to escape from or diminish pain, or the anticipation of pain, and includes any efforts to change, avoid, escape, delay or lessen the intensity or frequency of a private experience (Sandoz et al., 2010). This may involve private behaviours such as distraction or suppression. Acceptance is taught as an alternative to experiential avoidance and involves the active and aware embrace of private events, good or bad, without unnecessarily attempting to change them (Luoma, Hayes, & Walser, 2007). The pre-cursor to looking at acceptance is to help clients recognize how efforts to avoid emotions generally cause further emotional suffering. ED behaviours can be seen attempts to avoid current emotional experiences that often take the person away from the capacity to participate in valued activities. For example, someone may exercise excessively as a form of compensation and hence, not be able to attend a social function or spend time with loved ones.

Acceptance in ACT is about taking up what is offered by developing a *willingness* to stay with discomfort. ACT aims to teach acceptance as an alternative to *experiential avoidance* by helping clients remain in contact with painful experiences, emotions and so on, without attempting to alter them. Acceptance can be thought of as choosing to acknowledge one's thoughts and feelings without taking them as facts or doing anything about them (Hayes & Smith, 2005).

Cognitive Fusion and Defusion.

Cognitive defusion involves experiencing an event fully in its complexity without emotions or cognitions about the event dominating the experience. This does not mean that one perceives the event without having thoughts or feelings about it, but rather that those thoughts

and feelings do not prevent the event from being experienced (Sandoz et al., 2010). Defusion techniques are designed to erode the literal believability of certain thoughts, without necessarily getting rid of the thought. This in turn makes acceptance more possible because evaluation of private events are taken less literally. For example, to deal with an unpleasant thought, a person might be asked simply observe it with detachment; or sing it to the tune of *Happy Birthday*. One simple exercise in cognitive defusion involves having the client bring to mind an upsetting and recurring negative self-evaluation, such as, “*my legs are too fat*”. Clients are asked to hold the thought and believe it as much as possible, while noticing the effect it has upon them. Then, they are asked to take the same thought, and insert the phrase “*I’m having the thought that.....my legs are too fat*” Most people who hold this new thought notice a *distance* from it, such that it has much less impact (Hayes, 2004). Unlike CBT, defusion techniques do not attempt to dispute or change thoughts, rather, it is the relationship to the thought that is changed.

Disconnection from the Present Moment.

When fused with their private experiences, ACT suggests that people with EDs ‘live in their heads’, and are not in necessarily in contact with what is going on in their life in the present, moment-to-moment. With most EDs, large portions of time are spent thinking about the past or the future, ruminating over events that have occurred or worrying about what to eat, or how to get through social situations where food is involved. Whilst this is happening, individuals with EDs are generally not in contact with the present moment and hence, miss out on important aspects of their lives (Merwin et al., 2012).

ACT promotes ongoing non-judgmental contact with psychological and environmental events as they occur. Present-moment focus involves shifting attention to what is happening to one’s here-and-now experience, with openness, interest, and receptiveness. ACT encourages people to focus on and engage fully in whatever it is they are doing. Present moment focus

facilitates defusion and acceptance, as thoughts are observed as thoughts, emotions as emotions, and so on. The goal is to have clients experience the world more directly so that their behaviour is more flexible and their actions more consistent with the values they hold (Fletcher & Hayes, 2005; Luoma et al., 2007).

Attachment to the Conceptualized Self versus Self-as-Context.

Self-as-context work provides a safe psychological place from which acceptance and defusion are possible (Harris, 2006; Luoma et al., 2007). This is another form of cognitive fusion because it is about the fusion with one's self-concept (e.g., the stories we tell about ourselves). People become invested in how they perceive themselves; in short, they literally believe their own stories about who they are, even when doing so results in significant harm. The truth of the stories is irrelevant because the stories are accepted as true (Hayes et al., 2012).

Attachment to the conceptualized self results in rigid behaviours aimed at validating or defending one's stories, which contribute to psychological inflexibility. With respect to EDs, this can manifest as attachment to being perfect, being a people pleaser or striving for thinness. It can also manifest as holding onto personal narratives or stories about one's life, including relations between the past and the present ("I've always been fat"). Detachment from the conceptualized self involves a process where clients are encouraged to step back from and observe their personal stories, noticing that their story about themselves is different from the person doing the noticing. This involves helping clients notice that the stories they tell about themselves (e.g., "I inherited my eating disorder from my mother" or "I can't be successful until I lose weight") are just some of several possible stories that could be told. Such stories can be held lightly in an effort to lead clients away from defining themselves solely by any idea or characteristic that limits other experiences. Self-concept work is about becoming more flexible with how individuals define themselves (Hayes et al., 2012; Sandoz et al., 2010).

Identifying Values.

A central aim of ACT is to help clients clarify their values and then find ways to more fully enact them. It is an approach to behaviour change with a focus on improving quality of life. The dominance of rigid thoughts, coupled with disordered eating behaviour and subsequent avoidance can greatly interfere with life quality in areas such as relationships, intimacy, work, health or recreation. Within ACT, an ED is a problem precisely because disordered eating behaviours dominate over other behaviours in life domains that are important. Food restriction, bingeing and/or purging and overall weight pre-occupation become so central, that the individual loses sight of their values, or what is really important to them. Often the struggle with EDs is that one's resources, energy, time, are devoted to maintaining the disorder, while life continues with little or no chosen direction (Sandoz et al., 2010).

Without clear values, clients may find it difficult to act. They may feel *stuck* and their behaviour becomes habitual and automatic, which is itself a common feature of EDs and a form of psychological inflexibility. Values techniques are geared toward helping clients identify what is most important and what they want to stand for in their lives in a variety of domains (relationships, health, citizenship, and so on; Harris, 2006; Hayes, 2004; Luoma et al., 2007). For clients who have lived with EDs for a long time, it can be difficult to identify values that are not connected with food or weight. Most tend to value their disorder more than anything, and find it to be ego-syntonic (Schmidt & Treasure, 2006). Consequently, discussing values can be difficult for clients as they begin to gain awareness that they have few, if any, non-eating or weight related values. Often, this can lead to ambivalence towards treatment, particularly as they begin to get in touch with the costs of what has been missed in their lives (Sandoz et al., 2010).

Committed Action.

Finally, committed action involves behavioural changes that involve an effective action linked to chosen values. It involves noticing when actions are not consistent with values and then gently turning back to valued living. Committed action is about the willingness to notice how actions may or may not be bringing the individual toward her values. Individuals with EDs often struggle with committed action because they continue to manage their weight or feelings about body shape long after they have ceased to work effectively and have begun to have considerable costs (Sandoz et al., 2010). Committed action is about taking bold steps in the direction of one's values. It is about making committed steps, not in spite of one's pain or discomfort, but *with* one's pain and discomfort (Hayes & Smith, 2005).

From a theoretical standpoint, ACT may be an effective treatment for disordered eating. Although most of the research investigating this theoretical approach is still preliminary, there is sufficient evidence emerging that provides support for acceptance and mindfulness based approaches to treating EDs. The following section reviews some of the relevant research.

ACT Research

Tests of the theory underlying ACT and research explaining ACT outcomes are young, however, there is now growing body of literature in support of ACT for the treatment of a wide variety of disorders (Hayes et al., 2006). In the first examinations of ACT for depression, 18 women with depression were randomly assigned either to an early version of ACT or to two variations of cognitive restructuring (with and without cognitive distancing; Zettle & Hayes, 1986; Zettle & Raines, 1989). The results of these initial studies (performed by a clinician trained at the Beck's Center for Cognitive Therapy) indicated that ACT was more effective than cognitive therapy (CT) in the follow-up outcomes it produced. ACT and CT did not differ on measures of negative thought frequency, but did if clients were asked to rate the believability of

these same thoughts were they to occur. The decreases in the believability of negative thoughts, apart from frequency changes, were based on *cognitive defusion* and specifically associated with positive ACT outcomes.

In the treatment of psychosis for adults, ACT has been associated with lower rates of rehospitalization and higher rates of reported symptoms than treatment as usual (TAU; Bach & Hayes, 2002). The researchers compared four 45 minute sessions of ACT to TAU (medication and attendance at three or more psycho-educational groups one or two times a week for an average of 40 min each session) in a randomized trial helping inpatients cope with positive psychotic symptoms. ACT sessions targeted acceptance of the private experience of symptoms, defusion from these symptoms, the importance of distinguishing one's self from the content of one's thoughts, and the role of committed action in the achievement of valued goals. ACT participants showed significantly lower levels of re-hospitalization (approximately 50% fewer re-admissions) over a 4-month follow-up period. Paradoxically, a greater number of ACT participants than TAU participants admitted to symptoms at the end of follow-up, but in the ACT condition only, participants who admitted symptoms were particularly unlikely to be readmitted, perhaps because they also reported that the psychotic thoughts were less believable (the defusion measure used in the study).

A worksite stress reduction study randomly assigned 90 participants to receive nine hours of ACT, nine hours of a behavioural program designed to teach workers to remove stressors in the workplace, or to be wait-listed (Bond & Bunce, 2000). ACT demonstrated significantly greater improvements than the behavioural program as well as control groups in a general measure of stress and psychological health, both at post-treatment and follow-up. Both interventions were equally effective in relieving depression and increasing the propensity to take

concrete actions to reduce worksite stressors. The outcomes achieved by the ACT intervention were mediated by an increased acceptance of undesirable thoughts and feelings.

A study examining defusion tested the effectiveness of a commonly used ACT exercise, rapidly repeating a word over and over aloud until it loses all meaning (Masuda, Hayes, Sackett, & Twohig, 2004). In this study the impact of word repetition on the discomfort and believability of self-relevant negative thoughts was investigated as compared to a distraction task (reading about Japan) or to a thought control task involving abdominal breathing training and instructions to shift attention to more pleasant thoughts. The defusion task resulted in greater reductions in discomfort and believability of self-relevant negative thoughts as compared to a distraction task and a thought control task. These results indicate that this particular defusion exercise is an active component of ACT.

Another study addressed the effectiveness of ACT for panic disorder (Levitt, Brown, Orsillo, & Barlow, 2004). Sixty patients were randomly assigned one of three 10-minute audio taped interventions describing acceptance, emotional regulation, or a neutral narrative. They then spent 15 minutes breathing air containing 5.5% carbon dioxide, which has been shown to induce panic. Participants who listened to the emotional control tape showed the same degree of willingness to participate in a second challenge as those who listened to the narrative (control group). However, the acceptance group showed significantly greater levels of willingness to participate in a second challenge and reported lower levels of anxiety than those in the comparison groups.

Finally, a pain tolerance study (Gutierrez, Luciano, Rodriguez, & Fink, 2004), examined the impact of a 20-minute ACT protocol focused on acceptance, defusion, and values as compared to a cognitive and emotional change intervention. Pain levels were systematically raised throughout the study, and the randomly assigned participants were paid to persist as long

as they could in each condition. ACT participants showed a significantly higher tolerance of pain, and a significantly greater willingness to persist even after they reported that the pain had reached very high levels.

This section presented some empirical outcome studies that, although preliminary, exemplify the wide range of health problems and psychological disorders from which ACT has been shown to have had optimistic results. All of these ACT studies are predicated on the notion that the disorder or (unwanted) behaviours are characterized by experiential and emotional avoidance defined as the unwillingness to experience negative thoughts, emotions and physical sensation, and labeling these internal states as unacceptable and intolerable (Hayes et al., 1996). It has been demonstrated that individuals with eating problems have difficulty regulating emotional experience (Baer, Fisher, & Huss, 2005) and research suggests that individuals with EDs frequently have difficulty tolerating negative emotions or distress, and will use food, whether in a restrictive or chronic binge eating manner, to help regulate these negative experiences (Corstorphine, 2006). Accordingly, food restriction and/or overconsumption become a short-term method for regulating emotional avoidance (Linehan, 1993b). The next sections present the current research examining an ACT with disordered eating. The first section outlines studies that have utilized an end-to-end ACT approach or intervention, followed by emerging studies that provide support for individual ACT components, particularly emotional avoidance and mindfulness practices.

ACT Research Applied to Disordered Eating

To date, little empirical research using ACT with EDs has been reported, but ACT has been applied to EDs in private (Kater, 2010) and clinical settings (Berman, Boutelle, & Crow, 2009; Heffner et al., 2002; Pearson, Follette, & Hayes, 2012). In their single pre-test-post-test design study, Heffner et al. (2002) describe the application of ACT to a 15-year old girl with AN,

using a self-help manual (Heffner & Eifert, 2004). In this study, ACT techniques were integrated to treat emotional avoidance associated with AN by increasing acceptance of weight-related cognitions and redirecting the client's desire for thinness onto healthier, valued directions and goals. Rather than attempting to control and reduce her weight, the intervention involved encouraging the client to accept her body by engaging in several exercises adapted from the ACT manual (e.g., thought parade, Chinese finger trap). The client was able to identify valued goals as the therapists reinforced her efforts to achieve them. This intervention resulted in the remission of most anorexic symptoms in this case as measured by the *Eating Disorder Inventory 2* (EDI-2; Garner, 1991) and weekly weight assessments. The only remaining symptom was the client's body dissatisfaction. However, it is important to note that the treatment goal in this case study was not to *eliminate* body dissatisfaction, but to *accept* thoughts and feelings of body dissatisfaction and refocus her energy.

In another study, Berman et al. (2009) utilized a series of case studies to examine the feasibility of individualized ACT for three women with AN across 17-19 twice weekly sessions. Berman et al. (2009) adapted their treatment from the ACT for AN self-help manual (Heffner & Eifert, 2004). Outcomes showed that two of the three women had substantial improvements in disordered eating and body dissatisfaction as measured by the *Eating Disorders Examination Questionnaire* (EDE-Q; Fairburn & Beglin, 1994) as well as most psychological measures as measured by the *Symptom Checklist 90 Revised* (SCL-90-R; Derogatis, 1994). The third woman showed more modest improvements.

A recent pilot study explored the efficacy of a 1-day ACT workshop targeting body dissatisfaction and disordered eating attitudes (Pearson et al., 2012). Seventy-three women with self-identified body dissatisfaction were randomly assigned to the workshop or to a wait list control. Results of the study showed after a brief 2-week follow-up, that participants in the ACT

group showed significant reductions in body-related anxiety and significant increases in acceptance when compared to the wait-list control condition. Despite these optimistic outcomes, this study has many limitations: (a) lack of an extended follow-up, (b) lack of specificity with which the sample was selected; and (c) no clinical interview to determine inclusion criteria.

Although the ACT for ED literature is still in its infancy, there are various component studies that support the efficacy of specific ACT processes for EDs on their own. The following section provides a brief review of this highly applicable research.

Research on Individual ACT Processes and Disordered Eating

Emotional avoidance. ACT is predicated on the notion that most psychological disorders are characterized by experiential and emotional avoidance, and several lines of research provide support for the notion that ED symptoms function, in part, to help the individual avoid aversive emotional states (Lillis, Hayes, & Levin, 2011; Wildes, Ringham, & Marcus, 2010). Empirical evidence supports this model as well. For example, experiential avoidance has shown to be positively correlated with psychopathology, and negatively associated with mindfulness constructs (Baer, Smith, & Allen, 2004; Hayes et al., 1996). As well, research has documented that individuals seeking treatment for EDs are more likely than non-psychiatric controls to endorse the avoidance of emotional states (Wildes et al., 2010). Specifically, Corstorphine et al. (2007) found that women with EDs were significantly more likely than non-psychiatric control women to report avoidance of situations that might provoke both positive as well as negative emotional states. In this study, emotional avoidance was also found to be associated with increased level of body dissatisfaction in the disordered eating group. Cognitive-behavioural therapists suggest that the problematic need for control is what maintains and reinforces ED symptoms (Fairburn et al., 1997), thus, one rationale for using ACT with EDs is that it

specifically targets these ineffective efforts at control and maladaptive willingness to experience painful thoughts and emotions.

Maladaptive emotional regulation is a related concept to experiential avoidance. Studies have shown that individuals with EDs experience more negative affect than non-disordered individuals and tend to eat in response to distress. Heatherton and Baumeister (1991) suggest that EDs are motivated by a desire to escape from aversive emotional states, often related to perceived inability to meet high personal standards. Similarly, Wiser and Telch (1999) suggest that binge eating functions to reduce unpleasant emotional states in those who lack more adaptive emotional regulation abilities. Research on BN has shown that women with BN endorse the belief that eating alleviates distress, and coping motives are positively related to food consumption (Hohlstein et al., 1998; Jackson et al., 2003). Both theory and research findings suggest that EDs could be viewed as failed attempts to either regulate or avoid aversive emotional states. Although women with EDs may believe that bingeing will alleviate distress, along with a feeling of brief relief as they binge, they also experience a significant increase in negative emotion afterwards (Apple & Agras, 1997). This research suggests that binge eating is not a long-term strategy to manage negative emotions, but is instead used as short-term experiential avoidance. Efforts to control, or avoid unpleasant internal processes are considered the result of fusion with verbal processes (Hayes, Strosahl, & Wilson, 2012). The research exploring defusion as it relates to EDs will be covered next.

Cognitive defusion. Women with ED tend to be fused with cognitions about their weight, and body image dissatisfaction (Heffner et al., 2002; Sandoz et al., 2010). Wendell, Masuda, and Le (2012) found that having body image dissatisfaction does not sufficiently account for disordered eating alone; one must be fused with thoughts and emotions which plays a crucial role in the maintenance of disordered eating problems. Wendel et al. (2012) reported that

it is the inflexible interaction with thoughts that tend to exert control over disordered eating behaviour, which overshadows other contextual factors (e.g. social/physical consequences of dietary restriction or binging).

Schmidt and Treasure (2006) contend that symptoms of AN provide a sense of predictability, safety, and control. From an ACT perspective, it is these cognitive rules that work to decrease ambiguity and provide a sense of direction when context becomes difficult for individuals to navigate. Cognitive rules therefore dictate when and what to eat, and how much, among other decisions which may reinforce feelings of behavioral control. In this way, individuals with AN have found an internal control strategy that does indeed “work” because it directly impacts physiological functioning, and thus effectively reduces aversive somatic-affective experience. However, while negatively reinforcing, overreliance on verbal rules for behavior also has costs (Merwin et al., 2011).

Wulfert, Greenway, Farkas, and Hayes (1994) showed that verbal rules interfere with learning from experience. In this study, individuals were provided verbal instructions about how to perform a task (e.g., “press the button fast to earn points” in a computer game) and were more likely to follow that rule even when conditions changed and the strategy was no longer effective in achieving a reward (e.g., pushing the button slowly earns more points). This was in contrast to when individuals were in this same situation without direct instruction. Without verbal instruction, individuals assumed an approach based on their understanding of what works (e.g., to win points) and more willingly changed their approach when the conditions changed. Thus, although verbal rules are extremely functional, reducing the need for prolonged trial-and-error learning, they can also interfere with the ability to learn directly from experience that may shape more adaptive behavior. This has been called rule-based insensitivity, and refers to observations that under some conditions, individuals fail to adjust behavior to match the circumstances of the

environment due to competing verbal rules. Of importance, rule-based insensitivity is more likely among those who score high on a measure of self-reported rigidity (Wulfert et al., 1994), a characteristic common among individuals with AN (Merwin et al., 2012). Thus, the more rigidity among individuals with AN, the greater the dependence on cognitive rules rather than experience, and the more starved they get, the more rigidly rule-governed they become.

From an ACT perspective, people respond to words about an event as if they are responding to the actual event the words describe (Wilson & Roberts, 2002). For women with EDs, the person responds more readily to her thoughts or feelings about weight related events than the event itself (Sandoz et al., 2010). Although not a component study, in a case study of a 15-year girl with AN Heffner et al. (2002) encouraged cognitive defusion exercises involving the observation of negative thoughts she was trying to avoid. For homework the client recorded weight-related thoughts, level of acceptance and subsequent behaviour. Results of the cognitive defusion exercises demonstrated that increased acceptance of weight-related thoughts led to significantly less anorexic behaviours. ACT encourages mindful observation of negative thoughts and their accompanying feelings in order to facilitate less need for ED behaviours. Thus, a major task for those with EDs is to learn to be mindful of thoughts that define the person based on negative feelings (e.g. my weight is disgusting) in order to increase awareness and understanding that their thoughts and feeling are just one part of their experience (e.g. I experience a feeling of disgust when thinking of my weight). The following section reviews the mindfulness related research as it applies to disordered eating.

Mindfulness and acceptance. There is now emerging evidence demonstrating the utility of mindfulness practices in the treatment of EDs. Although these studies operationalize mindfulness in different ways, they all include similar strategies of meeting the present moment with full, nonjudgmental attention to one's thoughts, feelings and behaviours.

In the first mindfulness-based approach created specifically for treating EDs, Kristeller and Hallett (1999) applied mindfulness to CBT and guided imagery to address weight, shape and eating related self-regulatory processes. In this study, 18 obese women who met BED criteria participated in a 7-session group program over 6 weeks. Kristeller and Hallett (1999) demonstrated reductions in self-reported symptoms of binge eating (binges per week dropped from over 4 to about 1.5) severity of binges (fell from the “severe” range to just higher than “little or no problem” range), and depression (decreased from clinical to sub-clinical levels). Importantly, correlational analysis indicated improvements in binge eating were associated with improvements in mindfulness, eating control, and awareness of satiety signals. The strongest predictor of improvement in binge severity was time spent using eating-related meditations.

Baer, Fischer and Huss (2005; 2006) evaluated MBCT for treating binge eating in subclinical and clinical BED. Rather than targeting the reduction of thoughts and emotions, the investigators used MBCT to reduce responses toward automatic thoughts and emotions that precede binge eating. The emphasis was placed on training participants in pure mindfulness strategies in the absence of directly applying mindfulness to eating or CBT approaches such as problem-solving or assertiveness skills. In the original case analysis, MBCT was associated not only with both immediate and sustained improvements in binge eating pathology, but it also led to significant increases in self-reported mindfulness (Baer et al., 2005). In the follow-up study, 6 women participated in 10-sessions of MBCT. Pre and post-assessments showed positive effects for objective binge eating, self-reported binge eating severity, and eating concerns (Baer et al., 2006). Women in this trial also demonstrated notable increases in self-observation and non-judgment of these private events following treatment. Much like ACT, MBCT as exemplified in the Baer et al. (2005; 2006) studies, does not attempt to change the *content* of experience; rather, it challenges the individual to alter the *context* of experience through practicing acceptance.

In a qualitative study, Proulx (2008) suggests that mindfulness-based skills offered to young women early in their psychosocial development might assist in the prevention of EDs. In this phenomenological study, 6 college-aged women with BN participated in an 8-week mindfulness based ED group treatment. Participants reported less emotional distress and improved abilities to manage stress after completing the 8-sessions, and described their transformation from emotional and behavioural extremes and self-loathing, to the cultivation of an inner connectedness with themselves resulting from greater self-awareness, acceptance and compassion.

