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April O'Grady

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A SINGLE SUBJECT INVESTIGATION OF BEHAVIORAL AND COGNITIVE
THERAPIES FOR BODY DYSMORPHIC DISORDER

By

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B.Sc. Memorial University of Newfoundland, 1993

A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

(in Psychology)

The Graduate School

The University of Maine

May, 2002

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A SINGLE-SUBJECT INVESTIGATION OF BEHAVIORAL AND COGNITIVE
THERAPIES FOR BODY DYSMORPHIC DISORDER

By April O'Grady

Thesis Co-Advisors: Dr. Jeffrey Hecker,
Dr. Geoffrey Thorpe

An Abstract of the Thesis Presented
In Partial Fulfillment of the Requirements for the
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(in Psychology)
May 2002

Body dysmorphic disorder (BDD), a psychological disorder characterized by an intense preoccupation with an imagined physical defect, causes extreme distress and leads to depression, divorce, and suicide. Currently, empirically-supported treatments include cognitive-behavioral therapy (CBT) and selective serotonin-reuptake inhibitors, however, one important component of treatment literature yet to be investigated is the relative efficacy of cognitive or behavior therapy as a sole treatment. In particular, examinations of change processes throughout the course of treatment are needed. Thus, the identification of necessary treatment components in the CBT package and the isolation of specific change processes could lead to a more streamlined and effective treatment approach.

The current study utilized a multiple baseline, treatment crossover design to investigate change processes during either behavior therapy (BT) or cognitive therapy (CT) for BDD. Following a diagnostic assessment including a semi-structured interview for BDD, six individuals diagnosed with the disorder were

invited to participate, five of whom completed the study. Participants received eight sessions of either BT or CT, followed by the same number of sessions of the remaining treatment. BT involved exposure with response prevention (ERP), and required the completion of ERP exercises both at home and in session. CT sessions followed Beck's (1967, 1976) approach, and involved the identification and challenging of cognitive distortions. In addition to a battery of self-report questionnaires administered at each phase change and at follow-up, daily recordings of compulsive behaviors, appearance-related self-statements, and global distress were gathered, as well as weekly third party assessments of behavior.

Visual analysis of daily recordings demonstrated improvement for three of the five participants, with behavior therapy appearing to be most effective in reducing daily BDD symptoms. In addition, following completion of both cognitive and behavioral treatments, three of the five participants met criteria for clinically significant improvement on self-report measures of BDD symptoms and depression. Finally, investigation into the covariation of BDD-related thoughts and behaviors revealed results for two participants. Discussion focused on implications for behavioral and cognitive theories of symptom maintenance, as well as on interpreting current findings within the body of BDD outcome literature and further clinical implications.

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Chapter 1

INTRODUCTION

Body dysmorphic disorder (BDD) is a chronic, debilitating disorder characterized by extreme preoccupation with a perceived physical abnormality. The defect in appearance is imagined, or if a slight physical anomaly is present, an individual's concern is grossly exaggerated (American Psychiatric Association [APA], 1994). Clients with BDD are intensely preoccupied with their perceived defect and spend hours each day ruminating and worrying about it. They believe their defect to be so disgusting that others will find them repulsive. In response to these obsessions, individuals with BDD also spend hours in compulsive checking or other ritualized behaviors in a futile attempt to alleviate the discomfort caused by those ruminations (APA, 1994). These rituals are very difficult to resist and are distressing, even though the goal of the behavior is to reduce the discomfort elicited by the ruminations. Such debilitating symptoms may cause extreme distress and can result in divorce, job loss, drastic cosmetic surgery, self-mutilation, and even suicide (Hollander, Cohen, & Simeon, 1993; Phillips, 1991; Phillips, 1996a, Phillips 2000a, Sobanski & Schmidt, 2000a).

The area of concern can include any possible body part and complaints range from specific (e.g., crooked nose) to vague areas (e.g., paleness of the skin). However, some areas of concern are more common than others. For example, individuals often worry about the

shape, size, or symmetry of facial parts (e.g., nose, teeth, chin, eyes, mouth, cheeks, or eyebrows). In a British sample of 50 individuals diagnosed with BDD, 86% were preoccupied with an aspect of their face (Veale, Gournay, Dryden, Boocock, Shah et al., 1996). Other common areas include legs, hands, genitals, feet, and shoulders (Sobanski & Schmidt, 2000a & b). Many clients also present with imagined flaws in the skin or complexion (e.g., scars, wrinkles, paleness or redness of the skin) and with the hair (e.g., thinning hair, abnormally shaped hairline, or excessive growth of body hair) (Neziroglu & Yaryura-Tobias, 1993a; Yaryura-Tobias & Neziroglu, 1997a; Phillips, 1996a; Phillips, McElroy, Kecks, Pope, & Hudson, 1993).

Individuals with BDD experience significant distress over their supposed deformity and often describe their preoccupations as “tormenting” and “torturous” (Phillips, 1991, p.1140). The obsessions are difficult to control and sufferers usually make no attempt to resist them. Therefore, clients spend many hours a day obsessing about their defects to the extent that the thoughts dominate their lives (APA, 1994). Individuals with severe cases may not leave their homes for fear of being seen or may leave only at night. Thus, avoidance of usual activities often leads to extreme isolation and impairment in occupational and social functioning.

Those who suffer with BDD characteristically perform compulsive, ritualistic behaviors driven by their obsessions and the need to reduce

their distress. Checking the defect in a mirror and other reflective surfaces (e.g., store windows, car bumpers) is a common behavior and can consume many hours of the day. Special lighting or magnifying glasses sometimes are used to better scrutinize the flaw (APA, 1994). Others compulsively avoid mirrors by covering them up, removing them from their homes, or only using a bathroom mirror when it is covered with steam from the shower (Phillips, 1996a). In addition, excessive grooming behavior is common, in which individuals excessively comb hair, pick skin, and remove hair, or ritualistically apply makeup. BDD sufferers concerned with symmetry of body parts may also measure the flaw compulsively (Thorpe & Olson, 1997). These behaviors are completed with the goal of reducing distress but they serve to increase the intensity of the preoccupation and related anxiety and depression. The negative affect that follows BDD rituals is contrary to the rituals of obsessive-compulsive disorder, in which sufferers gain momentary relief from the completion of a compulsion.

Muscle dysmorphia has recently been recognized as a subtype of BDD (Pope, Gruber, Choi, Olivardia, & Phillips, 1997). Muscle dysmorphia is characterized by an intense preoccupation with appearing insufficiently muscular. Objectively, individuals with muscle dysmorphia are extremely muscular, yet, they perceive themselves to be small or skinny. Due to their embarrassment about physical appearance, these individuals often engage in compulsive weightlifting for hours a day, often

in secret. Sufferers often eat large amounts of food, take anabolic steroids, and wear several layers of clothing in an attempt to appear larger (Phillips, 1999a; Phillips, O'Sullivan, & Pope, 1997). Like those with typical BDD, individuals with muscle dysmorphia avoid situations in which their bodies may be seen (e.g., beaches, locker rooms, swimming pools). In addition, they may engage in compulsive mirror-checking, reassurance-seeking, and body-camouflaging. Social, occupational, and interpersonal functioning often is impaired due to embarrassment and time-consuming workout regimens.

Muscle dysmorphia is found in both males and females, and is particularly prevalent in the professional bodybuilding population (Pope et al., 1997). However, the disorder should not be confused with normal interest in bodybuilding, which does not cause distress or impairment in functioning. Muscle dysmorphia has been referred to as 'reverse anorexia', and has been considered as a form of eating disorder because of the concern about overall body shape, abnormal eating patterns, and excessive exercise (Pope, Katz, & Hudson, 1993). However, muscle dysmorphia differs from anorexia nervosa in that individuals are primarily concerned with increasing body mass, and the primary focus lies with exercise instead of diet. At the present time, the conceptualization of muscle dysmorphia as a subtype of BDD is thought to be the most appropriate (Phillips, 1999a). The disorder has phenomenological similarities to BDD and responds to exposure with response prevention

techniques similar to those utilized in the treatment of BDD. Research on muscle dysmorphia is extremely preliminary however, and more investigation is needed.

Because BDD is such a debilitating disorder, research on effective treatment remains of critical importance. Currently, the outcome literature for BDD is sparse but is increasing in size and improving in methodological rigor. Initial reports of treatment success consisted of case studies and pre-post measurements of symptom severity (Marks & Mishan, 1988; Munjack, 1978). More recent studies have exercised greater methodological control through random assignment to groups and comparisons to no-treatment controls (Rosen, Reiter, & Oronson, 1995; Veale et al, 1996). However, in all but one of these outcome studies, the treatment involves a package treatment of cognitive and behavioral techniques. No published studies have examined the relative effectiveness of cognitive challenging versus exposure with response prevention. In addition, although a cognitive-behavioral theory of BDD has been proposed, no experimental testing has been conducted.

Thus, the current body of BDD literature is lacking a test of the etiological and maintenance theories of the disorder. Although some information exists regarding the combined effects of cognitive and behavior therapies, we have very little knowledge regarding the essential components of that treatment package. In addition, there is little information on the effect of either behavior therapy (BT) or cognitive

therapy (CT) on changing both thoughts and behaviors related to BDD concerns. As will be discussed, both behavioral and cognitive theories of BDD hypothesize that successful treatment would have positive ramifications in both cognitive and behavioral realms. Therefore, an investigation into the processes of change during behavior and cognitive therapies would provide information regarding the utility of each individual treatment. To address this need, the current study examines the separate effects of behavioral and cognitive interventions on changes in BDD-related cognitions and behaviors. Using a multiple baseline crossover design, behavioral and cognitive theories of symptom maintenance will be investigated by examining the effects of exposure with response prevention and of altering maladaptive cognitive processes.

History and Demographics

BDD was initially described in the literature in the late 19th/early 20th centuries (Janet, 1903, as cited in Hay, 1970; Morselli, 1891 as cited in Hay, 1970). Morselli used the term 'dysmorphophobia' to describe a subjective feeling of physical deformity or ugliness in normally-appearing individuals. The term comes from the Greek word 'dysmorphia', which means abnormal shape (Yaryura-Tobias & Neziroglu, 1997b).

Dysmorphophobia has been recategorized several times throughout the history of the Diagnostic and Statistical Manual of Mental Disorders (DSM). In the DSM-III (APA, 1980) it was categorized as 'Atypical somatoform disorder', and divided in the DSM-III-R (APA, 1987) into

‘Delusional disorder, somatic subtype’, or ‘Body dysmorphic disorder’, depending on the delusional quality of the preoccupation. The DSM-IV (APA, 1994) kept this distinction, but allowed for a simultaneous diagnosis of both BDD and delusional disorder in instances where preoccupations are of delusional quality.

Individuals with BDD usually are diagnosed in late adolescence or early twenties (Phillips, 1996a; Veale et al., 1996), with males and females being equally likely to suffer with the disorder (Phillips, 1996a). Individuals with BDD are estimated to comprise 0.7% (Otto, Wilhelm, Cohen, & Harlow, 2001) to 2% of the population (Hollander & Wong, 1995). However, these prevalence rates are thought to be an underestimate as many sufferers of BDD present to dermatologists and plastic surgeons rather than to mental health professionals. Many individuals with BDD also go undiagnosed due to extreme embarrassment. For example, Phillips (1991) reported treating a depressed client for two years before the client disclosed BDD symptoms. The client was so ashamed of his supposed physical defect that he stated, “I didn’t have the guts to talk about it” (Phillips, 1991, p.1147). In addition, individuals with BDD tend to present with other disorders (e.g., depression, social phobia, obsessive-compulsive disorder), thereby receiving diagnosis and treatment separate from BDD (Grant, Kim, & Crow, 2001; Hollander, Neville, Frenkle, & Josephson, 1992).

