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COMPASSION-FOCUSED ACCEPTANCE AND COMMITMENT THERAPY FOR EATING DISORDERS: A  
MULTIPLE BASELINE ACROSS PARTICIPANTS STUDY

by

MARY L. HILL

Under the Direction of Akihiko Masuda, Ph.D., and Lindsey Cohen, Ph.D.

ABSTRACT

This study used a multiple baseline across participants design to demonstrate a functional relationship between a compassion-focused acceptance and commitment therapy (ACT) intervention and three participants' eating disorder (ED) behaviors and values-consistent behaviors. The purpose of the current study was to investigate the impact of the ACT intervention on participants' target behaviors. The next aim of the study was to assess participants' changes in related outcome variables of global disordered eating and general psychological distress during the course of the intervention and again at a three-month follow-up assessment. In addition, theoretically-consistent process variables of self-compassion and body image flexibility

were assessed to determine if changes in process variables corresponded with changes in primary outcomes. Results suggested that systematic changes in ED behaviors and values-consistent behaviors were observed across study phases for all three participants. Consistent with hypotheses, these changes corresponded with improvements in self-compassion and body image flexibility. Changes in secondary outcomes were also observed for all three participants over the course of the study. Additional research is necessary to assess effects of a compassion-focused ACT intervention in changing ED behaviors and values-consistent behaviors using a longer follow-up time point with a more diverse sample of individuals with problematic eating.

**INDEX WORDS:** acceptance and commitment therapy, eating disorders, body image flexibility, self-compassion

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MULTIPLE BASELINE ACROSS PARTICIPANTS STUDY

by

MARY L. HILL

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctorate of Philosophy

in the College of Arts and Sciences in the College of Arts and Sciences

Georgia State University

2017



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August 2017



## **DEDICATION**

This work is dedicated to the participants with whom I have worked over the years. I appreciate your willingness to further eating disorder treatment research and have been honored to work with you. Through our research, I hope to play a part in improving the quality of life for those who struggle with eating disorders and body image concerns.

## ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledge and thank my husband, Alan, and dog, Scruffy. They have been incredibly supportive of my graduate career and have uprooted their lives several times to allow me to pursue educational and career goals. I am very grateful for your love and encouragement. Any good that I am able to do during my career is because you have been there to support me along the way. Thank you.

Thank you to my dissertation committee members for your interest in this project and a special acknowledgement to Dr. Akihiko Masuda. I have had many wonderful opportunities during my graduate school career because I had the good fortune of being your student. Finally, I would like to offer a special thank you to Ward Schaffer for completing the adherence ratings. I appreciate the time and energy you invested to help me complete this project.

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## 1 INTRODUCTION

### 1.1 Overview of Eating Disorders

Eating disorders (EDs) and subclinical EDs are among the most difficult psychiatric disorders and conditions to treat (Fairburn, 2008; National Institute for Clinical Excellence [NICE], 2004). Individuals diagnosed with EDs experience significant distress, impairment, and medical consequences. The American Psychiatric Association (APA; 2013) has identified three main ED diagnoses: anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED).

AN is unique among the EDs because individuals who meet diagnostic criteria for this disorder are able to achieve significantly low weight, whereas those with other ED diagnoses tend to fall within the normal to obese weight ranges. Individuals with AN often severely restrict their food intake and exclude highly feared foods, such as those with high levels of fat and calories, from their diets. In addition, they may engage in binge eating and compensatory behaviors. Affected individuals also fear gaining weight, emphasize body weight and shape in their self-evaluations, and/or deny that low weight is a serious problem.

The other primary ED diagnoses each involve binge eating and do not, unlike AN, have a weight criterion. In BN, individuals engage in recurrent episodes of binge eating and compensatory behaviors aimed at preventing weight gain. Like people with AN, they base self-evaluations, to an excessive degree, on body shape and weight. In BED, individuals engage in recurrent binge eating episodes and experience marked distress, but do not engage in regular, inappropriate compensatory behaviors.

Subthreshold and mixed presentation EDs are currently categorized as other specified feeding or eating disorders and unspecified feeding or eating disorders (APA, 2013). In earlier editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM), however, these conditions were labeled eating disorders not otherwise specified (EDNOS). These ED diagnoses have similar symptom presentations, risk factors, maintaining factors, and consequences to those associated with AN, BN, and BED (Fairburn & Bohn, 2005; Thomas, Vartanian, & Brownell, 2009).

Experts have noted that “the psychopathology of EDNOS is commensurate with that of the officially recognized eating disorders” (Thomas et al., 2009, p., 3), and changes to the DSM criteria for EDs in the most recent edition reflect this observation (APA, 2013). For example, the majority of individuals diagnosed with an ED fit best into the EDNOS category because they met most of the criteria for AN or BN, but not all (Thomas et al., 2009). As a result, the criterion of amenorrhea was omitted and the weight cut-off has been increased for AN in the DSM-5; the frequency with which individuals must engage in binge eating and compensatory behaviors to meet criteria for BN has decreased; and BED, which had previously been considered an EDNOS, is now an officially recognized disorder (APA, 2013).

Fairburn and Bohn (2005) proposed an alternate, revolutionary approach to ED diagnosis for the DSM-5 in favor of a transdiagnostic perspective over a syndromal classification focused on different signs and symptoms of each ED diagnosis. They suggested aggregating AN, BN, and EDNOS under the umbrella of a single ED diagnosis, due to the key similarities among these conditions. They also advocated focusing more heavily on affected individuals’ level of impairment rather than on the specific symptoms that they experience and the frequency with

which they experience them. They argued that a unitary diagnosis would help to reflect the “diagnostic migration” (or the tendency for individuals to meet criteria for different ED diagnoses at different times of their lives) across EDs that has been observed in longitudinal studies, which may be indicative of shared etiological mechanisms (Milos, Spindler, Schnyder, & Fairburn, 2005). Even people whose disordered eating is subclinical endorse higher levels of depression, perfectionism, and body dissatisfaction than do those with “normal” eating attitudes and behaviors (Graziano & Sikorski, 2014). These findings support conceptualizing and treating EDs and subclinical EDs from a transdiagnostic perspective rather than differentiating them on the basis of the type of symptoms expressed.

**Risk and protective factors of eating disorders.** The etiology of EDs involves a combination of genetic, biological, psychological, familial, interpersonal, and cultural factors (Keel & Forney, 2013). Individual psychotherapy is not designed to directly address many of the factors identified as contributors to EDs, such as familial, biological, or cultural. Instead, individual therapy is better suited to address behavioral and psychological factors. Many of these factors are believed to be relevant to the development and maintenance of EDs, and several appear both to contribute to and to be consequences of EDs (Anderluh, Tchanturia, Rabe-Hesketh, & Treasure, 2003; Fennig & Hadas, 2010; Presnell, Stice, Seidel, & Madelev, 2009). The identification of these potential issues and the degree to which they are relevant for a particular individual are crucial for understanding and treating EDs using individual psychotherapy.

For most individuals who struggle with EDs, a range of psychological processes, including shame, body dissatisfaction, and mood dysregulation, motivate the restriction of food in-

take and use of other ED behaviors (e.g., excessive exercise, body-checking, and misuse of laxatives or diuretics; Fairburn, Cooper, & Shafran, 2003). As individuals with EDs continue to engage in ED behaviors and control their food intake and weight, these features often become worse. Further, affected people often lose interest in interpersonal relationships, hobbies, and other meaningful life domains as their lives increasingly revolve around ED behaviors and body image (Fairburn & Harrison, 2003). These behavioral patterns often result in general psychological distress, social withdrawal, and isolation, as well as substantial psychosocial impairment (NICE, 2004). Therefore, it is not just the ED behaviors themselves that are problematic but also the impact that those behaviors have on an individual's quality of life and ability to engage in personally meaningful activities.

Recently, ED researchers and clinicians have begun to focus on protective factors that prevent or ameliorate ED risk (Tylka & Kroon Van Diest, 2014). For example, Tylka and colleagues noted that protective factors could help an individual respond to body dissatisfaction constructively, view it as less threatening or distressing, and/or reduce ED behaviors directly (Tylka, Russell, & Neal, 2015). Two protective factors of interest in recent years are body image flexibility (Hill, Masuda, & Latzman, 2013; Sandoz, Wilson, Merwin, & Kellum, 2013) and self-compassion (Kelly, Carter, Zuroff, & Borairi, 2013; Webb & Forman, 2013).

***Body image flexibility.*** Body image flexibility is the ability to experience body dissatisfaction and other ED-related internal experiences fully and openly in service of pursuing values-consistent behaviors (Sandoz et al., 2013). As explained extensively below, the construct of body image flexibility is derived from a contemporary model of behavior change, called psychological flexibility (Hayes, Barnes-Holmes, & Wilson, 2012), and is an extension of psychological



flexibility specific to the context of body dissatisfaction and ED concerns. According to Hayes and colleagues (2012), psychological flexibility is the overarching ability to experience one's thoughts, feelings, and physiological sensations fully and openly without resisting them, when doing so promotes greater quality of life. Body image flexibility has received growing attention among ED researchers and clinicians in recent years because it has been shown to attenuate the links between risk factors and ED symptoms (Ferreira, Pinto-Gouveia, & Duarte, 2011). For example, a woman with greater body image flexibility could think that her stomach is too large, experience body dissatisfaction, and still choose to eat a balanced diet because it helps her live in ways that are consistent with her value of physical health. A growing body of evidence shows that body image flexibility is associated with low body dissatisfaction (Hill et al., 2013; Sandoz et al., 2013) and EDs (Ferreira et al., 2011; Moore, Masuda, Hill, & Goodnight, 2014; Sandoz et al., 2013). Furthermore, body image flexibility moderates the association between ED-related cognitions and ED behaviors; for women with high body image flexibility, ED-related cognitions are not positively associated with ED behaviors (Moore et al., 2014). Similarly, high body image flexibility may protect against ED behaviors among non-clinical women, especially those with lower body mass index (BMI; Hill et al., 2013). Although body image flexibility appears to be relevant to EDs, it is a fairly new construct, and its role in ED development and treatment deserves further investigation.

***Self-compassion.*** Another relatively new construct in psychology that appears to be important in understanding psychological health is self-compassion (Neff, 2003). Self-compassion, being kind and understanding when confronted with personal failure or shortcomings instead of excessively judging and criticizing oneself, is an effective response to shame and self-criticism

(Gilbert, 2005). There are three elements of self-compassion: 1) self-kindness (offering warmth and understanding toward one's own suffering and imperfections), 2) recognizing that suffering and personal inadequacy are part of being human, and 3) mindfulness (holding a balanced view of unpleasant emotions, neither suppressing nor exaggerating them; Neff, 2003). Self-compassion is qualitatively distinct from other related constructs, such as self-esteem, because it does not involve evaluations of self-worth or the degree to which the self is judged to be competent in particular life domains (Neff & Vonk, 2009).

By promoting self-compassion, individuals can effectively regulate feelings of shame (Gilbert, 2005). Self-compassion is associated with improved wellbeing and reduced emotional distress, and self-compassion may help shift how individuals relate to their thoughts and experiences that produce shame (Gilbert, 2005; Gilbert, McEwan, Catarino, Baiao, & Palmeira, 2012; Neff, 2003). Conversely, those who endorse low self-compassion have higher levels of self-criticism, depression, and anxiety (Gilbert et al., 2012).

Relevant to the present investigation, self-compassion may be a protective factor against EDs and important to promote in treatment (Ferreira, Pinto-Gouveia, & Duarte, 2013; Tylka et al., 2015). Several studies have found that self-compassion is negatively associated with a range of eating pathology (Kelly et al., 2013; Wasylkiw, MacKinnon, & MacLellan, 2012; Webb & Forman, 2013) and body image concerns (Wasylkiw et al., 2012), and protects against body dissatisfaction, shame, and EDs (Berry et al., 2010; Ferreira et al., 2013). For example, among college women who regularly exercised, those high in self-compassion reported exercising for intrinsic reasons (e.g., fun and physical health), and those who were low in self-compassion

were more likely to endorse avoidant reasons, such as avoiding judgment from others or avoiding feelings of guilt (Magnus, Kowalski, & McHugh, 2010). In addition, higher self-compassion was positively associated with BMI and fewer ED symptoms among college women (Kelly, Vimalakanthan, & Miller, 2014).

## 1.2 Psychological Treatment of Eating Disorders

To date, much of what is known about treating EDs is derived from evidence-based treatments, including traditional cognitive behavioral therapy (CBT; Wilson, Grilo, & Vitousek, 2007), enhanced CBT (CBT-E; Fairburn, 2008), and acceptance- and mindfulness-based CBTs (Baer, Fischer, & Huss, 2005). Recently, these CBT interventions have begun to focus more on daily functioning and quality of life while continuing to promote symptom reduction (Baer et al., 2005; Lillis, Hayes, Bunting, & Masuda, 2009; Safer, Robinson, & Jo, 2010; Safer, Telch, & Agras, 2001). For example, CBT-E offers a transdiagnostic account of EDs, which is more holistic and targets broader psychosocial issues relevant to EDs, such as mood intolerance, clinical perfectionism, low self-esteem, and interpersonal difficulties (Fairburn, 2008). Dialectical behavior therapy (DBT; Linehan, 1993) also aims to improve behavioral adaptation when applied to individuals with EDs (Safer et al., 2001; Safer et al., 2010). Broader functioning and quality of life coincides with symptom relief and is targeted by helping the individual better connect with positive life experiences (Jenkins, Hoste, Meyer, & Blissett, 2011).

***Acceptance and commitment therapy.*** Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is a mindfulness- and acceptance-based CBT, which emphasizes the holistic aim mentioned above. ACT is the applied extension of the psychological flexi-

bility model (Levin, Hildebrandt, Lillis, & Hayes, 2012), which incorporates mindfulness and acceptance into treatment and is deliberately designed to be transdiagnostic. There is an emphasis on present moment awareness and psychological openness (i.e., experiencing thoughts, emotions, and physiological sensations fully, as they are, without trying to resist or change them) for the purpose of promoting greater behavioral adaptation. ACT is transdiagnostic because case conceptualization incorporates a functional account of behaviors to understand processes that produce or maintain sets of behaviors (e.g., the escape or avoidance of unpleasant emotions; Hayes et al., 1996), and many different forms of behavior are believed to have similar functions and serve the same purpose. ACT is also transdiagnostic in terms of intervention strategies. From this framework, treatment targets common psychological processes of change (e.g., psychological flexibility) applicable to individuals with a range of psychological concerns instead of directly targeting the reduction of symptoms specific to a given psychological disorder (Hayes, Pistorello, & Levin, 2012). There is a growing body of empirical support for ACT as a treatment for various psychological and behavioral problems, including anxiety, depression, chronic pain, and smoking (A-Tjak et al., 2015; Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

***ACT account of psychological health and behavior change.*** In order to improve quality of life and reduce ineffective avoidance of internal experiences, ACT attempts to promote psychological flexibility (Hayes et al., 2006). According to Hayes and colleagues (2006), psychological flexibility is established through six core processes: defusion, acceptance, self-as-context, present moment awareness, values, and committed action. Each of these processes is conceptualized as a positive psychological skill, not merely a method of avoiding psychopathology. A

complete presentation of the psychological flexibility model is beyond the scope of this dissertation project. Instead, a brief overview of key features of the model is presented (see Figure 1.1).

Defusion is a process of reducing the literal meaning of thoughts and observing them as mental activities and language (Hayes et al., 2012). Acceptance is defined as willingness to fully experience one's thoughts and emotions without ineffective attempts to eliminate or change them. Individuals are also assisted in differentiating between their internal experiences (e.g., a specific thought, such as "I am fat") and the fact that they are people experiencing thoughts and emotions (e.g., "I notice that I am having the thought that I am fat"). Creating this psychological distance between the literal content of internal experiences and oneself is called self-as-context (Hayes et al., 2012).

From an ACT perspective, mindfulness, also referred to as present moment awareness, involves awareness of internal experiences while being open to what is happening in the present moment (Hayes et al., 2012). Living, including thinking and feeling, occurs in the present moment, and overly focusing attention on the past or future can inhibit functioning in the present. Values are particularly important in the psychological flexibility model and are an important area of focus in ACT. They are defined as chosen life directions that give life meaning and guide behavior. From this perspective, psychological suffering often occurs as a result of one losing contact with his/her personal values. Emotional pain is often involved in pursuing one's values, and ACT clinicians describe values and emotional pain as being inherently tied together. For example, when one values interpersonal relationships, s/he becomes vulnerable to

disappointment and hurt. Furthermore, the ACT clinician assists clients in repeatedly committing to pursuing values, even when experiencing distress (Hayes et al., 2012). Finally, to date, a growing number of laboratory based component studies have been conducted testing ACT therapeutic techniques designed to promote each of the six core processes (Hayes et al., 2006). A recent meta-analysis has shown that these therapeutic components promoted specific ACT processes in a theoretically-consistent manner (Levin et al., 2012).