In a recent pilot study (Hepworth, 2011), 33 individuals with a range of ED diagnoses participated in a short-term, manualized, mindfulness-based treatment group as an adjunct to long-term care. Participants were taught and encouraged to practice mindfulness skills learnt throughout the program, which included mindful breathing and noticing hunger as well as satiety signals to guide decisions about eating behaviours. Pre and post-assessments showed significant reductions in all subscales of a disordered eating measure (EAT-26; Garner, Olmstead, Bohr, & Garfinkel, 1982).

Although the use of ACT with EDs is not firmly established, on philosophical level, ACT may still be a very good fit for treating EDs because behaviours typically associated with disordered eating can be conceptualized, in part, as emotional control strategies (Heffner et al., 2002; Wilson & Roberts, 2002). Many of the emotional control strategies that women use to try to feel good (or to feel 'less bad') may work in the short term, but are frequently costly and self-destructive in the long term (Wilson & Roberts, 2002). For example, women with BN often focus on controlling their weight in order to avoid uncomfortable thoughts of being out of control within some other aspect of their life, as well as unpleasant feelings such as anxiety, and fear of rejection. In the short term, bingeing and purging or excessive dieting and exercising, may

give rise to a short-lived sense of relief, but in the long term, this experiential avoidance may potentially only increase the guilt associated with not being able to control a binge-purge cycle, which only exacerbates and magnifies the feelings of being out of control they were initially trying to avoid (Merwin et al., 2011).

Summary

ACT is a psychological treatment specifically designed to decrease experiential avoidance and increase psychological flexibility in the presence of difficult private events, such as diet and weight based thoughts. An ACT approach to disordered eating emphasizes the willingness to allow difficult weight-based thoughts to occur, and focusing on commitment to values-based actions. This is an alternative approach to existing treatment methods that predominantly emphasize change in weight-based cognitive content. Research specific to treating EDs with ACT is promising, however, data is very preliminary and consist of a one-day workshop intervention, and/or case studies with simple pre-post tests designs. The current study enhances this prior research by utilizing a larger sample size, and implementing a 7, two hour weekly treatment interventions, in order to more accurately emulate the manner in which such an intervention would be delivered in clinical practice.

CHAPTER 3

Method

Overview

The purpose of this study was to assess change over time in response to a seven session, group-based ACT intervention in a sample of adult women with disordered eating. This research examined changes in self-reported *QL*, *lived values*, *experiential avoidance*, *mindful acceptance*, *mindful observing*, *disordered eating behaviours* and *psychological maladjustment*, following an acceptance and mindfulness based intervention. Listed below are the primary research questions and associated hypotheses:

General research question.

1. Does participation in an ACT group intervention facilitate improvement for women with disordered eating on each dependent variable (*QL*, *lived values*, *experiential avoidance*, *mindful acceptance*, *mindful observing*, *disordered eating behaviours* and *psychological maladjustment*)?

Specific research questions.

2. Does change occur across time on each dependent variable (*QL*, *lived values*, *experiential avoidance*, *mindful acceptance*, *mindful observing*, *disordered eating behaviours* and *psychological maladjustment*)?
3. If change occurs, can differences in change on each dependent variable be accounted for by the length of time one has an ED?

Hypotheses. It was hypothesized that over the course of treatment, there would be significant intra-individual change or improvement on all measures. Because treatment success has been shown to be highly correlated with how long one has had an ED, it was also hypothesized that participants who reported having an ED for <17 years, would show a steeper

rate of change in the measures compared to those in the group of participants who reported having their ED for ≥ 17 years.

The next section describes the research methodology used in this study. A description of the research method and design, participant selection method and characteristics, and procedures are included. Data collection, processing, and statistical analysis are described. Methodological limitations and ethical assurances are also presented.

Research Method and Design

A quasi-experimental, ICG analysis for repeated measurement data was employed in this quantitative study. Individual growth curve models provide a means by which to measure change in response to treatment and provide an opportunity to model dynamic fluctuations in individual data across time. IGCs provide a method for modeling change, which explicitly accounts for intra-individual and inter-individual change simultaneously in a single model (Singer & Willett, 2003).

Participants

Thirty-nine women with disordered eating problems participated in this study. Participants were recruited from Calgary, and the surrounding areas, through advertisements posted at the University of Calgary and Mount Royal University campuses, at various physicians' offices within the Calgary Primary Care Health District, as well as a walk-in counselling centre within the community. A call for participants also appeared in a local newspaper advertisement, a University of Calgary newsletter (The Gauntlet: Appendix A), on two local television news broadcasts, and two local radio broadcasts. Females aged 18 years and older who self-identified as having an ED, or high concerns about their eating behaviours, were invited to participate in the program. Ms. Saraceni's contact information was provided on all recruitment communication for additional information about the intervention.

Inclusion criteria. An initial screen was conducted over the phone using a semi-structured interview (Appendix B) developed for this study. Participants who passed the initial screen were scheduled for pre-testing and were eligible to enrol in the study if they met the following inclusion criteria:

1. A score at or above the typical clinical range (T-score \geq 46) on the Eating Disorder Risk Composite (EDRC) of the Eating Disorder Inventory-3 (EDI-3), or a T-score at or above 43 on the General Psychological Maladaptive Composite (GPMC) of the EDI-3 (these measures are reviewed below). Scores at or above the typical clinical range have been shown to be associated with the attitudes and behaviours thought to be clinically relevant to the onset and maintenance of EDs.
2. The individual must have been engaged in disordered eating behaviours for a minimum of 6 months.
3. The individual must have experienced distress and/or functional impairment in her life.
4. Female and 18 years of age at the time of the intervention.
5. Ability to participate in a 7 session group intervention.

Exclusion criteria. Participants were excluded from the study if they met the following exclusion criteria:

1. A score within or exceeding the *elevated* clinical range (T-score \geq of 60) on the EDRC of the EDI-3, or a T-score within or exceeding the elevated clinical range (T-score \geq of 60) on the GPMC of the EDI-3.
2. Currently receiving therapy.
3. Evidence or suspicion of diminished mental capacity or severe psychiatric disorder.
4. An attempted suicide in the previous year and/or current suicidal ideation.
5. Pregnancy.

6. Inability to read or write English well enough to understand and complete the requirements of the study.

Forty-six participants volunteered for the study. Upon initial screening, 7 participants were excluded based on the exclusion criteria. Participants not meeting inclusion criteria were offered referral for counselling on a per case basis when deemed necessary. Eight of the remaining 39 selected participants did not complete the full study. Four of the participants who completed the pre-assessments withdrew prior to initiating the treatment, and two participants withdrew after attending the first session. One participant completed the entire intervention, but did not complete post and/or follow-up assessments due to time constraints and life stressors. One participant completed the requirements of the study, however, post and follow-up data was subsequently excluded based on confirmation that she was receiving alternate psychotherapy while participating in the later part of the study.

Measures

None of the measures utilized in this study required permission for use, with the provision that their use was solely research based.

Eating Disorders Quality of Life Scale (EDQLS; Adair et al., 2007). The EDQLS is a condition-specific quality of life measure for people with EDs. It has been extensively developed and tested with adults and adolescents with input from family and eating disorders health professionals. Validity of the EDQLS is supported by significant differences in mean EDQLS according to severity levels on the EDI-2 ($F = 95.3, p < .001$) and the Brief Symptom Inventory (BSI) ($F = 86.9, p < .001$). EDQLS scores were positively associated with time in treatment ($F = 4.65, p = .01$) suggesting responsiveness. A strong positive association was also found between EDQLS scores and stage of change ($F = 15.1, p < .001$). Pearson's correlations between the EDQLS and criterion instrument scores were .71 for the SF-12 mental subscale, .61 for the

Quality of Life Inventory (QoLI) and .78 for the 16D, supporting construct validity. The *values* sub-scale was used from this measure given its relevancy to the study. Items on this sub-scale ask questions about where one places values in relation to their ED (e.g., “the number on the bathroom scale is very important to me” or “my health is more important to me than my physical appearance”).

Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). The AAQ-II is a ten item scale that assesses *experiential avoidance*, or one’s willingness to experience a full range of emotions, thoughts, memories, bodily states and behavioural dispositions, including those that are negatively evaluated, without necessarily having to change, escape, avoid, or struggle to diminish the presence of such experiences (Hayes et al., 2004). A 7-point likert scale, ranging from 1 (*never true*) to 7 (*always true*), is used to rate responses. It is scored such that higher scores indicate higher levels of experiential avoidance. It has shown fair to good internal consistency with Chronbach’s alphas ranging from 0.76 to 0.87 across seven samples with a total of 3,280 participants from treatment for substance abuse samples, to the standard university students and community samples with a mean reliability coefficient of 0.83 (Bond et al., 2011). Furthermore, test-retest reliability is adequate with a community sample across both a three month (.80) and one year (0.78) retest period.

The AAQ-II is correlated with a variety of psychological constructs and symptoms of psychological disorders. It is positively correlated with depression, anxiety, stress, and overall psychological distress, and even has predicted greater psychological distress one year later (Bond et al., 2011). Specifically, the AAQ-II is significantly positively correlated (.65) with the Global Symptom Index on the Symptom Checklist 90 in the same large sample described above. Bond et al. (2011) also identified a range of AAQ-II scores that were indicative of significant psychological distress given the cut-scores of a variety of symptom measures given in the larger

sample. Scores in the range of 22 to 25 were significantly predictive of symptomatology and thus, scores above this range are likely clinically significant.

Higher scores on the AAQ-II indicate higher avoidance. Items on this scale are related to higher immobility (e.g., “My painful experiences and memories make it difficult for me to live a life that I would value”, or “It seems like most people are handling their lives better than I am”).

Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004). The KIMS is used to assess four mindfulness skills: (a) observing (noticing), (b) describing, (c) awareness, and (d) acceptance. This instrument has good test-retest reliability with correlations for the *observe*, *describe*, *awareness*, and *accept* scores being .65, .81, .86, and .83, respectively. It also demonstrates good concurrent validity, correlating with the Mindfulness Attention Awareness Scale (MAAS: Brown & Ryan, 2003) and correlates negatively with the AAQ-II. This study utilizes the *mindful accepting* and *mindful observing* sub-scales given their relevancy to the intervention of the study and because they were the two sub-scales utilized in the Baer et al. (2005) study.

Higher scores on the subscales of the KIMS reflect greater mindfulness skills. The *accepting* sub-scale assesses *mindful acceptance without judgment* skills. This scale considers elements of one’s ability to refrain from applying evaluative labels (Marlatt & Kristeller, 1999) and asks questions related to non-judgment (e.g., “I tend to evaluate whether my perceptions are right or wrong,” or, “I tell myself that I shouldn’t be feeling the way I’m feeling”). The *mindful observing* sub-scale of the KIMS assesses one’s ability to observe, notice, or attend to a variety of stimuli, including internal phenomena, such as bodily sensations, cognitions, and emotions and external phenomena, such as sounds and smells (Dimidjian & Linehan, 2003b). This sub-scale asks questions related to mindful attendance (e.g., “I notice changes in my body, such as

whether my breathing slows down or speeds up,” or, “I pay attention to sensations, such as the wind in my hair or the sun on my face”).

Eating Disorder Inventory – 3 (EDI-3; Garner 2004). Attitudes, behaviours, and traits thought to be clinically relevant to the onset and maintenance of EDs were measured utilizing the EDI-3. The EDI-3 is not designed to yield a diagnosis; rather, it provides descriptive data of symptom clusters and psychological traits associated with EDs.

The EDI-3 has 91 items organized into 12 subscales. The three EDI-3 subscales that assess core eating pathology are the *drive for thinness* (7 items), *bulimia* (8 items), and *body dissatisfaction* (10 items) scales. The nine psychological subscales on the EDI-3 are *low self-esteem* (6 items), *personal alienation* (7 items), *interpersonal insecurity* (7 items), *interpersonal alienation* (7 items), *interceptive deficits* (9 items), *emotional dysregulation* (8 items), *perfectionism* (6 items), *asceticism* (7 items), and *maturity fears* (8 items). In addition to the scale scores, the EDI-3 provides instructions for calculating composite scales.

As outcome variables in this study, two composite scales were utilized: the EDRC and the GPMC. The EDRC provides a composite measure of three constructs (*drive for thinness, bulimia, and body dissatisfaction*) with equal weighting for each of the contributing scales and provides one score that reflects the level of eating pathology. The GPMC consists of the summed T scores for all the nine of the EDI-3 psychological sub-scales. These measures have been utilized in previous studies (i.e., Evans, 2008; Leonard, 2007) where researchers confirm their stability and validity in measuring constructs associated with EDs.

For all three ED risk scales, the reliabilities range from 0.63 to 0.97, with the majority in the high 0.80 to low 0.90s. The overall GPMC reliability values ranged from 0.93 to 0.97 and all other composite reliability scores were in the 0.80s to 0.90s. EDI-3 test-retest correlations are excellent, ranging from 0.86 to 0.98.

The EDI-3 subscales correlate with other related measures. The *drive for thinness* subscale has been shown to correlate with the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979) total score ($r = 0.71$) and with the Restraint Scale (Herman & Polivy, 1975) ($r = 0.61$). The *bulimia* subscale has been shown to correlate with the *bulimia* and *food preoccupations* subscale of the EAT ($r = 0.68$). The EDI-3 is able to discriminate between patients with EDs and non-patient samples.

Session evaluation. At the end of the third session and the end of the program, participants completed a short two-part program evaluation and feedback form (Appendix C). The first section of the evaluation asked how satisfied the participants were with the program's overall facilitation, class exercises, and comfort in the group. Participants rated their satisfaction on a 5 point likert scale (1 = very dissatisfied5 = very satisfied). The second part of the evaluation asked participants to provide written comments addressing their initial reactions to the program in terms of content and process, with attention to their perception of any program problems and/or benefits.

Post-intervention interview. A semi-structured post-intervention interview (Appendix D) was conducted to elicit the participants' reactions to the study. Six of the participants were not able to complete the group interview; alternate arrangements were made to meet individually with each of these participants.

Therapist

The group facilitator has an advanced degree in counselling psychology, and has been trained in ACT techniques and procedures (Harris, 2008a, Hayes & Smith, 2005; Luoma et al., 2007). The facilitator also holds a provisional license with the College of Alberta Psychologist. The group intervention was monitored and supervised weekly by PhD level registered

psychologists who are available to consult and provide feedback to the group facilitator for adherence and competence.

Ethical Issues and Compliance with Human Subjects Research Protocols

Ethical considerations were addressed prior to the beginning of data collection. Consideration was given to obtaining proper informed consent both verbally, and via a written consent form. Participants were informed up front that contact information for professional support would be made available to participants should for any reason they decide not to participate, or continue participating if they decided at any point to withdraw from the study.

Upon receiving written consent from the participants, each participant was assigned an identification number that was utilized to coordinate their data. Only the researcher had access to the data to protect the participants' personal information. All hard copies of the completed measures were stored in a file in a secure cabinet at the researcher's office and will be kept for five years.

Prior to participation, all participants were informed that there may be instances where the researcher would be required to report concerns to the appropriate authorities if threats of harm were revealed throughout the intervention. The University of Calgary Conjoint Faculties Research Ethics Board approved this study on November 12, 2010.

Procedures

After completing the initial phone screen, the first group of participants were scheduled for completion of informed consent and baseline measurements were established during one week of pre-testing. Each participant received the intervention within a group setting, and outcome measures were collected post-treatment, and again at a 3 month follow-up.

All of the participants who passed the screening interview met inclusion criteria. The original design of this research was to be a randomized controlled trial; this initial design could

not be adhered to due to ethical and procedural considerations. Supervisory consultation was conducted and it was determined that it would not be possible to continue with the randomized controlled design. Rather than a separate intervention and control group, two concurrent intervention groups were offered; each on different weekdays, but within the same week. Participants were offered a choice of scheduled sessions. The same procedures were utilized to recruit a second and third cohort. Recruitment for the second cohort took place while the first cohort received the intervention.

The intervention was a weekly, two hour, 7 session group treatment that closely followed the procedures and strategies described in the manual outlining the application of ACT to AN (Heffner & Eifert, 2004) and the Mindfulness and Acceptance Workbook for BN (Sandoz et al., 2011). The material was modified slightly, and adapted for a group setting as well as for the treatment of a spectrum of eating problems. Handouts were provided weekly to augment psycho-educational components of the intervention, along with group meditations and short videos available from an on-line ACT website (Association for Contextual Behavioral Science, 2012). Various customizable techniques and tools were utilized for each principle and are outlined in greater detail in Heffner and Eifert (2004), and Sandoz et al. (2011).

The ACT interventions focused on two main processes: (a) development of acceptance of unwanted private experiences considered out of personal control, and (b) commitment and action towards living a valued life. Consistent with the ACT model, metaphors were shared throughout the sessions to help elucidate various ACT processes. What follows is a brief description of how these processes (and metaphors) were utilized throughout the intervention.

Treatment Intervention Process

Session 1: Introduction to ACT. The first session provided participants with an introduction to the ACT model and how ACT differs from other therapies. Key concepts were reviewed (e.g. symptom reduction being a by-product of therapy, not the goal; experiential avoidance; emotional control strategies). This first session sought to provide participants with an understanding of the nature and purpose of their ED and what made their ED a significant life problem. Here, EDs were described as adaptive behaviours that turned into serious problems when thoughts, feelings and memories were responded to in rigid and inflexible ways. The concept of struggle and control were introduced, along with ways the ongoing struggle had interfered with the participants' quality of life and life-goal attainment. The '*Quicksand*' metaphor (Harris, 2006) was utilized to illustrate how fixating on trying to control thoughts, feelings and memories works to keep people trapped in a vicious cycle of increased suffering. The quicksand metaphor was delivered like this:

“Have you ever seen one of those old cowboy movies where the bad guy fall into a pool of quicksand and the more he struggles, the faster it sucks him under? If you ever fall into quicksand, struggling is the worst thing you can do. What you're supposed to do is lie back, stretch out, keep still, and let yourself float on the surface. The same principle applies to difficult feelings: the more we try to fight them, the more they overwhelm us.” (p. 6).

Math problems and sunsets. Next, participants completed the *Math Problems and Sunset Exercise* (Sandoz et al., 2011, pp. 3-4). The purpose of this exercise was to illustrate the automatic responses humans have to solving problems such as threats, or danger, or even simple

math problems. Problem solving was described as highly adaptive for humans, and participants were invited to provide everyday examples of how they employed problem solving strategies in their lives (e.g., lost keys, no money for parking meter). Participants were then asked to consider if they felt they applied the same problem solving strategies that worked in the physical/outside world, to their internal world of psychological thoughts and feelings. Participants were invited to consider if their approach to getting rid of their ED was more aligned with a math problem that required solving, or more like a sunset that did not need solving. The following questions were utilized for a group discussion:

1. What if trying to solve your ED problem made little more sense than trying to solve a sunset?
2. What if your ED just doesn't need solving?
3. What if all this time you've been fighting your urges, fears, doubts, pain as if they were math problems, when all along they were just things about you, like sunsets, that could be seen and appreciated without being fixed or solved?

The purpose of this first session was to frame the upcoming sessions as opportunities for the participants to learn and practice new and more flexible ways of responding to their ED.

Session 2: Creative hopelessness. The focus in session two was to create an acceptance context for treatment as an alternative to ED control and avoidance reviewed in session 1. Participants gently explored the usefulness (or workability) and effects (or costs) of the various strategies used to cope with and manage ED behaviours; at the same time, providing encouragement to help participants learn to make space for alternate solutions.

First, participants were invited to partake in the *Reflecting on Binge Eating* guided meditation and practice (Sandoz et al., 2011, pp. 12-13). After debriefing, participants identified ways they have tried to get rid of, or avoid their disordered eating by completing the amended

Costs to Avoidance Worksheet adapted from Harris (2008, pp. 27-28). They then assessed each method by reflecting on the following questions:

1. Did this reduce your symptoms in the long term?
2. What did this strategy cost you, in terms of physical health, time, energy, vitality, relationships?
3. Did it bring you closer to the life you want?

The purpose of this exercise was to let participants experience how all of their various attempts to regulate ED-related experiences had not only failed, but also constricted their lives. The concept of letting go of the struggle and doing things that go against the grain was introduced as not only a possibility, but also a more viable option. To illustrate, metaphors typically used at this point in the treatment were provided and are described next.

Chinese finger trap. Participants were provided with a *Chinese finger trap*. These finger traps are tubes of weaved bamboo or straw. The therapist and participants each took a finger trap and did the exercise together. Participants were invited to slide both index fingers into the straw tube, one finger at each end. Once ensnared, the participants were asked to try to pull their fingers out of tube. As they attempted to pull their fingers free, the tube tightened causing discomfort. The harder the participants pulled, the tighter the snare became. The only way to regain some freedom and space was to push both fingers in first, and then slide the fingers out. The purpose of this exercise was to allow the participants to discover that attempting to pull away from discomfort, while understandable and seemingly logical (like pulling out of the finger trap), only creates more problems; the harder the person pulled, the more the trap tightened, which resulted in even less wiggle room and more discomfort. In contrast, having done something counterintuitive (pushing the fingers in rather than out, and metaphorically leaning into the discomfort) effectively ended the struggle and created more space. Participants were

invited to participate in a group discussion about if and how the metaphor was a reflection of how they may have been approaching their ED.

Tug of war metaphor. Lastly, participants were shown The *Tug of War Metaphor* video (Association for Contextual Behavioral Science, 2012; Heffner & Eifert, 2004). It was suggested that the struggle shown in the video sounded much like a tug of war that the participants had with their EDs. Participants were invited to think about how the metaphor related to their own disordered eating war, and what it might take for them to simply stop their own internal battle. Highlights of this metaphor is to encourage the participants to consider a different option in their tug of war against their ED, and instead, were encouraged to consider how willing they might be to instead, drop the metaphorical rope. For homework, participants were encouraged to consider what their life would be like if their ED had suddenly fallen away, and to write it on their work sheet.

Session 3: Choosing valued directions. Session three began with the *Sweet Spot* guided meditation (Sandoz et al., 2011, p. 34). Next, participants were invited to reflect on their homework from session two and discuss their responses to what they would do if they woke one morning and found that their struggle with eating and body image were gone. Questions used to facilitate the group discussion included:

1. What would you be doing instead or differently?
2. What would your relationships be like?
3. What kind of life would you live if you did not have an ED?
4. How might focusing on values provide an alternative to disordered eating?

Funerals and timelines. Various exercises from Heffner and Eifert (2004) were introduced to help participants clarify their values. The *Funeral Meditation* exercise (pp. 99-100) invited participants to think about what they would want their lives to stand for and how they wanted to

be remembered by loved ones. In this exercise, participants imagined themselves as outside observers to their own funeral, and were encouraged to pick and choose exactly what they wanted and needed to hear from their loved ones, and how they might want to be eulogized by each person. In a similar exercise, participants were provided with a picture of a blank headstone and asked to imagine it was their own. Next, they were instructed to write the inscription they would most want to see, one that might capture the essence of their lives and sum up the things that mattered to them most. In the *Timeline* exercise (Heffner & Eifert, 2004, pp. 102-103) participants were asked to think of their past, present, and future lives. Starting from birth, participants documented all of the important events that defined their life, along with any anticipated important future events. Using these three exercises, participants then made note of any themes in their lives and categorized these themes into the valued domains using the *Valued Living Questionnaire* (Sandoz et al., pp. 121-123) as a guide.