Differential Diagnosis and Comorbidity

Considering that 50 to 70% of the general population report overall body dissatisfaction, the appearance preoccupations of BDD must be differentiated from everyday, normal concerns about how individuals look (Biby, 1998; Castelnuevo-Tedesco, 1992). As opposed to standard appearance concerns, the negative thoughts about appearance demonstrated in BDD are extremely difficult to resist and often intrude on other thoughts and cognitive processes. The preoccupations are time-consuming, occupying several hours a day. In addition, individuals with BDD spend significant amounts of time in repetitive, ritualistic behaviors. Many avoid social situations or other events in which evaluation of appearance may occur (APA, 1994). Sufferers hold onto their distorted beliefs in the face of disputing evidence, and they may be convinced that their defects warrant medical attention or cosmetic surgery. The appearance concerns of the general population do not cause the same amount of persistent, all-encompassing distress nor significant impairment in functioning (Castelnuevo-Tedesco, 1992). Although there is evidence of distorted appearance-related thinking patterns in the general population (Mable, Balance, Galgan, 1986), the difference between clinical and nonclinical distress may lie in the distinction between body dissatisfaction and body distortion.

The presentation of BDD symptoms also resembles that of anorexia nervosa (AN). Currently, the diagnoses of BDD and AN are

exclusionary, in that the DSM-IV (APA, 1994) excludes a diagnosis of BDD in the presence of abnormal eating habits. However, there are many phenomenological similarities between the two disorders. In both BDD and AN, individuals hold a distorted perception of their appearance. Along with this distorted view, both disorders are characterized by intense preoccupations with physical appearance and compulsive behaviors (e.g., mirror-checking in BDD; weighing in AN). Both disorders involve an overemphasis on the importance of appearance for self-worth and relationships. Individuals with BDD or AN characteristically avoid social situations, certain types of clothing, and other activities that result in self-consciousness. In addition, emphasis on beauty remedies is focal in both disorders (Rosen & Ramirez, 1998). The presentation of body dissatisfaction is so similar between AN and BDD that eating disorders have been assessed using BDD measures (Rosen, Reiter, & Oronsan, 1994).

Despite the above similarities, there are many factors that separate BDD from AN. The focus of preoccupations in AN is an intense fear of gaining weight accompanied by a refusal to maintain a body weight over the minimal normal weight for age and height (APA, 1994). In AN, the overall body image is distorted, however, in BDD the appearance defect can include any conceivable body part, and is not restricted to size or weight. Individuals with BDD may have a severely distorted image of a particular aspect of their appearance, yet a completely rational view of the

rest of their body. In addition, BDD and AN differ in that people with AN often blame themselves for their weight, believing that their size is due to their gluttony and lack of willpower (Rosen & Ramirez, 1998). On the other hand, those with BDD usually see their defects as inherited traits or flaws with which they were born. In a study comparing BDD and eating disorders (Rosen & Ramirez, 1998) both groups demonstrated equally severe disturbances in body image that were significantly greater than the disturbance of a control group. However, individuals with eating disorders were more concerned with the size and shape of large body regions, and those with BDD were preoccupied with more specific areas of their bodies. Both clinical groups, however, reported similar low levels of self-esteem. Cororve and Gleaves (2001) suggest that the gender differential between BDD and AN could potentially be explained by cultural factors, with intense pressures for thinness in women versus more broad definitions for attractiveness in men.

BDD often is associated with major depressive disorder (APA, 1994). Low self-esteem and depressive symptoms often co-occur with appearance dissatisfaction (Grubb, Sellars, & Waligroski, 1993; Mable et al., 1986), and the rate of co-existing depression and BDD can be as high as 82% (Phillips & Diaz, 1997). However, it is unclear whether depression is a result of the body dissatisfaction and isolation of BDD or if it is an etiological factor (Biby, 1998). Yaryura-Tobias and Neziroglu (1997a) suggest that depression develops as a secondary or reactive depression

because of the disruption in social, occupational, and interpersonal functioning. Phillips (1999b) proposes that BDD-related depression is heterogeneous in nature, allowing a variety of relationships between the two disorders. In this context, depression could be either secondary to or independent of BDD, or the disorders may both lie on an affective spectrum of pathology (Phillips, 1999b). Because sufferers sometimes wait for years before seeking psychological assistance, the study of depression in individuals with BDD has been hampered.

Finally, high rates of comorbidity have been demonstrated between BDD and personality disorders. An outcome study of 17 individuals diagnosed with BDD revealed that the entire sample met criteria for at least one personality disorder diagnosis, with 13 meeting criteria for four or more (Neziroglu, McKay, Todaro, & Yaryura-Tobias, 1996). The most common diagnoses included avoidant, borderline, obsessive-compulsive, self-defeating, and dependent. No relationship was demonstrated between treatment outcome and number or type of personality diagnosis. Further investigations have shown Axis-II disorders to be prevalent among the BDD population. Another study of 17 participants revealed 87% to have at least one personality disorder, with a mean of 2.53 Axis-II diagnoses (Cohen, Kingston, Bell, Kwon, Aronowitz, & Hollander, 2000). In this study, personality impairment was positively related to pharmacological treatment outcome. Another large scale study also found that 57% of 74 participants had one or more personality disorders,

with the most common being avoidant, dependent, obsessive-compulsive, and paranoid (Phillips & McElroy, 2000). Because of the close resemblance between avoidant personality disorder criteria and the social and interpersonal avoidance integral to BDD, future research should identify whether the avoidant behaviors used in making the Axis-II diagnosis are over and above those typically found in BDD.

Connections Between BDD and Obsessive-Compulsive Disorder

Obsessive-compulsive disorder (OCD) is a psychological disorder characterized by intrusive and unwanted thoughts, ideas, or images that lead to an increase in anxiety followed by repetitious, intentional rituals in order to neutralize the anxiety (APA, 1994). The obsessive-compulsive spectrum represents a set of major disorders that manifest obsessions and compulsions of such intensity as to be considered variants of OCD (Yaryura-Tobias & Neziroglu, 1997a). Although the DSM-IV currently classifies BDD as a somatoform disorder, many investigators in the field conceptualize the disorder as part of the obsessive-compulsive (OC) spectrum (Cororve & Gleaves, 2001; Hollander et al., 1993; Phillips, 2000b; Yaryura-Tobias & Neziroglu, 1997b). In fact, the connections between OCD and BDD are of sufficient magnitude that the psychological and pharmacological treatment of BDD has been modeled after that of OCD.

The relation between BDD and OCD may be seen on many levels. First, BDD is phenomenologically similar to OCD. The core symptoms of

BDD resemble those of OCD in that individuals attempt to suppress intrusive thoughts that are anxiety-producing, persistent, recurrent, and difficult to control (Phillips, et al., 1993). In both disorders, individuals perform irresistible compulsions in response to discomfort elicited by the obsessions. For example, an OCD sufferer may experience an obsession about the harmful nature of germs and respond by repeated and ritualistic washing. With BDD, the thought that a pimple causes the person to appear disgustingly ugly could lead to ritualistic mirror-checking and skin-picking in an attempt to reduce distress and improve the appearance of the face. In addition, similarities exist in general obsessional content and structure of rituals. For instance, preoccupations in both disorders often center around a need for symmetry, perfection, and the sense of being “just right”, whereas compulsions common to both include checking and reassurance-seeking (Phillips, 2000b). In fact, symptomatology appears so similar that BDD is often misdiagnosed as OCD (Vitello & deLeon, 1990).

Obviously, however, phenomenological differences also exist. The specific content of BDD-related obsessions focuses on appearance, whereas those of OCD center around other concerns. In addition, BDD preoccupations are associated more often with shame, fear of rejection, and low self-esteem (Phillips, 2000b), and BDD-related rituals tend to increase rather than decrease distress (Neziroglu, 2000). In addition, BDD rituals have a somewhat reasonable connection to the content of the

preoccupations. For example, the thought that a body part is ugly may lead to the examining of that feature in the mirror. In OCD, the content of the obsessions often has no logical transition to the coinciding compulsions (e.g., counting to 100 in multiples of three in an attempt to prevent harm). Finally, level of insight in BDD tends to be more compromised, in that delusions of reference and beliefs of delusional or overvalued intensity occur more often than with OCD (Phillips, 2000b; Simeon, Hollander, Stein, Cohen, & Aronowitz, 1995).

Both BDD and OCD have similar demographic characteristics, age of onset, and course of symptomatology. In a comparison study, the two groups were similar on education level, and gender ratio was found to be approximately 1:1 for both disorders (Phillips, Gunderson, Mallay, McElroy, & Carter, 1998). In addition, the onset of both disorders often is seen in childhood or early adolescence and, when untreated, typically progresses with a chronic course. However, those who suffered with BDD were significantly less likely to have been married (Phillips, 2000a).

BDD and OCD also are highly comorbid with each other and with other similar disorders. In a study of 100 BDD clients, 34% also met criteria for OCD (Phillips, McElroy, Keck, Hudson, & Pope, 1994), and studies of OCD find comorbidity rates of up to 37% for BDD (Hollander et al., 1993; Phillips et al., 1998; Simeon, et al., 1995). Both disorders generally have similar comorbidity patterns with other disorders, however,

individuals with BDD have significantly higher rates of major depression and social phobia (Phillips et al., 1998).

Finally, results of pharmacological studies suggest a relationship between BDD and OCD in the preferential responses to selective serotonin reuptake inhibitors (SSRIs; Phillips, Albertini, Siniscalchi, Khan, Robinson, 2001). The possibility of common neurochemical mechanisms has been suggested due to the fact that individuals with BDD or OCD who are unresponsive to cognitive-behavioral treatment respond positively to the same selective serotonin-reuptake inhibitors (Hollander, Leibowitz, Winchel, Klumker, & Klein, 1989; Hollander et al., 1993). In addition, pharmacological augmentation strategies used for OCD nonresponders also have been useful in treating refractory BDD (Phillips, 1996c).

Although these similarities do not represent definitive evidence, the conceptualization of BDD as an OC-spectrum disorder is reasonable. Thus, the behavioral theory and treatment of BDD has developed from the behavioral model of OCD.

Behavioral Theory of OCD

The behavioral conceptualization of OCD is based upon Mowrer's two-factor learning theory (Mowrer, 1960), which explains the acquisition of general fear and avoidance through the principles of classical and operant conditioning. The first stage of this theory (acquisition) postulates that fear is acquired through the process of classical conditioning, which focuses on the association between a neutral stimulus and a reflexive

fearful response. According to conditioning theory, an aversive stimulus that automatically precedes an aversive response becomes paired with a neutral stimulus. Through this pairing, the neutral stimulus acquires the ability to elicit that aversive response. These conditioned stimuli may include concrete objects, as well as thoughts and images. The second stage (fear maintenance) operates on the reinforcement principles of operant conditioning, specifically those of negative reinforcement. With negative reinforcement, behaviors are maintained or increased through the blocking or avoidance of an aversive stimulus. In OCD, rituals and avoidance behaviors are developed and maintained through negative reinforcement because they reduce anxiety evoked by the conditioned stimulus in stage one (Mowrer, 1960).