Stylistically, ACT emphasizes experiential learning in order to downplay the dominance of language and verbal rules (Levin et al., 2012), which are theorized to contribute to behavioral rigidity and diminished quality of life. Metaphors and experiential exercises are used in ACT to illustrate these concepts and to help the individual learn through personal experience (e.g., mindfulness practices, defusion exercises, activities to help clients identify personal values, etc.) rather than through verbal rules given by the clinician (“You should accept your thoughts”).

A psychological flexibility model specific to the context of body dissatisfaction and EDs is presented in Figure 2.1. As noted above, psychological flexibility specific to ED concerns is called body image flexibility (Sandoz et al., 2013). In the context of ED behaviors, the goal of ACT is to promote psychological flexibility in general and body image flexibility in particular to increase healthy behavioral patterns consistent with a client’s chosen values. This is accomplished by teaching mindfulness, defusion, and acceptance skills designed to increase willingness to experience psychological discomfort, when doing so allows one to pursue important life goals. Preliminary evidence suggests that increased ability to accept emotional distress and defuse from body image-related cognitions is important in the treatment of EDs (Trindade & Ferreira, 2014).

In ACT, the focus is on increasing valued activities *now* rather than focusing on changing ways of thinking and feeling and *then* pursuing values (Hayes et al., 1999). Instead of waiting for a time when the individual does not experience eating-related anxiety or care about gaining weight, she can accept the anxiety in service of personal values. After values are clarified, behaviors that are inconsistent with those values are conceptualized as ineffective coping strategies to try to escape or avoid uncomfortable internal experiences (Lillis & Kendra, 2014).

ACT takes the approach of identifying the function of ED behaviors and how they lead to decreased valued-activity (Merwin, 2011). From this functional perspective, ACT also shifts the focus in treatment from eliminating ED cognitions (e.g., “I won’t get fat by eating normally,” “I shouldn’t care about my weight”) to promoting valued action even while experiencing those thoughts. As noted above, a client may have the thought that she will get fat if she eats normally, and yet she is encouraged to eat for the purpose of having the energy necessary for values-directed activities, such as sustaining attention at work or school and spending time with friends. Being able to engage in behaviors while experiencing seemingly inconsistent thoughts is important because “logical” thoughts about weight and eating may not be fully believed (e.g., “I shouldn’t care about my weight”) and may still elicit emotional discomfort (e.g., anxiety when eating or experiencing body dissatisfaction). Furthermore, if ED thoughts are pathologized and deemed “wrong” or “unhealthy” or “distorted,” individuals are likely to experience shame for experiencing them.

***ACT account of psychopathology and its extension to EDs.*** From an ACT framework, clients’ concerns are conceptualized functionally in terms of how problematic behavioral patterns

are maintained in a given context and how they affect overall functioning and quality of life. According to various cognitive and behavioral models, compensatory behaviors performed by individuals with EDs function as intentional efforts to avoid and down-regulate negative affect (Haedt-Matt & Keel, 2015; Wilson et al., 2007). This dysfunctional coping strategy is regarded within the ACT model as experiential avoidance (EA; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). EA is defined as a behavior “that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them” (Hayes et al., 1996, p. 1154). Hayes and his colleagues (1999) posit that EA and its associated outcomes, such as diminished quality of life, are regulated and maintained through cognitive processes. More specifically, EA manifests as the way an individual acts on culturally supported control-oriented beliefs, such as “It is wrong to feel emotional pain,” and “To be normal, I must control or avoid all events that trigger anxiety and discomfort,” and “My weight determines my self-worth.” In ACT, this overall behavioral process is called psychological inflexibility (Hayes et al., 2006). As noted below, an essential goal of ACT is the promotion of psychological flexibility in order to increase functional behavioral repertoires, and this may include coping skills that will disrupt the impact of control-oriented beliefs and undermine EA (Hayes et al., 1999).

*ACT account of EDs: A case example.* According to the ACT model, an individual engages in ED behaviors (e.g., excessive exercise, calorie restriction, purging) as a way to escape or avoid psychological pain (Anestis, Selby, Fink, & Joiner, 2007; Merwin, 2011) or defend his/her sense



of identity (Hayes et al., 2006). Consider the case of an adolescent girl with high moral and academic standards. As is the case with every individual, she is imperfect and does not always achieve her self-imposed high standards. She then experiences anxiety, shame, sadness, and anger when she makes mistakes or fails to meet her own high expectations. These emotions are uncomfortable, and she wants to avoid them.

After making “healthy” dietary changes, she learns that she is able to control her food intake and weight, experiences pride in response to this feeling of accomplishment and self-control, and finds that she can distract herself from her internal discomfort. In addition, she likely receives social reinforcement (at least initially) when peers and family members notice how “disciplined” she is with her eating and exercise. Because this is rewarding, she continues to engage in these behaviors, particularly when faced with the aforementioned discomfort associated with experiencing shortcomings and imperfections. By over-relying on these coping strategies, she de-emphasizes other aspects of her life; further, eating, exercise, weight, and body shape increasingly take more time and energy. She may then become fused with beliefs related to body image and “healthy” living (e.g., importance of low-calorie foods and exercise). Eating, body image, and exercise continue to be the central focus of her life, even as she experiences physical/medical problems, social isolation, and criticism from family and friends. Often individuals with EDs are initially unaware of the function of their ED behaviors and, even once they become aware of their function, these behavioral patterns persist (Corstorphine, Mountford, Tomlinson, Waller, & Meyer, 2006).

From an ACT perspective, the individual may be conceptualized as being cognitively fused with her particular identity (i.e., conceptualized self). When she experiences situations

that are inconsistent with these fused thoughts, she will experience internal discomfort. For example, she may not perform as well on an assignment in school as she wanted or may have “mean thoughts” about another person. This will lead to difficult thoughts (e.g., “I’m so stupid” or “a nice person would not think that way”) and emotions (e.g., self-directed anger and shame). She may ruminate over these experiences, focus on her imperfections, and re-experience the anger and shame, rather than focusing her time and energy on situations in the present moment. To avoid discomfort in the future, she may avoid situations in which the discomfort is likely to be elicited. If having a “mean thought” about another is deemed to be too difficult and to be avoided, she will likely avoid being around individuals about whom she may experience such thoughts. She has also learned that diet and exercise “work” as means for avoiding emotional discomfort and provide a sense of accomplishment. Although diet and exercise allow her to successfully avoid emotional discomfort in the short-term, she will likely experience discomfort again in the future. She may also experience added discomfort, such as declining health, missed social opportunities, and conflict with parents around not eating. This increases her psychological suffering in the long-term.

*Empirical evidence of ACT as a treatment for individuals with EDs.* Empirical evidence of ACT’s efficacy as a treatment for individuals with EDs is limited. Preliminary evidence supports ACT as a beneficial treatment for a range of ED concerns. Several case-series studies have shown that individual outpatient ACT may be an effective treatment for improving functioning and reducing ED behaviors in individuals with AN and subclinical AN (Berman, Boutelle, & Crow, 2009; Heffner et al., 2002; Masuda, Muto, Hayes, & Lillis, 2008), problematic emotional eating (Hill, Masuda, Moore, & Twohig, 2015), and BED (Hill, Masuda, Melcher, Morgan, & Twohig,

2015). ACT in a one-day workshop format has also been used and has been shown to improve body image flexibility and reduce ED behaviors among women with body dissatisfaction (Pearson, Follette, & Hayes, 2012), and reduce binge eating episodes and improve quality of life among adults with obesity (Lillis et al., 2009; Lillis, Hayes, & Levin, 2011). Decreases in binge eating were mediated by changes in psychological inflexibility (Lillis et al., 2011). ACT as a group therapy has been added to treatment as usual (TAU) in a residential treatment setting for individuals diagnosed with AN and BN; participants in the ACT plus TAU group had greater decreases in ED behaviors and lower rates of re-hospitalization at six-month follow-up than the TAU group (Juarascio et al., 2013). In a study that compared ACT to CBT with participants from a university counseling center presenting with comorbid disordered eating, CBT produced modest decreases in ED behaviors, and ACT produced large decreases (Juarascio, Forman, & Herbert, 2010).

Furthermore, ACT has successfully been applied to many variables identified as risk and maintaining factors of EDs, including body dissatisfaction (Pearson et al., 2012), shame and self-stigma (Luoma, Kohlenberg, Hayes, Bunting, & Rye, 2008), anxiety (for review see Bluett, Homan, Morrison, Levin, & Twohig, 2014), and depression (Folke, Parling, & Melin, 2012; Karlin et al., 2013; Zettle, Rains, & Hayes, 2011; Zhao, Zhou, Liu, & Ran, 2013). Although ACT has been applied to EDs in research contexts, no study to date has examined the effects of ACT explicitly targeting ED behaviors and related concerns, such as low self-compassion, using significant methodological rigor.

*ACT and self-compassion related to EDs.* As previously noted, low self-compassion has been identified in individuals with EDs and may play an important role in the development and

maintenance of EDs (Grabhorn, Stenner, Stangier, & Kaufhold, 2006; Kelly et al., 2013; Swan & Andrews, 2003; Wasylkiw et al., 2012; Webb & Forman, 2013). The construct of self-compassion fits well with the psychological flexibility model and ACT interventions (see Figure 3.1). More specifically, the psychological flexibility model concurs with Neff's view of self-compassion (Neff & Tirsch, 2013) in various conceptual and applied foci. For example, self-acceptance in ACT seems closely related to Neff's definition of self-kindness: offering warmth and understanding toward one's own suffering and imperfections. As such, psychological acceptance in ACT, particularly during emotional pain, may be a key aspect of self-kindness. Mindfulness is incorporated in both Neff's definition of self-compassion and the ACT model of psychological well-being and is important for both (Yadavaia, Hayes, & Vilardaga, 2014).

Beyond traditional ACT as an intervention that indirectly targets self-compassion, ACT can be adapted to focus specifically on the promotion of self-compassion (Luoma, 2014; Yadavaia, 2013). Conceptually, Luoma (2014) suggests that self-compassion can be promoted by increasing the six ACT core processes: 1) acceptance of one's experience of shame and related difficult emotions, 2) building present-moment awareness of shame and its consequences, 3) decentering from self-critical thoughts, 4) creating a sense of self that includes compassion for the self, 5) acknowledging self-kindness and self-improvement as personal values, and 6) committing to engaging in kind and compassionate behaviors for oneself. Furthermore, Luoma (2014) argues that these core ACT processes can be organized into specific interventions: 1) defuse from self-criticism and shame, 2) reduce the power of shame by engaging in exposure to shame-producing situations with compassion, and 3) increase behaviors consistent with values towards the self.

Consistent with the psychological flexibility model and the transdiagnostic account of EDs, the emphasis in ACT is not on the particular symptoms of EDs but instead on the function(s) of ED behaviors and if or how they help individuals live fulfilling lives. Therefore, the goal of ACT is to promote valued living, even while experiencing difficult thoughts and emotions, rather than promoting changing or eliminating unpleasant internal events. It has been noted that many individuals with EDs do not pursue treatment or drop out of treatment prematurely when the intervention directly targets ED thoughts and behaviors (Vanderlinden, 2008). Because ACT shifts the focus of treatment, individuals with EDs may become more willing to participate in ACT and to rely less on their ED behaviors which have been useful thus far, albeit with significant negative consequences. Two of the hallmarks of ACT, values clarification and committed action, appear to be particularly relevant for those with EDs because of the tendency of those with EDs to have poorly clarified values outside of food and body image (Fairburn, 2008). Although the preliminary evidence for using ACT to treat individuals with EDs is promising, additional empirical evidence is needed.

### **1.3 Purpose of the Study**

EDs have high rates of relapse and chronicity (Fairburn, 2008; Kaye, Wierenga, Bailer, Simmons, & Bischoff-Grethe, 2013). Because EDs are complex problems that are resistant to treatment, there is a need to conduct a sophisticated form of case analysis and treatment development (Hayes, Barlow, Nelson-Gray, 1999). The current study used a within-subjects experimental design (i.e., multiple baseline across participants), to better examine the utility of compassion-focused ACT with this population. When using within-subject experiments, one can evaluate hypothesized causal relationships between intervention and outcomes through

within- and between-subject comparisons, while also allowing for flexible implementation of the intervention based on the individual participant's needs (Holman & Koerner, 2014). The goals of these types of designs are closely tied to functional contextualism's goals of prediction and influence of behavior.

**Study objectives.** The purpose of the current study was to use a multiple baseline across participants design to assess the impact of individual compassion-focused ACT on ED behaviors and values-consistent behaviors that were behaviorally incompatible with ED behaviors. Additionally, the study assessed changes in participants' self-compassion and body image flexibility throughout the course of ACT, and evaluated whether changes in target behaviors corresponded to improvements in these theoretically consistent process variables. This study also investigated whether changes in these variables were maintained at a three-month follow-up time point. The specific study objectives included: 1) development of a compassion-focused ACT for ED treatment protocol, 2) implementation of the ACT protocol with a small sample of individuals who endorse problematic ED behaviors, and 3) evaluation of the impact of the protocol to determine whether ACT is an effective treatment for individuals with EDs. The nature of the intervention was brief, consisting of 10 50-minute sessions of ACT.

#### **1.4 Expected Results**

It was hypothesized that participation in the study's ACT intervention would lead to improvements in ED behaviors and values-consistent behaviors. Similarly, it was hypothesized that participants would report improved self-compassion and body image flexibility over the course of the ACT intervention, and that additional improvements would be seen in terms of decreased general distress and global ED symptoms. Consistent with the psychological flexibility

model underlying ACT and with previous ACT research concerning EDs and self-compassion, it was hypothesized that improvements in ED behaviors, values-consistent behaviors, and secondary outcomes would correspond with increases in body image flexibility and self-compassion. Finally, ED behaviors, values-consistent behaviors, self-compassion, body image flexibility, general distress, and global ED symptoms were assessed at a three-month follow-up time point to determine whether treatment gains were maintained.

## 2 METHOD

### 2.1 Participants

A minimum of three participants was needed for the current study design in order to experimentally examine the causal relation between intervention and outcome variables while controlling for extraneous variables (Kazdin, 2011). Inclusion criteria consisted of the following: 1) participants were at least 18 years of age, 2) endorsed engaging in ED behaviors associated with significant distress or impairment, 3) volunteered for participation in the study, and 4) identified values-consistent behaviors related to ED behaviors (e.g., eating dinner with family). Exclusion criteria consisted of endorsement of active psychosis, engagement in self-injurious behaviors, suicidality, or substance abuse within the past six months, enrollment in concurrent psychotherapy for an ED, or age of less than 18 years.

Recruitment methods for the study included advertisements on the university campus in the counseling center, psychology clinic, and student center. Individuals who were interested in the study contacted the student principal investigator via email and participated in the initial screening session. The purpose of this screening session was to determine eligibility and provide individuals with detailed information about the study and its requirements.

A total of three women volunteered for participation in the study. Two participants had seen flyers for the study in the Georgia State University (GSU) Counseling Center, and one participant was referred by personnel of a different study at the university that excluded individuals with active EDs. All participants met inclusion criteria, were enrolled in the study, and provided data that were used in the final analyses.



Participant 1 was a 23-year-old white woman with a history of AN - restricting type and social anxiety disorder. She reportedly had struggled with AN for the past five years, and she had participated in an online-based psychotherapy for her ED a year before. She did not participate in any other psychotherapy while participating in the study. At the time of the screening session, Participant 1 weighed 102 pounds (lbs.), had a BMI of less than 18, and met diagnostic criteria for AN. She chose “mindless snacking” and body-checking as ED behaviors to target in treatment. Mindless snacking was defined as eating without awareness and not in response to hunger. She reported that she often engaged in mindless snacking when at the restaurant where she worked or when home alone, where she would eat things such as small portions of burned baked goods or handfuls of cereal. Participant 1 reported that she often engaged in mindless eating and was unaware that she had done so until afterward, when she saw evidence of what she had eaten (e.g., missing portions of baked goods or smaller quantity of food in a container). She believed that mindless snacking helped her avoid anxiety that often came with eating with awareness (e.g., portioning out food on a plate and sitting to eat) and thinking about the number of calories consumed or noticing fullness. Mindless snacking also impacted the amount of food she allowed herself to eat when eating at designated meal times. She could justify avoiding meals or eating smaller meals because of her earlier snacking.