Next, participants considered where their weight fit in at their funeral, or on their epitaph or timeline. None of the individuals identified weight-related achievements (i.e., having lost 15 pounds; fitting into a size ‘0’) as being something of value or importance in their life. The discrepancy between what the participants stated they valued (i.e., friendships, health, career, family relations) and what they resourced in their life (i.e., dieting, starving, bingeing, disordered eating etc....) was shared and explored. The *Valued Living Questionnaire* was reviewed and assigned for homework.

Session 4: Cognitive defusion. Session four began a review *Valued Living Questionnaire* and participants were invited to share what struck them about the assignment. The cognitive defusion exercises began with the *Reflecting on Body Image* guided meditation and practice (Sandoz et al., 2011, pp. 15-17). Participants were then asked to bring to mind an upsetting and recurring negative self-judgment that took the form ‘I am X’ such as ‘I am disgusting’, or ‘I am

fat.’ They were then asked to hold that thought in their mind for several seconds and to believe it as much as they could, and to then notice how it affected them. Next, the individuals were instructed to take the thought ‘I am X’ and insert this phrase in front of it: ‘I’m having the thought that . . .’ and to run that thought again, this time with the new phrase and to notice what happened. Participants were asked to notice if they experienced a ‘distance’ from the thought, and to note if the thought had less impact.

Other activities demonstrated how one might observe negative thoughts with detachment. This involved having the participants repeat a negative thought over and over, out loud, until it became a meaningless sound; or they were asked to imagine it in the voice of a cartoon character; or sing it to the tune of ‘Happy Birthday’; or silently say ‘thanks mind’ in gratitude for such an interesting thought. Participants were shown that their thoughts could simply be observed; there was no effort to get rid of the thought, or change it. Instead, the point of cognitive defusion exercises was to change the relationship with the thoughts so they were seen as nothing more than words. Participants were taught the *Thoughts on a Parade exercise* (Sandoz et al., 2001, p. 78) and invited to practice this daily.

Noticing stories. Participants were then invited to examine the stories they held about themselves by completed the *I Am/I Am Not* guided meditation and practice (Sandoz et al., 2011, p. 59). This was followed with a group discussion about how some stories (or self-concepts) limited the participants from moving freely about in their lives. The exercise also demonstrated how stories (self-concepts) had influenced and compelled past behaviour. Participants were invited to discuss how eating and appearance were important themes in their stories, and more importantly, how these themes influenced their actions.

Observing self. Participants were then introduced to *self as context* work by participating in the *Noticing you Noticing* guided meditation and practice (Sandoz et al., 2011, p. 69). This

exercise demonstrated how it was possible to notice the self as the perspective from which each story emerged. The observing self exercise taught participants how to rise above their thoughts. From this viewpoint, participants were encouraged to observed negative self-judgments or self-limiting beliefs without being negatively impacted by them.

Session 5. Noticing avoidant eating. Session five began with a discussion about recognizing and noticing *avoidance*. Participants were invited to discuss ‘mind-wandering’ or ‘zoning out’ as a form of avoidance, and how this related to eating behaviours and valued living. Participants were encouraged to discuss the effects of not being present, and to discuss how they may have missed opportunities to pursue their values by not living in the present moment. In the *Noticing Avoidant Eating* practice (Sandoz et al., 2011, p. 97), participants called to mind instances of avoidant eating or food restricting in their life and were encouraged to notice the avoidance that showed up as they remembered specific efforts to control eating.

Contact with the present moment. Participants were invited to partake in mindfulness exercises to demonstrate the connection between avoidant eating and avoidance in general. In the *Finding Your Breath* guided meditation (Sandoz et al., 2011, p. 49) participants practiced and explored being able to flexibly *return to the present moment*. In the *Touching the Now* guided mediation (Sandoz, et al., 2001, p. 50), participants practiced gently transitioning their focus flexibly from one moment or place, to another. Participants were guided through a meditation that invited them to notice 5 things utilizing each one of their senses. This exercise served to help participants learn to be grounded and engaged with their environment. Participants were encouraged to practice the mindfulness exercises whenever they noticed themselves having trouble staying present.

Learning acceptance: Welcoming the uninvited. Participants were introduced to the concept of *acceptance* as a skilful way of approaching various life experiences and weight-

related thoughts and feelings without evaluation or judgment. To start, participants watched the *Unwanted Party Guest* video (Association for Contextual Behavioral Science, 2012) to illustrate acceptance of painful feelings. The concept of *expansion* was introduced and discussed in relation to the struggle with painful thoughts and feelings, and how to let the thought simply be, without getting overwhelmed by it. The *Letting go of No* guided meditation was used to help the participants with expansion and letting go (Sandoz et al., 2011, pp. 67-70).

Session 6: Committed action. In this final session, participants documented meaningful activities that would move them toward reaching their identified values. Using the *Baby Steps, Giant Leaps* guided practice (Sandoz et al., 2011, pp. 126-128), participants developed specific plans of action that needed to be taken to achieve their goals. This involved the translation of previously specified values into goal directed actions, realistic goal setting and criteria setting.

This session also included a discussion on how to handle barriers to committed action. The focus here was on helping clients to move with potential barriers as opposed to overcoming them. Participants were reminded about how they learned how to stay with difficult situations, unpleasant feelings and thoughts by practicing mindful acceptance and defusion skills. The most crucial aspect was for the participants to have learned that their ED did not have to be abolished first in order for them to engage in those things they identified as important to them.

Session 7: Debrief. A semi-structured post-intervention group interview was conducted to elicit the participants' reactions to the study. Participants completed post-testing materials, and were scheduled for a 3 month follow-up date.

Three Month Follow-Up

Three months following the debriefing and post-intervention testing, participants completed follow-up materials. Six of the participants were not able to meet at the scheduled time; the researcher met with these 6 participants individually at a mutually agreeable time.

Data Processing and Analysis

This section begins with a restatement of the general research questions and their associated specific research questions followed by data processing, and statistical analysis. The research questions are restated as follows:

Quality of Life (QL)

General research question for quality of life.

1. Does participation in an ACT group intervention improve *QL* for women with disordered eating?

Specific research questions for quality of life.

2. Does change in *QL* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *QL* be accounted for by the length of time one has an ED?

Valued Living

General research question for valued living.

1. Does participation in an ACT group intervention improve *valued living* for women with disordered eating?

Specific research questions for valued living.

2. Does change in *valued living* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *valued living* be accounted for by the length of time one has an ED?

Experiential Avoidance

General research question for experiential avoidance.

1. Does participation in an ACT group intervention improve *experiential avoidance* for women with disordered eating?

Specific research questions for valued living.

2. Does change in *experiential avoidance* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *experiential avoidance* be accounted for by the length of time one has an ED?

Mindful Acceptance

General research question for acceptance.

1. Does participation in an ACT group intervention improve *mindful acceptance* for women with disordered eating?

Specific research questions for mindful acceptance.

2. Does change in *mindful acceptance* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *mindful acceptance* be accounted for by the length of time one has an ED?

Mindful Observing

General research question for mindful observing.

1. Does participation in an ACT group intervention improve *mindful observing* for women with disordered eating?

Specific research questions for mindful observing.

2. Does change in *mindful observing* ratings occur across time?

3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *mindful observing* be accounted for by the length of time one has an ED?

Disordered Eating

General research question for disordered eating.

1. Does participation in an ACT group intervention reduce *disordered eating* for women with disordered eating?

Specific research questions for disordered eating.

2. Does change in *disordered eating* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *disordered eating* be accounted for by the length of time one has an ED?

Psychological Maladjustment

General research question for psychological maladjustment.

1. Does participation in an ACT group intervention reduce *psychological maladjustment* for women with disordered eating?

Specific research questions for psychological maladjustment.

2. Does change in *psychological maladjustment* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *psychological maladjustment* be accounted for by the length of time one has an ED?

Statistical Analysis

Setting up the data file. The data file was set up as a *person-period* data set such that each row in the data file represents a specific measurement time for a specific individual and

each column a different variable. In this file, some variables will be repeated for each participant, including that person's ID, and dummy variable's associated with program participation and times of measurement. Other variables will differ for each participant, including the values associated with the dependent variables and possible time-invariant predictors.

Data cleaning. To limit the effect of extreme values or outliers, Winsorization was used to transform the data. A 90% Winsorisation would see all data below the 5th percentile set to the 5th percentile, and data above the 95th percentile set to the 95th percentile. The 90% revealed only 1 outlier, and therefore an 80% Winsorization was utilized to convert all the data below the 10th percentile, to the 10th percentile, and data above the 90th percentile set to the 90th percentile.

Statistical analysis of change. Individual growth curve (IGC) analysis was utilized to investigate change in the dimensions of *QL*, *valued living*, *experiential avoidance*, *mindful acceptance*, *mindful observing*, *disordered eating* and *psychological maladjustment* over time. IGC analysis provides a method for modeling change which explicitly accounts for intra-individual (within-person) change and inter-individual (between-person) change simultaneously in a single model (Singer & Willet, 2003). This model offers a method which fits individual change equations for each study participant, and then models those individual change coefficients at another level of the model in an attempt to explain inter-individual differences in change.

Exploratory data analytic strategy. One obvious exploratory way of answering inter-individual questions was to examine each participant's change over time separately by plotting empirical growth plots and superimposing fitted trajectories to help suggest a suitable individual growth model (Willett, 1997). Summarization of the 7 observed dependent variables were obtained by superimposing a intra-individual trend line on the plot, simply by regressing the dependent variable on *time* for each participant.

The empirical growth trajectories of all of the participants was also collected together informatively in a single picture. This provides a simple and straightforward way of exploring inter-individual questions about inter-individual differences in change because eyeball comparisons of empirical trajectories across people can help detect systematicities in the way that the individual growth trajectories differ from person to person (Willett, 1997).

Growth Curve Modeling (IGC)

IGC modeling was utilized to determine patterns and change within each of the 7 areas of interest for the participants. The statistical program SPSSTM (version 19) was utilized to conduct these analyses. Growing consensus (e.g., Raudenbush & Bryk, 2001) suggests that growth curve modeling provides a flexible framework for the analysis of change in longitudinal data. In contrast to other approaches, such as repeated-measures analysis of variance (ANOVA), growth curve models confer important advantages. Specifically, growth curve models make use of all available data from an individual, which means that individuals need not be present for all waves of data collection nor be measured at identical intervals to one another. IGC is a particularly suitable method of analysis given the relatively high attrition rates typically seen in ED research (Carpenter & Kenward, 2004).

As specified in the research questions under investigation in this study, IGCs for repeated measurement data can be used to evaluate three basic questions about the data: (a) what is the trajectory or shape of intra-individual growth or change over time; (b) are there inter-individual differences in growth or change over time; and (c) can we explain or predict inter-individual differences in growth or change over time? To address these basic questions, IGCs are expressed as multilevel or hierarchical equations (Raudenbush & Bryk, 2002). The parameters (intercepts and slopes) from the level-1 model (intra-individual) become the dependent variables in the level-2 model (inter-individual). In this way, IGC analysis is a strategy whereby researchers can

develop a sequence of models that build from simpler to more complex (Singer & Willett, 2003). The analysis in this study therefore, starts with a base or intercept-only model and a conditional intercept model. Then we advance to an unconditional linear model and finally to a conditional linear model. Table 1 outlines definitions and interpretation of parameters in the Individual model for growth (change).

Table 1

Definition and Interpretation of Parameters in the Individual Growth Model

Level 1 Model: The level 1 individual growth trajectory is assumed to be linear in time over the period of the study, as follows:

$$Y_{ij} = \pi_{0i} + \pi_{1i}(Time_{ij}) + \varepsilon_{ij}$$

where:

Y_{ij}	is the outcome score of individual i at time.
$Time_{ij}$	is the time at which assessment j of subject i took place.
π_{0i}	is the intercept parameter or “elevation” of the hypothesized growth trajectory for individual i (that is, the true initial status of a participant on the dependent variable Y at the beginning of the study).
π_{1i}	is the slope is the parameter for individual i (that is, the true rate of change over time).
ε_{ij}	is a level 1 residual, or the unexplained portion of the outcome, across all occasions of measurement, for individual i in the population (the net scatter of the observed data around an individual’s hypothesized change trajectory).

Level 2 Model: At level 2, each individual growth parameter from the level 1 model is predicted by important time-invariant characteristics of the individual (e.g., study group), such that:

$$\pi_{0i} = \beta_{00} + \beta_{01}(Yr_ED) + \zeta_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(Yr_ED) + \zeta_{1i}$$

where:

β_{00}	is the population average of the level 1 intercepts, π_{0i} for individuals with a level 2 predictor value of 0.
β_{01}	is the population average difference in level 1 intercepts, π_{0i} for a 1-unit difference in the level 2 predictor (Yr_ED_i) (alternatively, the impact of predictor [Yr_ED] on initial status).
β_{10}	is the population average of the level 1 slopes, π_{1i} for individuals with a level 2 predictor value of 0.
β_{11}	is the population average difference in the level 1 slope, π_{1i} , for a 1-unit difference in the level 2 predictor (alternatively, the impact of predictor [Yr_ED_i] on the individual rates of change).
Yr_ED	is a generic level 2 time-invariant predictor, of which there may be many (not the case in this study however).
ζ_{0i} and ζ_{1i}	are the level 2 residuals that represent those portions of the level 2 outcomes that remain unexplained by the level 2 predictor.

Model A: base model. This analysis begins with specifying a base model or what is referred to as an unconditional mean model. This base model is not a longitudinal model, but it

does allow one to estimate total inter- and intra-individual variance in the outcome data in which subsequent longitudinal models may be compared. There are no predictors in the base model; it serves as a baseline model to examine individual variation in the outcome variable without regard to *time*.

At level-1, the base model equation is:

$$Y_{ij} = \pi_{0i} + \varepsilon_{ij}$$

where Y is the criterion variable for individual i at time j . π_{0i} is the mean of the criterion variable for each individual across all times (i.e., person mean), and ε_{ij} is the deviation of each individual's score at each time from the person mean (Singer & Willett, 2003).

At level-2 the equation is:

$$\pi_{0i} = \beta_{00} + \zeta_{0i}$$

In this model, each individual's mean score across times from the level-1 equation, π_{0i} , is a function of the grand mean of the dependent variable Y across individuals and time, β_{00} , plus the deviation of each individual's mean from the grand mean, ζ_{0i} (Singer & Willett, 2003).

Intraclass correlation coefficient. The unconditional means model allows for the evaluation of the magnitude of the intra-individual and inter-individual variance components (Singer & Willett, 2003). The statistic used to quantify the relative magnitude is the intraclass correlation coefficient (ρ)

$$\rho = \frac{\sigma_0^2}{\sigma_0^2 + \sigma_\varepsilon^2}$$

and describes the proportion of the total outcome variation that lies *between* individuals.

Model B: Unconditional linear growth model. This is a baseline growth curve model that examines individual variation of the growth rates (i.e., any significant variations in individual trajectory changes over time). Unlike the unconditional mean model, which only

assesses the outcome variation across individuals (i.e., the differences between the observed mean value of each person and the true mean from the population), this model also examines individual changes over time (i.e., how each person's rate of change deviates from the true rate of change of the population) (Singer & Willett, 2003). The time variable in this study was rescaled to make the results more interpretable. Pre-testing was scaled to *time 0*, post-testing to *time 1*, and follow-up to *time 2*. The level-1 unconditional linear model equation is:

$$Y_{ij} = \pi_{0i} + \pi_{1i}(Time_{ij}) + \varepsilon_{ij}$$

The level-1 model describes the growth trajectory for the repeated measures. Specifically, individual *i*'s score at assessment *j* is a function of the intercept (i.e., initial status, π_{0i}), the slope (i.e., the growth rate, π_{1i}), and a time-specific residual term (ε_{ij}) that captures the deviation between an individual's observed data points and their estimated linear trajectory (Peugh & Enders, 2005).

In this model, *Time*, is the only explanatory variable. In longitudinal models, the criterion variable, Y_{ij} , is the variable in which we are looking for change. The regression intercept for individual *i*, π_{0i} , is the predicted value of Y_i when *Time_{ij}* is zero for individual *i* (Singer & Willett, 2003). Similarly, the regression slope π_{1i} is the expected slope in the criterion with each unit increase in *Time* for individual *i*. The error, ε_{ij} , refers to the regression error left unexplained by the level-1 regression model (Peugh & Enders, 2005)

At level-2, there are two equations related to the unconditional linear model because the individual change coefficients are not conditional on a time-invariant predictor:

$$\pi_{0i} = \beta_{00} + \zeta_{0i}$$

$$\pi_{1i} = \beta_{10} + \zeta_{1i}$$

The first level-2 equation describes the individual intercepts as a function of the mean initial status (β_{00}) plus an individual deviation (ζ_{0i}) from this mean. In the same way, individual growth

rates are expressed as a function of the mean growth rate (β_{10}) and a residual (ζ_{1i}). Said differently, β_{00} and β_{10} are the intercepts (fixed effects) for the intercept and slope, respectively, and ζ_{0i} and ζ_{1i} are the unique effects for individual i on the intercept and slope, respectively. The unique effects are simply the difference between the fixed effect (the estimate of the population value) and the unique (random) effect associated with the individual (Singer & Willett, 2003).

Pseudo R^2 statistic. When fitting models, it is the hope that the addition of explanatory variable will add to the explanation of the outcome variable. As a measure of this, a Pseudo R^2 can be calculated to represent the proportional reduction in residual variance between two models (Singer & Willett, 2003).

$$R_e^2 = \left(\frac{\text{Proportional reduction in the}}{\text{Level - 1 variance component}} \right)$$

The most simple model tested in this study is Model A (the unconditional, means only model) which provides the baseline variance for comparison.

Model C: Conditional linear model. The level-1 model need not be limited to using *Time* as the only explanatory variable. In this study, it was desirable to model the level-1 coefficients with a time-invariant predictor. In other words, there was interest in testing the hypothesis that there were group differences in initial status and growth between participants who had an ED for less than or equal to or more than 17 years (Yr_ED). Seventeen years was established to be the median at which half of the participants reported having had an ED. Adding a predictor, such as “years with an ED” addresses the third basic question about explaining or predicting inter-individual differences in growth or change over time. That is, are there differences between the two groups in individual rate of change? The linear parameter in

this model is conditional on a level-2 predictor (i.e., Yr_ED) which is a fixed effect. The equations for a conditional linear model are as follows:

$$\text{Level-1: } Y_{it} = \pi_{0i} + \pi_{1i}(\text{Time}_{it}) + \varepsilon_{it}$$

$$\text{Level-2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}) + \zeta_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}) + \zeta_{1i}$$

In this model, the intercept and slope from the level-1 model are each being predicted by regression lines with their own intercept and slope representing the influence of group on each of these level-1 parameters where β_{11} represents the difference between condition in the rate of change over time.

Use of a dichotomous explanatory variable, such as Yr_ED (0 = < 17 years with an ED and 1 = \geq 17 years with an ED) is testing whether the change coefficients for different groups are significantly different. For example, data was coded as 0 = < 17 years with an ED and 1 = \geq 17 years with an ED; this is theoretically equivalent to testing the difference between the following two equations:

$$< 17 \text{ Years: } \pi_{0i} = \beta_{00} + \beta_{01}(0) + \zeta_{0i}$$

$$\geq 17 \text{ Years: } \pi_{1i} = \beta_{10} + \beta_{11}(1) + \zeta_{0i}$$

Because the equations are both predicting the intercept of the level-1 model, it follows that β_{01} is testing for a difference in the level-1 intercept between groups. A similar construction can be obtained where β_{11} is the difference in the level-1 slopes between groups.

Summary of Statistical Analysis. In this analysis, the unconditional models partition and quantify the outcome variation in two important ways: first, across people without regard to item (the unconditional means model), and second, across both people and time (the unconditional growth models). Instead of describing change in the outcome over time, the unconditional means model simply describes and partitions the outcome variation. Its hallmark is

the absence of predictors at every level. The unconditional means model stipulates that at level-1, the true individual change trajectory for person i is completely flat, sitting at elevation π_{0i} . Because the trajectory lacks a slope parameter associated with a temporal predictor, it cannot tilt. Any inter-individual variation in elevation is not linked to predictors (Singer & Willet, 2003). Time was then introduced as a predictor into the level-1 model, and because the only predictor in this model is *Time*, it is referred to as the unconditional growth model. Finally, to test the predictor effect on the shape of individual growth trajectories, a dichotomous variable (Yr_ED) was examined as a time-invariant covariate to explore group differences in change over time.

Summary

The purpose of this study is to assess the efficacy of an acceptance and commitment based therapy on the reduction of disordered eating features in a sample of women. This study is in response to a call from experts in the field who recommend the piloting of promising therapies given the relative difficulty of treating clients with EDs. This study is a preliminary investigation that will provide pilot data on the effectiveness of ACT as an intervention that assesses values, mindfulness and acceptance as mechanism of change. The utilization of a growth curve analysis provides a statistical modeling technique that summarizes changes about intra-individual change while simultaneously addressing inter-individual differences in change between participants. EDs and their related concerns are a new area of application for ACT; therefore, this study is helping to lay the groundwork for ACT applied to disordered eating populations.

CHAPTER 4

Results

The primary purpose of this study was to evaluate a 7 week group ACT intervention for women with EDs and disordered eating behaviours. A second purpose of this study was to investigate whether or not the ACT intervention had a differential effect on the participants who reported having had their ED for a shorter term, versus a long time period over the course of their lives. In this chapter, sample characteristics, results, evaluation of results and summary are presented.

Sample Characteristics

Thirty-nine women ($M_{age} = 37.2$, $SD_{age} = 13.8$, age range: 19 – 66 years) with self reported disordered eating participated in this study. The majority of the participants were Caucasian with English being their primary language (97.4%). Of the 39 participants in the study, 9 had reported having had previous therapy with respect to their eating problems. The number of years the participants reported having their ED ranged considerably from 4 to 38 years ($M_{Yr_ED} = 15.9$; $SD_{Yr_ED} = 8.33$). Demographic and other relevant sample characteristics are presented in table 2 below.

Table 2

Participant Characteristics

Characteristic (N = 39)	Mean	SD	Range	Frequency	Percentage
Age	37.2	13.8	19 – 66		
			19 – 24	11	28.2%
			25 – 34	6	15.4%
			35 – 44	10	25.6%
			45 – 54	9	23.1%
			55 <	3	7.7%
Years with an ED	15.9	8.44	4 – 38		
			1 – 9	13	33.3%
			10 – 19	11	28.2%
			20 – 29	12	30.8%
			30 <	3	7.7%
ED Type					
AN-B/P				1	2.6%
AN-R				6	15.4%
BN				12	30.8%
EDNOS				20	51.3%
Marital Status					
Single				20	51.3%
Divorced				3	7.7%
Widowed				2	5.1%
Married				14	35.9%
University or College Educated					
Graduate Degree				0	0%
Degree				21	17.6%
Diploma				6	5.0%
High School				12	10.0%

Review of Research Questions and Hypotheses

Seven research questions were formulated to evaluate the effect of the ACT intervention on each of the seven dependent measures: quality of life, values, experiential avoidance, mindful, acceptance, mindful observing, ED behavioural and ED maladaptive psychological traits. The primary research questions and hypothesis are restated and presented with findings next.