The first fear-acquisition stage of Mowrer's two-factor theory (1960) is not thought to be an adequate explanation for the initial development of obsessive fears (Foa & Tillmanns, 1980; Rachman & Shafran, 1998; Steketee & Tynes, 1991). During this phase, a previously neutral stimulus becomes paired with a stimulus that naturally produces fear, and the neutral stimulus then acquires the ability to elicit the fearful response. However, many OCD sufferers cannot recall aversive learning events that are related thematically to the obsessions or compulsions nor with the onset of symptoms (Rachman, & Shafran, 1998; Steketee & Tynes, 1991).

Despite a lack of ability to account for the acquisition of obsessive fears, Mowrer's model has been utilized as an explanation of symptom maintenance. The application of Mowrer's theory to the behavioral model of OCD focuses mainly on the second stage of fear maintenance, which adheres to reinforcement principles as an explanation for the maintenance of compulsive rituals and avoidance behaviors. In both subjective and physiological domains, empirical support for the anxiety-reducing properties of compulsions has been demonstrated (Rachman & Hodgson, 1980; Rachman, & Shafran, 1998). Thus, OCD has been conceptualized in terms of a functional relationship between obsessive-compulsive symptoms and anxiety (Foa & Tillmanns, 1980). In other words, obsessive thoughts, images, and impulses elicit anxiety, and compulsive behaviors are seen as attempts to decrease that anxiety. Thus, compulsive rituals are maintained by their negatively reinforcing properties, and are performed repeatedly until discomfort has decreased. When exposed to a fearful obsession, individuals repeatedly perform rituals that artificially and temporarily reduce the discomfort and prevent the natural habituation to that stimulus. It is this prevention of the natural habituation process that is the target of the currently empirically supported behavioral treatment for OCD - exposure with response prevention (ERP).

ERP involves the repeated exposure to obsessional material and the prevention of the ritualized behaviors, in order to disrupt the negatively reinforcing properties of the ritual and to allow for extinction of the anxiety

response (Meyer, 1966). As previously mentioned, rituals are conceptualized as a maintaining factor because they prevent the natural habituation to discomfort by reducing the distress more rapidly, albeit temporarily. Consequently, individuals do not experience the naturally-occurring, yet slower, decrease in anxiety that would take place in the absence of the ritual. Thus, during ERP, individuals are exposed to the anxiety-provoking stimulus so that the ritual prevention component can allow for the extinction of the anxiety response.

Behavioral Theory of BDD.

Because BDD has been conceptualized as an OC-spectrum disorder, Mowrer's two-factor theory may be an appropriate model on which to base a behavioral theory of BDD. Indeed, early learning experiences have been discussed as precursors in the development of BDD symptoms (Rosen et al., 1995). For example, in keeping with the classical conditioning model for fear acquisition, humiliating teasing and peer rejection may naturally create an anxiety response. Then, events involving appearance evaluation become paired with anxiety-provoking teasing so that appearance-related thoughts and situations acquire the ability to create an anxiety response.

As possible support for this theory, BDD symptoms often are reported to first appear in adolescence, a time during which physical differences are especially powerful elicitors of peer attention (Phillips, 1991; Phillips, Atala, & Albertini, 1995; Neziroglu & Yaryura-Tobias,

1993a). In addition, Phillips (1996b) reported several examples in which the development of BDD symptoms coincided with negative comments about appearance. For example, one client began worrying about his appearance when high school friends called him “pizza face” (Phillips, 1996b, p.186). Following this comment, the client felt extremely self-conscious about his skin and began checking his face in the mirror several times a day. In another study (O’Grady, Thorpe, & Hecker, 1999), a client was able to pinpoint a humiliating experience in late adolescence that marked the beginning of obsessions about her feet. Yet another BDD sufferer recalled painful teasing about facial ugliness that he associated with the onset of BDD symptoms and several suicide attempts (O’Grady, Hecker, Thorpe, & Maki, 2001). Thus, for some individuals, negative appearance-related learning experiences appear to precede the onset of BDD symptoms.

However, Mowrer’s fear acquisition theory currently lacks empirical support as an explanation for BDD symptom onset. Research has not demonstrated such conditioning events in all BDD sufferers, nor does BDD develop in every individual who has been teased about appearance. Therefore, at this point in time, classical conditioning events may be seen only as a contributing factor to the development of BDD.

The second component of Mowrer’s two-factor theory (fear maintenance) may be used to explain the maintenance of BDD rituals and avoidance behaviors. Through negative reinforcement, the avoidance

behaviors are strengthened and the association between the feared stimuli and aversive events is maintained. Escape and avoidance behaviors prevent the natural habituation to discomfort and, therefore, are maintained as the typical fear response (Hodgson & Rachman, 1972; Roper, Rachman, & Hodgson, 1973). In the case of BDD, avoidance of and escape from social situations are negatively reinforcing because the discomfort, embarrassment, and humiliation of exposing the defect is avoided or reduced.

Also hypothesized to be reinforcing, rituals such as mirror-checking and reassurance-seeking are thought to provide short-term relief (Yaryura-Tobias & Neziroglu, 1997a). Paradoxically, however, individuals report an increase in distress both during and after the ritual (Phillips, 1996b; Veale & Riley, 2001). One explanation for this conflict may be that individuals experience a very short period of relief that is reinforcing, only to be followed by intense feelings of ugliness, guilt, and shame for conducting the ritual. The fleeting relief that follows the ritual may be sufficiently reinforcing to maintain the behavior. Rituals also may be maintained because the discomfort of not performing the ritual would increase to levels even higher than those experienced during ritual. Clients have reported strong beliefs and images of ugliness that mount in intensity prior to mirror-checking rituals (O'Grady, Thorpe, & Hecker, 1999). Such reports revealed that the image seen in the mirror is perceived as terribly ugly, but not quite as horrendous as the imagined

appearance. Thus, although mirror-checking may provide some level of reinforcing reassurance, the negative feelings associated with the perceived ugliness of the reflection still are intense and distressing. Thus, rituals such as mirror-checking and reassurance-seeking create a vicious cycle in which attending to anxiety-provoking body parts is both reinforcing, yet disturbing.

One study of mirror-checking compared 52 BDD clients with 55 controls using a self-report mirror-gazing questionnaire (Veale & Riley, 2001). Results demonstrated that, prior to checking the mirror, BDD clients reported several motivations: the hope that they would look different this time, the urge to know exactly how they appeared, the belief that they would feel worse if they did not check, and the intention to camouflage. BDD clients were more likely than controls to focus on an internal feeling rather than specific body parts, to practice a face that they would present while in public, and to use “mental cosmetic surgery” to change their body image. In addition, those with BDD reported feeling worse following the period of mirror-checking.

As with OCD treatment, ERP exercises conducted in the treatment of BDD encourage exposure to anxiety-provoking situations (e.g., attending social and public events, exposing the defect to another person) and prevention from ritualizing (e.g., dashing from the party, covering the defect). The intent of ERP is to allow for the natural habituation to the situation and, ultimately, the extinction of the anxiety response.

Beck's Cognitive Theory

The cognitive model of BDD follows from Beck's conceptualization of depression (Beck, 1963; 1964; 1976a), which also has been applied as a model for anxiety disorders (Beck, Emery, & Greenberg, 1985). Within this model, distorted information processing strategies and dysfunctional assumptions about the self, world, and others arise from maladaptive cognitive schemas. Thus, cognitive therapy strives to alter unhelpful schemas by challenging faulty assumptions and replacing distorted cognitive processes with more adaptive strategies. In addition, therapeutic cognitive change is thought to produce consequent modifications in both behavior and affect. Thus, although thoughts are the direct target of cognitive therapy, treatment is believed to have positive ramifications on emotions and actions.

Beck's cognitive model is composed of three concepts: the cognitive triad, schemas, and cognitive distortions. The cognitive triad represents an idiosyncratic pattern of thought encompassing the self, the world, and the future. Negative views of the self lead to unpleasant experiences, which are thought to be further evidence of personal defects. Then, individuals draw illogical connections between their supposed personal flaws and their ultimate character, which may be assumed to be worthless and unlovable. In addition, the individual's ongoing experiences and the world in general are interpreted as negative. The world is seen as making excessive demands, placing unreasonable obstacles throughout

daily life. Ongoing interactions with the environment often are negatively misconstrued, despite more obvious and positive interpretations. The final aspect of the cognitive triad involves a pessimistic view of the future. Long-term expectations of life include the continuation of current difficulties and the introduction of additional frustrations, hardships, and unfair consequences.

The second component of Beck's cognitive model (Beck, 1963; 1964; 1976) is the concept of schemas. Schemas are hypothesized frameworks that influence the organization of incoming information and guide the understanding of life experience (Freeman & Davis, 1990). Any given situation may be perceived in multiple ways due to the variety of available information. According to cognitive theory, any one individual will attend selectively to particular stimuli and organize the information according to their own internal framework or schema. The schema is a relatively stable structure that allows for consistent responses to similar situations, with different schemas hypothesized to be activated in different situations. When the situational-specific schema is activated, it guides the processing of the event such that environmental stimuli are categorized and evaluated in agreement with the schema. An individual then responds in a manner congruent with the interpretation. Some schemas may be dormant for a period of time and then activated by a specific stressful event. Because information is organized to be consonant with the activated schema, a dysfunctional schema elicited by a stressful event

would organize information in a pathological manner, so that an individual selectively attends to negative stimuli. Thus, situations will be misinterpreted and information organized in an inappropriate manner and with negative content.

The final component of Beck's model incorporates faulty methods of information processing, referred to as cognitive distortions. Cognitive distortions are routine errors in thinking that are based on idiosyncratic views (Beck 1967, Freeman & Davis, 1990). The distortions, which are consonant with activated schemas, serve to support an individual's negative beliefs even in the presence of contradictory information. For example, the distortion referred to as 'selective abstraction' involves conceptualizing an entire experience based on a seemingly minor and inconsequential detail, while ignoring more salient and pertinent information. Another pattern (dichotomous thinking) describes a tendency to place all experiences in one of two polarized categories. Thus, through the faulty processing and organization of information, cognitive distortions are the mechanism through which negative schemas are supported and maintained.

Beck's cognitive therapy follows directly from the above theory. According to cognitive theory, the content of underlying schemas is reflected in the theme of these cognitive distortions. Therefore, distortions become the initial target of treatment as a means of ultimately accessing and altering the unhelpful schema. Distortions, in turn, can be accessed

through automatic thoughts, which are spontaneous thoughts associated with certain situations and mood states (Beck, 1995; Freeman & Davis, 1990). Therapy involves tracking these spontaneous and automatic statements across situations in order to identify the distortions. The labeling of distortions allows an individual to understand dysfunctional thought patterns and begin to alter them. The ultimate goal of altering these patterns is to challenge the underlying maladaptive schema and initiate the development of one that is more adaptive.

Cognitive theory proposes that the most strategic method for creating therapeutic change is through altering inner beliefs and thinking patterns. Due to the idiosyncratic nature of cognitive processes, each individual will perceive, and therefore react, differently in a given situation. Thus, the perception of an event, not the event itself, determines the consequent emotional reaction. Therefore, according to cognitive theory, the most beneficial point of intervention lies with cognitions. Because cognitions are believed to be linked with both behavior and affect, a change in one component is hypothesized to result in change among the others (Beck, 1976; 1996, Freeman & Davis, 1990). Successful cognitive therapy should result not only in positive cognitive change, but in beneficial modifications in behavior and emotion as well.