For Participant 1, body-checking was defined as engaging in checking behaviors that helped her escape or avoid anxiety related to her size or shape. For example, she would excessively check her appearance in the mirror or other reflective surfaces or put her hands around

her waist to feel the size of her waist. Body-checking was often time consuming and, paradoxically, would lead to increased distress by bringing more attention to judgements about her size and shape.

Participant 1 chose eating full meals as her values-consistent behavior to promote. Being able to eat full meals corresponded with her values of physical health and interpersonal relationships. By eating full meals, she would increase the amount and variety of foods in her diet, which would lead to improvements in health. Eating full meals would also allow her to participate in social activities that often included eating (e.g., going to parties or to restaurants with friends).

Participant 2 was a 24-year-old white woman with a history of depression and AN - restricting type. She had struggled with her ED since high school and participated in psychotherapy for depression in high school. She was not participating in any other psychotherapy at the time of the study, and she had not sought treatment for her ED prior to participating in the study. Her weight at the time of the screening session was 112 lbs., with a BMI of 19, which was on the lower end of the normal range.

The ED behaviors Participant 2 chose to target in the study were restricting and body-checking. She defined body-checking as, "checking my appearance in the mirror beyond getting ready or normal bathroom visits as well as feeling or looking at my body to check fat and muscle tone." Her values-consistent behavior was social withdrawal. When trying to identify a value to promote, Participant 2 had a difficult time framing socializing in a way that she could increase (e.g., engaging socially). She noted that she often avoided social situations because of appearance-related anxiety, feeling self-conscious when she thought she looked "bloated" or

“heavy.” It was easier for her to notice when she withdrew rather than identify when she approached social situations that she would normally try to avoid. Therefore, the goal was to reduce the frequency of avoiding social interactions. Later over the course of the study, she was able to notice when she engaged socially even with her anxiety.

Participant 3 was a 19-year-old white woman with a history of AN - restricting type, depression, and social anxiety disorder. She had struggled with her ED since she was a freshman in high school. She had participated in psychotherapy for her depression and anxiety the year before participating in the current study and was not involved in any psychotherapy at the time of the study. She had no treatment for her ED prior to participating in this study. At the time of the screening session, Participant 3's weight was 150 lbs., and her BMI was 24, which fell within the “normal” range.

Participant 3 chose “orthorexia” and body-checking as ED behaviors to target during the study. She defined orthorexia as eating “pure” or “clean” foods with low fat and calorie content (e.g., raw vegetables or steamed brown rice) rather than eating foods that were more calorically dense or foods based on taste preference. Orthorexia led to eating a very restrictive diet and not eating a balanced diet (e.g., little to no protein). She defined body-checking as looking at particular body parts (e.g., waist, hips) in the mirror for “too long” and judging herself based on her appearance.

For her values-consistent behavior to promote, Participant 3 chose wearing clothes based on comfort or style rather than body image. Clothing choice corresponded with her values of self-expression, creativity, and physical health. At baseline, she noted that she often chose clothing based on how she thought she looked in them or what others might think of her

appearance rather than choosing styles that she preferred or clothing that was more physically comfortable to wear.

## **2.2 Setting**

Participants were seen for the screening evaluation and individual ACT sessions in an individual therapy room in the GSU Psychology Clinic. The clinic is located on the GSU campus in downtown Atlanta. Participants were video-recorded as part of the study to assess treatment integrity. Recordings were saved on password- and firewall-protected computer servers in the clinic file room and were destroyed at the conclusion of the study, after a research assistant in the principal investigator's laboratory had coded them for treatment fidelity (see Treatment Fidelity section below). All study measures were included in an online Qualtrics survey created for the study. Pretreatment, midpoint, posttreatment, and follow-up assessments were completed using the Qualtrics survey. Participants were given a participant code to enter at the beginning of the survey and did not provide personally identifying information.

## **2.3 Study Design**

The current study used a multiple baseline across participants design with the purpose of demonstrating a functional relationship between the compassion-focused ACT intervention and participants' target behaviors. Within-subject experimental designs, including a multiple baseline across participants design, are well-suited for documenting the effectiveness of evidence-based treatments and for offering information concerning what intervention strategies work, at what time in treatment, and how they work via systematic assessment and treatment

implementation (Kazdin, 2011). A single-case design allowed for examining hypothesized causal relationships between the treatment and study outcomes (Holman & Koerner, 2014).

Key elements of a multiple baseline across participant design include 1) repeated measurement of target behaviors, 2) a baseline assessment and the establishment of a stable baseline, 3) the implementation of the intervention, 4) a comparison of the effects within the same participant, and 5) replication of effects across participants (Holman & Koerner, 2014; Kazdin, 2011). There is no established rule for determining how long the baseline phase should be before introducing the intervention, beyond waiting for behaviors to have limited variability (Kazdin, 2011). Using a multiple baseline design with staggered baselines, in which participants begin the intervention after varying lengths of the baseline phase, adds to experimental control and evidence that the intervention, rather than extraneous factors, produced changes in target behavior (Kazdin, 2011).

Data were collected routinely and continuously across baseline and intervention phases, and participants served as their own controls. For each participant, target behaviors from baseline through the intervention phase and at posttreatment were compared to assess changes. A three-month follow-up time point was included to determine if the intervention gains were maintained. Hypotheses are supported and additional evidence of internal and external validity is available when similar results are seen across participants. This study design allowed for observation of the effects of the intervention to be made while also controlling for extraneous variables that may have accounted for changes in target behaviors, such as the effect of repeated measurement (Hayes et al., 1999).

In the present study, participants' daily self-reported target behaviors (i.e., ED behaviors and values-consistent behavior) were the primary outcome variables. Because target behaviors were not always directly observable by the researcher, it was necessary to have participants themselves monitor their behaviors and report them as a way of providing continuous observations needed for single-case research (Kazdin, 2011). The first participant began daily self-monitoring of ED behaviors and values-consistent behaviors and completed study-related assessments 10 days prior to beginning the intervention phase, after a stable baseline for these behaviors had been established. Participant 2's baseline phase lasted 41 days. The third participant's baseline phase in which she completed self-monitoring lasted 7 days. As a general rule of thumb, in addition to being stable, the baseline of one of the participants needed to be at least three data points longer in duration (Kazdin, 2011). For all participants, in addition to needing to establish stable baselines before moving to the intervention phase, scheduling of the first treatment session was determined based on participants' availability and the availability of the study therapist. Staggering the duration of the baseline phases allowed for examining whether there was a causal link between ACT and target behaviors through developing adequate within-subject and between-subject comparisons.

Additional study variables included body image flexibility and self-compassion, which were hypothesized mechanisms of action for the present ACT intervention, and secondary outcome variables of global disordered eating and general distress. Measures of process variables were administered at the beginning of each session during the intervention phase and were also included in the larger assessment battery given at pretreatment, midpoint, posttreatment,

and three-month follow-up time points. This helped to determine whether changes in hypothesized mechanisms of action corresponded with changes in target behaviors. Measures of secondary outcomes were also included in the larger assessment battery given at pretreatment, midpoint, posttreatment, and three-month follow-up time points. The secondary outcome measures were meant to complement the daily self-reported primary outcomes, and the degree to which self-monitoring and responses on self-report measures agreed was assessed (Kazdin, 2011). An additional outcome of weight was included to monitor because it was expected that changes in target behaviors (e.g., eating more full meals and limiting restricting) would correspond with weight gain or weight maintenance and be inconsistent with weight loss.

Previous ACT clinical research has used similar single-case research designs (Juncos & Markman, 2015; Twohig & Crosby, 2010; Twohig, Hayes, & Masuda, 2006; Twohig, Shoenberger, & Hayes, 2007; Twohig & Woods, 2004). Similarly, previously published studies of ACT successfully used participants' daily self-monitored behaviors as the primary outcome and complementary self-report measures as secondary outcomes to monitor the outcomes of interest (Hill, Masuda, Melcher, et al., 2015; Hill, Masuda, Moore, et al., 2015; Twohig & Crosby, 2010; Twohig et al., 2006; Twohig et al., 2007; Twohig & Woods, 2004).

## **2.4 Measures**

In the current study, participants self-monitored target ED behaviors and values-directed activity on a daily basis and completed the measures of body image flexibility and self-compassion before each session during the intervention phase. Participants 1 and 3 completed

sessions weekly and completed process measures weekly at each session. Participant 2 completed the first three sessions on a weekly basis, then she was seen twice per week and completed the process measures at each session. Additionally, participants filled out standardized assessments online at pretreatment, midpoint, posttreatment, and three-month follow-up to track broader disordered eating concerns and psychological functioning.

**Screening measures.** A demographic questionnaire created for the study was used to determine key demographic variables and clearly define characteristics of the sample (see Appendix). Participants completed sections of the Structured Clinical Interview for the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (SCID-IV; First, Gibbon, Spitzer, & Williams, 2002) as part of the initial screening session. The SCID-IV is a diagnostic interview used to assess psychological disorders based on the criteria of the DSM-IV. Portions of the SCID-IV were used as a screening measure to determine inclusion and exclusion criteria related to particular diagnoses.

**Daily self-monitored target behaviors.** Participants' self-identified target behaviors related to EDs (e.g., restricting) and body dissatisfaction (e.g., body-checking) served as the primary outcome variables. Participants monitored the frequency of their target behaviors daily throughout the baseline and intervention phases and again for one week at the three-month follow-up assessment point. This repeated self-monitoring was useful in determining the utility of the ACT intervention. Self-monitoring of the problem behaviors again at follow-up was used to assess the long-term benefits of the intervention. Because engagement in values-consistent actions is an essential part of the ACT model, participants also identified and monitored valued or intrinsically reinforcing behaviors daily, just as they tracked target problem behaviors.



**Body image flexibility.** Participants completed the Body Image-Acceptance and Action Questionnaire (BI-AAQ; Sandoz et al., 2013) before each session as a self-reported process of change measure. The BI-AAQ is a 12-item self-report questionnaire designed to assess psychological flexibility specific to body image. The measure assesses the extent to which one is entangled with difficult body image thoughts and emotions, the degree to which one avoids or is affected by body image-related psychological experiences, and the extent to which the individual engages in values-consistent activities despite negative body image. All items are rated on a 7-point Likert-like scale ranging from 1 “never true” to 7 “always true” and are reverse-scored. Total scores for BI-AAQ range from 12 to 84, with higher scores representing higher body image flexibility. The BI-AAQ can successfully discriminate ED patients from healthy controls; for patients, the mean score was 31.43 ( $SD = 11.79$ ), and the mean score for healthy controls was 67.39 ( $SD = 12.04$ ; Ferreira et al., 2011). The BI-AAQ has good internal consistency (Cronbach’s  $\alpha = .92$ ), as well as concurrent, criterion, and incremental validity in a sample of college students (Sandoz et al., 2013).

**Self-compassion.** Participants also completed the Self-Compassion Scale - Short Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) before each session. It was designed to measure the degree to which individuals act compassionately toward themselves during times of psychological struggle. This is a 12-item version of the original 26-item SCS and is psychometrically comparable to the longer version; however, the scale creators recommend that subscales for the SCS-SF not be used because of low internal consistencies (Raes et al., 2011). Negative items are reverse-scored, and the mean of these and the positive items create a composite self-compassion score. Scores range from 1 to 5, with higher scores reflecting higher self-

compassion. In a previous study, patients with EDs differed significantly in levels of self-compassion, as measured by the SCS-SF, with a mean score of 2.03 ( $SD = 0.68$ ) compared to controls ( $M = 2.88$ ,  $SD = 0.65$ ; Kelly, Vimalakanthan, & Carter, 2014). The full scale internal consistency has been shown to be high (Cronbach's alpha = .87) in a college sample.

**Global disordered eating.** The Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn, 2008) is a 36-item self-report measure of a range of ED symptoms, including the severity of dietary restraint and concerns about eating, shape, and weight (e.g., "Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight?"). Participants were instructed to respond to items based on the previous 28 days. The global score is the sum of all scale items. In studies establishing norms for the EDE-Q, the mean global score for patients with EDs was 2.97 ( $SD = .65$ ; Mond, Hay, Rodgers, Owen, & Beaumont, 2004) and 3.83 ( $SD = 1.40$ ) to 4.02 ( $SD = 1.28$ ; Aardoom, Dingemans, Slof Op't Landt, & Van Furth, 2012). The mean global score for controls was .80 ( $SD = .73$ ; Mond et al., 2004) and .93 ( $SD = .86$ ; Aardoom et al., 2012). The EDE-Q has good internal consistency (Aardoom et al., 2012) test-retest reliability (Luce & Crowther, 1999), and concurrent validity (Fairburn & Beglin, 1994). The EDE-Q has been shown to have adequate psychometric properties in both clinical and community samples (Fairburn & Beglin, 1994; Luce & Crowther, 1999; Wilfley, Schwartz, Spurrell, & Fairburn, 1997).

**General psychological distress.** The General Health Questionnaire-12 (GHQ-12; Goldberg, 1978; Goldberg & Williams, 1988) is a 12-item measure of general psychological health in terms of 1) ability to carry out normal functioning, and 2) development of new, distressing phe-

nomena. Participants rate the frequency with which they have experienced a range of behavioral and psychological symptoms over the past three weeks. Items are scored on a scale of 0 (“not at all”) to 3 (“much more than usual”). The total score is calculated by summing the scores of each item, with higher scores indicating higher subjective distress. In a recent study using a college sample, the GHQ-12 was found to have adequate internal consistency (Cronbach’s alpha = .87; Masuda, Price, Anderson, Schmertz, & Calamaras, 2009).

## **2.5 Procedures**

Individuals interested in participating in the study contacted the principal investigator to schedule a time to discuss the study procedures and requirements and to complete the initial screening. The principal investigator conducted these screening sessions to determine whether potential participants were eligible for the study, to begin to establish rapport, and to answer questions about the study. At the time of screening, participants were weighed by the principal investigator using a scale in her research laboratory to get a baseline measure of weight. Participants’ weight was measured in this fashion at midpoint, posttreatment, and follow-up. After completing the screening, individuals completed the study measures and began tracking ED-related target behaviors for the baseline phase of the study. Participants emailed the principal investigator at the end of each day with the frequencies of target behaviors for that day.

The duration of the baseline phase (time between the pretreatment screening assessment and beginning the intervention) for each participant depended on 1) the length of time needed to establish a stable baseline, 2) staggering to be able to conduct within-individual and between-individual comparisons, and 3) participant and therapist availability in order to sched-

ule the first treatment session. Due to ethical considerations, it was determined prior to recruitment that participants would not be asked to remain in the baseline phase more than three months. This did not impact any of the participants, who required self-monitoring phases shorter than three months to establish consistent baselines.

The intervention phases for all three participants consisted of 10 individual sessions of semi-manualized compassion-focused ACT for EDs. Participants 1 and 3 were seen for weekly sessions, and Participant 2 was initially seen on a weekly basis but then requested to be seen twice per week after the third session because of scheduling. Sessions 4 through 10 were completed biweekly. Because identification of individual treatment responders requires repeated measurement to assess variability at the individual level of analysis, participants continued to self-monitor their target behaviors daily during the intervention phase of the study and completed process measures of hypothesized mechanisms of change before each session. At pre-treatment, midpoint, and posttreatment, participants completed an online version of the larger assessment package so that related outcome variables were assessed over time. Participants also completed the online assessment package again at a three-month follow-up assessment point and continued daily monitoring of ED and values-consistent behaviors for one week.

Repeated measurement was important because time-series approaches rely on intra-subject variability to evaluate the results of the intervention. By assessing potential process variables weekly, changes over time could be observed, and data could suggest if changes in the process variables corresponded with changes in outcomes. Repeatedly measuring process variables throughout the course of treatment provided more information concerning how the hypothesized mechanisms of change corresponded with changes in problem behaviors.

**Treatment manual.** The treatment manual created for the study was based on several existing ACT resources, including *Acceptance and Commitment Therapy: An Experiential Approach to Behavior Change* (Hayes et al., 1999), *Get Out of Your Mind and Into Your Life* (Hayes & Smith, 2005), and *The Anorexia Workbook: How to Accept Yourself, Heal Your Suffering, and Reclaim Your Life* (Heffner & Eifert, 2002). The exercises used and concepts discussed were pulled from these well-known ACT sources and tailored to the particular presenting concerns of the participants. Specifically, a range of ED behaviors and related issues, such as body image flexibility, were targeted for the participants in this study.

The manual consisted of 10 50-minute individual therapy sessions delivered by the principal investigator. The principal investigator is a doctoral student trained for over five years by a peer-reviewed ACT trainer. Before completing the current study intervention, she had also participated in a four-day intensive ACT training conducted by notable ACT researchers and clinicians and a one-day intensive workshop for using ACT to treat individuals diagnosed with AN. She has also published several peer-reviewed publications and delivered professional presentations about ACT and its application to EDs.