General research question.

1. Does participation in an ACT group intervention facilitate overall improvement for women with disordered eating on each dependent variable (*QL, lived values, experiential avoidance, mindful acceptance, mindful observing, disordered eating behaviours and psychological maladjustment*)?

Specific research questions.

2. Does change occur across time on each dependent variable (*QL, lived values, experiential avoidance, mindful acceptance, mindful observing, disordered eating behaviours and psychological maladjustment*)?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters be accounted for by the length of time one has an ED?

Hypotheses. A linear growth model for each criterion variable was specified and estimated that allowed each participant to have her own initial status and rate of change on each measure. Because there was no randomization in this study, it is difficult to hypothesize group differences in average initial levels of QL. However, it is hypothesized that both groups (< 17 and ≥ 17 years) would show significant change on each measure (either an increase or decrease depending on the measure) over the course of the study. Because treatment success is correlated with how long one has had an ED, it was also hypothesized that participants in the < 17 years group would show a steeper rate of change on each measure, as compared to those in the group of participants who had an ED for ≥ 17 years.

For the following results section, the *QL* findings are reviewed in more detail to guide the reader. The results of the remaining six measures are presented with less detail to avoid redundancy.

Quality of Life Findings

General Research Question

1. Does participation in an ACT group intervention improve *QL* for women with disordered eating?

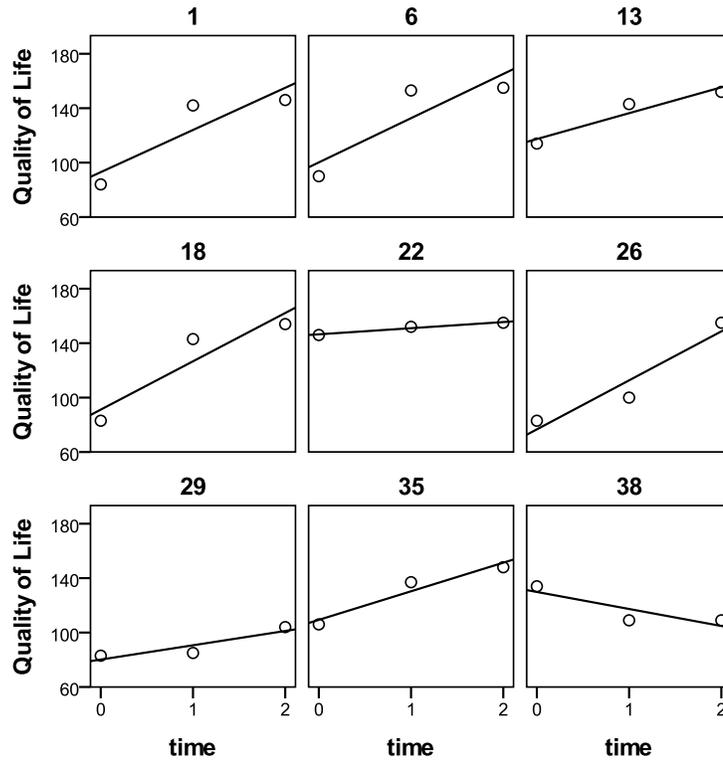
Specific Research Questions.

2. Does change in *QL* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *QL* change be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 1 presents the *QL* values from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *QL* and time suggests that there may be a positive linear trend. For some, the trajectory appears smooth and systematic (subjects 13, 29, 35); for others, it appears slightly more scattered (subjects 1, 6, 18). With only 3 waves of data, the selected trajectory to postulate is a simple linear model. This model assumes that a straight line adequately represents each participant's true change over time and that any deviations from linearity observed in the sample data result from random measurement error (Singer & Willett, 2003).

Figure 1. Empirical growth plots with fitted regression lines for 9 participants on quality of life.



Unconditional Means Model

Model A. Model A of table 3 presents the results of fitting the unconditional means model to the *QL* data. The estimated overall participant average on *QL* is 118.4 and is statistically significant ($\beta_{00,p} < .001$). The ‘Estimates of Covariance Parameters’ section provides an estimate of the random effects of the model, i.e. variance in the intercepts and residual. Noteworthy is that the variance within-participants is more than twice that of the variance between-participants, indicating a substantial amount of variation is due to within-person differences. The level-1 residual variance captures the variability of an individual’s score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{131.5} = 11.5$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *QL* rating between 95.9 and 140.9 (i.e., ± 1.96 deviations from the mean; $118.4 \pm$

1.96[11.5]). By substituting the two estimated variances components from the *QL* data, the ICC can be estimated as

$$\hat{\rho} = \frac{1 - .53}{1 - .53 + .11} = .22$$

suggesting that 22% of the total variation in *QL* is attributable to differences between the participants.

Unconditional Linear Growth Curve Model

The unconditional model is a baseline growth curve model that examines individual variation of the growth rates (i.e., if there are significant variations in individual trajectory changes over time). Unlike the unconditional mean model, which only assess the outcome variation across individuals, this model also examines individual changes over time.

Model B. Model B in table 3 presents the results of fitting the unconditional growth model to the *QL* data. The fixed effects in table 3, β_{00} and β_{10} , estimate the starting point and slope of the population average change trajectory. The significant values in both the intercept and linear slope parameters indicate that the initial status and linear growth rate were not constant over time. The mean estimated initial status for the sample was significant ($\beta_{00} = 15.9$, $SE = 3.1$, $p = .001$). There was a significant linear increase in the *QL* scores ($\beta_{10} = 14.0$, $SE = 2.1$, $p = .001$). The following equation outlines the substitutions back into the model.

$$QL_{ij} = \pi_{0i} + \pi_{1i} \text{ time} + \varepsilon_{ij}$$

$$\pi_{0i} = 105.9 + \varepsilon_{ij}$$

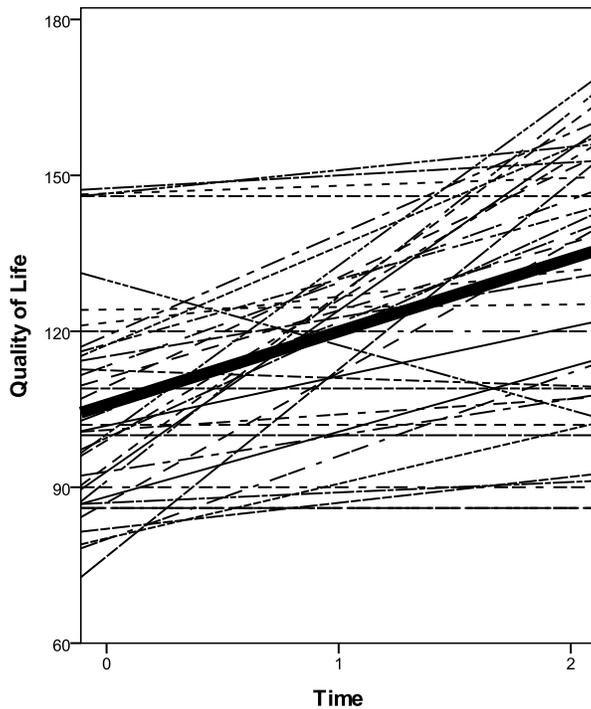
$$\pi_{1i} = 14.0 + \varepsilon_{ij}$$

Figure 2 presents the result of regressing *QL* on time for all 39 participants separately by ID.

Although there are exceptions, most participants' levels of *QL* appear to increase over time. The

thin lines show the fitted lines for each participant in the study, and they indicate that there is considerable variability in the intercepts and slopes between participants.

Figure 2. Spaghetti plot of average (thick) and participant-specific (thin) regression lines on quality of life.



To quantify the proportion of outcome variation explained, we can look at the decrease in within-person residual variance σ_ϵ^2 between the unconditional means model and the unconditional growth model. As shown in table 3, the initial level-1 residual variance estimate, 476.1, drops to 282.3 in the initial model for change. As the fundamental difference between these models is the introduction of *time*, the pseudo- R^2 statistic assesses the proportion of within-person variation explained by time (Singer & Willett, 2003). The statistic is computed as:

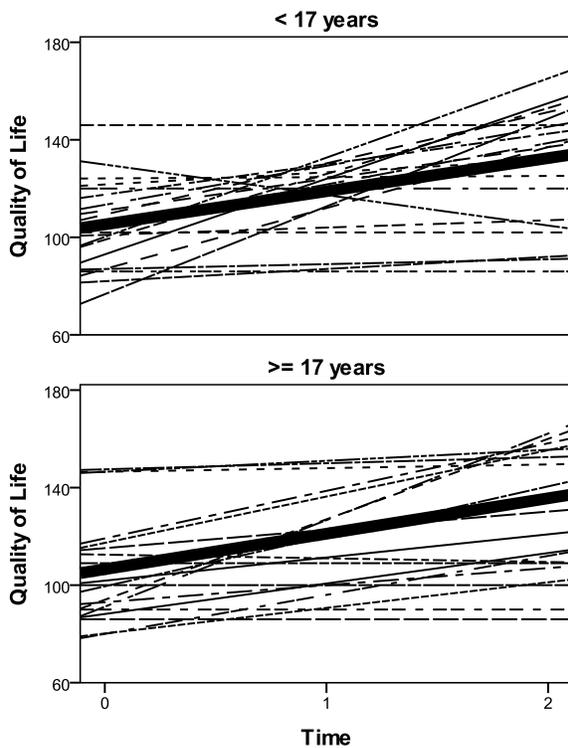
$$R_\epsilon^2 = \frac{476.1 - 282.3}{476.1} = .41$$

Forty-one percent of the within-person variation in *QL* can therefore be explained by linear time.

Level-2 Sub-Model for Inter-individual Differences in Change

The level-2 sub-model codifies the relationship between inter-individual differences in the change trajectories and time-invariant characteristics of the individual (Singer & Willett, 2003). Figure 3 separately plots fitted regression lines according to the participants' years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line. This line appears not to differ substantially on the intercept or slope between the two groups.

Figure 3. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over time for the Yr_ED groups on quality of life.



Model C. Model C examines if it is possible to use a characteristic or property of the participants to better understand why their slopes are higher or lower, or why their intercepts are higher or lower over time. To test the predictor effect on the individual growth trajectories, the

dichotomous variable (Yr_ED) was introduced as a time-invariant covariate to explore group differences in change over time. The estimated initial *QL* for the average participant who had an ED for < 17 years was 105.4 (β_{00} , $p = < .001$); the estimated differential in initial *QL* between participants who had an ED < or \geq 17 years was indistinguishable from 0, 1.0 (β_{01} , $p > .01$). The estimated rate of change in *QL* for participants who had an ED for < 17 years was significant 14.1 (β_{10} , $p < .001$); and the estimated differential in the rate of change in *QL* between participants who had an ED \geq 17 years was indistinguishable from 0, -0.1 (β_{11} , $p < .01$). From table 3, we have the following two, level-2 fitted models:

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}_i)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}_i)$$

Fitted values are obtained by substituting 0 and 1 for Yr_ED:

$$\begin{array}{l} \text{When Yr_ED}_i = 0 \\ \left\{ \begin{array}{l} \pi_{0i} = 105.4 + 1.0(0) = 105.4 \\ \pi_{1i} = 14.1 - 0.1(0) = 14.1 \end{array} \right. \end{array}$$

$$\begin{array}{l} \text{When Yr_ED}_i = 1 \\ \left\{ \begin{array}{l} \pi_{0i} = 105.4 + 1.0(1) = 106.4 \\ \pi_{1i} = 14.1 - 0.1(1) = 14.0 \end{array} \right. \end{array}$$

The average participant whose years of having an ED is < 17, has a fitted trajectory with an intercept of 105.4 and a slope of 14.1 on the *QL* measure; the average participant whose years of having an ED is \geq 17 years has a fitted trajectory with an intercept of 106.4 and a slope of 14.0 on the *QL* measure.

Table 3

Results of fitting growth model for change to the quality of life data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i} 105.4**	Intercept	β_{00}	118.4**	105.9**	
	Yr_ED	β_{01}	(2.9)	(3.1)	(4.4) 1.0 (6.3)
Rate of change, π_{1i}	Intercept	β_{10}		14.0**	14.1**
	Yr_ED	β_{11}		(2.1)	(3.0) -0.1 (4.3)
Variance Components					
Level 1 282.5**	Within-	σ_{ε}^2	476.1**	282.3**	
	Person		(84.0)	(88.8)	(71.5)
Level 2	In initial status	σ_0^2	131.5 (78.7)	136.0 (106.2)	145.6 (109.2)
	In rate of Change	σ_1^2		6.1 (52.0)	10.9 (53.5)
	Covariance	σ_{01}		25.0 (58.1)	21.8 (60.0)
Pseudo R^2 Statistics and Goodness-of-fit					
	R_{ε}^2			.41	.41
	Deviance		925.1	885.6	875.5
	AIC		929.1	893.6	883.5
	BIC		934.3	903.9	893.8

** $p < .001$

This model predicts QL between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Quality of Life Findings

For the average participant, *QL* improved over the course of treatment and 3 months after. For some, the improvement was rapid; for others, less so. Fitted intercepts were centered

near 105.9; the fitted slopes were centered near 14.0. This suggests that for the average participant, *QL* increased steadily from pre-test to follow-up from 105.9 to 133.9.

The average change trajectory for both the participants who had an ED for < 17 years, and those who had their ED \geq 17 years were virtually the same. Participants who had their ED for < 17 years had the same average *QL* ratings at pre-testing, as did participants who had an ED for \geq 17 years, and both groups showed no difference in their rate of improvement over time.

Valued Living Findings

General Research Questions

1. Does participation in an ACT group intervention improve *valued living* for women with disordered eating?

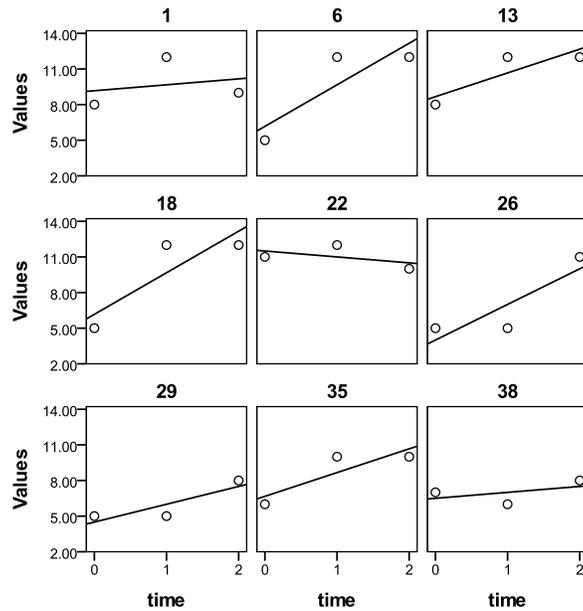
Specific Research Questions.

2. Does change in *valued living* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *valued living* be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 4 presents the *values* ratings from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *values* and time suggests that there may be a positive linear trend. For some, the trajectory appears smooth and systematic (subjects 22, 29, 38); for others, it appears slightly more scattered (subjects 1, 18, 26).

Figure 4. Empirical growth plots with fitted regression lines for 9 participants on valued living.



Unconditional Means Model

Model A. Model A of table 4 presents the results of fitting the unconditional means model to the *values* data. The estimated overall participant average on the *values* measure is 8.44 and is statistically significant (β_{00} , $p < .001$). The level-1 residual variance captures the variability of an individual's score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{0.9} = 0.95$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *values* rating between 6.5 and 10.3 (i.e., ± 1.96 deviations from the mean; $8.4 \pm 1.96[0.95]$). The ICC can be estimated as .16, suggesting that 16% of the total variation in *values* is attributable to differences between the participants.

Unconditional Linear Growth Curve Model

Model B. Model B in table 4 presents the results of fitting the unconditional growth model to the *values* data. The mean estimated initial status for the sample was significant ($\beta_{00} = 7.2$, $SE = 0.3$, $p < .001$). There was a significant linear increase in *values* scores ($\beta_{10} = 1.3$, $SE = 0.2$, $p < .001$). The following equation outlines the substitutions back into the model.

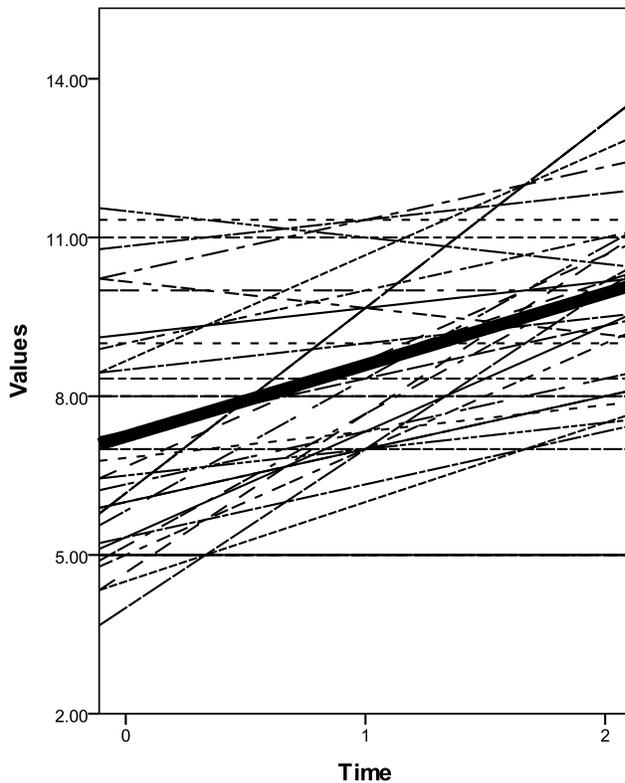
$$\text{Values}_{ij} = \pi_{0i} + \pi_{1i} \text{time} + \varepsilon_{ij}$$

$$\pi_{0i} = 7.2 + \varepsilon_{ij}$$

$$\pi_{1i} = 1.3 + \varepsilon_{ij}$$

Figure 5 presents the result of regressing *values* scores on *time* for all 39 participants separately by ID. Although there are exceptions, most participants' values appear to increase over time. The thin lines show the fitted lines for each participant in the study, and appear to indicate considerable variability in the intercepts and slopes between participants.

Figure 5. Spaghetti plot of average (thick) and participant-specific (thin) regression lines for the sample on valued living.

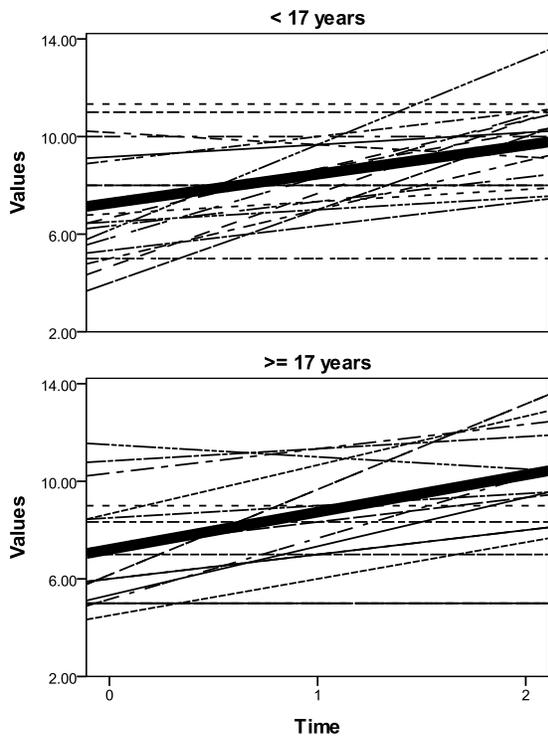


By comparing the level-2 variance components (σ_0^2) in Model B to σ_0^2 in Model A, there was a decline of .44 (from 4.8 to 2.7). As such, it is concluded that 44% of the within-person variation in *valued living* is systematically associated with linear time.

Level-2 Sub-model for Inter-individual Differences in Change

Figure 6 separately plots fitted regression lines according to the participants’ years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line. This line appears not to differ substantially on the intercept or slope between groups, however, there appears to be considerable inter-individual heterogeneity within and between the groups.

Figure 6. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over time for the Yr_ED groups on valued living.



Model C. To test the predictor effect on individual growth trajectories, the dichotomous variable (Yr_ED) was introduced as a time-invariant covariate to explore group differences in

change over time. The estimated initial *values* rating for the average participant who had an ED for < 17 years was 7.3 ($\beta_{00}, p < .001$); the estimated differential in initial *values* ratings between participants who had an ED < or \geq 17 years was indistinguishable from 0, -0.1 ($\beta_{01}, p > .01$). The estimated rate of change in *values* ratings for participants who had an ED for < 17 years was 1.2 ($\beta_{10}, p < .001$); and the estimated differential in the rate of change in *values* scores between participants who had an ED \geq 17 years was indistinguishable from 0, 0.2 ($\beta_{11}, p > .01$). From table 4, we have the following two, level-2 fitted models:

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}_i)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}_i)$$

Fitted values are obtained by substituting 0 and 1 for Yr_ED:

$$\begin{aligned} \text{When Yr_ED}_i = 0 & \quad \left\{ \begin{array}{l} \pi_{0i} = 7.2 - 0.1(0) = 7.2 \\ \pi_{1i} = 1.2 + 0.2(0) = 1.2 \end{array} \right. \end{aligned}$$

$$\begin{aligned} \text{When Yr_ED}_i = 1 & \quad \left\{ \begin{array}{l} \pi_{0i} = 7.2 - 0.1(1) = 7.1 \\ \pi_{1i} = 1.2 + 0.2(1) = 1.4 \end{array} \right. \end{aligned}$$

The average participant whose years of having an ED was < 17 has a fitted trajectory with an intercept of 7.2 and a slope of 1.2 on the *values* measure; the average participant whose years of having an ED was \geq 17 years has a fitted trajectory with an intercept of 7.1 and a slope of 1.4 on the *values* measure.