Cognitive Theory of BDD

The cognitive approach to BDD incorporates Beck's concepts of schemas, cognitive distortions, and automatic thoughts. As discussed

previously, Beck's cognitive theory (1964, 1976) proposes that an individual's perception of events is dictated by an underlying schema, the content of which shapes the attitudes and beliefs that influence thought, behavior, and affect. According to Beck's theory, schemas develop early in life due to learning experiences, and lie dormant until activated by a relevant event. Once the schema is activated, perceptions are colored by the content of that schema. Thus, an individual with a particular schema will process relevant information differently than someone without a similar structure and, therefore, emotion and behavior will be influenced by the perception of an event rather than the event itself.

The concept of schemas may be applied to the development of BDD. Negative appearance-related experiences have been hypothesized to set the stage for distorted assumptions about the normality of appearance and for dysfunctional connections between appearance, self-worth and acceptance (Rosen et al., 1995). These experiences could be conceptualized as precipitating factors in the development of a maladaptive schema. Once developed, the schema would influence the perception of appearance-related situations. According to Cash and Labarge (1996), 'appearance-schematic' individuals react to and process appearance-related stimuli differently than those who are 'aschematic'. Individuals schematic for appearance are more invested psychologically in their physical presentation because appearance is considered to be an index of self-worth and a standard for evaluation. Individuals with BDD

may have these negative appearance schemas and interpret events based on the belief 'I am ugly.' This belief causes an individual to respond negatively to beauty-related stimuli, shapes the interpretation of appearance-related situations, and influences consequent emotions and behaviors (Cash & Labarge, 1996).

One difficulty with this theory is the inability to explain why some individuals develop BDD and others with similar early learning experiences (e.g., childhood teasing) do not develop the disorder. Perhaps, for some reason, these individuals do not develop maladaptive appearance schemas at all despite humiliating childhood experiences. Perhaps the maladaptive schema does develop but future buffering experiences keep the distress at a subthreshold level. Another possibility is that the schema develops but continues to lie dormant. These questions remain unanswered.

In addition to the influence of schemas, other cognitive experiences (e.g., cognitive distortions, negative self-statements) are thought to maintain BDD symptoms (Geremia, 1997; Rosen, 1995). As discussed previously, cognitive distortions are negative thought patterns that arise from negative schemas. The distortion is thought to reflect the thematic content of the schema. For instance, an 'ugly appearance' schema would give rise to cognitive distortions about physical attractiveness. One such distortion commonly seen in BDD is referred to as 'all-or-none thinking' and involves categorizing experiences in terms of extreme categories

(Geremia, 1997). An example of all-or-none thinking in BDD is the belief 'I have a pimple, therefore my whole appearance is ruined', or 'if I am not physically perfect then I must be ugly.' Another cognitive distortion commonly found in BDD is 'disqualifying the positive' in which positive experiences are discounted so as not to contradict the negative belief (Geremia, 1997). This distortion occurs regularly during repetitive reassurance-seeking, during which positive comments about appearance are dismissed as sympathetic expressions elicited by the clients' extreme ugliness.

BDD symptoms also may be perpetuated through the rehearsal of negative self-statements (Rosen et al., 1995). Statements such as "I am ugly and worthless" may be rehearsed to the extent that they become believable and automatic. In keeping with Beck's theory, these automatic thoughts may be seen as reflections of a maladaptive schema. Thus, disconfirming evidence for these statements may be discounted due to distorted thinking patterns.

As discussed earlier, cognitive theory proposes that the most effective point of intervention lies with changing accessible thinking patterns, with the ultimate goal being to alter the underlying schema. Because of the proposed connection among thoughts, emotions, and behaviors, altering thinking patterns is believed to result in therapeutic changes in all three realms. Therefore, initial goals of cognitive therapy for BDD would include identifying and challenging appearance-related

cognitive distortions through the monitoring of automatic thoughts.

Therapeutic work at this level would move toward challenging and altering maladaptive inner beliefs about the self and connections between appearance and worth. As therapeutic cognitive gains were made, positive changes in affect and behavior also would be expected.

Empirical Support for ERP and CT with OCD

Because BDD is considered to be within the OC-spectrum, results of the behavioral and cognitive treatments for OCD could be useful, as they may extrapolate to the treatment of BDD. Therefore, the following section discusses the empirical evidence for ERP and CT as applied in the treatment of OCD.

Meyer (1966) was the first to implement ERP as a treatment for OCD and, since then, it has become the first-line psychological treatment (Marks, 1997; Steketee & Tynes, 1991). The efficacy of ERP in reducing OCD symptoms has been demonstrated in pre- and post-treatment studies (Boersma, Den Hengst, Dekker, & Emmelkamp, 1976; Emmelkamp & Kraanen, 1977; Foa & Goldstein, 1978; Foa, Grayson, Steketee, Doppelt, Turner, & Latimer, 1983), and in comparison to a relaxation-training control (Rachman, Marks, & Hodgson, 1973; Roper, Rachman, & Marks, 1975). Foa and colleagues summarized 20 studies of ERP treatment for OCD (Foa, Steketee, & Ozarow, 1985). They observed that following ERP, 51% of individuals were either 'symptom free' or 'much improved', whereas another 39% were 'moderately improved.'

Only 10% demonstrated no change. In addition, two reviews of controlled studies concluded that OCD symptoms improved more with ERP than with SSRIs, and that improvements were maintained for years following ERP compared to relapse after pharmacotherapy (Abel, 1993; van Balkom, van Oppen, Vermeulen, van Dyck, Nauta, & Vorst, 1994). The efficacy of ERP has been demonstrated, not only at post-treatment, but also in follow-up investigations ranging in time from one to six years following treatment (O'Sullivan & Marks, 1990).

In addition to reducing behavioral rituals, ERP has been demonstrated to reduce the frequency of obsessions, as well as the distress associated with the obsessions. In one study of 21 participants treated with ERP, 12 reported no obsessive symptoms following treatment, whereas eight reported mild to moderate obsessions, and one remained unchanged (Foa & Goldstein, 1978). Other more recent studies also have shown a decrease in obsessions and associated anxiety following ERP. For example, one investigation of 46 participants demonstrated that reduction in fixity of beliefs (i.e., strength of belief in feared consequence as a result of not ritualizing) and increase in resistance to obsessions correlated significantly with reductions in compulsions (Ito, Araujo, Hemsley, & Marks, 1995). Although obsessions did decrease following behavioral treatment, improvement was greater on behavioral measures (e.g., frequency of rituals and avoidance behaviors). Another study of 41 participants examined the effect of ERP on three

measures of cognitive change: (i) strength of belief that consequence of not ritualizing will occur, (ii) recognition of absurdity of obsession, and (iii) degree of conviction in the face of contradictory evidence (Lelliot, Noshirvani, Basoglu, Marks, & Monteiro, 1988). Results indicated that decreases in scores on the three cognitive scales correlated significantly with decreases in ritual frequency.

Initial studies of cognitive therapy (CT) alone have provided positive results. The first randomized controlled trial of CT for OCD compared rational emotive therapy (RET) with ERP (Emmelkamp, Visser & Hoekstra, 1988). A total of 18 participants received 10 sessions of either treatment. At post-treatment and at a six-month follow up, both treatments resulted in significant decreases in obsessive-compulsive symptoms, with no significant differences between the efficacy of the two therapies. In addition, CT significantly improved depressed affect, but ERP did not. Another study compared ERP to the combined effects of ERP and CT (Emmelkamp & Beens, 1991). Post-treatment comparisons of ERP and RET demonstrated no significant differences on symptom improvement. However, adding ERP to RET provided no incremental benefit.

Van Oppen and colleagues conducted the first randomized controlled trial evaluating Beck's model of CT for OCD (van Oppen, de Haan, van Balkom, Spinhoven, Hoogduin et al., 1995). In this study, 71 participants were randomly assigned to 16 sessions of either CT or ERP.

Overall, results demonstrated that both treatments significantly improved OCD symptoms to a similar degree. However, CT showed superior efficacy on some measures of OC symptoms and on generalized measures of psychological distress. Results supporting the efficacy of ERP and CT were discussed in a recent review (Abromowitz, 1997). The meta-analysis utilized only studies with direct comparisons of randomly assigned groups, and examined comparisons between ERP and relaxation training, as well as those between ERP and CT. Although effect sizes demonstrated a clear superiority of ERP over relaxation training, no significant difference between ERP and CT was found.

Most recently, Salkovskis' (1996) model has been utilized in the comparison of cognitive and cognitive-behavioral group therapies for OCD (McLean, Whittal, Thordarson, Taylor, Sochting, Koch, et al., 2001). This study of 76 participants compared a CT group and a CBT group to a waitlist control, demonstrating that both treatments were superior to the control group on a measure of obsessive-compulsive symptoms. In addition, ERP alone was marginally more effective at post-treatment than the combined CBT intervention, with ERP demonstrating a significantly superior effect at a three-month follow-up. Interestingly, only one of seven cognitive measures improved over treatment for both the ERP and CBT groups.

Despite the above findings supporting the efficacy of CT for OCD, some investigators propose that evidence is insufficient to draw firm conclusions (James & Blackburn, 1995; Stanley & Averill, 1998). Following a review of

available studies, James and Blackburn (1995) state that although preliminary results may lead to optimistic conclusions, such judgments are premature. First, various forms of CT have been utilized, including Beck's model, Salkovski's model, and RET. Therefore, generalized conclusions regarding the efficacy of CT cannot be drawn. In addition, some studies incorporate behavioral experiments that involve some exposure procedures. Therefore, by adding behavioral components to CT, a test of pure cognitive strategies is precluded (James & Blackburn, 1995; Stanley & Averill, 1998). Thus, although initial results are promising, the current supporting body of literature may best be considered preliminary.

Additional Theories of BDD

Evolutionary significance. The theory of evolutionary significance discusses the potentially adaptive nature of typical BDD concerns. According to the theory, two biological factors are hypothesized to contribute to the development of BDD. First, many individuals with BDD are concerned with the perfect symmetry of body parts, such as ears, eyes, breasts, and legs (Phillips, 1996a). Veale and colleagues (1996) hypothesize that this drive for symmetry is innate because symmetrical body parts are indicative of biological quality. Thus, biological symmetry attracts sexual partners by advertising resistance to developmental disruptions. Second, the authors propose that the fear of rejection salient in BDD sufferers is an adaptive, innate response as well. Those who are rejected by potential mates are less likely to procreate. Therefore, the

innate drive to pass on genetic material may foster a fear of rejection as an adaptive mechanism.

Veale and colleagues (1996) link this evolutionary theory to the cognitive theory discussed earlier. Because an increased drive for symmetry and fear of rejection are proposed to have evolutionary significance, thoughts and behaviors that are consonant with such predispositions may be considered adaptive as well. Individuals who are strongly predisposed to these factors may be more responsive to cues of symmetry or rejection and may develop schemata that increase the risk for developing BDD. However, Veale and colleagues do not explain how the schemata would develop. Another problem with the theory is that there is no viable method of supporting or disconfirming the presence of such biological predispositions, other than the presence of the symptoms themselves. It could be hypothesized that BDD-related cognitions and behaviors are due to certain innate factors gone awry, but there must be a way of testing those suppositions before the theory can be supported. At this time, the capability of assessing and measuring biological predispositions does not exist. Thus, the circular argument remains in which predispositions exist because symptoms are present; and the symptoms are present due to the predispositions.