Each session began with a brief mindfulness exercise. Regular mindfulness practice helped to teach and strengthen the skill of nonjudgmental awareness of present-moment experiences. Next, the therapist checked in with participants about target behaviors from over the week, and then proceeded with the agenda set for the session. Each session addressed core ACT processes and included educational information, mindfulness practice, experiential exercises, instructions for exercises to practice out of session, and/or review of at home practice,

when applicable. The treatment tended to follow the following course; however, specific content and pace of therapy was flexibly determined, depending on participants' unique needs: Session 1: Establishing a therapeutic relationship and discussing target behaviors; Sessions 2-3: Undermining ineffective control strategies and normalizing psychological pain and suffering; Sessions 4-6: Promoting psychological openness, body image flexibility, and self-compassion; Sessions 7-8: Psychological acceptance and body appreciation; Sessions 9-10: Commitment to valued living. This is similar to the treatment protocol used in previous ACT for ED studies (Hill, Masuda, Melcher, et al., 2015; Hill, Masuda, Moore, et al., 2015); however, the present ACT protocol more explicitly targeted self-compassion.

Self-compassion was promoted using a variety of strategies, including participating in a self-compassion meditation in session, completing a self-compassion writing homework activity (e.g., Neff, 2017), and asking participants to think about how they would respond to a friend in a similar situation. This is because extant literature suggests that ACT is particularly suitable for promoting self-compassion (Barnard & Curry, 2011) and the promotion of self-compassion has been noted as an important part of ED development and maintenance and is likely useful to target in treatment (Kelly, Carter, & Borairi, 2014).

**Treatment integrity.** To ensure ACT treatment integrity, a randomly selected sample of 20% of the recordings of the intervention sessions was scored by an independent evaluator in terms of how well sessions covered ACT treatment components. The evaluator was a doctoral student with knowledge of ACT research and practice who was trained by the co-chair. Sessions were randomly selected using block randomization. The evaluator used the website [www.randomizer.org](http://www.randomizer.org) to generate three sets of two numbers each, drawing from possible one to ten

numbers which corresponded to the number of sessions completed for each participant. Sessions for which adherence ratings were completed were: sessions five and nine for Participant 1, sessions four and five for Participant 2, and sessions two and seven for Participant 3. This assessment was conducted using a validated, reliable ACT treatment scoring system (Plumb & Vilaradaga, 2010). The scoring system offers ratings for different ACT treatment components, and each component was rated on a scale of 1 to 5 (1 “never explicitly occurred” - 5 “occurred with great frequency and was addressed in a very in-depth manner”). The therapist was also evaluated on use of techniques inconsistent with an ACT intervention, including attempts to change or eliminate cognitions, use of experientially avoidant change strategies, and reinforcing the idea that thoughts and emotions cause behaviors.

## **2.6 Data Analytic Plan**

The data evaluation process traditionally used to assess single-case designs is visual inspection to evaluate the effects of the intervention over time and if the effects are replicated across participants systematically (e.g., change for each occurs shortly after the intervention is introduced; Kazdin, 2011). Participants’ ED behaviors and values consistent behaviors were plotted and graphed for visual inspection. Visual inspection provided a way to judge the consistency of the intervention effects by evaluating graphed data. Visual inspection and analysis were used to view the raw data directly and assess the frequency of target behaviors during the baseline phases compared to the target behaviors during the intervention phases.

Kazdin (2011) describes four characteristics of data important to visual inspection: 1) changes in the average rate of behaviors across phases, 2) the shift in behavioral patterns from the end of one phase to the beginning of the next – when a phase changes, the rate of target

behavior is also expected to change, 3) the trend or slope of the data which shows systematic increases or decreases in behavior over time, and 4) the latency of the change, which is the period between the onset or termination of one phase and changes in behavior. For a multiple baseline across participants study, it is also important to assess the pattern of behavioral changes across participants (e.g., replication and between-subject comparisons).

Graphical representation of data allows for better understanding of data distribution and better interpretation of the data by identifying possible influences of outliers (Wilkinson et al., 1999). The most common graph used is a simple line graph with participants' daily self-reported behaviors plotted in a noncumulative fashion, with the data points in each phase connected (Kazdin, 2011). The level of the target behaviors from baseline to intervention phases suggests if an immediate response to the intervention occurred. Assessing the trend (slope) in data distribution will give information about increases or decreases in the target behaviors within and between phases. Mean data for target behaviors were plotted graphically to assess the degree to which changes in target behaviors correspond with the introduction of the intervention. For the current study, changes in means were plotted as a horizontal line within each phase. By plotting the mean of each phase, readers can more easily compare the effects of the different conditions (Kazdin, 2011).

Additionally, analyses of ACT-process and secondary outcome measures were assessed to supplement the visual inspection of target behaviors. The departure from dysfunction method (Kazdin, 2011, pp. 315) was used to determine whether there were reliable changes in variables. For this method, it is assumed that significant improvements occurred when participants began the study in a dysfunctional state and ended in a more functional state. Significant



improvement is defined as an improvement of at least two standard deviations in participants' scores for each self-report measure from baseline to posttreatment and follow-up (Juncos & Markman, 2015). Participants' posttreatment scores on self-report measures were compared to the mean scores for clinical samples to determine if they were two or more standard deviations from the clinical (or dysfunctional) group mean, if such data are available (Kazdin, 2011). For Participant 1, who met criteria for AN, an additional supplemental form of analysis that relies on determining if participants no longer meet diagnostic criteria for an ED was used (Kazdin, 2011, pp. 315).

### 3 RESULTS

Participants' scores on study measures at pretreatment, midpoint, posttreatment, and follow-up and means and standard deviations for ED behaviors and values-consistent behaviors across phases are reported in Tables 1.1 and 2.1. None of the participants deteriorated during treatment or at three-month follow-up. Across participants, there was a decrease in ED behaviors and increase in values-consistent behaviors from pretreatment to posttreatment assessment points. This corresponded with changes in global disordered eating and general psychological distress, and these changes were largely maintained at follow-up. Changes in process variables throughout the study suggested that improvements in self-compassion and body image flexibility corresponded to the improvements in primary and secondary outcome variables.

#### 3.1 Treatment Effects in Primary Outcomes and Changes in Process Variables

The primary aims of the study were to examine whether the present ACT intervention decreased participants' ED behaviors and increased participants' self-identified values-consistent behaviors. The means and standard deviations across study phases are listed in Table 1.1. The following descriptive results are based on visual inspection of ED behaviors, values-consistent behaviors, and process variables from baseline through intervention phases and at follow-up.

**Participant 1.** Examining Figure 4.1 using visual inspection revealed that there was a notable decrease in the level and trend of ED behaviors from baseline to posttreatment and follow-up for Participant 1. Decreases in variability of ED behaviors can also be seen during the intervention phase which continued through follow-up. The average number of self-reported ED behaviors during the baseline phase for Participant 1 was as follows: mindless snacking was five times per day ( $SD = 0.94$ ) and body-checking was 4.40 ( $SD = 1.16$ ) times per day (see Table 1.1).

Once Participant 1 entered the intervention phase, mindless snacking incidents decreased to an average of 2.03 (SD = 0.89) per day, and the average incidents of body-checking decreased to 2.21 (SD = 1.19) per day. By the three-month follow-up assessment, Participant 1's average mindless snacking had decreased further to 1.13 (SD = 0.64) per day, and her body-checking also had decreased further to an average of once (SD = 0.53) per day.

An increase in level and trend of her values-consistent behavior can be seen in Figure 5.1. At baseline, the average number of self-reported full meals eaten was zero per day. The number of full meals increased to an average of 0.77 per day (SD = 0.66; range: 0-2) during the intervention phase, and her self-reported full meals increased to an average of two per day (SD = 0) by the three-month follow-up assessment. Anecdotally, in addition to eating full meals, Participant 1 noted that over the course of treatment she had begun to try new foods that she had previously avoided because of their fat and calorie content. She also reported that she was proud that she allowed her fiancé to order her meal at restaurants on two occasions which was particularly anxiety-provoking.

Beyond self-report data, Participant 1 saw a consistent weight-gain over the course of treatment which corresponded with the increase in her self-reported full meals eaten. At baseline, her weight was 102 lbs., which increased to 105 at the midpoint, 110 at posttreatment, and 117 at the three-month follow-up time point. During the screening session before the baseline phase, Participant 1 reported that she had not menstruated in several years. During session 10 of the intervention, she reported having started her menstrual cycle earlier in the week. This is an important marker of physical recovery in AN that corresponded with her self-reported changes in eating and observed weight-gain.

Regarding process variables, Participant 1 demonstrated improvements in both self-compassion and body image flexibility (see Table 2.1 and Figure 6.1). The departure from dysfunction method revealed that Participant 1 began the study in a state of dysfunction, with self-compassion and body image flexibility scores in the clinical range. By posttreatment, her scores were more than two standard deviations from the clinical group mean for both body image flexibility ( $M = 31.43$ ,  $SD = 11.79$ ; Ferreira et al., 2011) and self-compassion ( $M = 2.03$ ,  $SD = 0.68$ ; Kelly et al., 2014). The largest change in both self-compassion and body image flexibility occurred between midpoint and posttreatment time points (see Figure 6.1). By the sixth session, a notable increase in body image flexibility corresponded with a significant decrease in mindless snacking and decreasing trend in body-checking. By the fifth session, Participant 1 reported eating two full meals, compared to none during baseline and at most one daily during the first half of the intervention (see Figure 5.1). For Participant 1, body appreciation and self-compassion were discussed in an in-depth way in the fifth and sixth sessions, and she completed self-compassion exercises on her own between those sessions.

At the end of treatment, Participant 1 was asked open-ended questions regarding what she believed was helpful about the intervention and what she thought was not helpful. She reported that participating in the study helped her to increase her awareness of her thoughts, emotions, and eating. She appreciated that treatment focused heavily on increasing values and not just on reducing problematic eating behaviors. She reported that she was not able to think of any part of the therapy that was not helpful or that she would have liked to be different.

**Participant 2.** Examination of Figure 4.1 revealed a decrease in ED behaviors from baseline to posttreatment and follow-up for Participant 2. The average frequency of restricting at

baseline was 1.02 ( $SD = 0.74$ ) incidents of restricting per day and 9.60 ( $SD = 1.75$ ) incidents of body-checking per day (see Table 1.1). During the intervention phase, restricting had decreased to an average of 0.54 ( $SD = 0.60$ ) per day and body-checking decreased to an average of 4.93 ( $SD = 2.43$ ) per day. This decrease was maintained at the three-month follow-up with an average of 0 ( $SD = 0$ ) per day and four ( $SD = 1.60$ ) per day for restricting and body-checking respectively. Variability in ED behaviors also decreased throughout Participant 2's participation in the study.

Anecdotally, Participant 2 also reported that she had increased her awareness of her motivation for exercising over the course of the study and noted that she had shifted her motivation to a value of physical health over body image. She reported that not only had her motivation changed, the intensity in which she engaged in exercise also reduced from what she believed was excessive to more appropriate amounts of physical activity. Beyond self-report data, Participant 2 showed steady weight maintenance over the course of the study, remaining at 112 lbs. at midpoint and posttreatment and increasing slightly to 113 lbs. by follow-up. Because she did not lose any weight and her weight remained in the normal range, it is reasonable to assume that her self-reported target behaviors were valid.

Participant 2's goal of decreasing social withdrawal was largely met (see Figure 5.1). At baseline, she reported an average of 0.91 ( $SD = 0.85$ ) incidents of withdrawing from or avoiding social situations per day. This decreased to 0.30 ( $SD = 0.56$ ) during the intervention and 0.29 ( $SD = 0.45$ ) at the three-month follow-up assessment point. By the third week of the intervention phase, Participant 2 was able to identify and track the frequency of her social engagement,

which she defined as going to social events or talking with peers even when she felt self-conscious and anxious. She began tracking social engagement at the third session. At that time-point, she reported two incidents of social engagement for the week. The average incidents of social engagement for the intervention phase was five per week (range: 2-11). At the three-month follow-up, she reported six incidents of social engagement for the week (range: 0-2 per day). Her self-reported increase in social engagement was consistent with her self-reported decrease in social withdrawal.

Regarding process variables, Participant 2 demonstrated improvements in both self-compassion and body image flexibility (see Table 2.1 and Figure 6.1). The departure from dysfunction method revealed that Participant 2 began the study in a state of dysfunction, with self-compassion and body image flexibility scores in the clinical range. By posttreatment, her scores were more than two standard deviations from the clinical group mean. The largest change in self-compassion occurred between midpoint and posttreatment, and the largest change in body image flexibility occurred between pretreatment and the midpoint (see Figure 6.1). By the fourth and fifth sessions, a notable increase in body image flexibility corresponded with a decrease in restricting and body-checking. By the midpoint of treatment, body appreciation, acceptance, mindful eating and self-compassion were emphasized, and Participant 2 reported that they were helpful. At the sixth session, she reported that she had watched old home videos and had seen how carefree she had been about her body and food as a young child. Watching the videos in addition to focusing on self-compassion in session helped her to treat herself with the compassion she would a child.

With regard to her perceptions of treatment, Participant 2 reported that the following treatment components were particularly helpful: learning and practicing mindful eating, focusing on self-compassion, and discussing body appreciating and shifting the focus from appearance to what her body does for her and allows her to do. She reported that there were aspects of treatment that she did not think were helpful. Specifically, she noted that self-monitoring felt “burdensome” and that she would have liked to have talked more about her desire for a sense of control in the role of her ED. Although control was addressed in therapy, she believed it would have been useful to discuss it more thoroughly.

**Participant 3.** Visual inspection of Figure 4.1 revealed that there was a decrease in the level and trend of ED behaviors from baseline to posttreatment and follow-up for Participant 3. Self-reported ED behaviors for Participant 3 at baseline was as follows: orthorexia occurred on average 1.29 ( $SD = 0.49$ ) times per day and body-checking 2.57 ( $SD = 0.53$ ) times per day (see Table 1.1). Orthorexia decreased to an average of 0.15 ( $SD = 0.36$ ) times per day during the intervention phase and zero ( $SD = 0$ ) times per day during the one week of the three-month follow-up assessment. Body-checking decreased to an average of 0.64 ( $SD = 0.74$ ) times per day during the intervention phase and to 0.43 ( $SD = 0.73$ ) per day during the one week of the three-month follow-up assessment.

An increasing trend in Participant 3’s values-consistent behavior can be seen in Figure 5.1, and the variability in the values-consistent behavior decreased by follow-up. Participant 3’s values-consistent behavior of wearing clothing based on style and comfort over appearance increased from an average of 0.29 ( $SD = 0.49$ ) times per day during baseline to 0.96 ( $SD = 0.19$ )

times per day during the intervention phase and an average of once ( $SD = 0$ ) per day at the three-month follow-up assessment.

Regarding additional values-consistent behavior, over the course of treatment, Participant 3 noticed that she often avoided potential conflict or asking for her needs to be met because of appearance-related anxiety. She identified that she wanted to learn and practice assertiveness, even when she felt self-conscious and anxious. The same ACT processes used to improve ED-related behaviors were also employed to teach effective ways of responding to anxiety in interpersonal contexts (e.g., defusion from unhelpful thoughts, accepting uncomfortable emotions, and engaging in behaviors that helped her move in valued-directions). By posttreatment, she acknowledged that she was better able to interact with co-workers, express her needs and concerns with them, and ask for help.

Beyond self-report data, Participant 3 also showed steady weight maintenance over the course of the study. She began the study at 150 lbs., and her weight increased to 155 by midpoint, and remained at 155 at posttreatment and three-month follow-up. Because she did not lose any weight and her weight remained in the normal range, it is reasonable to assume that her self-reported target behaviors were valid

With regard to process variables, Participant 3 demonstrated improvements in both self-compassion and body image flexibility over the course of the study (see Table 2.1 and Figure 6.1). Participant 3 began treatment with levels of both self-compassion and body image flexibility in the subclinical range; therefore, the departure from dysfunction method was not used to assess changes in process variables. Most notable improvements were seen between pretreatment and midpoint for self-compassion and between midpoint and posttreatment for



body image flexibility. An increase in body image flexibility at the sixth session corresponded with abstaining from orthorexia and a notable decrease in body-checking. Also by the sixth session, Participant 3's increase in body image flexibility corresponded with daily engagement in valued-action of wearing clothing based on style and comfort over solely on how she thought she looked (see Figure 5.1). She also noted that body appreciation and self-compassion focused on by mid-treatment were important and beneficial in changing target behaviors.

When asked what she believed had been helpful about the study intervention, Participant 3 reported that self-monitoring was helpful in increasing her awareness of problematic behaviors and values. She also reported that having a "neutral" therapist who did not judge or evaluate her thoughts as "wrong" or "distorted" was helpful and better than her previous therapy experience. She denied thinking that there were aspects of treatment that were not useful.