Table 4

Results of fitting growth model for change to the values data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i}	Intercept	β_{00}	8.4** (0.3)	7.2** (0.3)	7.3** (0.5)
	Yr_ED	β_{01}			-0.1 (0.7)
Rate of change, π_{1i}	Intercept	β_{10}		1.3** (0.2)	1.2** (0.3)
	Yr_ED	β_{11}			0.2 (0.4)
Variance Components					
Level 1	Within-Person	σ_{ϵ}^2	4.8** (0.9)	2.7** (0.5)	2.7** (0.6)
Level 2	In initial status	σ_0^2	0.9 (0.7)	1.9 (0.8)	2.0 (1.1)
	In rate of Change	σ_1^2		0.1 (0.1)	0.1 (0.5)
	Covariance	σ_{01}		-0.4 (0.2)	-0.4 (0.6)
	Pseudo R^2 Statistics and Goodness-of-fit				
	R_{ϵ}^2			.44	.44
	Deviance		460.3	429.4	428.5
	AIC		464.3	437.4	436.2
	BIC		470.0	447.8	446.6

** $p < .001$

This model predicts values between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Valued Living Findings

For most of the participants, *valued living* improved over the course of treatment. For some, the improvement was rapid; for others, less so. Fitted intercepts were centered near 7.2; the fitted slopes were centered near 1.3. This suggests that *valued living*, for the average participant, increased steadily from pre-test to follow-up from 7.2 to 9.8.

The average change trajectory for both the participants who had an ED for < 17 years or ≥ 17 years were virtually the same. Participants who had their ED for < 17 years had the same average *valued living* ratings at pre-testing, as did participants who had an ED for ≥ 17 years, and both groups showed no difference in their rate of improvement over time.

Experiential Avoidance Findings

General Research Questions

1. Does participation in an ACT group intervention improve *experiential avoidance* for women with disordered eating?

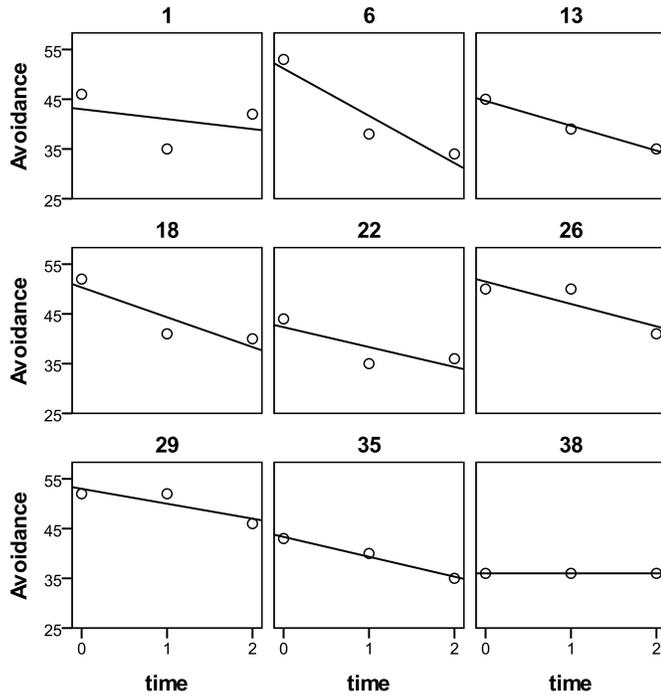
Specific research questions.

2. Does change in *experiential avoidance* occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *experiential avoidance* be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 7 presents the *avoidance* scores from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *avoidance* and time suggests that there may be a slight negative linear trend with relative homogeneity amongst participants on these 9 individuals compared to the variety in slope seen on the previous measures, potentially with exception of participants 1 and 6.

Figure 7. Empirical growth plots with fitted regression lines for 9 participants on experiential avoidance



Unconditional Means Model

Model A. Model A of table 4 presents the results of fitting the unconditional means model to the *flexibility* data. The estimated overall participant average on the *avoidance* measure was 40.5 and was statistically significant (β_{00} , $p < .001$). The level-1 residual variance captures the variability of an individual's score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{12.8} = 3.6$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *avoidance* rating between 33.4 and 47.6 (i.e., ± 1.96 deviations from the mean; $40.5 \pm 1.96[3.6]$). The ICC can be estimated as .32, suggesting that 32% of the total variation in *avoidance* is attributable to differences between the participants.

Unconditional Linear Growth Curve Model

Model B. Model B in table 5 presents the results of fitting the unconditional growth model to the *avoidance* data. The mean estimated initial status for the sample was significant ($\beta_{00} = 42.1$ $SE = 1.0$, $p < .001$). There was a significant linear decrease in *avoidance* scores ($\beta_{10} = -1.9$, $SE = 0.6$, $p < .01$). The following equation outlines the substitutions back into the model.

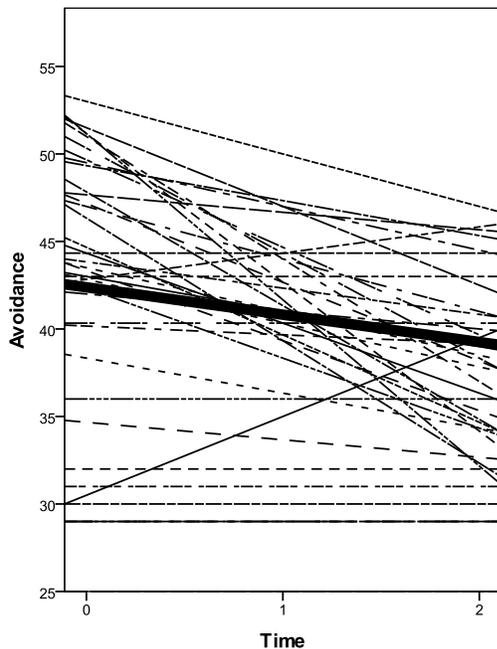
$$\text{Avoidance}_{ij} = \pi_{0i} + \pi_{1i} \text{time} + \varepsilon_{ij}$$

$$\pi_{0i} = 42.3 + \varepsilon_{ij}$$

$$\pi_{1i} = -1.9 + \varepsilon_{ij}$$

Figure 8 presents the result of regressing *avoidance* scores on time for all 39 participants separately by ID. Although there are exceptions, most participants' scores appear to decrease over time. The thin lines show the fitted lines for each participant in the study, and they indicate that there is considerable variability in the intercepts and slopes between participants.

Figure 8. Spaghetti plot of average (thick) and participant-specific (thin) regression lines on experiential avoidance.

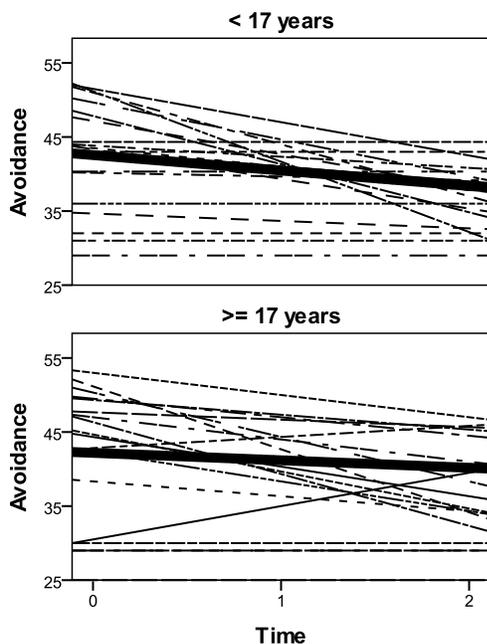


By comparing the level-2 variance components (σ_0^2) in Model B to σ_0^2 in Model A, there was a decline of .50 (from 27.6 to 13.7). As such, it is concluded that 50% of the within-person variation in *avoidance* is systematically associated with linear *time*.

Level-2 Sub-model for Inter-individual Differences in Change

Figure 9 separately plots fitted regression lines according to the participants' years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line. This line appears not to differ substantially on their intercept or slope between the two groups, however, there is considerable inter-individual heterogeneity within and between the groups.

Figure 9. Spaghetti plot of average (thick) and participant-specific (thin) over time for the Yr_ED groups on experiential avoidance.



Model C. The estimated initial *avoidance* measure for the average participant who had an ED for < 17 years was 42.3 (β_{00} , $p < .001$); the estimated differential in initial *avoidance* scores between participants who had an ED < or ≥ 17 years was indistinguishable from 0, -0.5 (β_{01} , $p >$

.01). The estimated rate of change in *avoidance* scores for participants who had an ED for < 17 years was -2.3 (β_{10} , $p < .01$); and the estimated differential in the rate of change in *avoidance* scores between participants who had an ED ≥ 17 years was also indistinguishable from 0, 0.9 (β_{01} , $p > .01$). From table 5, we have the following two, level-2 fitted models:

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}_i)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}_i)$$

Fitted values are obtained by substituting 0 and 1 for Yr_ED:

$$\begin{aligned} \text{When Yr_ED}_i = 0 & \quad \{ \pi_{0i} = 42.3 - 0.5(0) = 42.3 \\ & \quad \{ \pi_{1i} = -2.3 + 0.9(0) = -2.3 \end{aligned}$$

$$\begin{aligned} \text{When Yr_ED}_i = 1 & \quad \{ \pi_{0i} = 42.3 - 0.5(1) = 41.8 \\ & \quad \{ \pi_{1i} = -2.3 + 0.9(1) = -1.4 \end{aligned}$$

The average participant whose years of having an ED was < 17, has a fitted trajectory with an intercept of 42.3 and a slope of -2.3 on the *avoidance* measure; the average participant whose years of having an ED was ≥ 17 years has a fitted trajectory with an intercept of 41.8 and a slope of -1.4 on the *avoidance* measure.

Table 5

Results of fitting growth model for change to the experiential avoidance data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i}	Intercept	β_{00}	40.5** (0.8)	42.1** (1.2)	42.3** (1.7)
	Yr_ED	β_{01}			-0.5 (2.4)
Rate of change, π_{1i}	Intercept	β_{10}		-1.9* (0.6)	-2.3* (0.9)
	Yr_ED	β_{11}			0.9 (1.2)
Variance Components					
Level 1	Within-Person	σ_{ϵ}^2	27.6** (5.5)	13.7** (3.5)	13.7** (3.5)
Level 2	In initial status	σ_0^2	12.8 (7.3)	46.3 (14.0)	48.0 (14.5)
	In rate of change	σ_1^2		6.9 (4.5)	7.4 (4.7)
	Covariance	σ_{01}		-16.5 (7.1)	-17.5 (7.4)
Pseudo R^2 Statistics and Goodness-of-fit					
	R_{ϵ}^2			.50	.50
	Deviance		649.5	663.0	617.2
	AIC		653.5	631.0	625.2
	BIC		658.7	641.4	635.5

** $p < .001$, * $p < .01$.

This model predicts avoidance between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Experiential avoidance Findings

For most of the participants, *experiential avoidance* declined over the course of treatment. For some, the decline was rapid; for others, less so. Most participants showed improvement. Fitted intercepts were centered near 42.1; the fitted slopes were centered near -1.9.

This suggests that for the average participant, *experiential avoidance* declined steadily from pre-test to follow-up from 42.1 to 38.3.

The average change trajectory for both the participants who had an ED for < 17 years, and those who had their ED \geq 17 years were virtually the same. Participants who had their ED for < 17 years had the same average *experiential avoidance* ratings at pre-testing, as did participants who had an ED for \geq 17 years, and both groups showed no difference in their rate of decline over time.

Mindful Acceptance Findings

General Research Questions

1. Does participation in an ACT group intervention improve *mindful acceptance* skills for women with disordered eating?

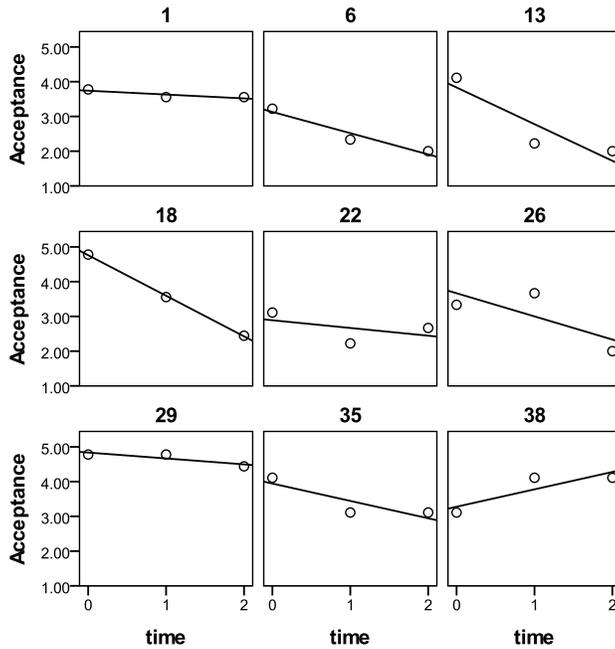
Specific Research Questions

2. Does change in *mindful acceptance* occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *mindful acceptance* be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 10 presents the *acceptance* ratings from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *acceptance* and time suggests that there may be a negative linear trend. For some, the trajectory appears smooth and systematic (subjects 1, 18); for others, it appears slightly more scattered (subjects 13, 22, 26).

Figure 10. Empirical growth plots with fitted regression lines for 9 participants on acceptance.



Unconditional Means Model

Model A. Model A of table 6 presents the results of fitting the unconditional means model to the *acceptance* data. The estimated overall participant average on the values measure is 3.5 and is statistically significant (β_{00} , $p < .001$). The level-1 residual variance captures the variability of an individual's score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{0.2} = 0.45$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *acceptance* rating between 2.6 and 4.4 (i.e., ± 1.96 deviations from the mean; $3.5 \pm 1.96[0.45]$). The ICC can be estimated as .33, suggesting that 33% of the total variation in *acceptance* ratings is attributable to differences between the participants.

Unconditional Linear Growth Curve Model

Model B. Model B in table 6 presents the results of fitting the unconditional growth model to the *acceptance* data. The mean estimated initial status for the sample was significant

($\beta_{00} = 3.8$, $SE = .09$, $p < .001$). There is a significant linear decrease in *acceptance* ($\beta_{10} = -0.3$, $SE = 0.1$, $p < .001$). The following equation outlines the substitutions back into the model.

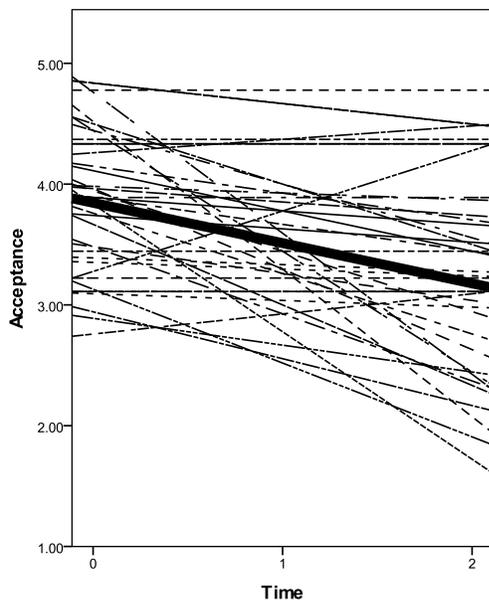
$$\text{Acceptance}_{ij} = \pi_{0i} + \pi_{1i} \text{time} + \varepsilon_{ij}$$

$$\pi_{0i} = 3.8 + \varepsilon_{ij}$$

$$\pi_{1i} = -0.3 + \varepsilon_{ij}$$

Figure 11 presents the result of regressing *acceptance* ratings on *time* for all 39 participants separately by ID. Although there are exceptions, most of the participants' *acceptance* ratings appear to decrease over time. The thin lines show the fitted lines for each participant in the study, and appear to indicate considerable variability in the intercepts and slopes between participants.

Figure 11. Spaghetti plot of average (thick) and participant-specific (thin) regression lines for the sample on acceptance.

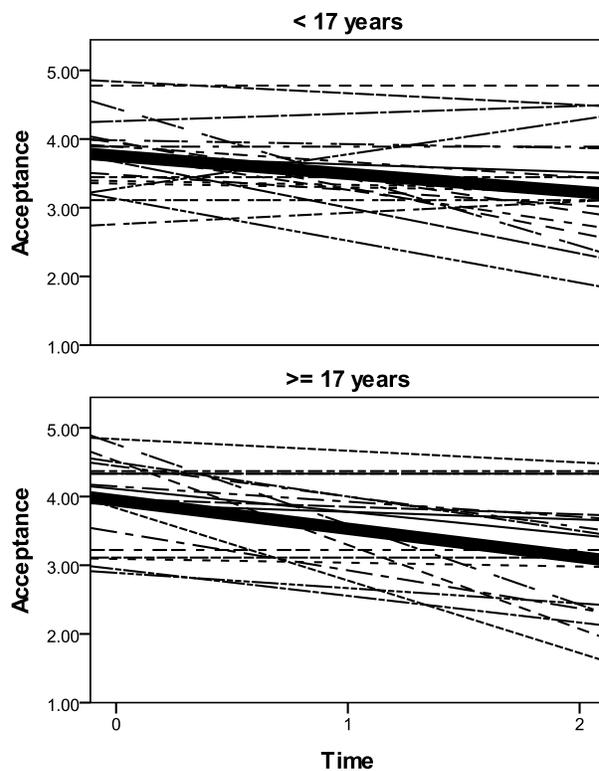


By comparing the level-2 variance components (σ_{ε}^2) in Model B to σ_{ε}^2 in Model A, there was a decline of .25 (from 0.4 to 0.3). As such, it is concluded that 25% of the within-person variation in values is systematically associated with linear *time*.

Level-2 Sub-model for Inter-individual Differences in Change

Figure 12 separately plots fitted regression lines according to the participants' years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line.

Figure 12. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over the time course for the Yr_ED groups for acceptance.



Model C. The estimated initial *acceptance* measure for the average participant who had an ED for < 17 years was 3.8 (β_{00} , $p < .001$); the estimated differential in initial *acceptance* ratings between participants who had an ED < or ≥ 17 years was indistinguishable from 0, 0.2 (β_{01} , $p > .01$). The estimated rate of change in *acceptance* ratings for participants who had an ED for < 17 was -0.3 (β_{10} , $p > .01$); and the estimated differential in the rate of change in *acceptance*

ratings between participants who had an ED ≥ 17 years is also indistinguishable from 0, - 0.2 (β_{11} , $p > .01$). From table 6, we have the following two, level-2 fitted models:

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}_i)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}_i)$$

Fitted values are obtained by substituting 0 and 1 for Yr_ED:

$$\begin{array}{l} \text{When Yr_ED}_i = 0 \\ \left\{ \begin{array}{l} \pi_{0i} = 3.8 + 0.2(0) = 3.8 \\ \pi_{1i} = -0.3 - 0.2(0) = -0.3 \end{array} \right. \end{array}$$

$$\begin{array}{l} \text{When Yr_ED}_i = 1 \\ \left\{ \begin{array}{l} \pi_{0i} = 3.8 + 0.2(1) = 4.0 \\ \pi_{1i} = -0.3 - 0.2(1) = -0.5 \end{array} \right. \end{array}$$

The average participant whose years of having an ED was < 17 , had a fitted trajectory with an intercept of 3.8 and a slope of -0.3 on the *acceptance* measure; the average participant whose years of having an ED was ≥ 17 years had a fitted trajectory with an intercept of 4.0 and a slope of -0.5 on the *acceptance* measure.

Table 6

Results of fitting growth model for change to the acceptance data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i}	Intercept	β_{00}	3.5** (0.1)	3.8** (0.1)	3.8** (0.1)
	Yr_ED	β_{01}			0.2 (0.2)
Rate of change, π_{1i}	Intercept	β_{10}		-0.3** (0.1)	-0.3** (0.1)
	Yr_ED	β_{11}			-0.2 (0.1)
Variance Components					
Level 1	Within-Person	σ_{ϵ}^2	0.4** (0.1)	0.3** (0.1)	0.3** (0.1)
Level 2	In initial status	σ_0^2	0.2 (0.1)	0.1 (0.1)	0.1 (1.1)
	In rate of Change	σ_1^2		0.02 (0.1)	0.02 (0.1)
	Covariance	σ_{01}		0.1 (0.1)	0.1 (0.1)
Pseudo R^2 Statistics and Goodness-of-fit					
	R_{ϵ}^2			.25	.25
	Deviance		226.5	204.1	206.0
	AIC		230.5	212.1	214.0
	BIC		235.7	222.5	224.3

** $p < .001$

This model predicts acceptance between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Mindful Acceptance Findings

For most of the participants, *acceptance* declined over the course of treatment. For some, the decline was rapid; for others, less so. Few participants showed any improvement on *acceptance*. Fitted intercepts were centered near 3.8; the fitted slopes were centered near -0.3.

This suggests that for the average participant, *acceptance* declined steadily from pre-test to follow-up from 3.8 to 3.2.

The average change trajectory for both the participants who had an ED for < 17 years, and those who had their ED ≥ 17 years were virtually unchanged over time. Participants who had their ED for < 17 years had similar *acceptance* ratings at pre-testing as participants who had an ED for ≥ 17 years. Similarly, both groups showed no difference in their rate of decline over time.

Mindful Observing Findings

General Research Questions

1. Does participation in an ACT group intervention improve *mindful observing* skills for women with disordered eating?

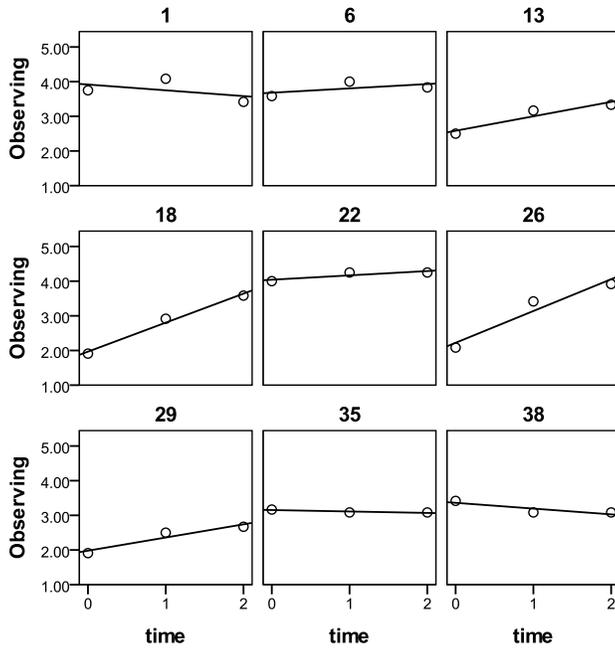
Specific Research Questions

2. Does change in *mindful observing* ratings occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *mindful observing* be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 13 presents the *mindful observing* ratings from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *mindful observing* and *time* suggests that there may be a positive linear trend. For most participants, their trajectories appear smooth and systematic.

Figure 13. Empirical growth plots with fitted regression lines for 9 participants on mindful observing.



Unconditional Means Model

Model A. Model A of table 7 presents the results of fitting the unconditional means model to the *mindful observing* data. The estimated overall participant average on the *mindful observing* measure is 3.3 and is statistically significant ($p < .001$). The level-1 residual variance captures the variability of an individual’s score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{0.2} = 0.45$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *observing* rating between 2.4 and 4.2 (i.e., ± 1.96 deviations from the mean; $3.3 \pm 1.96[0.45]$). The ICC can be estimated as .50, suggesting that 50% of the total variation in *mindful observing* is attributable to differences between the participants.