An additional difficulty with this theory is the failure to propose causal factors for such extreme development of the predispositions. Evolutionary theory focuses on the adaptive significance of hereditary

traits and the extinction of maladaptive characteristics. Although a drive for symmetrical body parts and a fear of rejection may be beneficial in moderation, the preoccupation demonstrated in BDD is disabling in intensity. The theory does not propose how adaptive concern about physical presentation could develop into pathological obsessions over imagined defects.

Selective attention. According to Veale and colleagues (1996), another maintaining factor is the selective attention of BDD clients to their perceived defect. This selective attention results in a heightened perception and overly-accurate representation of the flawed feature which, in turn, may result in a negative judgment of appearance (Veale et al., 1996). Jerome (1992) presents observations consistent with the idea that BDD clients selectively overfocus on their imagined defects. Twenty cosmetic rhinoplasty patients who met criteria for BDD demonstrated a more accurate estimation of nose size than controls. Following surgery, however, BDD clients failed to maintain their previous level of accuracy, and nose size estimation fell within range of controls. Jerome proposes that constant mirror-checking and overfocusing on nose shape and dimensions form the basis of their overly accurate estimations of nose size. After surgery, heavy bandaging prevents such selective attention and results in a more normal estimation. According to Jerome, the prevention of such focusing, often achieved by mirror-checking, may reduce BDD symptoms.

A recent study investigated selective attention and overfocusing in BDD sufferers (Deckersbach, Savage, Wilhelm, Buhlmann, Reid, et al., 1998). This study examined whether clients tended to focus on specific details of visual material or to integrate those details into a more global picture. BDD clients and matched controls were administered the Rey-Osterrieth Complex Figure Test (CFT; Austerlitz, 1944 as cited in Deckersbach et al., 1998), a commonly-used neuropsychological measure. The CFT requires the examinee to copy a complex geometric figure, and then to draw it from memory. Scores on the CTF provide information on the accuracy of copied or recalled elements, and quantifies the organization of the figure (i.e., how much participants focused on the details while copying the figure). Focusing on details of the figure rather than the global picture interferes with reproduction of the figures. Interestingly, the performance of individuals with BDD on both the copy and recall conditions was significantly impaired compared to controls, suggesting a focus on particular details rather than on the global figure. Although the BDD group copied the CTF figure as accurately as controls, they obtained lower organization scores (i.e., the copied version was accurate and complete but the process of construction was disorganized). In addition, BDD clients remembered significantly fewer components of the design when asked to produce the figure from memory. Therefore, Deckersbach and colleagues concluded that individuals with BDD encoded an unstructured, piece-by-piece, distorted representation of the

CFT into memory, which unlike a structured representation, was difficult to reproduce from memory. The authors interpreted these results as indicative of selective attention.

The phenomenon of attentional bias in BDD is intriguing, however, current data are based on a small number of individuals. Further investigation could utilize more precise measurements of attentional bias to address questions concerning individual differences, and the causes and consequence of selective attention.

Psychodynamic theory. According to psychodynamic theory, BDD results from the unconscious displacement of sexual or emotional conflict (Bloch & Glue, 1988). Preoccupation with the appearance defect, therefore, acts as a disguise for the true source of distress. Within the psychodynamic interpretation, the body part of concern takes on symbolic meaning (Phillippopoulos, 1979). For example, the nose is considered as a phallic symbol. Thus, a woman who requests rhinoplasty is interpreted as attempting to relieve a conflicted identification with her father in order to progress into a more feminine role. However, a man who requests a smaller nose is considered to be experiencing latent homosexuality. No empirical evidence exists to support the psychodynamic conceptualization of BDD.

Treatment of BDD

Currently, cognitive-behavioral therapy (CBT) and pharmacotherapy with serotonin-reuptake inhibitors are the only

treatments for BDD that are empirically supported (Chambless & Hollon, 1998). Psychodynamic treatments have been documented as well (Bloch & Glue, 1988; Philippopoulos, 1979) but reports of success are subjective in nature. In addition, one report of eye movement desensitization and reprocessing demonstrated a reduction in BDD symptoms (Brown, McGoldrich, & Buchanan, 1997). Although CBT is considered to be one of the two empirically supported treatments, the study of CBT for BDD is in its early stages. There exist only a handful of CBT outcome studies, most of which are uncontrolled. In many cases, measures of treatment effectiveness are restricted to pre- and post-treatment comparisons.

In an early case study of a 27-year-old male, the effectiveness of behavioral therapy for BDD was reported (Munjack, 1978). Treatment consisted of 11 sessions of systematic desensitization to address an intense preoccupation with facial redness. Following relaxation training, two hierarchies were constructed using fears of scrutiny and verbal criticism. During each session, relaxation therapy was followed by imaginal exposure of hierarchy items. At post-treatment, the client reported being no longer bothered by preoccupations about his red complexion. Another early report of behavior therapy discusses the inpatient treatment of five individuals who suffered chronically with BDD (Marks & Mishan, 1988). These five case reports outline the behavioral treatment, which consisted primarily of exposure and response prevention. Clients demonstrated a decrease in avoidance behaviors and

associated anxiety. In addition, the delusional beliefs, previously assessed as “unamenable” (p.678), were reported as having weakened or disappeared. No cognitive therapy or challenging of those beliefs had been conducted. Unfortunately, three of the five clients also had begun pharmacotherapy during behavioral treatment; therefore, results cannot be attributed solely to psychotherapy.

More recently, Neziroglu and Yaryura-Tobias (1993b) report the use of CBT with five BDD clients. Intensive treatment consisted of four weeks of 90-minute sessions, five days a week. The first 60 minutes of each session were spent on exposure with response prevention (ERP). Cognitive therapy, involving identification and challenging of irrational cognitions, was conducted during the remainder of the session. Clients were assessed pre- and post- treatment, and at a one-year follow-up using the Overvalued Ideation Scale (OVI) and the Yale Brown Obsessive Compulsive Scale adapted for BDD (YBOCS-BDD). Following CBT, clients obtained lower scores on both measures, indicating reductions in levels of obsessions and behavior. One drawback, however, is that both measures of distress relied on self-report and, therefore, are open to subjective interpretation.

In another study, Neziroglu and colleagues examined the effect of CBT and the presence of comorbid personality disorders in 17 participants with BDD (Neziroglu, et al., 1996). As in the above study, treatment consisted of daily 90-minute sessions over a four-week period. A

combination of ERP and challenging of cognitions was implemented. Results indicated a statistically and clinically significant decrease in intensity and frequency of preoccupations and rituals for 12 of the 17 participants, based on YBOCS-BDD scores. The entire sample met criteria for at least one personality disorder; however, no relationship was demonstrated between treatment outcome and number or type of personality diagnosis.

Newell and Shrubb (1994) discuss the successful cognitive-behavioral treatment of two female clients who refused to participate in exposure treatment. Individual therapy consisted of reverse role-plays, or “mock trials”, in which the client presented arguments for the attractiveness of the body part and the therapist presented evidence against that argument. For one client, no other attempt was made to challenge cognitions or to encourage exposure, whereas exposure exercises were integrated during the latter treatment stages for the second individual. Self-rated problem severity and strength of negative beliefs decreased dramatically following treatment for both clients.

Two studies have examined the effects of CBT when conducted in a group setting. In one study of 54 women diagnosed with BDD, half were randomly assigned to a no-treatment control group, while the remainder underwent eight weekly 2-hour sessions of group CBT. Groups consisted of four to five clients and one therapist (Rosen et al, 1995). Compared to the control group, post-treatment scores for CBT clients

improved significantly on several measures including the BDDE, YBOCS-BDD, and the Body Shape Questionnaire. In addition, the treatment group improved significantly over time on each measure, as demonstrated by follow-up performance. Clinically significant improvement also was demonstrated in that clients no longer met criteria for diagnosis and had scores on measures of BDD symptomatology lower than the pretreatment score minus two standard errors of measurement. However, as in the Neziroglu and Yaryura-Tobias (1993b) study, all measurements were self-report. Wilhelm, Otto, Lohr, and Deckersbach (1999) also have demonstrated the effectiveness of group CBT for BDD. Thirteen clients were assigned consecutively to small groups that met for 12 weekly 90-minute sessions. Compared to pre-treatment assessments, clients experienced a significant improvement in BDD symptoms and depression levels. Similar results for group CBT also have been demonstrated with a Spanish sample (Raich, Soler, & Mora, 1995). According to the above studies, CBT administered in group settings appears to be a promising format for therapeutic change.

Finally, two studies have been conducted examining either ERP or CT alone. McKay and colleagues examined the effectiveness of ERP in the absence of cognitive strategies, as well as the benefits of a maintenance program following the completion of treatment (McKay, Todaro, Neziroglu, Campisi, Moritz, & Yaryura-Tobias, 1997). Ten participants attended ERP sessions five days per week for six weeks.

Results demonstrated significant improvements on general measures of BDD symptoms, depression, and anxiety. Five of the 10 participants who received a maintenance program following treatment demonstrated lower levels of general anxiety and depression compared to controls, and all individuals remained “symptom free” (p.67) at follow-up. Secondly, Geremia (1997) conducted a treatment study utilizing cognitive therapy consistent with Beck’s (1967) model. Four clients were randomly assigned to one of two multiple baseline designs. Condition 1 consisted of three weeks of baseline data collection followed by seven weeks of cognitive therapy and a five week follow-up assessment. The second condition involved five weeks of baseline collection, seven weeks of treatment, and a three week follow-up. Results were analyzed using techniques specifically designed for single-subject experimental research. Three of the four clients demonstrated a significant reduction in depression, anxiety, and body dissatisfaction following treatment. However, only two of those clients reported a significant reduction in the intensity and frequency of BDD-related obsessions and compulsions, as evidenced by scores on the YBOCS-BDD. Visual inspection of those individual cases demonstrated a very gradual improvement in BDD symptoms following cognitive therapy.

In summary, research has demonstrated that a cognitive-behavioral treatment package, administered in individual or group format, decreases BDD-related obsessions, behaviors, and negative affect. In addition,

when treatment consists solely of cognitive therapy, reduction in obsessions and compulsions occurs in some individuals. What has not been explained, thus far, is why cognitive therapy is successful only in some cases. If cognitive therapy is not effective for all individuals, perhaps behavior therapy would be a viable alternative; or perhaps a combination of cognitive and behavioral techniques is needed in some cases. The one study that examined pure behavior therapy demonstrated decreases in symptoms for all individuals, however, the measures were general in nature and do not provide information on individual differences. In short, we do not know what approaches are best with certain individuals, or what factors influence the effectiveness of behavioral versus cognitive techniques. In addition, there exists little information regarding the processes that change during the course of behavior or cognitive treatment. The current study investigates these processes of change through examining daily changes in BDD-related cognitions and behaviors over the course of both behavior and cognitive therapy.