**Between-participant analyses of primary outcomes.** Along with the visual inspection of within-participant changes, the pattern of between-participant changes in primary outcome variables was examined. Across participants, changes in key dimensions (i.e., level, trend, or variability) of target behaviors started to occur in expected directions once participants entered the intervention phase regardless of the timing of the intervention or the length of baseline phases. This pattern suggests a potential causal link between the compassion-focused ACT intervention and changes in primary outcome variables.

### **3.2 Secondary Outcome Variables**

The secondary aim of the study was to examine changes in global ED and general psychological distress. Although they were not directly targeted in treatment, it was hypothesized that participants' global ED symptoms and general distress would decrease over the course of

the study, consistent with decreases in ED target behaviors. Participants' scores are displayed in Table 2.1.

**Participant 1.** Consistent with hypotheses, Participant 1's ED symptoms score exhibited a clinically significant change that corresponded with self-reported changes in ED behaviors and observed weight increase. Over the course of the intervention, her global ED score and distress score decreased at each major assessment point (see Table 2.1). At the pretreatment assessment time point, Participant 1's global ED score was 4.03, which was in the clinical range ( $M = 4.02$ ,  $SD = 1.28$ ; Aardoom et al., 2012). By the three-month follow-up assessment, her score had fallen to 0.90, which was in the nonclinical range. Similarly, her general psychological distress scores decreased over the course of the study.

**Participant 2.** Participant 2 also demonstrated decreases in secondary outcomes, consistent with hypotheses and changes in ED target behaviors. At pretreatment, her global ED score was 2.28. This decreased to 1.61 at midpoint, 1.25 at posttreatment, and 0.96 by three-month follow-up. Similarly, Participant 2's general psychological distress decreased by the end of the intervention. At pretreatment, her distress was 11. It increased slightly by the midpoint to 12, but then decreased to six by posttreatment and remained low by follow-up with a score of seven.

**Participant 3.** Participant 3 also exhibited decreases in secondary outcomes over the course of the study. Although her pretreatment global ED score fell within the nonclinical range, decreases were still observed at each major assessment time point. At baseline, Participant 3 had a global ED score of 1.00, which decreased to 0.72 at midpoint, 0.62 at posttreat-

ment, and 0.33 at the three-month time point. Her general psychological distress also decreased from pretreatment to follow-up. At pretreatment, her distress was 15. It decreased to 12 at post-treatment and remained at 12 at the three-month follow-up assessment.

### **3.3 Treatment Integrity of the ACT Intervention**

A randomly selected sample of 20% of the recordings of the intervention sessions were scored by an independent evaluator, a doctoral student supervised by the co-chair in ACT research and practice. The sample of recordings was scored for their coverage of ACT treatment components using a validated, reliable ACT treatment scoring system (Plumb & Vilardaga, 2010). The ACT treatment components that were rated included creative hopelessness/workability, willingness/acceptance/mindfulness, defusion, goals/values, and committed action. Each component was rated on a scale from 1 to 5. Items were scored as a 1 if the component did not occur in that session, as a 2 if the component occurred at least once but not in an in-depth manner, as a 3 if it occurred several times during the session and was covered at least once in a moderately in-depth manner, as a 4 if it occurred frequently and was covered in-depth, and as a 5 if it occurred with high frequency and was covered in considerable depth. The therapist was also rated on overall adherence to ACT principles as well as overall competence. Sessions 5 and 9 were rated for Participant 1, sessions 4 and 5 were rated for Participant 2, and sessions 2 and 7 were rated for Participant 3.

At least one of the rated ACT components was covered frequently in an in-depth manner (i.e., received a rating of “5”) in each of the rated sessions. The means for each component over the rated sessions were as follows: creative hopelessness/workability = 3.17 ( $SD = 1.47$ ), willingness/acceptance = 4.50 ( $SD = 0.56$ ), defusion = 4.17 ( $SD = 0.98$ ), values/goals = 4.50 ( $SD =$

0.84), and committed action = 2.83 ( $SD= 1.47$ ). Therapist overall adherence to the manual was also rated highly ( $M = 4.17$ ;  $SD = 0.41$ ) as well as therapist overall competence ( $M = 4.67$ ;  $SD = 0.52$ ).

Ratings were also conducted on use of techniques antithetical to ACT, including challenging cognitions, using experiential avoidant change strategies, and encouraging the idea that cognitions and emotions cause actions. Each of these items was rated as a 1 across participants. This indicated that none of these interventions were observed in any rated sessions.

## 4 DISCUSSION

Despite advances in psychological treatments of EDs, there are significant numbers of individuals who do not respond to treatment (Fairburn, 2008), and EDs have high rates of relapse, chronicity, and death (Kaye et al., 2013). This is especially true for treatments for adults with AN (NICE, 2004). Although notable improvements in understanding and treating EDs have been made over the years, there is room for improvement in existing treatments.

The primary objective of this study was to investigate the impact of a compassion-focused ACT intervention on ED behaviors and values-consistent behaviors in women with clinically significant ED behaviors using a multiple baseline across participants design. The secondary objective was to explore the impact of the ACT intervention on global ED and general psychological distress. It was hypothesized that ED behaviors, global ED scores, and general distress would decrease over the course of the ACT intervention and values-consistent behaviors would increase. In addition, ACT-consistent process variables of body image flexibility and self-compassion were hypothesized to increase over the course of the intervention and correspond to changes in participants' target behaviors.

### 4.1 Primary and Secondary Outcomes

Results across participants reflected systematic improvement in the primary outcome variables of self-monitored ED behaviors and values-consistent behaviors as a result of participating in the ACT intervention. The average number of ED behaviors for each participant decreased from baseline to intervention phases and continued to decline by the three-month follow-up. The most significant change observed was for Participant 1, who no longer met criteria

for AN by posttreatment. Although all three participants still engaged in ED behaviors (e.g., body-checking) during the one week timeframe of the three-month follow-up period, the frequency and severity of these behaviors were below the clinical range. Research has shown that ED behaviors are common among many women without ED diagnoses (Mulholland & Mintz, 2001), and body-checking is one ED-related behavior that is normative (Farrell, Shafran & Fairburn, 2004; Haase, Mountford, & Waller, 2011; Leahey, Crowther, & Ciesla, 2011). As such, it is not surprising or necessarily problematic that all participants continued to engage in some body-checking at follow-up.

The present ACT intervention focused on the promotion of values-consistent activities in addition to reduction of ED behaviors. Not only did all participants demonstrate an increase in self-reported engagement in values-consistent behaviors, all reported that they appreciated focusing on valued living in addition to decreasing problem behaviors. They indicated that the emphasis on values was a particularly meaningful and beneficial aspect of the study intervention. Skills and concepts learned in treatment were also useful for other areas of functioning beyond ED-related behaviors, such as increasing willingness to practice assertiveness.

The secondary aim of the study was to assess participants' changes in global ED and general psychological distress over the course of the intervention and again at a three-month follow-up assessment. Changes in target behaviors were consistent with improvement in these secondary outcomes. All participants exhibited decreases in global ED at each major assessment point. The improvement for Participant 1 was substantial as she moved from the clinical range to the nonclinical range. In addition, all participants' general psychological distress decreased from pretreatment to posttreatment, and the decreases were maintained at follow-up.

Although neither global ED or distress were directly targeted in treatment, benefits of the treatment generalized to these outcomes. Participation in the compassion-focused ACT intervention led to improvements in both global ED and general distress.

#### **4.2 Process Variables**

For each participant, visual inspection revealed that there were substantial increases in self-compassion and body image flexibility throughout the course of the study. These variables are theorized to be processes of change in ACT for EDs. Visual inspection also suggested that changes in the primary outcomes corresponded with improvements in these ACT-consistent process variables.

Self-compassion is an adaptive emotion regulation and coping strategy (Braun, Park, & Gorin, 2016), and, as described earlier, the promotion of self-compassion is consistent with the psychological flexibility model of behavioral health (Luoma, 2014). Although self-compassion is known to be important in ACT and other psychosocial interventions, the exact role of self-compassion remains unclear. Extant literature has demonstrated that self-compassion acts at multiple levels and through multiple paths in the context of ED treatments (Tylka et al., 2015), and this seems to be the case in ACT as a treatment for individuals with EDs.

A recent review suggested that self-compassion works by: 1) decreasing ED outcomes directly, 2) preventing the risk of an individual ever developing an ED, 3) interacting with known risk factors to inhibit their negative effects, and 4) disrupting the mediational pathway through which risk factors lead to EDs (Braun et al., 2016). For example, a recent cross-sectional study showed that self-compassion fully mediated the relationship between drive for thinness and shame in a sample of women diagnosed with EDs and partially mediated the relationship in a

nonclinical sample (Ferreira et al., 2013). Another cross-sectional study with a nonclinical sample showed that self-compassion moderated the association between body comparison and body appreciation, suggesting that self-compassion protects individuals' body appreciation when they compare their appearance to others (Homan & Tylka, 2015).

In the current study, visual inspection suggested that increases in self-compassion were associated with decreases in ED behaviors as well as improvement in values-consistent behaviors across participants. In particular, Participant 1 and Participant 2 exhibited substantial improvements in self-compassion. Participation in the compassion-focused ACT intervention led to increased self-compassion, and increases in self-compassion appeared to correspond with changes in ED behaviors and values-consistent behaviors. Participant 3, whose pretreatment self-compassion was in the nonclinical range, also demonstrated improvement in self-compassion throughout the course of the study.

Body image flexibility is another construct important in understanding and treating EDs (Sandoz et al., 2013). Increasingly, ED research has focused on emotion and behavior regulation strategies (Anestis et al., 2007) because the way one regulates, interprets, relates, and responds to difficult thoughts and emotions is important in understanding what maintains EDs (Corstorphine et al., 2006). Body image flexibility is an adaptive regulation strategy in the context of experiencing body dissatisfaction and other ED-related thoughts and emotions. Responding to such thoughts and emotions without relying exclusively on escape or avoidance via ED behaviors is an effective form of coping, particularly because ED-related thoughts and emotions are difficult to change or fully eliminate (Guarda, 2008).



In the current study, visual inspection suggested that increases in body image flexibility were associated with decreases in ED behaviors. This finding is consistent with previous ACT case studies with individuals with EDs (Hill, Masuda, Melcher et al., 2015; Hill, Masuda, Moore et al., 2015). In particular, Participant 1 and Participant 2 exhibited substantial improvements in body image flexibility, corresponding with decreases in ED behaviors. In addition, body image flexibility was associated with improvements in values-consistent behaviors for each participant. Extending the ACT for EDs literature, the present study demonstrated a potential link between increased body image flexibility and value-consistent behaviors. Given the present findings along with results of previous cross-sectional research, future studies should investigate potential mediating and moderating roles of both body image flexibility and self-compassion in larger scale studies.

#### **4.3 Conceptual Implications**

Research has demonstrated that a large portion of individuals with EDs, particularly those with AN, remain fully symptomatic after completing even established treatments delivered by well-trained therapists (Wilson et al., 2007). One reason may be that existing treatment models have failed to focus on important maintaining factors (Juarascio et al., 2013). As previously noted, evidence suggests that self-compassion and flexibility in responding to private events are important process of change in psychotherapy (e.g., Neff & Tirch, 2013). Conceptually, techniques used in ACT are intended to improve flexibility and self-compassion which in turn undermine rigidly applied regulation strategies and lead to behavior change. A growing

body of research has shown therapies that promote a process of openness and flexibility toward unpleasant internal experiences, like ACT, have positive clinical outcomes (Hayes, Villatte, Levin, & Hildebrandt, 2011).

Specific to EDs, body image flexibility and self-compassion target psychological symptoms central to EDs, including shame, body dissatisfaction, and mood dysregulation (Fairburn et al., 2003; Sandoz et al., 2013), and core constructs targeted in ACT are important in the development and maintenance of EDs, such as need for control and intolerance of uncertainty (Merwin et al., 2011; Orsillo & Batten, 2002). The present findings showed expected changes in both outcomes and ACT process variables, which is also consistent with the recent CBT models of ED treatment which postulate that ED behaviors function as emotion and behavior regulation strategies (Hayaki, 2009; Polivy & Herman, 2002). These results suggest that promoting mindfulness and acceptance of and compassion for disappointments and challenges related to eating and body image may be more beneficial in treatment than attempting to improve one's body image or self-esteem (Kelly et al., 2014). Although conceptually self-esteem and self-compassion are distinct constructs, they have some shared variance (Neff, 2003). Assessing both self-esteem and self-compassion in future studies will offer further clarification regarding similarities and differences between the two in an ED sample.

The role of thoughts and emotions related to body image and self-esteem is a conceptual question that has yet to be answered. Researchers and clinicians have increasingly shown interest in attempting to identify conceptual and applied differences in psychotherapies, including the role of cognitions in psychological dysfunction and psychological well-being (e.g., Arch &

Craske, 2008). CBT has been effective for a range of psychological disorders, including EDs (Fairburn, 2008). In traditional CBT, changes in cognition are believed to be essential in achieving therapeutic change (Forman, Herbert, Moitra, Yeomans, & Geller, 2007). However, there has been a lack of consistent support for hypothesized cognitive mechanisms of CBT (Arch & Craske, 2008; Hayes, 2004), and research suggests that adding cognitive interventions to behavioral interventions has not consistently shown added benefit (Hayes, 2004; Longmore & Worrell, 2007).

Furthermore, cognitive restructuring, an important treatment component of CBT, may be conceptualized as a form of thought suppression (Arch & Craske, 2008; Hayes, 2004), which is often counterproductive by paradoxically increasing the frequency and intensity of thoughts attempted to be avoided (Abramowitz, Tolin, & Street, 2001). However, others suggest that cognitive restructuring and ACT techniques used to promote cognitive defusion and acceptance are not necessarily distinct but are stylistically different means to the same end (Leahy, 2008). Given these inconsistent findings, many clinical researchers have questioned the essential role of direct cognitive change as the mechanism underlying successful treatment outcomes of CBT and the process of defusion and acceptance in successful ACT outcomes, and there has been a call for more work regarding the mechanisms of action in CBT and ACT (e.g., Arche & Craske, 2008; Hayes, 2008).

The different proposed mechanisms of change for ACT and CBT have yet to be tested empirically with an ED sample. From a theoretical perspective specific to EDs, ACT leads to behavioral and quality of life improvements without changing ED cognitions. Instead, these thoughts and related emotions may become less believable or distressing when individuals

learn to experience them and respond in more adaptive ways (Berman et al., 2009; Merwin et al., 2011). Research has supported this conceptualization by showing that successful ED treatments do not reduce the frequency of ED- and body image-related thoughts but do influence the degree to which one relates to these thoughts (Bulik et al., 2003; Merwin et al., 2011).

The current findings suggest that targeting body image flexibility and self-compassion may offer positive results for individuals with a long history of EDs and offers support for self-compassion and body image flexibility as underlying mechanisms in mindfulness- and acceptance-based CBTs (e.g., Gilbert, 2005). Conceptually, body image flexibility and self-compassion are associated yet distinct constructs (Kelly et al., 2014; Ferreira et al., 2011; Schoenefeld & Webb, 2013). Building on previous research, the present findings offer support for the idea that body image flexibility and self-compassion are linked and that both are important in understanding and treating target behaviors of individuals with EDs. Some have suggested that body image flexibility helps explain the relationship between self-compassion and ED behavior (Schoenefeld & Webb, 2013). It may be that when one is more flexible with and accepting of ED-related thoughts and emotions, she also becomes more understanding and accepting of herself and her struggle with an ED. Because body image flexibility and self-compassion are interrelated, it may also be easier to continue to adopt flexibility and acceptance towards ED-related internal experiences as self-compassion increases. Once one has increased both body image flexibility and self-compassion, she may be more willing and better able to increase adaptive eating behaviors and other values-consistent behaviors and rely less of ED behaviors to regulate distress.

As previously noted, both body image flexibility and self-compassion have been recognized as possible mechanisms of action in ED treatments. It is likely that targeting both will lead to greater improvements in ED-related symptoms, values-consistent behaviors, and overall quality of life than what could be achieved by targeting either alone. In the current study, participants' body image flexibility and self-compassion increased in the context of their participation in the compassion-focused ACT intervention, which led to improvements in target behaviors.