Unconditional Linear Growth Curve Model

Model B. Model B in table 7 presents the results of fitting the unconditional growth model to the *mindful observing* data. The mean estimated initial status for the sample was significant ($\beta_{00} = 3.0$ $SE = 0.3$, $p < .001$). No significant rate of change was found in the *mindful observing* scores ($\beta_{10} = 0.3$, $SE = 0.1$, $p > .01$). The following equation outlines the substitutions back into the model.

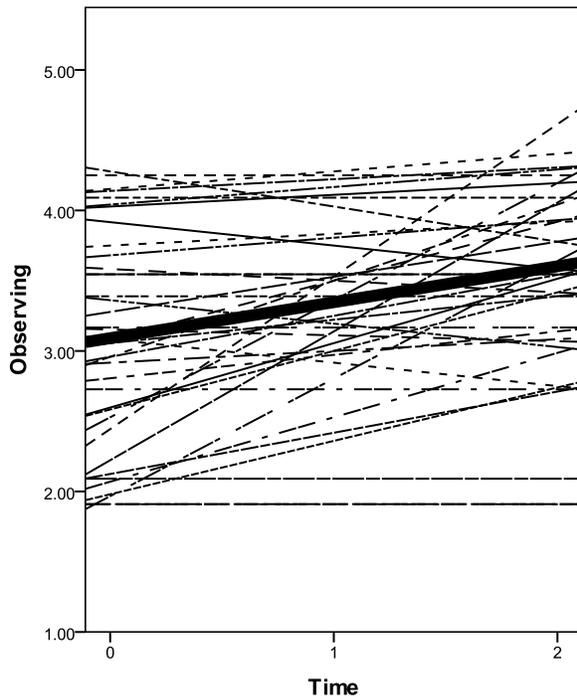
$$\text{Mindful Observing}_{ij} = \pi_{0i} + \pi_{1i} \text{time} + \varepsilon_{ij}$$

$$\pi_{0i} = 3.0 + \varepsilon_{ij}$$

$$\pi_{1i} = 0.3 + \varepsilon_{ij}$$

Figure 14 presents the result of regressing *mindful observing* scores on time for all 39 participants separately by ID.

Figure 14. Spaghetti plot of average (thick) and participant-specific (thin) regression lines for the sample on mindful observing.

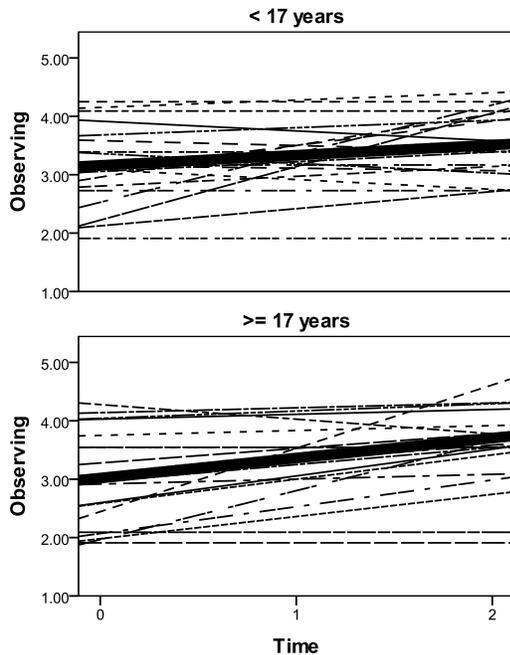


By comparing the level-2 variance components (σ_{ϵ}^2) in Model B to σ_{ϵ}^2 in Model A, there was a decline of 0.50 (from 0.2 to 0.1). As such, it is concluded that 50% of the within-person variation in *mindful observing* is systematically associated with linear *time*.

Level-2 Sub-model for Inter-individual Differences in Change

Figure 15 separately plots fitted regression lines according to the participants' years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line. This line appears not to differ substantially on their intercept or slope between the two groups, however, there is considerable inter-individual heterogeneity within and between the groups.

Figure 15. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over time for Yr_ED groups for mindful observing.



Model C. The estimated initial *mindful observing* rating for the average participant who had an ED for < 17 years was 3.3 (β_{00} , $p < .001$); the estimated differential in initial *mindful*

observing ratings between participants who had an ED < or ≥ 17 years was indistinguishable from 0, -0.6 (β_{01} , $p > .01$). The estimated rate of change in *mindful observing* ratings for participants who had an ED for < 17 years was also not significant 0.1 (β_{10} , $p > .01$); the estimated differential in the rate of change in *mindful observing* scores between participants who had an ED ≥ 17 years is also indistinguishable from 0, 0.3 (β_{11} , $p > .01$).

Table 7

Results of fitting growth model for change to the mindful observing data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i}	Intercept	β_{00}	3.3** (0.2)	3.0** (0.3)	3.3** (0.4)
	Yr_ED	β_{01}			-0.6 (0.5)
Rate of change, π_{1i}	Intercept	β_{10}		0.3 (0.1)	0.1 (0.2)
	Yr_ED	β_{11}			0.3 (0.3)
Variance Components					
Level 1	Within-Person	σ_{ϵ}^2	0.2 (0.1)	0.1 (0.02)	0.1 (0.02)
Level 2	In initial status	σ_0^2	0.2 (0.2)	0.6 (0.3)	0.6 (0.3)
	In rate of Change	σ_1^2		0.1 (0.1)	0.1 (0.1)
	Covariance	σ_{01}		-0.2 (0.2)	-0.2 (0.2)
Pseudo R^2 Statistics and Goodness-of-fit					
	R_{ϵ}^2			.50	.50
	Deviance		51.0	38.9	38.5
	AIC		55.0	46.9	46.5
	BIC		57.5	51.8	51.1

** $p < .001$

This model predicts mindful observing between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Mindful Observing Findings

For most of the participants, *mindful observing* remained unchanged over the course of treatment. Fitted intercepts were centered near 3.0; the fitted slopes were centered near 0.3. This suggests that for the average participant, *mindful observing* ratings remained the same from pre-test to follow-up.

The average change trajectory for both the participants who had an ED for < 17 years, and those who had their ED \geq 17 years were also virtually the same. At pre-testing, participants who had their ED for < 17 years showed no significant differences in *mindful observing* from participants who had ED for \geq 17 years.

Disordered Eating Findings

General Research Questions

1. Does participation in an ACT group intervention reduce *disordered eating* for women with disordered eating?

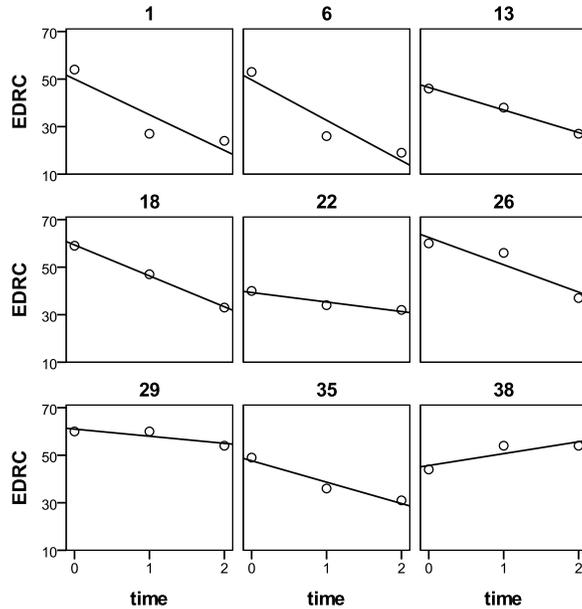
Specific Research Questions

2. Does change in *disordered eating* occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *disordered eating* be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 16 presents the *disordered eating* ratings from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *disordered eating* and *time* suggests that there may be a negative linear trend.

Figure 16. Empirical growth plots with fitted regression lines for 9 participants on disordered eating.



Unconditional Means Model

Model A. Model A of table 8 presents the results of fitting the unconditional means model to the *disordered eating* data. The estimated overall participant average on *disordered eating* was 44.1 and is statistically significant (β_{00} , $p < .001$). The level-1 residual variance captures the variability of an individual's score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{38.5} = 6.2$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *disordered eating* rating between 31.9 and 56.3 (i.e., ± 1.96 deviations from the mean; $44.1 \pm 1.96[6.2]$). The ICC can be estimated as .26, suggesting that 26% of the total variation in *disordered eating* was attributable to differences between the participants.

Unconditional Linear Growth Curve Model

Model B. Model B in table 8 presents the results of fitting the unconditional growth model to the *disordered eating* data. The mean estimated initial status for the sample was

significant ($\beta_{00} = 50.9, p < .001$). There was a significant linear decrease in *disordered eating* ratings ($\beta_{10} = -7.6, SE = 1.1, p < .001$). The following equation outlines the substitutions back into the model.

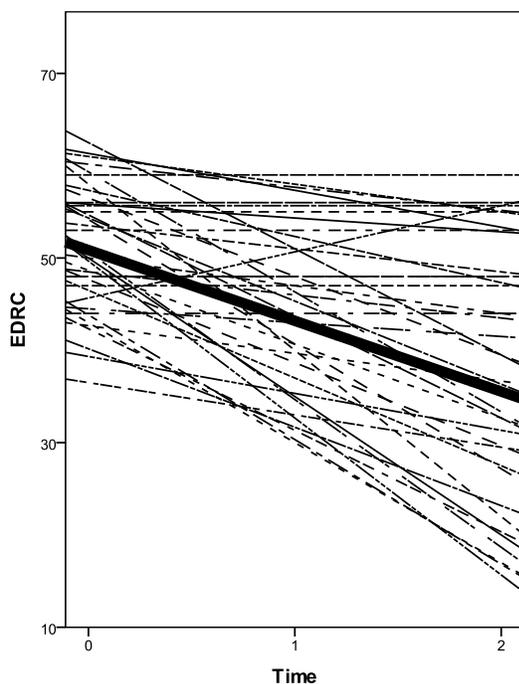
$$\text{Disordered Eating}_{ij} = \pi_{0i} + \pi_{1i} \text{ time} + \varepsilon_{ij}$$

$$\pi_{0i} = 50.9 + \varepsilon_{ij}$$

$$\pi_{1i} = -7.6 + \varepsilon_{ij}$$

Figure 17 presents the result of regressing *disordered eating* ratings on *time* for all 39 participants separately by ID. Although there are exceptions, most participants' *disordered eating* ratings appear to decrease over time. The thin lines show the fitted lines for each participant in the study, and they indicate that there is considerable variability in the intercepts and slopes between participants.

Figure 17. Spaghetti plot of average (thick) and participant-specific (thin) regression lines for the sample on disordered eating.

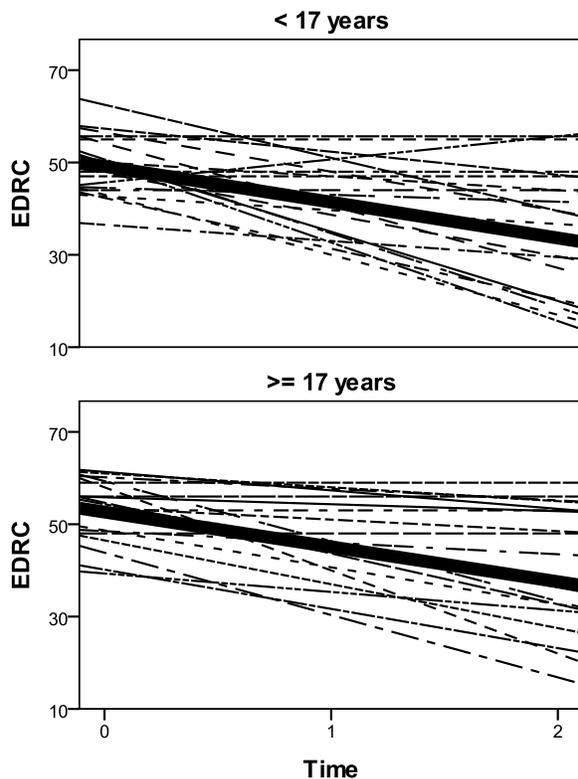


By comparing the level-2 variance components (σ_0^2) in Model B to σ_0^2 in Model A, there was a decline of .64 (from 107.4 to 38.6). As such, it is concluded that 64% of the within-person variation in *disordered eating* ratings is systematically associated with linear *time*.

Level-2 Sub-model for Inter-individual Differences in Change

Figure 18 separately plots fitted regression lines according to the participants' years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line.

Figure 18. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over time for Yr_ED groups for disordered eating.



Model C. The estimated initial *disordered eating rating* for the average participant who had an ED for < 17 years was 49.2 (β_{00} , $p = < .001$); the estimated differential in initial

disordered eating ratings between participants who had an ED < or \geq 17 years was indistinguishable from 0, 3.5 ($\beta_{01}, p > .01$). The estimated rate of change in *disordered eating* ratings for participants who had an ED for < 17 years was significant -7.8 ($\beta_{10}, p < .001$); and the estimated differential in the rate of change in *disordered eating ratings* between participants who had an ED \geq 17 years was indistinguishable from 0, 0.4, ($\beta_{11}, p > .01$). From table 8, we have the following two, level-2 fitted models:

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}_i)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}_i)$$

Fitted values are obtained by substituting 0 and 1 for Yr_ED:

$$\begin{array}{l} \text{When Yr_ED}_i = 0 \\ \left\{ \begin{array}{l} \pi_{0i} = 49.2 + 3.5(0) = 49.2 \\ \pi_{1i} = -7.8 + 0.4(0) = -7.8 \end{array} \right. \end{array}$$

$$\begin{array}{l} \text{When Yr_ED}_i = 1 \\ \left\{ \begin{array}{l} \pi_{0i} = 49.2 + 3.5(1) = 52.7 \\ \pi_{1i} = -7.8 + 0.4(1) = -7.4 \end{array} \right. \end{array}$$

The average participant whose years of having an ED was < 17, had a fitted trajectory with an intercept of 49.2 and a slope of -7.8 on the *disordered eating* measure; the average participant whose years of having an ED was \geq 17 years had a fitted trajectory with an intercept of 52.7 and a slope of -7.4 on the *disordered eating* measure.

Table 8

Results of fitting growth model for change to the disordered eating data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i}	Intercept	β_{00}	44.1** (4.5)	50.9** (1.1)	49.2** (1.5)
	Yr_ED	β_{01}			3.5 (2.2)
Rate of change, π_{1i}	Intercept	β_{10}		-7.6** (1.2)	-7.8** (1.5)
	Yr_ED	β_{11}			0.4 (2.1)
Variance Components					
Level 1	Within-Person	σ_{ϵ}^2	107.4** (18.8)	38.6** (9.0)	38.5** (9.0)
Level 2	In initial status	σ_0^2	38.5** (19.1)	15.1 (13.7)	13.6 (9.0)
	In rate of Change	σ_1^2		15.3 (10.5)	16.3 (10.8)
	Covariance	σ_{01}		15.2 (8.7)	14.8 (8.6)
Pseudo R^2 Statistics and Goodness-of-fit					
	R_{ϵ}^2			.64	.64
	Deviance		780.5	709.8	700.4
	AIC		784.5	717.8	708.4
	BIC		789.7	728.2	718.7

** $p < .001$

This model predicts EDRC between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Disordered Eating Findings

For most of the participants, *disordered eating* improved over the course of treatment. For some, the improvement was rapid; for others, less so. Fitted intercepts were centered near 50.9; the fitted slopes were centered near -7.6. This suggests that for the average participant, *disordered eating* decreased steadily from pre-test to follow-up from 50.9 to 35.7.

The average change trajectory for both the participants who had an ED for < 17 years, and those who had their ED ≥ 17 years were virtually the same. Participants who had their ED for < 17 years had the same average *disordered eating* ratings at pre-testing as did participants who had an ED for ≥ 17 years, and both groups showed no difference in their rate of improvement over time.

General Psychological Maladjustment Findings

General Research Question

1. Does participation in an ACT group intervention improve *psychological maladjustment* for women with disordered eating?

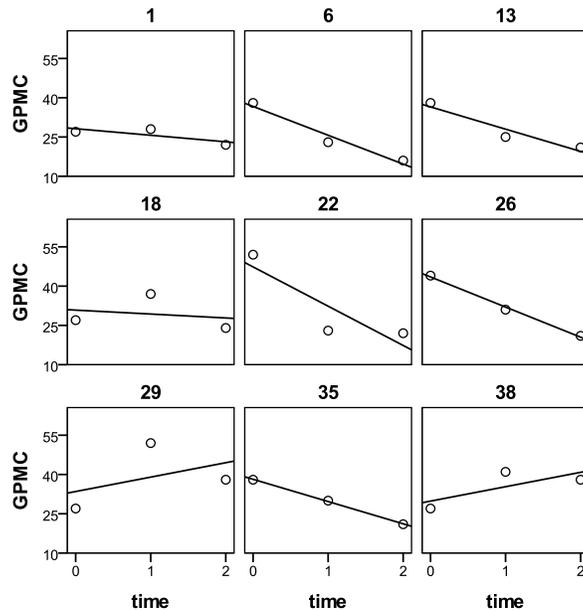
Specific Research Questions

2. Does change in *psychological maladjustment* occur across time?
3. If change occurs, can between-person variation in the individual elevation and rate of change parameters in *psychological maladjustment* be accounted for by the length of time one has an ED?

Level – 1 Sub-model for Individual Change

Figure 19 presents the *psychological maladjustment* ratings from the data of 9 randomly selected participants as a function of time after treatment. For these select participants (and for most of the others not shown) the relationship between *psychological maladjustment* and time suggests that there may be a negative linear trend.

Figure 19. Empirical growth plots with fitted regression lines for 9 participants on psychological maladjustment.



Unconditional Means Model

Model A. Model A of table 9 presents the results of fitting the unconditional means model to the *psychological maladjustment* data. The estimated overall participant average on the *psychological maladjustment* measure is 34.0 and is statistically significant (β_{00} , $p < .001$). The level-1 residual variance captures the variability of an individual's score around his or her mean and the level-2 variance estimate can be converted to a standard deviation (i.e., $\sqrt{0.7} = 0.84$) to facilitate its interpretation (Peugh, 2010). As such, 95% of the participants had a mean *psychological maladjustment* rating between 32.4 and 35.5 (i.e., ± 1.96 deviations from the mean; $34 \pm 1.96[0.84]$). The ICC can be estimated as 0.01, suggesting that only 1% of the total variation in *psychological maladjustment* is attributable to differences between the participants.

Unconditional Linear Growth Curve Model

Model B. Model B in table 9 presents the results of fitting the unconditional growth model to the *psychological maladjustment* data. The mean estimated initial status for the sample was significant ($\beta_{00} = 39.6$, $SE = 1.1$, $p < .001$). There was a significant linear decrease in

psychological maladjustment ratings ($\beta_{10} = -6.0$, $SE = 1.0$, $p < .001$). The following equation outlines the substitutions back into the model.

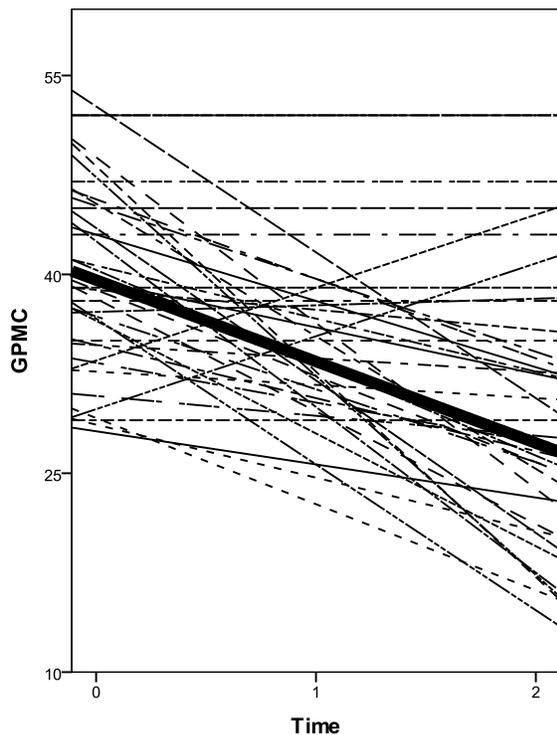
$$\text{Psychological Maladjustment}_{ij} = \pi_{0i} + \pi_{1i} \text{time} + \varepsilon_{ij}$$

$$\pi_{0i} = 39.6 + \varepsilon_{ij}$$

$$\pi_{1i} = -6.0 + \varepsilon_{ij}$$

Figure 20 presents the result of regressing *psychological maladjustment* ratings on time for all 39 participants separately by ID. Although there are exceptions, most participants' *psychological maladjustment* ratings appear to decrease over time. The thin lines show the fitted lines for each participant in the study, and indicate considerable variability in the intercepts and slopes between participants.

Figure 20. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over time for the sample on psychological maladjustment.

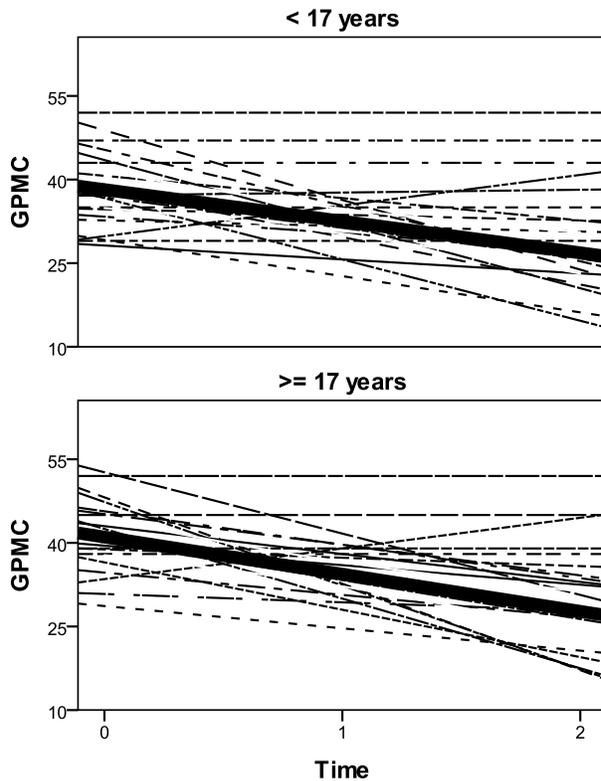


By comparing the level-2 variance components (σ_0^2) in Model B to σ_0^2 in Model A, there was a decline of .47 (from 84.7 to 45.3). As such, it is concluded that 47% of the within-person variation in *psychological maladjustment* was systematically associated with linear *time*.

Level-2 Sub-model for Inter-individual Differences in Change

Figure 21 separately plots fitted regression lines according to the participants' years with an ED (< 17 years on the top panel, and ≥ 17 years on the bottom panel). The average change trajectory for each group is shown in the bold thick line.

Figure 21. Spaghetti plot of average (thick) and participant-specific (thin) regression lines over time for the Yr_ED groups on psychological maladjustment.