Methodological Issues

Single-participant designs. In designing the current study, some methodological issues required consideration. One such decision centered around single-case versus group designs, and the appropriateness of each for the current questions under investigation. In the literature, discussions regarding the usefulness of single-subject designs versus group methodology have examined the relative

contributions of each and the specific types of information that each provides (Barlow & Hersen, 1987; Kazdin, 1982; Lundervold & Bellwood, 2000; Morgan & Morgan, 2001). While group designs allow for the comparative testing of two treatments, single case experimental data provide detailed information regarding the processes or mechanisms of change during the course of a successful treatment. For many decades, single-subject designs have been chosen as a means to investigate psychological phenomena preliminary studies (Morgan & Morgan, 2001). In fact, Kazdin (1982) has argued that preliminary investigations into treatment effectiveness should first utilize single-subject designs and focus on the process information that is yielded. Then, only once the mechanisms of change have been identified, should group designs be employed to investigate the overall efficacy of one treatment versus another. The body of BDD outcome literature stands at this preliminary state. Therefore, because change mechanisms of successful cognitive-behavioral treatment have not yet been identified, the current study utilized a single-participant design to examine processes that change over the course of both cognitive therapy and behavioral treatment. The following section discusses the characteristics of single-case designs, their advantages and disadvantages, and addresses issues regarding the scientific rigor of single-participant versus group designs.

Single-participant designs are characterized by the repeated measurement of dependent variables over the course of an experimental

manipulation. Although single-case designs may replicate these manipulations across additional participants, data analysis does not combine results across individuals to produce group averages. Instead, the goal is to examine the detailed development of behavior across time within a single individual, and to draw strong inferences about functional relationships through intra- and interparticipant replications (Morgan & Morgan, 2001).

Although single-participant designs do not traditionally utilize the null hypothesis testing common to group designs, they are rooted in the scientific method and can produce very rigorous and meaningful results (Barlow, Hayes, & Nelson, 1984; Leitenberg, 1973; Morgan & Morgan, 2001). For example, an important goal of scientific research is the demonstration of the experimental criterion. This criterion refers to the method of data evaluation used to determine whether an intervention has a reliable effect on behavior. Typically, the experimental criterion entails a comparison of behavior under varying conditions, such as intervention and nonintervention (Kazdin, 1984). Thus, in order for a series of single-subject designs to demonstrate scientific rigor, data must be evaluated in such a way as to meet the experimental criterion.

Several such methods exist for single-case data that allow for the inference of causal relationships. Commonly, the visual inspection of detailed graphs, in which data points are plotted across separate phases, is used to evaluate reliable change (Baer, 1977; Michael, 1974). Such

“eyeballing” of the data may appear to be subjective and lacking in the usual scientific standards that guide decision-making. However, for visual inspection to be properly conducted, specific data requirements must be met. In addition, the process of visual inspection and the conclusion of reliable behavior change are governed by specific criteria, such as changes in trend and latency of change (Kazdin, 1982; Parsonson & Bear, 1978). Cause and effect relationships between intervention and behavior change may be inferred if such design requirements are met (Kazdin, 1984). In fact, many proponents of single-participant designs argue that effects are only meaningful if clearly observable by visual inspection (Hopkins, Cole & Mason, 1998; Parsonson & Baer, 1986; Perone, 1999; Skinner, 1969). Thus, although some traditional Fisherian techniques are available for small N designs, they are considered to be ill-fitted and to undermine basic premises of single-case methodology (Lundervold & Bellwood, 2000; Perone 1999).

As mentioned earlier, scientific rigor of the single-subject experimental design is increased by the fundamental characteristic of repeated measurement (Barlow, Hayes, & Nelson, 1984). Repeated assessments of the dependent variable are crucial in examining individual variability across baseline and treatment phases, and are necessary in identifying trends in the behavior of interest. In fact, the addition of repeated measurement to anecdotal case study is argued to be sufficient for upgrading to a quasi-experimental design (Browning & Stover, 1971).

In addition, repeated assessment allows for more ease in separating the treatment effect from measurement error and other extraneous variables (Barlow, Hayes, & Nelson, 1984). The detailed information provided through repeated measurement is an advantage of single-subject designs that is often lost in group studies, which typically assess the dependent variable only before and after treatment, and at follow-up.

Another advantage to the single-subject design is the consideration of variability as valuable information in the examination of intraindividual changes. This approach to measurement allows for a more specific understanding of the factors that control an individual (Barlow, Blanchard, Hayes, & Epstein, 1977). Such a perspective is contrary to the view of group designs, in which variability is seen as error that must be explained. In most between-groups designs, measurements are conducted pre- and post-treatment. An average group response is calculated, and the amount that each individual differs from that average is considered intersubject variability, or error. A weak treatment effect may be the result of averaging the responses of clients who improve, deteriorate, or remain constant (Barlow & Hersen, 1987). By contrast, the single case design, because it incorporates variability into meaningful data, increases the understanding of individual behavior. Not only is this valuable and practical information lost in between-groups analyses, but the consideration of variability as error may mask actual differences.

The single subject experimental design also addresses the ethical issue of withholding treatment in treatment versus no-treatment group studies. When clients are suffering, there is an ethical dilemma in placing them in a waitlist control group. Many scientist-practitioners struggle with the decision to place a suffering client in a no-treatment group, yet a comparison group is necessary to demonstrate the effectiveness of a treatment manipulation (Barlow, et al., 1977; Barlow & Hersen, 1987). Single case methodology allows for the examination of interventions on an individual basis, in which individual behavior in a treatment phase is compared to baseline measurements of that same client. Thus, the need for a no-treatment group is reduced to a few weeks of baseline data-gathering. In fact, proponents of single-case designs argue that the comparison of a participant's behavior during the experimental phase to that of the baseline phase is more meaningful because in natural settings a clients' behavior is compared to pre-treatment behavior, not with the behavior of other clients.

The most prominent difficulty with single-subject experimental designs is external validity, or generalizability of findings. Questions may arise as to whether information gained from the response of one client will be relevant to the treatment of other cases, or whether other clinicians would achieve similar results (Barlow et al., 1977). However, the use of a between-groups design does not ameliorate this difficulty. Problems also exist in generalizing from group results to an individual client. Hersen and

Barlow (1976) state that “the more adequate the sample, in that all relevant population characteristics are represented, the less relevance will this finding have for a specific individual” (p.55). The idea is that a more representative sample equals a more heterogeneous one, and that the average group response, therefore, will be less likely to generalize to that of an individual client. Barlow and colleagues (1977) refer to this hypothetical average client as the “nonexistent average” (p.224). Thus, group designs are not necessarily the answer to the external validity issue, as the treatment effect for a particular client may be lost in the group average.

The current study implements the single-case methodology of the multiple baseline technique. In this design, baseline responses are measured over time before any manipulation is conducted. These baselines differ in length across clients. Following the baseline, the intervention is conducted, and measures of the same dependent variable are taken. Thus, response changes that follow the treatment may be compared to baseline behaviors (Baer, Wolf, & Risley, 1968). The purpose of the multiple baseline is to correct for methodological weaknesses of the simple phase change. In a simple phase change where responses are measured during one baseline length and one phase of treatment, there is no protection against coincidental, extraneous events that influence behavior. In such cases, the researcher cannot be confident that changes in responding are due to the intervention. For

example, an effect demonstrated by Participant 1 may be due to an external influence that occurs during treatment. The multiple baseline methodology replicates the phase change with other clients, allowing for improved internal validity.

Another benefit of the multiple baseline design is the ability to control for assessment or time-related changes. The varying lengths of baselines act as controls for each other, in that such effects should be evident in each baseline. However, if treatment effects are demonstrated following the different baseline lengths, then one may be more confident of internal validity (Barlow et al., 1984). Thus, multiple baselines across clients improve confidence in treatment effects by arranging phase changes so that between series comparisons are possible.

The current study also utilizes a crossover component in combination with the multiple baselines. In a crossover design, two series or conditions are synchronized such that two phase changes occur concurrently, but in the reverse order. In other words, clients in one condition will receive behavioral treatment followed by cognitive therapy, whereas individuals in the remaining condition will undergo cognitive therapy followed by behavioral treatment. An advantage to the crossover design is that control over external factors is increased through changing phases after the same number of sessions. Thus, consistent effects shown within both conditions are more convincing than simple, unsynchronized phase changes. One disadvantage to the crossover

design, however, is order effects. Because one treatment is followed by a second, it is uncertain whether effects demonstrated in the second phase are due to the second treatment or to delayed effects of the initial intervention. Despite this uncertainty, crossovers provide important information concerning the effectiveness of the first-order treatment and the combination of both treatments.

Response covariation. The examination of change mechanisms is enhanced by identifying how different symptoms change in relation to each other over the course of treatment. Response covariation refers to a relationship between two responses such that a change in one response affects changes in the other (Kazdin, 1982). Such covarying of responses could result in therapeutic benefit, in that symptoms that are difficult to target may be treated indirectly through more easily targeted responses (Parrish & Roberts, 1993). For example, overvalued ideations found in OCD are thought to be resistant to challenging and to respond poorly to cognitive therapy (Kozak & Foa, 1994), yet behavioral treatment has been demonstrated to reduce the believability of obsessions (Lelliot et al., 1988). Thus, one symptom may be addressed therapeutically through the targeting of an alternate symptom. For example, in the case of BDD, cognitive therapy may have little effect on reducing preoccupations with appearance and the frequency of negative self-statements. However, if negative self-statements covary with BDD-related behaviors (e.g., mirror-checking), then a reduction in such behaviors may cause a change in

those cognitive statements. Thus, through response covariation, BDD-related obsessions that are resistant to cognitive therapy may be targeted indirectly through the treatment of related behaviors.

Thus far, no methodologically rigorous studies have examined the effects of behavior therapy on BDD-related cognitions. However, in one case study of relaxation training (Munjack, 1978), the client reported a subjective decrease in preoccupations. Also, in a series of case studies discussing the effects of ERP (Marks & Mishan, 1988), some clients did report a decrease in previously unshakable beliefs. Unfortunately, several of those participants began pharmacotherapy during the behavioral treatment and, therefore, improvement in symptoms cannot be attributed to behavior therapy. Geremia (1997) examined the effects of cognitive therapy on BDD symptoms, and demonstrated that the targeting of BDD-related cognitions resulted in a reduction of compulsive behaviors for two of the four participants. In addition, the OCD outcome literature demonstrates that successful behavior therapy reduces frequency and believability of obsessions (Foa & Goldstein, 1978; Ito, et al., 1995, Lelliot et al., 1988).

Thus, the identification of covarying clusters of symptoms may aid in more effective treatment by revealing alternative and indirect treatment targets. First, however, there is a need to identify these components or processes that must be changed. In other words, before we investigate whether a change in negative self-statements will affect change in

compulsive checking behaviors, we need to determine whether frequency of checking must change before treatment is successful. The current study examines daily changes in cognitions and behaviors throughout the course of therapy in order to identify whether changes in these processes are required for successful treatment. In addition, the covariation of cognitions and behaviors are examined over the course of both cognitive and behavioral treatment in order to investigate whether targeting of one process affects changes in the other. The covariation of BDD-related behaviors and cognitions over the course of behavior and cognitive therapies will be examined in the current study.

Current Study

The current study investigated particular aspects of behavioral and cognitive theories of BDD through examining daily changes in behaviors and cognitions over the course of behavior and cognitive therapies.

In keeping with the fear maintenance stage of Mowrer's two-factor theory, behavioral theory for BDD states that BDD-related behaviors are maintained through negative reinforcement. As discussed previously, rituals (e.g., mirror-checking) and avoidance behaviors (e.g., camouflaging) are hypothesized to decrease discomfort elicited by appearance-related thoughts and situations, and are maintained because of their ability to decrease the aversive response. In addition, the performance of these behaviors artificially decreases discomfort and prevents the natural habituation process. If this theory were accurate, then

interrupting the reinforcing properties of rituals and avoidance through ERP would result in an overall decrease in BDD-related behaviors. The BDD outcome literature has demonstrated that a combination of ERP and CT reduces BDD symptoms. However, a detailed investigation on the effects of ERP alone on reducing overall BDD behaviors has not been conducted.