Based on previous research and the current study, the importance of emphasizing self-compassion in treatment seems clear. Hayes (2008) has suggested that compassion may be the only value that is inherent to the ACT model; however, self-compassion has not yet been added as a formal component of ACT (Luoma et al., 2012; Neff & Tirsch, 2013). It may be beneficial for researchers and clinicians to 1) consider how existing ACT techniques can be used to target self-compassion, and 2) directly integrate self-compassion into the ACT model. When the ACT model is applied to a particular problem area, such as shame and EDs, specific interventions can be adapted to better meet the needs of the particular context and population (Hayes, n.d.). Using a compassion-focused ACT intervention rather than a more traditional ACT approach with this population may be warranted (Luoma, 2014) because 1) individuals with EDs tend to be higher in shame and lower in self-compassion than those without an ED (Swan & Andrews, 2003), 2) ED behaviors often serve as maladaptive ways of reducing shame (Goss & Gilbert, 2002), and 3) ED behaviors themselves can elicit shame (Goss & Allan, 2009; Goss & Gilbert, 2002).

The compassion-focused ACT protocol created for the current study was meant to not only focus on ED-specific symptoms but also values. Participants experienced changes in both ED-related variables and valued activities. Not only do individuals with EDs engage in unhealthy eating behaviors, they often lose interest in interpersonal relationships, hobbies, and other meaningful areas of life as their lives become increasingly narrowed and focused on ED behaviors and body image (Fairburn & Harrison, 2003). Therefore, it is important for any ED treatment to address the lack of valued-action that often accompanies EDs. ACT is particularly suitable for targeting behavioral deficits in these domains as it is designed to help individuals shift their focus and energy to pursuing values-consistent behaviors.

#### **4.4 Clinical Implications**

One area of focus of the current study was body image flexibility because of its association with EDs and because it is a proposed mechanism of change in ED treatment (Sandoz et al., 2013). The results of the current study support the conceptualization of EDs as problems of inflexibility (Merwin et al., 2011). Consequently, it may be beneficial for clinicians to directly target how one relates and responds to eating- and body-related thoughts and emotions. Providing a rationale (e.g., that individuals can decrease problem behaviors and increase valued-action even with the presence of unpleasant thoughts and emotions related to body dissatisfaction) may be beneficial, given that these thoughts and emotions are often longstanding and difficult to change or eliminate (Vanderlinden, 2008). Using cognitive defusion techniques targeting ED-related thoughts may promote body image flexibility and acceptance and reduce an individual's over involvement with ED-related thoughts (see Hill, Masuda, Melcher, et al., 2015). Simply focusing treatment on ED-related thoughts without considering body image flexibility

may not effectively decrease ED behaviors (Sandoz et al., 2013). Although body dissatisfaction and other ED-related thoughts are necessary for one to develop an ED, they are not sufficient in explaining how some individuals continue to experience such thoughts without them impacting eating behavior (Polivy & Herman, 2002), and research suggests that body image flexibility better predicts EDs than body dissatisfaction alone (Sandoz et al., 2013). Using repeated measurement of body image flexibility can offer information regarding if and how clients change how they respond and relate to ED-related thoughts and emotions and how this corresponds with changes in ED behaviors.

Similarly, measures of self-compassion can be administered before treatment to assess to what degree shame and self-compassion should be targeted with a particular individual. An individual's pretreatment level of self-compassion can provide information concerning the degree to which emphasizing self-compassion may be useful and the length of treatment necessary. An early reduction in shame predicted faster improvements in ED-related symptoms (Kelly et al., 2014); however, those who are high in self-criticism and low in self-compassion seem to respond more slowly to treatment aimed at improving self-compassion (Luoma, 2014). Therefore, such individuals may require more time in therapy to increase self-compassion and experience related treatment benefits and may benefit from focusing on self-compassion earlier in treatment. Repeatedly assessing self-compassion during treatment can demonstrate if and how treatment leads to improvement in self-compassion and reduction in ED behaviors.

Self-compassion is a multi-faceted construct (Neff, Whittaker, & Karl, 2017), and it may be clinically relevant for therapists to consider what, if any, specific factor of self-compassion is more important for a particular individual (e.g., self-kindness or common humanity). The SCS-SF

may not be the optimal measure of self-compassion if the goal is to assess self-compassion in more detail. The creators of the SCS-SF recommend using the total score over subscale scores (Raes et al., 2011); therefore, it may be preferable for clinicians to use the original self-compassion scale in order to assess the six-factors (self-kindness, self-judgement, common humanity, isolation, mindfulness, and overidentification) of self-compassion measured by the longer scale.

There are many techniques that can be utilized to increase self-compassion, both implicitly and explicitly (Neff, 2017; Neff, Kirkpatrick, & Rude, 2007). In the current study, participants engaged in activities intended to promote self-compassion, such as 1) normalizing difficulty with EDs, anxiety, and shame, 2) perspective-taking activities in which they considered what they would say to a friend in a similar situation or to themselves as a child, and 3) writing a letter to themselves from the perspective of an unconditionally loving friend or family member. As with Participant 3, even individuals whose self-compassion scores fall within the normal range can benefit from treatment aimed at improving self-compassion.

Participants in the current study reported that focusing on valued living in addition to ED behaviors was an aspect of treatment they appreciated and believed was extremely beneficial. Central features of ACT may be particularly beneficial for treating individuals with EDs because of the focus on increasing engagement in values-consistent behaviors and improving overall functioning. By increasing body image flexibility and self-compassion, individuals may be more willing to engage in previously avoided but meaningful activities and decrease the need for ED behaviors that function as problematic avoidance (Merwin et al., 2011). This may be particularly important in treatment of individuals with more severe pathology, like those with a long history of AN, who have trouble identifying values unrelated to ED behavior (Fairburn, 2008).



Helping individuals clarify values and tailoring treatment to expanding their lives rather than focusing exclusively on eliminating the ED may lead to increased willingness to participate in treatment. Given these findings, it may be important for clinicians working with individuals with EDs to expand the focus of treatment to increasing valued action in addition to decreasing problem behaviors. Specifically, clinicians may want to promote valued activities identified by the individual as being meaningful rather than activities that are simply enjoyable or reduce distress.

Because the conceptualization of EDs from an ACT perspective includes understanding the function of ED behaviors, clinicians may want to conduct formal functional analyses to determine the function of behaviors for a particular individual. Often ED behaviors serve as ineffective emotion regulation strategies; however, it will be important to ensure that this is the case before proceeding with the intervention. Finally, it is important for clinicians to remain aware of the intended purpose of ACT techniques and to consider the overall conceptualization of EDs from an ACT perspective. Rather than delivering an experiential exercise or metaphor as written in books and treatment protocols, a clinician should consider the individual with whom s/he is working and how an exercise or metaphor is received by that individual (Hayes et al., 2011). For example, one would not want to intentionally or unintentionally deliver the message that shame is bad and potentially increase a client's shame because s/he experiences shame. It is also important to consider the timing with which a particular therapeutic technique is delivered and the quality of the therapeutic relationship (Vanderlinden, 2008) when choosing what techniques to use and at what point in treatment. Again, flexibly delivering ACT concepts and

techniques rather than rigidly following a treatment protocol may be necessary when working with individuals with varying needs.

#### **4.5 Strengths**

Worth noting are the methodological strengths of the present dissertation project. A major strength of this study was the use of an experimental design to investigate the effects of compassion-focused ACT as a treatment for individuals with EDs. More specifically, the present study employed a multiple baseline across participants design to investigate a causal link between the intervention and primary behavioral outcomes. This experimental design was particularly appropriate for ED behaviors because they rarely improve spontaneously (Wilson et al., 2007). It was also well-suited for use with individuals with AN and subclinical AN given their low base rates; the lifetime prevalence of AN among adults in the United States is 0.6% (Hudson, Hiripi, Pope, and Kessler, 2007). Across all participants, systematic changes in all target behaviors were observed, and these changes were contingent upon the introduction of the intervention. By systematically staggering the timing of intervention and controlling for extraneous factors (e.g., history and maturation), the present study design allowed for drawing the conclusion that the intervention contributed to the changes in ED and values-consistent behaviors.

Second, the present study design was also suitable for treatment development as it was more time- and cost-effective than a larger randomized control trial (RCT) would have been (Hayes et al., 1999). This is important given that an optimal ACT for ED protocol has yet to be established. Across existing studies of ACT and other mindfulness- and acceptance-based therapies for EDs, there is considerable variability in the content and delivery of treatments (Masuda & Hill, 2013), and the evidence regarding their efficacy has not been established (Wanden-

Berghe, Sanz-Valero, & Wanden-Berghe, 2011). In addition, because treatment development research for AN has been so difficult, some have suggested that RCT research should be postponed until new, favorable interventions for AN have been developed (Fairburn, 2005). The present study was the first within-subject experiment that investigated the applicability of ACT to individuals with EDs.

Another strength of the study was the inclusion of a follow-up assessment point. The importance of examining longer-term effectiveness of therapy has been noted as the treatment effects can fade after the intervention has ended (Gifford et al., 2004; Lappalainen et al., 2007). Previous treatment studies with a similar emphasis on body dissatisfaction and self-compassion, ED behaviors, and shame also included three-month or four-month follow-up assessments (e.g., Albertson, Neff, & Dill-Shackleford, 2014; Lillis et al., 2009; Luoma, Kohlenberg, Hayes, & Fletcher, 2012). The present findings suggest that beneficial effects of the compassion-focused ACT are likely to be maintained at least for three months after treatment has concluded.

Fourth, from a transdiagnostic perspective, the present study design was beneficial for evaluating changes in sets of behaviors that are not defined by a particular topography but by a common function (Holman & Koerner, 2014). ED behaviors may vary in form within and between individuals, and yet they may function similarly (e.g., emotional escape or avoidance of discomfort, weight-control). In the present study, each participant identified two primary ED behaviors. All participants chose body-checking as one of their primary ED behaviors, and each participant also identified another ED behavior (e.g., mindfulness snacking, restriction) that differed from the other two participants. Given the diversity of target ED behaviors, the findings of

this study may be generalized to individuals with a variety of ED concerns, not just those with a particular ED diagnosis or type of problem behavior.

Fifth, target behaviors assessed in the present multiple baseline across participants experimental design were not limited to problem behaviors but also included values-consistent behaviors. Each participant chose a personal valued action, and these valued actions differed topographically across participants, although they might have been functionally similar to one another. Extending primary outcome behaviors of interest to constructive behaviors allowed the present study to investigate the effects of the compassion-focused ACT intervention on broader life domains that go beyond symptom reduction. It is important to note that the effects of treatment were replicated across behaviors of each participant and across participants.

Finally, adherence checks were completed to assess the degree to which treatment components consistent with ACT were used above and beyond “nonspecific” therapist factors. This suggests ACT is helpful beyond just supportive listening and good therapeutic rapport. However, this study was not designed to completely rule out the effects of nonspecific factors, such as therapeutic alliance, treatment credibility, and expectation for improvement, which may have impacted outcomes. Given that the present study did not rule out these factors, future studies should replicate and extend this study by including a comparison treatment condition, such as a standard treatment (e.g., CBT-E) or psychoeducational comparison, that incorporates nonspecific factors.

#### 4.6 Limitations

There were several limitations worth noting. First, a methodological limitation of the current study was the timing of the intervention. The baseline phases were not ideally staggered, especially between Participant 1 and Participant 3. The timing of the intervention phases was influenced by participants' needs in addition to establishing stable baselines long enough in duration for between-participant comparisons. There was at least a three-data point difference in baseline phases between participants, which is the minimum required; however, this was not long enough to do thorough between-participant comparisons.

In addition, some of the primary outcome variables did not move immediately after the introduction of the intervention. Therefore, conclusions about the degree to which the intervention caused behavior change are not clear. This is a limitation of studies using single-subject research designs because there is no consensus on when behavior change needs to occur during the intervention phase in order to infer a functional relationship (Lieberman, Yoder, Reichow, & Wolery, 2010). In addition, there is no established rule regarding what determines sufficient consistency across participants to determine a functional relationship (Lieberman et al., 2010).

Another limitation was the reliance on self-report for collecting measures of outcome and process variables. This assessment method can be negatively impacted by participants' limited insight or response bias (Stone et al., 2000). However, this limitation was reduced by the use of multiple measures, including the physiological measure of participants' weight. These efforts added validity to the self-reported changes in primary and secondary outcomes and process variables. Additionally, Participant 1 reported that she had started menstruating at the end

of the intervention phase, which is an indication of improved physical health associated with balanced diet and healthy weight.

Another weakness of the current study was that there was no treatment comparison nor were there alternative process measures included to test for other potential mechanisms of change. No definitive statements can be made regarding the benefits of ACT for individuals with EDs above and beyond other psychotherapies. Similarly, given the lack of investigating competing processes of change, it remains unclear if the present compassion-focused ACT is qualitatively different from other interventions, such as CBT-E (Fairburn, 2008). The decision to limit the number of process-variable measures administered was made to reduce the burden placed on participants. This limits conclusions that can be drawn from the current study. It may be beneficial for future studies to use a treatment comparison condition and assess proposed ACT mechanisms and mechanisms of change of the comparison therapy. This would provide useful information regarding common mechanisms underlying effective treatments as well as any true differences between therapies.

For example, the present study did not assess body dissatisfaction and ED cognitions, key ED symptoms, and it is unclear the degree to which they may have corresponded to changes in the present outcome variables. In the current study, all participants described still experiencing body dissatisfaction and urges to restrict, skip meals, and engage in body-checking throughout the course of intervention. However, they also reported that they learned to respond differently to those thoughts and emotions via improved body image flexibility and self-compassion. As body dissatisfaction and ED cognitions are considered potential processes of

change in other forms of therapy, such as CBT-E, future ACT studies should include these key variables for outcome and process analyses.

Regarding sample characteristics, participants in the current study were relatively homogeneous. All participants were educated young white women. Although the rate of EDs is highest among young white females from middle to high socioeconomic statuses, research shows that EDs are increasingly affecting older women (Baker & Runfola, 2016; Runfola et al., 2013), women of other racial and ethnic backgrounds (Gordon, Castro, Sitnikov, & Holm-Denoma, 2010), and boys and men (Wiseman & Moradi, 2010). Future studies need to use more diverse samples than the white female college student participants used in this study to be able to generalize findings to the larger population.

Another limitation is the variability in which the intervention was delivered across participants. This may be viewed as a threat to treatment fidelity, which can impact both internal and external validity (Borrelli, 2011). Although all participants received the same amount of treatment, Participant 1 and Participant 3 participated in weekly sessions, and Participant 2 participated in sessions twice per week during part of the treatment delivery. When designing the protocol for the current study, it was intended to be delivered on a weekly or biweekly basis. Therefore, Participant 2 being seen twice per week was not in itself problematic; however, because the other two participants were seen weekly and Participant 2 initially participated in weekly sessions, treatment was not delivered uniformly. From a functional perspective, this is not problematic, and in fact flexibility in the delivery of a treatment increases the degree to which it can be utilized in real world settings. However, in the research context, consistency in treatment delivery is important in establishing a causal relationship.

Other notable limitations include that only one person completed adherence ratings and only one therapist delivered the ACT intervention. Having multiple raters would have been beneficial in getting consistent ratings across raters and determining interrater reliability. By having multiple therapists complete the ACT protocol, a stronger statement regarding the efficacy of ACT for EDs could be made. It is possible that characteristics of the therapist were important in facilitating improvements instead of the ACT intervention and using multiple therapist would increase confidence in conclusions regarding the benefit of the intervention over therapist characteristics. Yet, in the context of the current study, having additional therapists delivering the intervention would have introduced additional variability.

A final limitation to note is the lack of a longer follow-up assessment point. Although a three-month follow-up was included, some have suggested that treatment effects often weaken significantly after one year (e.g., Durham, Higgins, Chambers, Swan, & Dow, 2011). Therefore, this study offers limited conclusions regarding longer-term effects of treatment. Future studies should include follow-up periods of one year or longer.

#### **4.7 Conclusions**

Because EDs are often resistant to treatment, it is essential to identify processes necessary to target in treatment and interventions that improve these processes. In the current study, all participants had a long history of EDs and represented a group that is historically difficult to treat and difficult to research (Berman et al., 2009). Interestingly, all participants had previous psychotherapy for an ED, depression, or anxiety and still experienced clinically signifi-



cant ED symptoms at the beginning of the study. They all reported that the therapy was beneficial and all completed the entire protocol, including daily self-monitoring, homework assignments, and assessments, even though no inducement was offered other than the therapy itself.

Results of the current study suggest the potential conceptual and clinical relevance of employing compassion-focused ACT to target body image flexibility, self-compassion, ED behaviors, and values-consistent behaviors with individuals with EDs. This adds to the growing body of evidence that suggests mindfulness- and acceptance-based therapies, such as ACT, are beneficial for individuals with EDs and related concerns, such as body-checking (Baer et al., 2005; Juarascio et al., 2010; Masuda & Hill, 2013). The promotion of self-compassion and body image flexibility may be particularly useful when working with individuals with ED concerns because they target improved functioning while promoting alternatives for relating and responding to distressing internal experiences. Focusing on quality of life, functioning, and living a valued life by learning to respond openly to difficult cognitions and emotions may be particularly important to incorporate into treatments for individuals with EDs as these individuals often lose contact with important aspects of life by overly focusing on weight, shape, and appearance. ACT appears to be a beneficial intervention for ED behaviors; however, additional research is warranted with this population.