Model C. The estimated initial *psychological maladjustment* rating for the average participant who had an ED for < 17 years was 38.1 (β_{00} , $p < .001$); the estimated differential in

initial *psychological maladjustment* ratings between participants who had an ED < or \geq 17 years is indistinguishable from 0, 2.9 (β_{01} , $p > .01$). The estimated rate of change in *psychological maladjustment* ratings for participants who had an ED for < 17 years was significant -5.5 (β_{10} , $p < .001$); and the estimated differential in the rate of change in *psychological maladjustment* ratings between participants who had an ED \geq 17 years was also indistinguishable from 0, 1.5 (β_{11} , $p > .01$). From table 9, we have the following two, level-2 fitted models:

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Yr_ED}_i)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Yr_ED}_i)$$

Fitted values are obtained by substituting 0 and 1 for Yr_ED:

$$\begin{array}{l} \text{When Yr_ED}_i = 0 \\ \left\{ \begin{array}{l} \pi_{0i} = 38.1 + 2.9(0) = 38.1 \\ \pi_{1i} = -5.5 - 1.1(0) = -5.5 \end{array} \right. \end{array}$$

$$\begin{array}{l} \text{When Yr_ED}_i = 1 \\ \left\{ \begin{array}{l} \pi_{0i} = 38.1 + 2.9(1) = 41.0 \\ \pi_{1i} = -5.5 - 1.1(1) = -6.6 \end{array} \right. \end{array}$$

The average participant whose years of having an ED was < 17, has a fitted trajectory with an intercept of 38.1 and a slope of -5.5 on the *psychological maladjustment* measure; the average participant whose years of having an ED was \geq 17 years has a fitted trajectory with an intercept of 41.0 and a slope of -6.6 on the *psychological maladjustment* measure.

Table 9

Results of fitting growth model for change to the psychological maladjustment data

		Parameter	Model A	Model B	Model C
Fixed Effects					
Initial Status, π_{0i}	Intercept	β_{00}	34.0** (0.9)	39.6** (1.1)	38.1** (1.6)
	Yr_ED	β_{01}			2.9 (2.2)
Rate of change, π_{1i}	Intercept	β_{10}		-6.0** (0.9)	-5.5** (1.3)
	Yr_ED	β_{11}			-1.5 (1.8)
Variance Components					
Level 1	Within-Person	σ_{ϵ}^2	84.7** (15.5)	45.3** (11.6)	45.1** (11.5)
Level 2	In initial status	σ_0^2	0.7 (10.1)	10.9 (15.0)	10.2 (15.0)
	In rate of Change	σ_1^2		4.7 (9.0)	5.2 (9.1)
	Covariance	σ_{01}		-1.5 (9.6)	-1.3 (9.7)
Pseudo R^2 Statistics and Goodness-of-fit					
	R_{ϵ}^2			.47	.47
	Deviance		725.8	685.3	677.6
	AIC		729.8	693.3	685.6
	BIC		735.0	703.7	695.9

** $p < .001$

This model predicts GPMC between pretesting and follow-up as a function of time (at level-1) and the addition of Yr_ED as a predictor (at level-2).

Summary of Psychological Maladjustment Findings

For most of the participants, *psychological maladjustment* improved over the course of treatment. For some, the improvement was rapid; for others, less so. Fitted intercepts were centered near 39.6; the fitted slopes were centered near -0.6. This suggests that for the average

participant, *psychological maladjustment* declined steadily from pre-test to follow-up from 39.6 to 27.6.

The average change trajectory for both the participants who had an ED for < 17 years, and those who had their ED \geq 17 years were virtually the same. Participants who had their ED for < 17 years had the same average *psychological maladjustment* ratings at pre-testing as did participants who had an ED for \geq 17 years, and both groups showed no difference in their rate of improvement over time.

This section reviewed the quantitative result of the IGC analysis on each dependent variable. The next section reviews some of the outcomes from the program evaluation.

Program Evaluation Results

As shown in table 10, most participants rated their overall satisfaction with the program's facilitation, use of in-class exercises, and level of comfort in the group at either a 4 or 5 on a 5 point likert scale (1 = Very dissatisfied; 5 = Extremely Satisfied). All participants rated their overall satisfaction with the program between a 4 or 5 out of 5.

Table 10

Program evaluation frequencies on a 1 – 5 likert scale (1 = very dissatisfied; 5 = extremely Satisfied

Question	Range	Frequency (N = 25)	Percentage
How satisfied were you with the program's overall facilitation?	1 – 5		
	1	0	0%
	2	0	0%
	3	0	0%
	4	6	24%
	5	18	72%
How satisfied were you with use of in class exercise?	1 – 5		
	5.5*	1	4%
	1	0	0%
	2	0	0%
	3	0	0%
	4	9	36%
How satisfied were you with your Level of comfort in the group?	1 – 5		
	4.5*	1	4%
	5	15	60%
	1	0	0%
	2	0	0%
	3	0	0%
	4	8	32%
	5	17	68%

*Two participants indicated scores outside of ranges indicated on the evaluation form.

Summary

The primary purpose of this study was to evaluate the efficacy of a 7 session, group ACT intervention for the treatment of EDs and disordered eating behaviours. The second purpose of this study was to investigate whether or not the ACT intervention had a differential effect for participants who reported having a longer versus shorter course of illness measured in years (< or ED ≥ 17). In this study, the median length of time participants reported having their ED was 17 years.

As hypothesized, results indicated that on average, participants showed significant improvements in *QL, valued living, experiential avoidance, disordered eating and psychological*

maladjustment. Participants showed unexpected significant declines in *mindful acceptance*, and no significant change in *mindful observing* scores. The intent in ACT is to transform one's relationship with difficult thoughts and feelings, so that symptoms are seen as transient psychological events rather than 'symptoms', and symptom reduction comes about as a by-product and not the goal of therapy. Symptom reduction did in fact occur for the average study participant over time; however, it does not appear that ED symptoms declined through anticipated mindfulness processes.

Contrary to the hypothesis that participants who had their ED for shorter durations would show greater overall improvements, there were no group differences between the groups who had an ED < or ED \geq 17 on any of the measures. The next chapter discusses the implications of these findings, recommendations and conclusions.

CHAPTER 5

Discussion

Eating disorders are among the most difficult disorders to treat, particularly among adults with a longer duration of illness (Austin et al., 2008; Reas et al., 2000). Even CBT as the current therapy of choice only achieves moderate success rates in treating these challenging disorders. Research advances have been difficult in the area of ED treatment because (a) attrition rates are high and often differential among treatment and control groups (Halmi et al., 2005); (b) rare diagnoses (e.g., AN) yield small sample sizes affecting statistical power and making generalization difficult (Keel & McCormick, 2010); and, (c) of difficulties in recruiting participants due to the secrecy of these disorders (Wilson et al., 2007).

Within the literature, there are a variety of ways EDs are conceptualized and an array of treatment approaches and modalities used to treat these disorders. This study reviewed some of the most common of these, including CBT, to which many participants still show an incomplete response. As such, additional work is necessary to develop more effective treatments for EDs that can be broadly disseminated to clinical practice. This study was in response to calls from experts in the field who suggested that ED treatment efforts should concentrate on the development and pilot testing of promising approaches (Fairburn, 2005) as well as authors (i.e., Baer, 2003; Foreman et al., 2007; Heffner et al., 2002; Wilson, 1996) who have suggested that acceptance-based methods for treating EDs deserve increased attention. ACT represents one such psychotherapy.

In contrast to traditional CBT, which focuses primarily on challenging and changing distressing cognitions, ACT focuses on changing one's relationship with thoughts. EDs are characterized by attempts at control (Orsillo & Batten, 2002) therefore attempting to control or avoid unwanted thoughts, as well as other internal experiences, is thought to not only be

ineffective, but counter-productive (Wilson & Roberts, 2002). ACT takes advantage of a growing body of literature that suggests that attempts to suppress thoughts are largely unsuccessful (e.g., Purdon, 1999; Wegner, 1994) because the struggle to control thoughts can actually increase the distress they produce (Hayes, 2004). Although the efficacy of ACT has been researched for a variety of mental illnesses, no empirical research on the use of ACT for EDs has been published, aside from a single published pre-test post-test design case study with an adolescent girl with AN (Heffner et al., 2002).

The primary goal of this study was to conduct empirical pilot research to test the feasibility of a manualized group intervention delivered over 7, two hour weekly sessions. Thirty-nine adult women with clinical disordered eating participated in this quasi-experimental study. Participants were assessed on 7 measures: *life quality, valued living, experiential avoidance, acceptance without judgment, mindful observing, ED behaviours and psychological maladjustment* taken at three time points (prior to receiving the intervention, post-intervention, and at a 3 month follow-up).

IGC analyses were performed separately on the 7 outcome measures. A linear growth curve containing no predictors was fitted for each measure to represent each participant's pattern of growth over time, and to determine if variability in the individual slopes (the time effect) could be explained by whether or not participants had a shorter (< 17 years) or longer (≥ 17 years) in terms of duration of illness. This predictor was introduced into the study to try and explain any between-person variation in the individual elevation and rate of change parameters.

There were 3 major findings in this study. First, participants significantly improved over time on measures of *QL, valued living, experiential avoidance, disordered eating, and psychological maladjustment*. Secondly, improvements were expected on measures of mindfulness, however, *mindful acceptance without judgment* for the average participant declined

significantly, and ratings of *mindful observing* showed no significant change over time. Lastly, it was also hypothesized that participants with a shorter duration of illness (< 17 years) would show steeper rates of improved change on all measures compared to participants with a longer duration of illness (≥ 17 years). The analyses revealed no significant differences between groups on any of the outcome variables. The general pattern of results seen in this study is only partly consistent with the theory underlying the ACT intervention, as well as previous clinical trials examining the efficacy of ACT. Each of the findings is discussed below.

Symptom Reduction Findings

The most common explicit purpose of psychotherapy is to alleviate some set of signs and symptoms (Wilson & Sandoz, 2010). ACT differs from many treatment approaches in that it does not attempt to reduce ED symptoms; instead, it aims to increase psychological flexibility in the presence of ED symptoms while actively pursuing valued living (Sandoz et al., 2010). ACT's stark shift in focus from symptom reduction to valued living is very clear with respect to treatment for disorders; ACT does not attempt to reduce symptoms that on the surface may seem unacceptable; instead, it focuses on altering how an individual responds to their symptoms, rather than trying to diminish their frequency or alter their content. Fortunately, symptom-reduction is often a pleasant 'side-effect' of ACT. The current study exemplifies how an ACT approach to treatment can result in symptom reduction, without targeting symptoms per se.

Results of the current study show significant decreases in ED symptoms and psychological maladjustment over the course of treatment, both of which were maintained at follow up. There are several ACT studies claiming similar symptom reduction without intentionally addressing symptoms. In the ED field, Forman, Butryn, Hoffman, and Herbert (2009) conducted a preliminary open trial for analyzing the effectiveness of an ACT based intervention for weight loss in obese women. Results showed that participants lost 6.6% of body

weight at post-treatment and 9.6% at the 6 month follow-up. In contrast to many traditional methods of therapy that are based largely on attempts to control and reduce unpleasant internal states, symptom reduction came about by implementing strategies designed to increase tolerance of experiential avoidance. Similarly, Tapper, Shaw, Ilslev, Hill, Bond, and Moore (2009) conducted an exploratory study in which they analyzed the efficacy of ACT versus a control condition in the weight loss in women. In the 6 month follow-up, participants in the ACT condition who applied what they learned during treatment, showed greater weight loss than participants in the control condition, which was also, was mediated by the decrease in binge eating.

Berman et al. (2009) also noted that two of the three women in a case study showed substantial improvements in disordered eating and body dissatisfaction using an ACT based approach. As well, in a case report using ACT to treat AN in a 15 year old girl, restrictive symptoms began to remit within 10 sessions and treatment gains were maintained throughout 4 follow-up session (Heffner et al., 2002). These are just a few of the outcome studies where ACT appears to be demonstrating significant and enduring positive symptom results while utilizing a novel, non-symptom focused approach to treatment. Symptom reductions in the current study replicate and support the Heffner et al. (2002) study noting that overall feelings of ineffectiveness and drive for thinness decreased to non-clinical ranges.

There have also been several studies outside of the ED field that support the non-symptom based approach to treatment. For example, Bach and Hayes (2002) analyzed the differential effect of four 45-minute sessions of ACT as adjunct to the treatment as usual (TAU) for preventing rehospitalizations versus TAU in patients with psychotic symptoms. Results at follow-up showed that the ACT+TAU condition had a significantly lower level of rehospitalizations than the TAU group. Similarly, in studies of social phobia, Block (2002)

compared 6 group sessions of ACT versus CBT in participants with subclinical social anxiety (N= 26). At post-treatment, the ACT group was better than CBT in a behavioral measure of public speaking. In a study of borderline personality disorder, Gratz and Gunderson (2006) analyzed the differential effect of TAU versus ACT+TAU and found significant differences at post-treatment between the TAU and ACT+ TAU group, with participants in the ACT+TAU reaching normative functioning levels.

These are just a few of many current studies which have demonstrated significant improvements in symptom reduction. In each of these studies, ACT processes reportedly worked by helping clients notice that it was their ongoing attempts to *solve* or *avoid* unpleasant feelings and/or symptoms, not the symptoms themselves that often made the symptoms (and life) worse. In ACT, this is referred to as the vicious cycle, where the solution becomes the problem (Harris, 2008). Participants in the current study shared examples in their pre-interview of how efforts to *control* their ED symptoms lead to their “solution” eventually becoming their problem. One of the participants talked about how much she hated being obese, and dealt with her hatred by bingeing on chips and chocolate in attempts to zone out, or make herself feel better. She expressed feeling better for a few moments, but then started to think about the number of calories she just consumed, and how that would only add to her weight, leaving her feeling more dismal and depressed than she had prior to her binge. Another participant talked about wanting to get into great shape. She said that she continually tried new workout regimes, but because she was so out of shape, working out felt too uncomfortable and difficult. She talked about not liking the discomfort, and therefore stopped working out, at which point her fitness level continued to decrease. This inappropriate or excessive use of control strategies is referred to as *experiential avoidance*, a critical component of the ACT process. For instance, acceptance-based approaches teach cognitive defusion skills, where thoughts, feelings, and urges come to be experienced from

a psychological distance. This enables an uncoupling between experience and action (i.e., one can have a thought, feeling, or urge without acting upon it). This study directly targeted experiential avoidance strategies, the results of which are presented in next.

Experiential Avoidance Findings

Experiential avoidance is a term used within ACT to describe rigid and inflexible efforts to avoid, escape, or diminish some type of private event, which is experienced as aversive, or discomforting (Hayes et al., 1996). An ACT approach to EDs is predicated on the notion that EDs are characterized by experiential and emotional avoidance, which can produce immediate, short-term relief from negatively evaluated thoughts and emotions, which negatively reinforces ED behaviours (Merwin & Wilson, 2009). In general, ACT does not consider experiential avoidance as problematic per se, but rather, avoidance becomes problematic when it leads to psychological inflexibility which in turn, interferes with a person's everyday functioning and valued living. This study, in part, sought to evaluate the impact of an ACT intervention on ratings of experiential avoidance.

Overall, the data lend support to the notion that experiential avoidance appears to be salient for individuals with EDs (Berman et al, 2009; Lavender, Jardin, & Anderson, 2009; Lillis et al., 2011; Masuda, Price, Anderson, & Wendell, 2010; Proulx, 2008; Smith, Shelly, Leahigh, & Vanleit, 2006; Wildes et al., 2010). Lillis et al. (2011) contend that experiential avoidance may be key in bingeing behaviours and noted that higher levels of experiential avoidance predicted self-reported binge eating at baseline, suggesting that binges serves as a means to use food as part of a toxic emotion-regulation strategy. One type of experiential avoidance is thought suppression (Hayes, 1999; Purdon, 1999), which has shown to be associated with a variety of affective disorders (Abramowitz, Tolin, & Street, 2001). Efforts to suppress upsetting or unpleasant thoughts can often be maladaptive and ultimately ineffective due to a paradoxical

increase in the unwanted cognition that frequently occur when attempts at suppression fail (Soetens, Braet, Dejonckheere, & Roets, 2006, Wegner, Schneider, Carter, & White, 1987). Lavender et al. (2009) found that unsuccessful suppression efforts resulted in a rebound in the frequency of unwanted thoughts, suggesting that individuals who engage in thought suppression may be at risk for turning to maladaptive ED strategies to cope if initial suppression efforts fail. Individuals with EDs also are likely to score higher than both clinical and non-clinical populations on measures of experiential avoidance and tend to lack acceptance of unwanted private events (Wildes et al., 2010) and studies comparing control groups to those diagnosed with AN found that those with AN score higher on measures of emotional avoidance (Corstorphine et al, 2007). These preliminary findings suggest that disordered eating functions, at least in part, to help individuals avoid unpleasant experiences.

In the current study, participants showed significant reductions in experiential avoidance from pre-test to follow up. Although the core ACT processes overlap and are interrelated, ACT teaches mindful acceptance predominantly as an alternative behaviour to experiential avoidance (Eifert, 2011). As the antidote to experiential avoidance, reduction in avoidance ratings from a clinical and theoretical ACT perspective would have come about predominantly through *acceptance* and *mindfulness* processes. The mindfulness results do not appear to support *acceptance without judgment* or *mindful observing* as playing a role in the improved experiential avoidance scores found in this study. The next section reviews these unexpected findings, which run counter to what is generally noted in the literature with respect to ACT outcomes.

Mindfulness Findings

ACT is about acceptance *and* it is about change at the same time (Harris, 2008b). Overall, participants achieved improved and desired outcomes over the course of the study, however, it does not appear that these improvements were achieved through mindfulness practices; processes

considered to underpin change in ACT. This is particularly puzzling when taking into consideration that mindfulness practices were the processes directly targeted throughout the intervention, unlike symptom reduction or QL that were not targeted. Not only did *mindful observation* ratings remain unchanged over time, *acceptance without judgment* scores significantly declined, a most perplexing finding bearing in mind symptom reduction and QL improvements were still achieved.

In line with the research showing that thought suppression could be counterproductive (Abramowitz et al., 2001; Wenzlaff & Wegner, 2000), it seems logical to consider therapeutic mindfulness approaches to help clients create distance from their thoughts and feelings, without trying to suppress their experience. Learning the skill of cognitive defusion is central in ACT; at a basic level, mindful cognitive defusion exercises are utilized to teach clients how to respond less literally to ED related thoughts and emotions, a process whereby thoughts can simply be observed, and need not be suppressed, corrected, avoided, and most importantly, acted upon.

Mindfulness appears to be a presumably viable option for clients with EDs who are often trapped by and entangled in evaluative thoughts (Merwin et al., 2011), however, findings in this study do not appear to support the use of mindfulness practices for ED clients. In fact, the participants' ability to observe their thoughts did not change over time, and even when they were taught to assume an *observer perspective*, their ability to view thoughts and feelings without evaluation or judgment deteriorated over the course of treatment. It appears that the more that clients were taught to simply notice their thinking process, the less able they were to target the process of evaluating and acceptance without judgment. Sample comments from participants regarding mindfulness gathered from the post interview support these unexpected findings (see Table 11).

Table 11

Sample comments from participants regarding mindfulness

Type	Comment
Discomfort	<ul style="list-style-type: none"> - “I am kind of angry with you (Reana) because at least before I did this program, I had my binges to comfort me. Now, I am more aware of what I am doing and feel twice as bad about how I feel.” - “I definitely need improvement with mindfulness. I see I am not fully present.” - “I see my binges as temporary relief from me, or my life. I guess I enjoyed the temporary escape. I kind of don’t care to give that up, yet. I guess I’m not interested in mindfulness.” - “I did not like the mindfulness work. I have too many racing thoughts to get this stuff. I know practice makes perfect, but I find this irritating. I just don’t like the whole meditation, yoga, pay attention stuff.”
Realizations	<ul style="list-style-type: none"> - “I learned that I move through my days mindlessly. I zone out a lot. Part of me didn’t realize how much I zone out, and the other part just thought this was normal.” - “.....so I worry about this or that, or think about this or that.....so much that I am <i>with</i> my kids physically, but I’m not present. Sad really. Are my stupid worries more important than being there for my kids?” - “I need to be more aware so I don’t miss stuff in life. I think I miss a lot.” - “I actually make things in my life bigger than they really are, as an excuse to binge and purge. That’s ridiculous, but that’s what I do. Now I am mindful that I do this....I just don’t want to start a task, so the binge/purge delays the inevitable.”

The current study is the first of its kind in terms of an end to end implementation and empirical evaluation of an ACT intervention for transdiagnostic clinical disordered eating. Consequently, there are no studies of this kind in which to make formal mindfulness outcome comparisons. From both a clinical and theoretical perspective however, the mindfulness findings appear to be inconsistent with initial results from ED related component studies (e.g., Alberts et al., 2012; Baer et al., 2005; Courbasson et al., 2011; Heffner & Eifert, 2004; Kristeller & Wolever, 2011; Lavender et al., 2009; Masuda, Muto, Safer, Telch, & Agras, 2001; Wendell et al., 2012) which provide preliminary support for the role of acceptance and/or mindfulness based

interventions for EDs. Although these component studies have shown promising results, all of these studies utilized different adaptations of mindfulness, limiting direct comparisons. Mechanisms of change in acceptance-based interventions are also not fully investigated, especially in the ED field. For example, most of these other studies either did not measure *mindfulness* (Berman et al., 2009; Courbasson et al., 2011; Heffner et al., 2002; Juarascio, Forman, & Herbert, 2010, Kristeller & Wolever, 2011; Lillis et al., 2011), were case studies with a simple pre-post designs (Alberts et al., 2012; Baer et al., 2005; Heffner et al., 2002) or utilized non-clinical samples (Juarascio et al., 2010; Lavender et al., 2009; Masuda et al., 2010; Pearson et al., 2012; Wendell et al., 2012). Clearly, more empirical work is required in the field of EDs, and how mindfulness may play a role in mediating change.

It is both interesting and disappointing that this related body of work focused on measures of symptom reduction at the exclusion mindfulness measures, particularly given the clear stance ACT proponents take with respect to symptom reduction not being the main focus of therapy. One component study did utilize a mindfulness measure in their research (Alberts et al., 2012), which subsequently showed significant improvements on the KIMS after an 8-week mindfulness intervention for EDs. However, this study utilized a totaled score of the subscales on this measure, which does not necessarily reflect increased mindfulness, as subscales on this measure are not meant to be totaled. Without this relevant comparison data, it is difficult to speculate on how and why the tendency for the *acceptance without judgment* scores run counter to the other positive results. Perhaps the experience of *mindful observing* is associated with a tendency to become more judgmental of experience. For women with disordered eating, this is understandable given that ED related thoughts or feelings are the preferred focus which likely takes attention away from more distressing content (e.g., feelings of low self-worth; Merwin &

Wilson, 2009). Therefore, practice at noticing and observing thoughts may actually increase awareness of evaluative thought content.