In the OCD outcome literature, ERP has been shown to decrease OCD-related behaviors, cognitions, and associated distress. Therefore, if these change processes can be extrapolated to BDD, then a successful course of ERP would be expected to reduce unhelpful cognitions and negative affect, as well as behavior. The current study conducts a detailed investigation into processes that change over the course of ERP, and examines procedures consistent with the theory that BDD-related behaviors and cognitions are maintained through negative reinforcement patterns.

Although the implementation of ERP often improves OCD symptoms, it would be erroneous to assume that the only mechanism for improvement could be an interruption in negative reinforcement patterns and habituation of a learned response. Other theories have been proposed as possible explanations for the therapeutic effect of ERP. For example, emotional processing theory (Rachman, 1980) and its adaptation to anxiety disorders (Foa & Kozak, 1991) proposes that exposure therapy achieves its gains through the modification of a fear

structure. Emotional processing involves the integration of information into an existing fear structure that is incompatible with the pathological elements of that structure. Exposure therapy is proposed to provide that incompatible information, allowing for a reduction in fear by changing the meaning of the feared event by demonstrating a reduction in the probability of harm, while also allowing habituation of the physiological response (Foa & Kozak, 1991).

Similarly, self-efficacy theory (Bandura 1986; 1988) states that fearful behaviors arise from low self-efficacy (i.e., lack of belief in one's own coping abilities in the face of fearful stimuli). The change mechanism of exposure therapy is believed to be an increased sense of mastery following the successful completion of exposure trials. Yet another possible explanation for the success of behavior therapy could be the altering of cognitions following a successful ERP trial and subsequent increase in activity. Thus, several possible explanations exist for the therapeutic success of ERP, preventing a definitive test of behavioral theory in the current study.

Alternately, cognitive theory of BDD states that BDD symptoms are maintained through a combination of distorted thinking patterns and ongoing negative self-statements. In addition, Beck's general cognitive theory (from which BDD cognitive theory was derived) proposes that the most effective point of intervention to change cognitions, behaviors, and affect lies with altering the cognitions. Therefore, cognitive theory

proposes that overall therapeutic change results from reductions in cognitive distortions and negative self-statements. The current study investigates the theory that BDD symptoms are maintained through cognitive distortions and negative self-statements by investigating whether these statements decrease over the course of cognitive therapy.

However, as with the testing of behavioral theory, challenges exist with empirically testing the validity of BDD cognitive theory. That is, results demonstrating effective cognitive therapy, while consistent with the theory, would not prove that proposed change mechanisms were the actual maintaining factors. In other words, cognitive therapy could result in amelioration of BDD symptoms through entirely different processes other than those assumed by cognitive theory. For example, McFall and Wollersheim (1979) proposed that individuals with OCD match the perceived threat of an event with their ability to cope, and that the challenging of expected catastrophic outcomes allows for a more appropriate match between threat and coping ability. Alternately, discussions regarding the effectiveness of cognitive therapy for OCD have noted that cognitive therapy often requires behavioral experiments or naturally leads to an increase of behavioral activity (Abromowitz, 1997). Thus, the fact that cognitive therapy may be effective through mechanisms other than the alteration of maladaptive schemas makes the testing of that theory difficult.

Also of importance is determining the particular aspects of the CBT package that result in symptom relief. In very practical terms, the identification of crucial components and the elimination of extraneous elements are time- and cost-effective. In addition, the inclusion of unnecessary elements could serve to dilute the overall effectiveness of the treatment by guiding efforts away from the most crucial aspects of intervention. For example, if the proposed investigation determined that cognitive challenging did not contribute in a clinically significant manner to the reduction of BDD symptoms, then therapeutic efforts could center on behavioral exercises. Thus, the identification of necessary treatment components could make for a more powerful and effective intervention. The current study examined clinically significant change following both behavior and cognitive therapies.

Using a multiple baseline series, six clients were randomly assigned to one of two conditions. Clients in Condition One underwent baseline assessment, followed by eight bi-weekly sessions of CT, another period of baseline assessment, and eight bi-weekly sessions of BT. Clients in Condition Two underwent the same sequence of baseline and treatment, but received BT as the initial treatment followed by CT (Figure 1).

Within each condition, clients were assigned to one of three multiple baselines. Baseline One involved one week of baseline measurement followed by the first treatment, three weeks of baseline, and

the second treatment. Baseline Two entailed two weeks of baseline measurement, treatment, two weeks of baseline, and treatment. Finally, clients in Baseline Three underwent baseline measurement for three weeks, followed by treatment, one week of baseline, and treatment. Throughout the study, three measurements were conducted on a daily basis: an idiosyncratic behavior (e.g., frequency/duration of mirror-checking) was monitored daily to assess behavioral change; a frequency count of negative self-statements was recorded daily to assess cognitive change; and a rating of global distress was recorded daily to assess affective change. Thus, the daily measures of cognition, behavior, and affect provided a very detailed picture of changing processes throughout the two treatments. In addition to these daily measurements, a semi-structured clinical interview and a battery of BDD-related measures were administered at all phase change points throughout the study, and third-party ratings were collected weekly.

Hypotheses Related to Behavior Therapy

Hypothesis 1: Behavior therapy will result in decreases in daily frequencies of appearance-related compulsions.

Hypothesis 2: Behavior therapy will result in decreases in daily frequencies of appearance-related negative self-statements.

Hypothesis 3: During behavior therapy, the reduction in daily negative self-statements will not be as great as the reduction in daily compulsive behaviors.

Hypothesis 4: Behavior therapy will result in decreases in daily distress levels.

Hypotheses Related to Cognitive Therapy

Hypothesis 5: Cognitive therapy will result in decreases in daily frequencies of appearance-related negative self-statements.

Hypothesis 6: Cognitive therapy will result in decreases in daily frequencies of appearance-related compulsions.

Hypothesis 7: During cognitive therapy, the reduction in daily compulsive behaviors will not be as great as the reduction in daily negative self-statements.

Hypothesis 8: Cognitive therapy will result in decreases in daily distress levels.

Hypothesis Related to Combined Cognitive and Behavioral Therapies -

Hypothesis 9

Both behavior therapy and cognitive therapy are predicted to be necessary for clinically significant change. Neither behavior therapy nor cognitive therapy alone will be sufficient in decreasing BDD-related symptoms to a clinically significant degree.

Chapter 2

METHOD

Participants

Participants were two males and three females, ranging in age from 21 to 44, who met diagnostic criteria for BDD. Education level ranged from high school completion to a Masters degree. A sixth male participant began the study but discontinued. Participants were recruited from both Maine and Manitoba communities through local advertisements and through referrals from other mental health professionals. The diagnosis of BDD was determined using the Body Dysmorphic Disorder Examination (BDDE, Appendix A; Rosen & Reiter, 1996). The BDDE is a semi-structured clinical interview designed for diagnostic purposes, and for assessing the presence and severity of BDD symptoms. Four of the six participants were taking medication for psychological disorders at the time of this study, and were permitted to participate provided they were stabilized on the medication for at least four weeks. Exclusion criteria included the diagnosis of anorexia nervosa or a psychotic disorder, active alcohol or substance abuse, and concurrent psychotherapy.

Therapists

Two clinical psychology interns and one clinical psychology doctoral student conducted the individual therapy sessions, and were supervised by a licensed clinical psychologist. All three therapists had a background in cognitive-behavior therapy, and were further trained in the

cognitive-behavioral models of BDD and treatment techniques specific to the disorder. In addition, training was conducted regarding the design of the study, and therapists followed a detailed treatment manual.

Adherence to the treatment protocol was monitored through individual supervision sessions that followed each therapy session.

Measures

Total Compulsive Behavior Score (TCBS). On a daily basis, clients were asked to record compulsive behaviors. The daily score represented the number of compulsive behaviors performed or total amount of time spent ritualizing in a given hour. The particular behavior and hour in which measurement was taken were chosen on an idiographic basis and remained consistent throughout the entire study. For example, if the most prominent ritual was mirror-checking, then the participant recorded the number and/or the duration of checks during the same hour each day. The TCBS was calculated by summing the minutes spent ritualizing or the number of behaviors conducted in that hour. Appendix B presents the behavior measured for each participant. A reduction in the TCBS was used as an indication of treatment success.

Total Negative Self-Statements Score (TNSS). On a daily basis, clients were asked to record the number of negative appearance-related self-statements during a chosen hour. Clients were provided with a mechanical counter, and asked to record every occurrence of a negative self-statement during this hour. As with the TCBS, the measurement hour

was chosen on an idiographic basis, and reflected the hour in which these thoughts were most frequent. The TNSS was calculated by summing the number of negative thoughts in that hour, and a reduction in this score was considered indicative of treatment success.

Global Distress Rating (GDR). For the third daily measure, clients were asked to record their average level of distress throughout the entire day. Ratings were to range from 0 to 100, and a reduction in this score was considered indicative of treatment success.

Third Party Measure. On a weekly basis, participants were asked to obtain additional data from a person who lived with the client and who was knowledgeable about the appearance concerns. Once a week, the participant was provided with a form (Appendix C) requesting the third party to (i) rate on a 10-point scale the average amount of effort the participant exerted that week related to appearance concerns, and (ii) indicate the number of times the participant asked for reassurance that day.

Body Dysmorphic Disorder Examination (BDDE). The BDDE (Appendix A; Rosen & Reiter, 1996) is a 32-item semi-structured clinical interview designed as a diagnostic instrument, as well as a tool for assessing typical BDD symptoms that may be targeted for treatment. A total score of 60 or greater (out of a possible score of 166) is indicative of the presence of BDD. The interview taps into self-consciousness and preoccupation with physical appearance, overvalued ideations about the importance of appearance in self-evaluation, avoidance of social

situations or exposure of the appearance defects, and body camouflaging and body checking behaviors.

The BDDE has demonstrated satisfactory reliability and validity (O'Grady, Thorpe, & Kubik, 1998; Rosen & Reiter, 1996), good test-retest reliability ($r = .96$ for two-week period), inter-rater reliability ($r = .94$ to $.98$), and internal consistency ($r = .93$). The BDDE correlated significantly with other measures of BDD, and successfully discriminated clients referred for body image problems from non-clinical individuals with body image complaints and normal controls (Rosen & Ramirez, 1998; Rosen & Reiter, 1996).

The Yale-Brown Obsessive Compulsive Scale for Body Dysmorphic Disorder (YBOCS-BDD). The YBOCS-BDD (Appendix D; Phillips, Hollander, Rasmussen, Aronowitz, DeCaria, & Goodman, 1997) was adapted from the YBOCS (Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989), a widely used measure of obsessive compulsive disorder. The self-report version of the YBOCS-BDD consists of 10 items that measure time spent engaging in BDD-related obsessions and compulsions, as well as the intensity of distress, amount of interference in daily functioning, and the level of subjective control over obsessions and compulsions. Each item is rated on a 0- to 4-point scale, with separate scores calculated for the obsession and compulsions subscales.