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## APPENDICES

### Appendix A: Study Measures

#### Demographic Questionnaire

Please answer the following questions in a way that best characterizes you.

1. Age range (select one)
  - a. 18-24
  - b. 25-29
  - c. 30-34
  - d. 35-39
  - e. 40-44
  - f. 45-49
  - g. 50-54
  - h. 55-59
  - i. 60-64
  - j. 65 +
  - k. Prefer not to respond
  
2. Sex (select one)
  - a. Male
  - b. Female
  - c. Transgender
  - d. Prefer not to respond
  
3. Race/ethnicity (you may answer “no response” if you prefer not to answer):  
\_\_\_\_\_
  
4. Current major (you may answer “no response” if you prefer not to answer):  
\_\_\_\_\_

5. Have you ever been diagnosed with a psychological disorder (e.g., depression, bulimia, social anxiety disorder)?
  - a. Yes
  - b. No
  - c. Prefer not to answer
  
6. If you answered “yes” to question 5, with what disorder(s) were you diagnosed? (You may answer “no response” if you prefer not to answer.) \_\_\_\_\_

## EDEQ

The following questions are concerned with the PAST FOUR WEEKS ONLY (28 days). Please read each question carefully and circle the appropriate number on the right. Please answer *all* the questions.

Question 1-12: Please circle the appropriate number on the right. Remember that the questions only refer to the past 4 weeks (28 days) only.

On how many of the past 28 days ...	No Days	1-5 Days	6-12 Days	13-15 Days	16-22 Days	22-27 Days	Every-day
1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2. Have you gone for long periods of time (8 waking hours or more) without eating anything in order to influence your shape or weight?	0	1	2	3	4	5	6
3. Have you <i>tried</i> to avoid eating any foods, which you like, in order to influence your shape or weight?	0	1	2	3	4	5	6
4. Have you tried to follow definite rules regarding your eating (for example, a calories limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5. Have you had a definite desire to have an empty stomach with the aim of influencing your shape and weight?	0	1	2	3	4	5	6
6. Have you had a definite desire to have a <i>totally flat</i> stomach?							
7. Has thinking about <i>food, eating, or calories</i> made it much more difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8. Has thinking about shape or weight made it more difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9. Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6



10.	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11.	Have you felt fat?	0	1	2	3	4	5	6
12.	Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

Question 13-18: Please fill in the appropriate number on the right. Remember that the questions only refer to the past 4 weeks (28 days).

13.	Over the past 28 days, how many <i>times</i> have you eaten what other people would regard as an <i>unusually large amount of food</i> (given the circumstances)?	_____
		(# of episodes)
14.	On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?	_____
		(# of episodes)
15.	Over the past 28 days, on how many <i>days</i> have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food <i>and</i> have had a sense of loss of control at that time)?	_____
		(days)
16.	Over the past 28 days, how many <i>times</i> have you made yourself sick (vomit) as a mean of controlling your shape or weight?	_____
		(# of episodes)
17.	Over the past 28 days, how many <i>times</i> have you taken laxatives as a means of controlling your shape or weight?	_____
		(# of episodes)
18.	Over the past 28 days, how many <i>times</i> have you exercised in a “driven” or “compulsive” way as a means of controlling weight, shape, or amount of fat, or to burn off calories?	_____
		(# of episodes)

Questions 19-21: Please circle the appropriate number. Please note that for these questions the term “*binge eating*” means eating what others of your age and gender would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

		No Days	1-5 Days	6-12 Days	13-15 Days	16-22 Days	22-27 Days	Every-day
19.	Over the past 28 days, on how many days have you eaten in secret (e.g., furtively)? ... ignore episodes of binge eating	0	1	2	3	4	5	6
		None of the time	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time
20.	On what proportion of the times that you have eaten have you felt guilty (felt that you’ve done wrong) because of its effect on your shape or weight? ...ignore episodes of binge eating	0	1	2	3	4	5	6
		Not at all	Slightly	Moderately	Markedly			
21.	Over the past 28 days, how concerned have you been about other people seeing you eat?	0	1	2	3	4	5	6

...ignore episodes of binge eating

Questions 22-28: Please circle the appropriate number on the right. Remember that the questions only refer to the past 4 weeks (28 days).

On how many of the past 28 days ...	No at all		Slightly		Moderately		Markedly	
22. Has your <i>weight</i> (number on the scale) influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6	
23. Has your <i>shape</i> influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6	
24. How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next 4 weeks?	0	1	2	3	4	5	6	
25. How dissatisfied have you been with your <i>weight</i> (number on the scale)?	0	1	2	3	4	5	6	
26. How dissatisfied have you been with your <i>shape</i> ?	0	1	2	3	4	5	6	
27. How uncomfortable have you felt seeing your body (for example, your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6	
28. How uncomfortable have you felt about others seeing your body (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6	

What is your weight at present? (Please give your best estimate.) \_\_\_\_\_

What is your height? (Please give your best estimate.) \_\_\_\_\_

If female: Over the past 3-4 months have you missed any menstrual periods?

\_\_\_\_\_

If so, how many? \_\_\_\_\_

Have you been taking the "pill"? \_\_\_\_\_

## BI-AAQ

*Directions: Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following rating scale to make your choices. For instance, if you believe a statement is 'Always True,' you would write a 7 next to that statement.*

Never True	Very Seldom True	Seldom True	Sometimes True	Frequently True	Almost Always True	Always True
1	2	3	4	5	6	7

- \_\_\_ 1. Worrying about my weight makes it difficult for me to live a life that I value.
- \_\_\_ 2. I care too much about my weight and body shape.
- \_\_\_ 3. I shut down when I feel bad about my body shape or weight.
- \_\_\_ 4. My thoughts and feelings about my body weight and shape must change before I can take important steps in my life.
- \_\_\_ 5. Worrying about my body takes up too much of my time.
- \_\_\_ 6. If I start to feel fat, I try to think about something else.
- \_\_\_ 7. Before I can make any serious plans, I have to feel better about my body.
- \_\_\_ 8. I will have better control over my life if I can control my negative thoughts about my body.
- \_\_\_ 9. To control my life, I need to control my weight.
- \_\_\_ 10. Feeling fat causes problems in my life.
- \_\_\_ 11. When I start thinking about the size and shape of my body, it's hard to do anything else.
- \_\_\_ 12. My relationships would be better if my body weight and/or shape did not bother me.

## GHQ

We would like to know if you have had any medical complaints, and how your health has been in general, *over the past few weeks*. Please answer ALL questions by circling the answer which you think most nearly applied to you. Remember that we want to know about present and recent complaints, not those that had in the past.

Have you recently:

1.	been able to concentrate on whatever you're doing?	better than usual	same as usual	less than usual	much less than usual
2.	lost much sleep over worry?	not at all	no more than usual	rather more than usual	much more than usual
3.	felt that you are playing a useful part in things?	more so than usual	same as usual	less useful than usual	much less useful
4.	felt capable of making decision about things?	more so than usual	same as usual	less so than usual	much less capable
5.	felt constantly under strain?	not at all	no more than usual	rather more than usual	much more than usual
6.	felt you couldn't overcome your difficulties?	not at all	no more than usual	rather more than usual	much more than usual
7.	been able to enjoy your normal day-to-day activities?	more so than usual	same as usual	less so than usual	much less than usual
8.	been able to face up to your problem?	more so than usual	same as usual	less able than usual	much less able
9.	been feeling unhappy and depressed?	not at all	no more than usual	rather more than usual	much more than usual
10.	been losing confidence in yourself?	not at all	no more than usual	rather more than usual	much more than usual
11.	been thinking of yourself as a worthless person?	not at all	no more than usual	rather more than usual	much more than usual
12.	been feeling reasonably happy, all things considered?	more so than usual	about same as usual	less so than usual	much less than usual

## HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never

Almost always

1

2

3

4

5

- \_\_\_\_ 1. When I fail at something important to me I become consumed by feelings of inadequacy.
- \_\_\_\_ 2. I try to be understanding and patient towards those aspects of my personality I don't like.
- \_\_\_\_ 3. When something painful happens I try to take a balanced view of the situation.
- \_\_\_\_ 4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
- \_\_\_\_ 5. I try to see my failings as part of the human condition.
- \_\_\_\_ 6. When I'm going through a very hard time, I give myself the caring and tenderness I need.
- \_\_\_\_ 7. When something upsets me I try to keep my emotions in balance.
- \_\_\_\_ 8. When I fail at something that's important to me, I tend to feel alone in my failure
- \_\_\_\_ 9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
- \_\_\_\_ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
- \_\_\_\_ 11. I'm disapproving and judgmental about my own flaws and inadequacies.
- \_\_\_\_ 12. I'm intolerant and impatient towards those aspects of my personality I don't like.

## Appendix B: Tables

Table 1.1

*Means and Standard Deviations of Target Behaviors across Phases and 3-Month Follow-up*

	Baseline	Intervention	3-Month Follow-Up
<b><i>Participant 1</i></b>			
BC <i>M</i> (SD)	4.40 (1.16)	2.21 (1.19)	1.00 (0.53)
MS <i>M</i> (SD)	5.00 (0.94)	2.03 (0.89)	1.13 (0.64)
Meals <i>M</i> (SD)	0.00 (0.00)	0.77 (0.66)	2.00 (0.00)
<b><i>Participant 2</i></b>			
Restricting <i>M</i> (SD)	1.02 (0.74)	0.54 (0.60)	0.00 (0.00)
BC <i>M</i> (SD)	9.60 (1.75)	4.93 (2.43)	4.00 (1.60)
Withdrawal <i>M</i> (SD)	0.91 (0.85)	0.30 (0.56)	0.29 (0.45)
<b><i>Participant 3</i></b>			
Orthorexia <i>M</i> (SD)	1.29 (0.49)	0.15 (0.36)	0.00 (0.00)
BC <i>M</i> (SD)	2.57 (0.53)	0.64 (0.74)	0.43 (0.73)
Clothing <i>M</i> (SD)	0.29 (0.49)	0.96 (0.19)	1.00 (0.00)

*Note:* BC stands for Body-Checking and MS stands for Mindless Snacking. Clothing refers to the mean number of times per day Participant 2 wore clothes based on comfort or style preference.

Table 2.1

*Mean Scores for Secondary Outcomes and Process Variables at Pretreatment (Pre), Midpoint (Mid), Posttreatment (Post), and 3-Month Follow-up (FU)*

Scale	Pre	Mid	Post	FU
<b><i>Participant 1</i></b>				
Global ED	4.03	3.30	2.13	0.90
General Distress	23.00	12.00	6.00	4.00
Body Image Flexibility	27.00	37.00	53.00	65.00
Self-compassion	1.92	2.33	3.59	3.42
<b><i>Participant 2</i></b>				
Global ED	2.28	1.61	1.25	0.96
General Distress	11.00	12.00	6.00	7.00
Body Image Flexibility	41.00	49.00	54.00	52.00
Self-compassion	2.58	2.92	3.58	3.75
<b><i>Participant 3</i></b>				
Global ED	1.00	0.72	0.62	0.33
General Distress	15.00	11.00	12.00	12.00
Body Image Flexibility	53.00	54.00	63.00	69.00
Self-compassion	2.92	3.25	3.25	3.33



## Appendix C: Figures

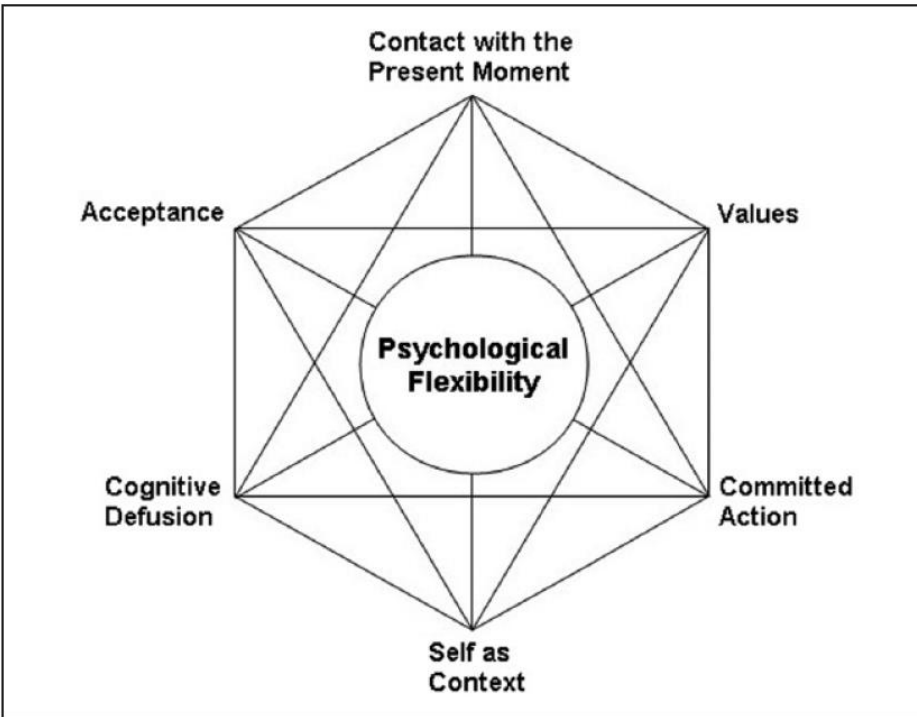
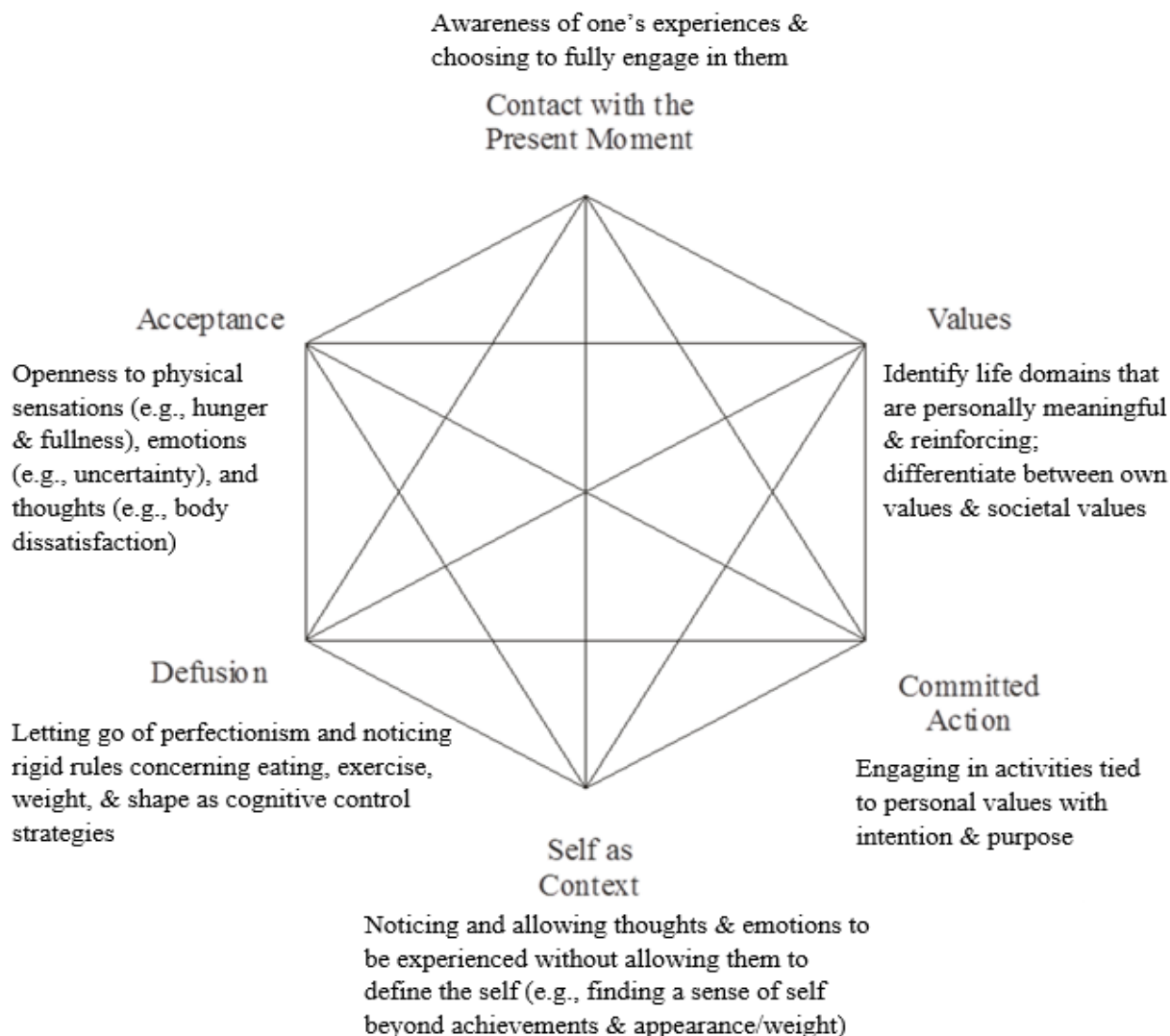
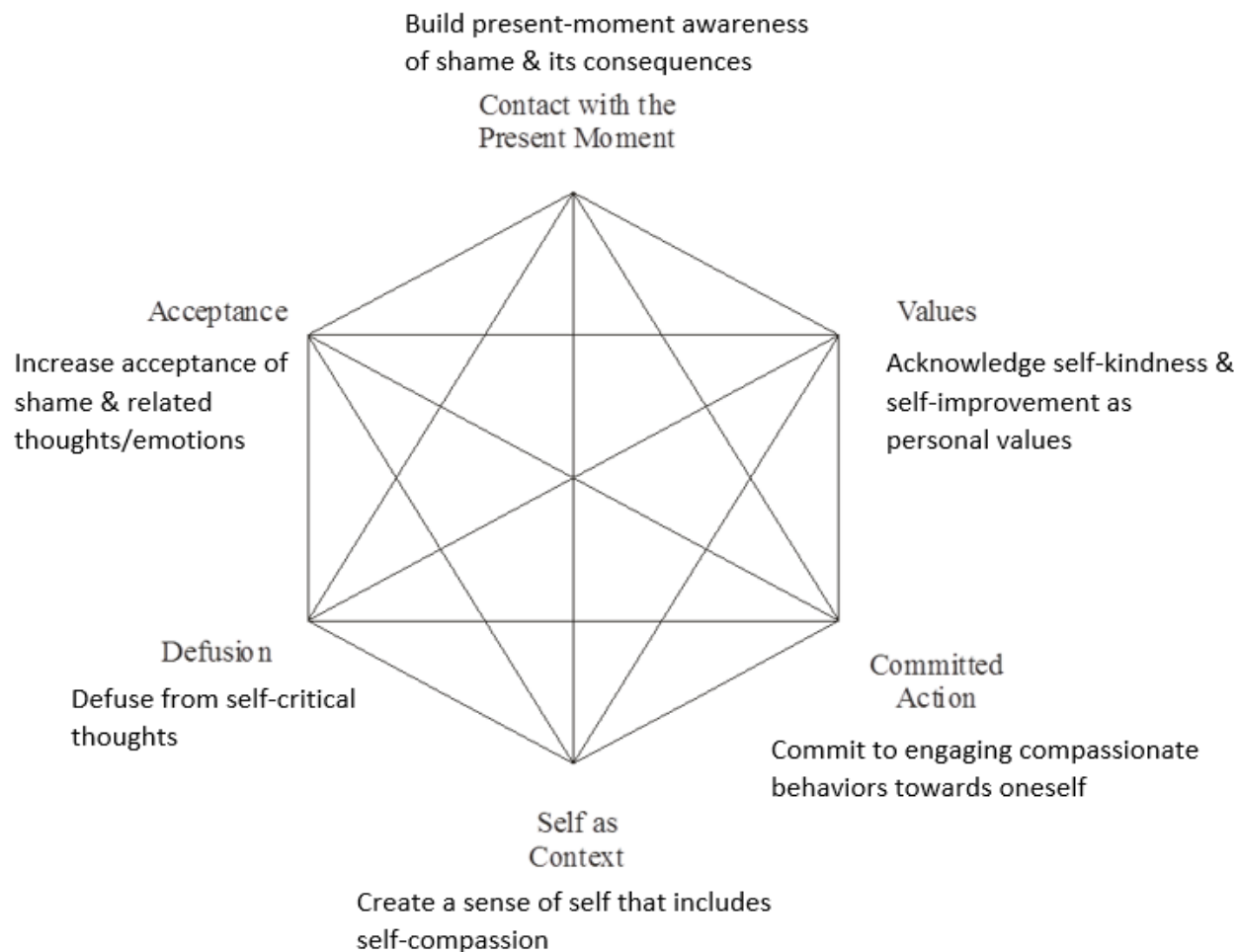