Mindfulness and the third-wave of CBT. Working with dysfunctional thoughts defines some of what cognitive therapists do in therapy sessions (Longmore & Worrell, 2007), and according to a review of psychotherapy process literature (Blagys & Hilsenroth, 2002), evaluating, challenging, and modifying thoughts are the hallmarks of CBT that distinguish it from other therapies. Recently, proponents of third-wave therapies such as ACT question the explicit modification of maladaptive cognitions as a necessary or sufficient intervention in CBT and propose that the rational challenging of thoughts is superfluous (Hayes et al., 2004). Some of this questioning originates with findings from the Jacobson et al (1996) study (cited earlier in this paper) who determined that behavioural therapy was equally as effective as cognitive therapy for depressed patients, which run radically counter to the CBT paradigm. Dobson and Khatri (2000) discuss the serious implications for both the theory and practice of CBT given that the findings of Jacobson et al. (1996) run so radically counter to the CBT paradigm. Indeed, this particular paper is cited by Hayes (2004) to support his conclusion that challenging thoughts in CBT do not actually add to the effectiveness of the treatment.

A comprehensive review of component research into the active elements of CBT (Longmore & Worrell, 2007) for depression and anxiety disorders concluded that without exception, component studies of CBT found no difference in effectiveness between the cognitive and behavioural elements of CBT. Nor did cognitive interventions provide “added value” to behavioural interventions. Hayes (2004) casts doubt on the need for cognitive interventions in CBT stating that one of the empirical anomalies in CBT is that “clinical improvement in CBT often occurs before the presumptively key features have been adequately implemented” (Hayes 2004, p. 4). In other words, most of the improvement patients experience in treatment happens

within the first 4 sessions, before the implementation of any distinctive cognitive techniques are introduced. In their review paper, Longmore and Worrell (2007) conclude that for a range of clinical problems, cognitive interventions do not produce superior outcomes to the behavioural components of CBT, and that the behavioural part of CBT alone is equally as effective as behavioural therapy combined with cognitive interventions.

It is these types of theoretical developments which led to the third wave of CBT which is heavily based on the notion that cognitive interventions are not a necessary component of therapy and specifies that neither *cognitive disputation*, nor the *rational challenging of thought content* of CBT is required for clinical improvement. Proponents of third wave therapies maintain that rational disputation and challenging of thoughts in CBT is superfluous (Hayes et al., 2004) endorsing a decreased emphasis on the challenging of thought content and more acceptance and mindfulness of the context of thought.

This study provides important and relevant information for proponents of third wave therapies that target mindfulness as the most important aspect of clinical change (Hayes et al., 2006) for disordered eating. The findings suggest that neither *acceptance* nor *mindful observing* appear to have *necessitated* the significant symptom improvements, cognitive elements thought to underpin clinical improvement in ACT. As previously stated, similar uncertainty has been addressed in the CBT literature which call into question some of the fundamental tenets of CBT, and the implicit role of cognitive modification as the mediating mechanisms of symptom improvement (Hayes et al., 2004). In fact, even prominent supporters of CBT (Dobson & Khatri, 2000; Jacobson et al., 1996) now question the legitimacy of the role of cognitive change as causal in the symptomatic improvements often achieved in CBT. This uncertainty in CBT is briefly reviewed in relation to similar questions that might be raised regarding the legitimacy of mindful change as causal in symptomatic improvements often achieved in ACT.

Cognitions and mindfulness. Longmore and Worrell (2007) reveal a worrying lack of empirical support for cognitive mediators of CBT as the mechanisms of change in reducing distress. Hayes et al. (2005) agree with this gap in knowledge, and put forward acceptance based interventions as the alternative to thought entanglement. Hayes (2004) claims that changes in cognitive mediators often fail to explain the impact of CBT, stating that unless cognitive effects are demonstrated to be mediated by changes in underlying cognitive structures, there remains the possibility that they work through other means. Based on the result found in this study, the very same argument could be stated with respect to mindfulness processes, and the possibility that positive effects found elsewhere in the study, likely came about through other means. ACT's emphasis on changing the *context of thoughts*, or one's *relationship to thoughts*, may be no more of a necessary component within ACT, than are the cognitive components of CBT, at least for individuals with clinical disordered eating. Although the status of mindfulness as a mechanism of change is outside of the scope of this study and a matter for separate empirical study, it is still important to consider the role of values, and subsequent improved QL to potentially explain the significant improvements noted in this research.

Quality of Life Findings

Treatment outcome measurement has traditionally focused on reducing behavioural symptoms, despite calls for more broad approaches to ED outcomes (deRive, Noordenbos, & Furth, 2005). The impact of EDs on life quality is well documented (Hay & Mond, 2005) and measures of treatment success need to reflect broader areas of life functioning (Adair et al., 2008). More importantly, measuring QL features is highly consistent with the ACT model as a unified “non-syndromal” approach to therapy. Unfortunately, none of the relevant literature utilizing ACT for EDs have assessed QL (Berman et al., 2009; Heffner & Eifert, 2004; Pearson

et al., 2012) therefore direct comparisons of QL findings between the current study and others cannot be made.

The current study found significant improvement in overall QL over time, which is an indication of significant overall change in various life domains such as relationship improvement, work/school improvement, physical and psychological health, and appearance. From an ACT perspective, increases in QL also reflect willingness on the part of the participants to engage in various aspects of life that they identified as being negatively impacted by their ED. It also reflects their willingness to construct values, and to connect with chosen values through daily action (Hayes et al., 2012).

Values construction. The process of constructing values in ACT is thought to undermine avoidance (Hayes et al., 2012). This is supported by the significantly decreased AAQ scores, which in addition to showing decreased experiential avoidance, as a corollary, also show increased action. The assumption is that when individuals engage in ED behaviours, they are not able to engage in a valued life (Heffner et al., 2002). As such, a major goal of ACT, and the current study, was to get the participants to act, but in ways that served their values; in other words, value-guided action as opposed to disordered eating behaviours.

A central component of ACT addresses the need for individuals to connect with what is of greatest importance to them, and what they hope their life can be about. ACT has more explicitly recognized the importance of values than mainstream CBT. In CBT, the hypothesized path for mental health would be from cognitive change to symptom change to QL improvements. In contrast, the hypothesized path in ACT would be from changes in psychological flexibility, to improvements in QL, with symptom reduction occurring as a by-product. Although directionality was not tested, this study's findings would suggest that values clarification, and committed

action toward living a valued life, likely contributed to improved QL and symptom reduction in some way.

Values construction remains a largely implicit, yet untested assumption in ACT. Inaction with respect to one's values is a clear indication of what ACT theorists refer to as *psychological inflexibility* (Luoma et al., 2007) and the subsequent higher likelihood of developing a psychological disorder (Donalson-Feilder & Bond, 2004). As such, values clarification is critical to improved QL; it is a key ACT process where clients learn to implement meaningful activities, rather than utilizing maladaptive strategies that perpetuate the ED.

Although values have not been formally assessed in any of the relevant ACT for EDs research, preliminary support of orienting individuals with EDs towards values could account for much of the preliminary support ACT has gained in the literature. For example, many individuals with EDs feel or believe that their ED behaviours actually improve their life (Adair et al., 2008), as such, orienting them towards values may be a more successful navigation of the ego-syntonic nature of EDs (Juarascio et al., 2010). Participants in the current study who did not want the goal of treatment to be weight gain, were oriented towards their higher values (e.g., family, relationships), which seemed to provide a compass which guided their behaviour through uncertainty. Thus, the significant improvements in *valued living* are likely a reflection of the participants' value-guided exposure to novel circumstances being more compelling than exposure simply for the sake of symptom reduction. This finding may be particularly relevant in this clinical population which is often behaviourally inhibited and harm avoidant (Cassin & von Ranson, 2005).

Inaction with respect to values. Immobility in ACT is assumed to come about from being unclear about one's values (Hayes et al., 2012) as well as a by-product of experiential avoidance where the individual becomes so consumed with avoiding pain, that they no longer

take action, or act in ways that are harmful or damaging to what they genuinely care about. Or, if they do take actions, these actions are often ineffective or psychologically maladaptive which ultimately only exacerbate the ED. Committed action is a critical component in ACT because a truly meaningful life is thought to come about mostly from connecting with values through daily actions (Hayes et al., 2012). In the ACT model, committed action is about having free choice over behaviour based on life direction. Choice however, is often connected to reasons, which from an ACT perspective, can be made either in the presence or absence of reason. Because reasons can often change, while values tend to remain consistent, ACT promotes committed action as an integral part of treatment gain, and encourages participants to make conscious choices to engage in activities that are aligned with values, even when competing reasons show up (See participant comments in Table 12).

Table 12

Sample comments from participants regarding action.

Type	Comment
Action	<ul style="list-style-type: none"> - “Seriously, I joined a rowing club and the girls there seem to like me. We go out after practice...like I still don’t eat much, but I have fun. I haven’t had fun like this in a while. There is more to life than ED.” - “I registered to finish my degree. I am so pumped. I feel new, alive. I have noticed that I am less alone, or lonely because I am busy. For example, last week I went and borrowed all the books I need for my upcoming courses. I am totally into them. I can hardly wait for my first class.” - “I try to out-do everyone because I need to be the best. At yoga, I will push myself past the point of comfort just to be the best. No-one cares. I have learned to do things in life for enjoyment, not to out-do others.” - “I am judgmental. Whenever I get a judgmental thought now, I stop, notice my judgment, and say, “thank you mind for such a ridiculous judgment.” - “My sister came to stay with me for a while. I decided to do something very different this weekend. I put BN aside for the weekend and just focused on our relationship.
Realizations	<ul style="list-style-type: none"> - “I always thought my sister hated me so I avoided her. I think spending time with her helped me realize that I avoided her, so she thought I hated her.” - “...overanalyzing is sort of how I function. Instead of doing something, I think about it, and think and think. And that doesn’t really help.” - “I actually have options to BN. I have to do something to make changes in my life instead of making BN my <i>go to</i> activity.” - “I am devastated that I have put so much of my life into dieting, and weighing myself. It clearly hasn’t made a difference anyway. It’s time to let go and do something different on action. - “I have been through many therapies over the course of the years and this was the most helpful. No other therapy focuses directly on ACTION. This program gives me motivation to live a valued life.”

As participants began to identifying their values, they also recognized that previous or current ED behaviours moved them away from their life values. For example, some participants indicated that they had never given sufficient thought to their values. Some stated how troubling

it had been for them to have learned that their ED was not only a value they held, but their *primary* value (see table 13). Others commented that they wanted nothing more than to engage in relationships yet recognized that their ED avoidance behaviours had kept them from spending time with others. Rather than continuing to devote more time and energy to ED behaviours, participants started to make different choices. For example, commitments were made to engage with friends regardless of how the individual felt about appearance. As well, some participants decided to go to parties or events, despite a previous requirement to lose 10 pounds before attending functions. For many participants, the prerequisite to engage in a valued life was contingent upon an acceptable body size and/or appearance before. ACT encourages individuals not to wait for the ideal body, and instead, to engage in values-consistent action regardless of body size.

Table 13

Sample comments from participants regarding valued living

Type	Comment
Positive	<ul style="list-style-type: none"> - “I say my children are my greatest value, but if I am honest, I spend less quality time with them than anyone. I have spent more time with Ben and Jerry than my kids at times. This has been a good wake up call, and I am grateful. A small thing, but a big thing”. - “I need to get a life. It’s that simple. I really took the values exercises to heart. They were very eye opening. The epitaph and funeral exercises were very impacting for me...how do I want to be remembered?...what do I want my life to stand for? And you (Reana) reminded me of that every session, you know, not to lose sight of that.” - “Well there is a choice in where I want to put my focus. I can put my focus on those things I want my life to stand for; or I can put my focus on my ED. Either way the choice is really mine”. - “This program has given me a sense of purpose. For me, education has always been an important value, and was always disappointed that I did not finish my degree. I think that disappointment chipped away at me, more than I knew. But now, I can do something about it.”
Negative	<ul style="list-style-type: none"> - “Maybe I have an ED because I have few values...my life had no significance and with no significance there is no quality of life”. - “I realize I don’t have values. I <i>think</i> I have values, but really, my ED <i>is</i> my value”. - “My top value, family, is not where I put my time, or energy or any resources. My ED has been my priority”. - “Where I put my focus is what I’ve got in my life, and that’s been my ED

Both of the manuals utilized to guide this study’s intervention (Heffner & Eifert, 2004; Sandoz et al., 2010) address the topic of *valued living* towards the end of the manual. This study followed recommendations made by Wilson and Roberts (2002) to implement early values construction discussions in order to help motivate participants through the treatment experience. The first step of this process, and an important part of motivating behaviour change (Wilson & Roberts, 2002), was to highlight inconsistencies between the participants’ constructed values and current behaviour. This part of values construction process known as *creative hopelessness* in ACT, was an especially challenging stage of therapy for participants once they came to see the

disparity between their stated values and how they have actually lived their lives, particularly for participants who were spending much of their waking time consumed by ED behaviours.

Given that ED symptoms are often ego syntonic and culturally sanctioned (Adair et al., 2008; Orsillo & Batten, 2002) this study followed recommendations made in the literature to place significant emphasis on the *creative hopelessness* process (Orsillo & Batten, 2002). In summary, highlighting *creative hopelessness* as the initial step in values clarification process, addressing values in the beginning of therapy, and revisiting the importance of committed action towards values, could have possibly accounted for the significant improvements QL, valued living, and symptom reduction, irrespective of the unexpected *mindfulness* findings.

Length of course of illness. Although ACT does not target ED symptom reduction per se, the average participant experienced less distress at the end of treatment as evidenced by the EDI-3 and EDQLS measures, regardless of how long they had their disorder. Participants who had their disorder longer than 17 years improved just as well on these measures as participants who had their ED for less than 17 years. This is an important finding considering it is well established that the longer abnormal eating patterns continue, the more deeply ingrained they become and the more difficult they are to treat (Austin et al., 2008; Reas, Williamson, Martin, & Zucker, 2000).

Despite the fact that many people with EDs are reluctant to stop using disordered eating behaviours due to fear of weight gain or to provide short term relief from negative affect (Fairburn, 2008), there is something about individuals with clinical EDs who volunteer for treatment studies that likely differentiates them from those people who are less willing. Although the participants' readiness for change was not assessed in this study, it is possible that what differentiates someone who is willing to be part of treatment from someone who is not, may be the same factor that trumps the length of the course of illness having any differential impact.

This is a positive indicator when considering motivational factors in any treatment, however, it also elucidates an obvious limitation of the study discussed in the next section.

Limitations

Methodological limitations that should be taken in to consideration when interpreting the results are: (a) potential for sample selection bias and limited generalizability, (b) the use of self-report, and (c) threats to internal validity. A review of these follows.

Sample selection bias. The recruitment method utilized in this study was one of convenience, therefore all participants who volunteered for the study were self-selected. The potential for volunteer bias may limit the external validity of the results because the willingness to participate in the study may distinguish participants in a specific fashion not representative of the larger population (Moss & von Ranson, 2006) (i.e., those who chose to participate in the study may systematically differ from non-participants). As well, participants included in this study were limited to adult women 18 years and older, therefore, this sample may not be representative of the population of adolescents or males with EDs.

Self-report. It was presumed that all participants were honest with responses to inclusionary and exclusionary criteria as a medical diagnosis was not required or verified. All of the measurements in this study were obtained from self-report instruments; it was assumed participants comprehended the questions and responded to them truthfully.

Threats to internal validity. Although a strength of within-person repeated measures designs is the ability to control participant variables, quasi-experimental designs with no control group limit the extent to which the design can attribute causality to the intervention and rule out potential alternative explanations for the results obtained. Although this study was not qualitative in nature, once the control group was no longer a possibility, qualitative information was gathered from participants in the hopes of informing and providing support for the quantitative

results of the study. Without control participants, it is unclear what effect the treatment factors had on the outcomes. Having said that, participant comments captured in post interview (see Table 11, 12 and 13) certainly support the quantitative findings.

Strengths

The present study is notable in that it is the first experimental evaluation to have utilized a transdiagnostic, group based, complete ACT intervention for clinical disordered eating. The treatment manuals (Heffner & Eifert, 2004; Sandoz et al, 2010) flexibly accommodated different clinical presentations of EDs. In an age of increasingly detailed distinctions amongst EDs, and equally detailed treatments, the results indicate that a single treatment approach can be flexibly applied to treat various forms of disordered eating. The benefits of a unified approach has clear advantages in terms of greater simplicity and efficient training and dissemination of knowledge.

This study also enhanced the current ACT based ED literature on a number of fronts by: (a) including measures that are relevant to ACT processes (QL, valued living, mindfulness); (b) recruiting a clinical sample with a wide age-range; (c) utilizing a relatively large sample size compared to previous ACT based ED studies; (d) utilizing IGC analysis to flexibly accommodate measuring change over time in a population that is known to have high attrition rates, and; (e) utilizing three waves of data (as opposed to a pre-post or case study design).

Recommendations for Future Research

Although acceptance and mindfulness-based research reviewed in this paper have shown preliminary results that mindfulness interventions can undermine ED symptoms, the specific mechanisms of change in ACT for EDs are not fully investigated. The mindfulness results found in this study run counter to previous preliminary research, therefore future research would serve the literature well by examining mediating cognitive factors.

The current study suggests that incorporating processes that include *commitment to valued living* into therapy practice may be promising for treating EDs. Given these preliminary positive results, the next step would be to conduct studies that pin point the specific mechanism of change in ACT for EDs. If the cognitive aspect of acceptance work for EDs does not add therapeutic value above and beyond the values-based, action oriented components of ACT, then enhancing these behavioural processes may be a more efficient and effective way to engage and help treat individual's with EDs.

As a final recommendation, future studies should incorporate consistent and relevant measures such as QL and valued living that align with an ACT protocol. To date, none of the ACT based ED studies, and only a few of the ED component studies, have included non-symptom focused measures. In essence, ACT is about living a valued life, with or without symptoms; future ACT research should therefore include measures that better reflect this non-symptom focused model.

Summary

ACT was designed to be widely applicable to a range of disorders, including those such as EDs that do not fit into neat diagnostic categories. Studies reviewed in this paper suggest that EDs are characterized by inflexible control strategies; strategies explicitly targeted in ACT. Thus, if ED symptoms work to facilitate experiential avoidance, then theoretically, ACT strategies designed to increase experiential acceptance and mindfulness should have considerable utility for individuals with EDs. Although there is growing support for treating EDs with an ACT approach, empirical evidence regarding its efficacy has not been established. The mindfulness findings in the study run counter to findings from other preliminary research on mindfulness for EDs. Significant improvements were found in symptom reduction, QL and valued living. ACT's emphasis on creative hopelessness and commitment to valued living as opposed to symptom

reduction, may be well suited to individuals with EDs who tend to be ambivalent about behaviour change

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New therapy for hard to cure eating disorders

Emily Macphail
Gauntlet News

Although therapies for eating disorders have shown some progress over the last 20 years, none in particular has been overwhelmingly successful. Faculty of education graduate student Reana Saraceni is doing her best to change this.

Saraceni is currently running a study looking at the effectiveness of Acceptance and Commitment Therapy for women with eating disorders, which views psychological suffering primarily as avoidance of unpleasant thoughts, emotions and situations. This avoidance may be helpful short-term, but long-term it is damaging because the underlying problem still exists.

A fairly new form of behavioural therapy, the ACT approach is different from many traditional therapy forms. Whereas more common techniques attempt to change thought content, ACT focuses on changing a person's relationship to their thoughts.

A method known as "defusion" is taught, which tries to alter the believability or attachment to a thought, rather than altering how frequently the thought occurs. It is hypothesized that by doing this, people will be better able to make value-based choices around behaviour rather than avoidance-based choices.

The primary goal of ACT is to

increase psychological flexibility, the ability to be in the present and choose behaviour based on what will lead to the valued outcome.

According to Saraceni, ACT is likely to be beneficial for treating eating disorders because for those afflicted, "large portions of time are spent thinking about the past or the future. While this is happening, people are generally not in contact with the present moment."

She sees the difficulties those with eating disorders have with experiential avoidance, which results in the loss of certain values. "Helping people tap into their values [through ACT] is often instrumental in increasing motivation to make behavioural change," said Saraceni.

Twenty women have been a part of the study so far. Many have expressed that even though they may have felt ambivalence initially being in a group setting, the mindfulness component of the therapy was helpful in "allowing them to be aware of their thoughts and feelings and be present with them," said Saraceni.

Groups consist of three to six participants and are generally held on Tuesday or Wednesday evenings for six weeks. Saraceni aims to have 40 women in total participate, and participants must be 18 or older.

If you are interested in participating in the ACT study, please contact Reana Saraceni at rsaraceni@ucalgary.ca for more information.

Appendix B: Telephone Screening Questionnaire

Name:	Age:		
Preferred Method of Contact:			
Suitable for Pretesting:	Yes	No	

ED specific questions:

1. What is your current weight and height?
2. How much would you like to weigh?
3. Do you do anything to get rid of the food you eat (e.g., diet pills, vomit, laxatives etc.)?
4. How much do you exercise?
5. What is your physical health like? (missed periods, irregular heartbeats)
6. How long has eating/weight been a problem for you?
7. How old were you when your eating problems began?
8. Have you ever had a clinical diagnosis for an eating disorder/which?

General Questions:

1. What is it about participating in the treatment intrigues you?
2. How has your mood been in the last month?
3. Do you have any thoughts of hurting yourself? Have you ever made a suicide attempt?
4. Have you been in treatment before?
5. If so, what was your previous treatment experience like?
6. How much and how often do you use alcohol/caffeine/nicotine/illegal drugs?
7. Are you taking any prescription medication?
8. Are you pregnant?
9. What is your relationship with your family like?
10. Who are important people in your life outside of family? Who is your social support?
11. What are your treatment goals? What do you hope to get out of participating in this study?

Appendix C: Program Evaluation and Feedback

Date: _____

Please rate each item on the scale shown to indicate your level of satisfaction

A) How satisfied are you with the program's overall facilitation thus far?

Very Dissatisfied	Dissatisfied	Neither Satisfied or Dissatisfied	Satisfied	Extremely Satisfied
1	2	3	4	5

B) How satisfied are you with the use of in class exercises?

Very Dissatisfied	Dissatisfied	Neither Satisfied or Dissatisfied	Satisfied	Extremely Satisfied
1	2	3	4	5

C) How satisfied are you with your level of comfort in this group?

Very Dissatisfied	Dissatisfied	Neither Satisfied or Dissatisfied	Satisfied	Extremely Satisfied
1	2	3	4	5

D) What have you learn about yourself in these sessions?

E) What would you like to have changed/improved? (Time slot convenient/Group size/Location?)

F) Other comments you would like to share.

Appendix D: Post Intervention Group Interview

1. If you could identify the one thing in this treatment you believe has made a positive difference in your life quality, what would that be?
2. What was one thing you learned about yourself as a result of being part of this study?
3. Looking back, was there anything about the study that you did not anticipate happening, that did?
4. Was there any part of this intervention that was incredibly difficult for you?
5. What might you recommend for improvements to this intervention?
6. As researchers, do you think we are on the right track with acceptance and mindfulness practices in terms of how to explore new ways to treat eating disorders?