Figure 1.1. Psychological flexibility diagram.



*Figure 2.1.* Psychological flexibility specific to eating disorders. From "Treating disordered eating in gay men and other GSM clients using DBT and ACT" by J. C. Walloch and M. L. Hill, 2016, p. 120. Copyright 2016 by Matthew Skinta and Aisling Curtin, Context Press.



*Figure 3.1.* Psychological flexibility diagram specific to shame and self-compassion. From “Acceptance and Commitment Therapy for shame and self-criticism,” by J. B. Luoma, 2014, <http://www.actwithcompassion.com>.

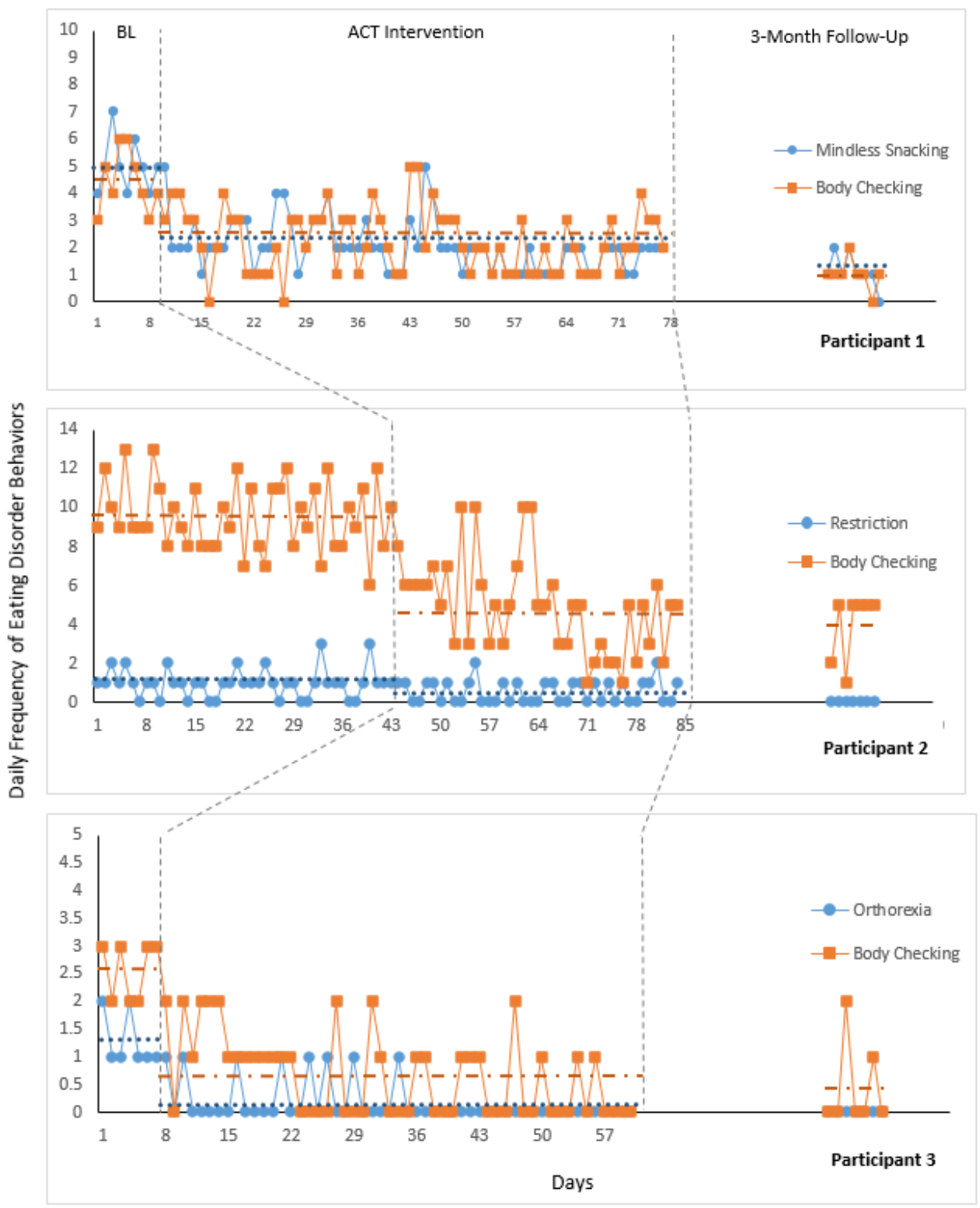


Figure 4.1. Daily eating disorder behaviors across participants with mean lines plotted for each behavior during each phase.

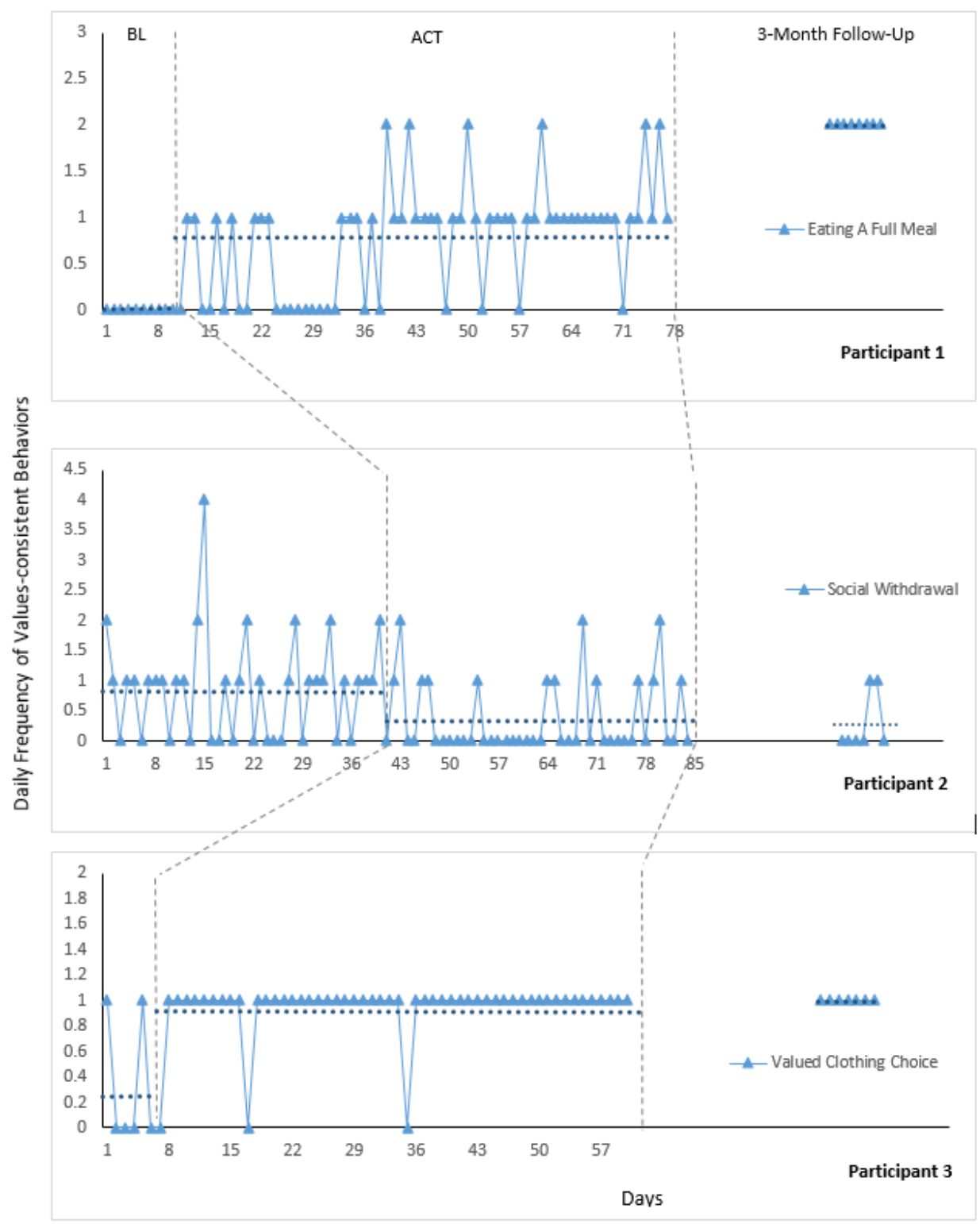


Figure 5.1. Daily values-consistent behaviors across participants with mean lines plotted for each phase.

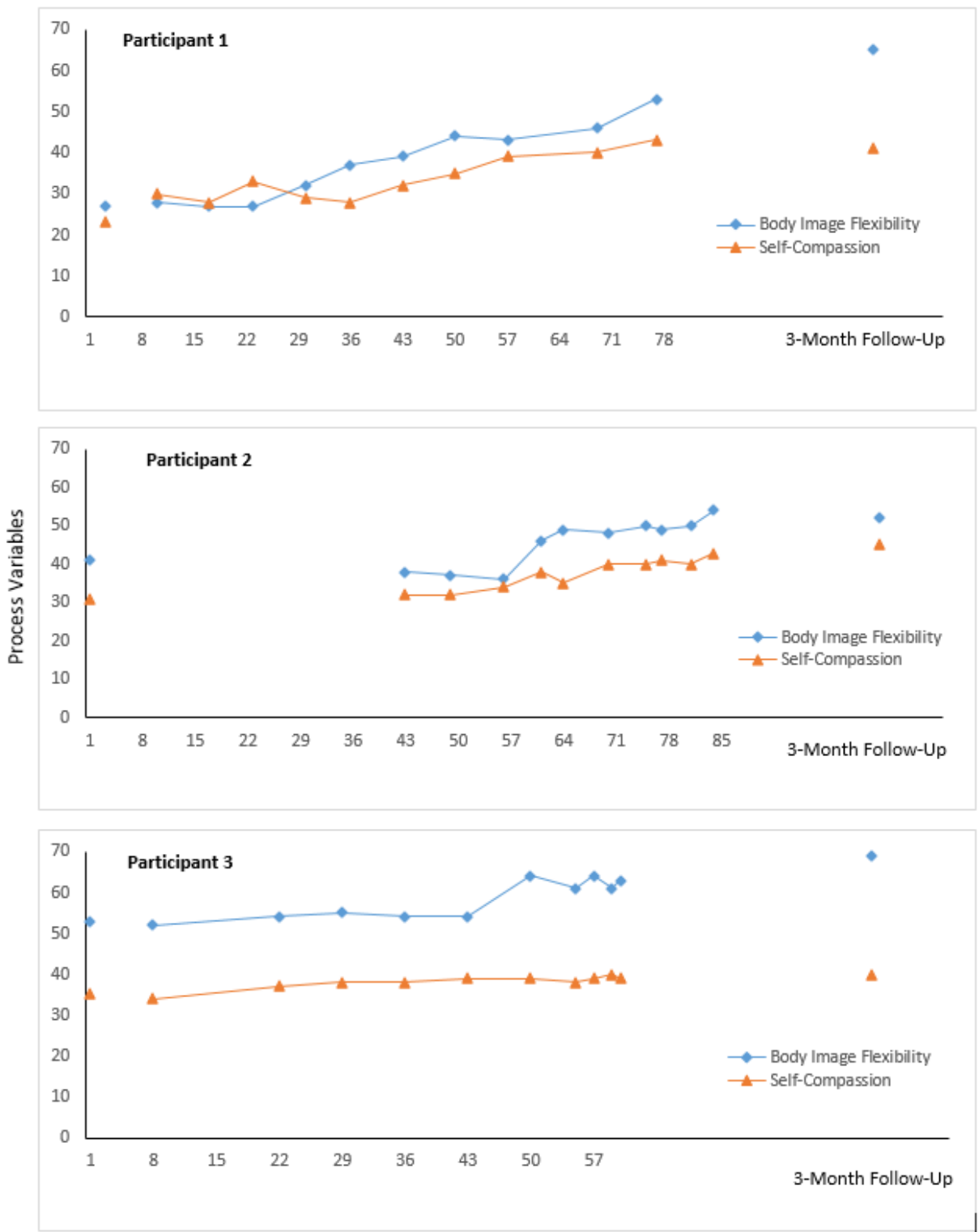


Figure 6.1. Weekly process variables.