The clinical interview version of the YBOCS-BDD showed good internal consistency ($r = .80$) and test-retest reliability ($r = .88$ for one week interval). Total scores on the YBOCS-BDD were significantly correlated with scores on the Clinical Global Impression Scale but not the Brief Psychiatric Rating scale, indicating adequate convergent and discriminant validity. Sensitivity to symptom improvement was demonstrated with 26 clients following a 16-week pharmacological trial (Phillips et al., 1997).

The Appearance Schemas Inventory (ASI). The ASI (Appendix E; Cash & Labarge, 1996) is a 14-item, self-report measure designed to assess beliefs and assumptions concerning the importance, meaning, and effects of appearance on one's life. Items are rated on a five-point scale of "strongly disagree" to "strongly agree." The ASI demonstrates acceptable internal consistency (coefficient alpha = .84; Cash & Labarge, 1996). Good construct validity was shown through moderate to high correlations with other body-image measures ($r = .48$ to $.64$) and unique, incremental variance over and above those measures ($R\text{-squared} = .57$; $p < .001$). In addition, the ASI differentiated between clinical body-image groups and non-clinical groups. An investigation of the factor structure revealed three factors that were termed body-image vulnerability, self-investment, and appearance stereotyping.

The Social Avoidance and Distress Scale (SADS). The SADS (Appendix F; Watson & Friend, 1969) is a 28-item, true/false measure designed to assess distress associated with social and interpersonal

situations, as well as the behavioral avoidance of those situations. The maximum possible score is 28, with higher scores indicative of higher levels of anxiety and poor adjustment to social environment.

The SADS demonstrates acceptable internal consistency (.77 to .94; Robinson, Shaver, & Wrightsman, 1991) and test-retest reliability (.68 to .94 over four week period; Watson & Friend, 1969). A correlation of .45 between the social and evaluative scales of the S-R Inventory of Anxiousness (Endler & Hunt, 1966) demonstrated adequate convergent validity. Discriminant validity was demonstrated with the Affiliation Scale of Jackson's (1966, as cited in Geremia, 1997) Personality Research Form ($r = -.76$).

The Overvalued Ideas Scale (OVIS). The OVIS (Appendix G; Neziroglu, Yaryura-Tobias, McKay, Stevens, & Todaro, 1998, as reported in Geremia 1997) is a nine-item, self-report inventory that assesses the degree to which individuals believe that particular fears are realistic and compulsions are necessary. Each item is rated on a scale of one to ten, with higher ratings indicating greater overvalued ideation. Good internal consistency ($r = .96$) was demonstrated using a group of 48 individuals diagnosed with OCD. Convergent validity was indicated with a significant correlation ($r = .69$) between the OVIS total score and a YBOCS item that assesses insight into obsessive-compulsive symptoms. The correlation of a depression scale with the OVIS ($r = -.12$) demonstrated discriminant validity.

The Beck Depression Inventory – II (BDI-II). The BDI-II (Appendix H; Beck, Steer, & Brown, 1996) is a 21-item, self-report questionnaire that taps into the cognitive, affective, behavioral, and biological features of depression. Each item is rated on a 0- to 3-point scale of severity, with higher ratings indicating greater severity of symptoms. Total scores on the BDI-II may describe an individual as severely, moderately, or mildly depressed. Low scores indicate the absence of depression.

The BDI-II is psychometrically sound (Beck et al., 1996). The instrument demonstrates good internal consistency ($\alpha = .92$) and test-retest reliability ($r = .93$). Significant correlations with scales that measure depressive symptoms (Beck Hopelessness Scale, $r = .68$; Hamilton Psychiatric Rating Scale for Depression, $r = .71$) and significant, but lower, correlations with anxiety measures (Hamilton Rating Scale for Anxiety, $r = .47$) indicate convergent and discriminant validity. A principal components analysis identified two factors, termed Somatic-Affective (standardized-regression coefficients $\geq .35$) and Cognitive (.33).

Design

Six clients were randomly assigned to one of two conditions (Appendix I). Clients in Condition One received eight sessions of CT, followed by the same number of BT sessions, whereas participants in Condition Two underwent the same treatments but in the reverse order. Within each condition, participants were assigned to one of three initial baseline periods (one, two, or three weeks). A second baseline

assessment period was implemented at the midpoint of treatment (i.e., following treatment one and prior to treatment two). These midpoint baselines also differed in length (three, two, or one weeks), depending on the number of initial baseline weeks, to amount to four weeks of total baseline assessment time. Baseline One involved three weeks of baseline measurement followed by the first treatment, one week of assessment, and the second treatment. Baseline Two entailed two weeks of baseline, treatment, two weeks of measurement, and treatment. Finally, clients in Baseline Three underwent baseline assessment for three weeks, followed by treatment, one week of baseline, and treatment.

During baseline assessment, two measurements were conducted. An idiosyncratic behavior (e.g., duration of mirror-checking) was monitored daily to assess behavioral change, whereas cognitive change was monitored with a daily frequency count of negative, appearance-related self-statements. In addition, a battery of outcome measures was administered repeatedly throughout the study (Appendix J).

Procedure

Assessment. Individuals responding to study advertisements were screened on the telephone for appropriateness in the study.

Respondents who were diagnosed with anorexia nervosa or a psychotic disorder or those who had an active alcohol or substance abuse problem were considered inappropriate for the study, and were referred elsewhere for services. Individuals who described preoccupations with appearance

defects that interfered with daily functioning were invited to participate in a more comprehensive, face-to-face interview. For those individuals who were taking medications for psychological disorders, the interview was scheduled once a stable dosage for four weeks had been maintained.

During the interview, the BDDE was administered in order to determine whether participants met criteria for BDD. Once a diagnosis of BDD had been determined, clients were invited to take part in the research study. Participants were informed about the procedures of the study and were given a consent form to read and sign. Those individuals who did not meet these criteria offered referrals to other mental health practitioners.

In keeping with single-case methodology, assessment continued frequently throughout treatment. As discussed above, each client participated in a pre-treatment baseline assessment. Daily counts of both rituals and negative cognitions were recorded throughout the baseline period, as well as during both behavioral and cognitive phases of treatment. In addition to the daily recordings of specific symptoms, a battery of measures was administered at each phase change (Appendix J). The battery included the YBOCS-BDD, BDI-II, OVI, Appearance Schemas Inventory, and SADS. The BDDE interview also was conducted at phase changes in order to assess whether individuals still met criteria for the disorder.

Behavior therapy. Behavior therapy consisted of eight one-hour sessions twice per week. Session 1 was psychoeducational in nature and explained BDD in terms of the behavioral model. A behavioral analysis of antecedents, consequences, and avoidance behaviors was conducted and discussed with the client. Then, a rationale for ERP was discussed, and a detailed hierarchy of anxiety-provoking ERP exercises was developed in a collaborative manner. Hierarchy items included both in-session and homework scenarios and focused on the exposure of the body part in public situations and the prevention of anxiety-reducing rituals. Examples of ERP hierarchy items included creating a fake pimple on face while avoiding mirror-checking or covering-up, wearing a form-fitting shirt to a busy waiting area while refraining from covering-up or fleeing the area, and allowing the therapist to stare at lips while avoiding talking or placing hand in front of mouth.

Throughout Sessions 2 to 8, ERP exercises were conducted in a graduated manner, both in session and as homework. Once hierarchy items were selected, clients were instructed to remain in the situation until discomfort decreased, without using the traditional distress-relieving compulsions. Distress levels were measured by the Subjective Units of Distress Scale (SUDS; Appendix K). The SUDS is a 100-point Likert rating scale in which zero represents 'no anxiety' and 100 represents 'worst possible anxiety.' Clients were asked to record SUDS ratings at

approximately two-minute intervals throughout ERP exercises. ERP trials were discontinued once SUDS ratings decreased to 20 to 30.

The initial ERP trial was conducted in the presence of the therapist in order to ensure proper execution of the exercise. Because of the distressing nature of ERP, clients tend to terminate the exercise prematurely, or to engage in other anxiety-reducing techniques (e.g., self-talk). Therefore, clients were reminded continually of the rationale for ERP and the beneficial nature of experiencing the anxiety as fully as possible. Progression to the next hierarchy level followed participants' sense of mastery on lower-rated items.

Cognitive therapy. Cognitive therapy was provided in eight one-hour sessions twice a week. Clients receiving CT underwent cognitive restructuring procedures based on the principles of Beck's model of cognitive therapy (Beck, 1995). Session 1 was predominantly psychoeducational in nature and described BDD in terms of the cognitive model. Participants were provided with a list of cognitive distortions common among those with BDD (Geremia, 1997; Appendix L), and idiosyncratic cognitive errors were postulated. Details about the perceived defect and the resulting distress were discussed, as well as the impact on social and occupational functioning. Dysfunctional attitudes and unhelpful automatic thoughts were explored in a preliminary manner, along with discussion surrounding developmental antecedents of body image

problems, sociocultural and familial factors, and immediate sources of body image distress.

In Sessions 2 through 8, participants kept daily thought diaries (Appendix M) in which they recorded automatic thoughts, fluctuations in mood, situational details, and resultant changes in behavior. For example, a client may write, "I was having coffee with my friend and she was staring at my hair. I bet she thought my hair was too fuzzy and that no one else would want to be my friend. I am so ugly and stupid. I felt embarrassed and told her I had to leave." Then, these recordings were discussed and evaluated in session. The validity of disturbing automatic thoughts was challenged, in a collaborative manner, by examining evidence for and against the thought, determining alternative explanations to the thought, and evaluating the importance of the thought on feelings. The goal of such validity-testing was to challenge cognitive distortions underlying the distressing automatic thoughts. Particular attention was paid to the more damaging beliefs concerning the implications of appearance for self-worth.

With practice, clients were encouraged to recognize maladaptive automatic thoughts and cognitive errors, and to begin challenging their validity throughout daily activities. As such skills were developed, clients practiced generating more accurate thoughts to replace the negative self-statements. Participants were encouraged to interrupt negative self-statements as they occur, replace them with the more neutral thoughts,

and evaluate the effect on emotion. For example, the client discussed above may challenge her beliefs that she was an ugly and unwanted friend by thinking “if I really were that ugly then my companion wouldn’t be able to tolerate sitting across from me”, and “if no one wanted to be my friend then I wouldn’t receive the social invitations that I do.” This challenging could eventually lead to the generation of more accurate replacement thoughts, such as “my hair is fluffy and curly [versus fuzzy and ugly]”, and “friends enjoy my company.”

Once participants demonstrated an ability to challenge cognitive distortions, CT progressed to the identification of more underlying core beliefs. Thus, automatic thoughts were pursued in order to identify the connection between physical appearance and inherent character traits (e.g., lovability, worthiness). Once identified, the validity of core beliefs (e.g., “I am worthless”; “I am unlovable”) was challenged with the goal of altering the underlying schema.

Follow-up Assessment

Two months following the completion of treatment, a follow-up assessment was conducted, including re-administration of the BDDE diagnostic interview and battery of self-report measures.

Chapter 3

RESULTS

The following daily data were visually analyzed according to published guidelines (Parsonson & Baer, 1978; Appendix N.), and questionnaire data were analyzed in accordance with guidelines for computing clinical significance (Jacobson & Truax, 1991; Appendix O). With regard to BDDE scores, clinical significance was demonstrated once the individual no longer met criteria for the disorder. Due to order effects, hypotheses regarding the effects of BT or CT were discussed in terms of participants who received that treatment as the initial intervention. Case descriptions of the five participants and their qualitative responses to treatment are presented in Appendix P.

Hypotheses Related to Behavior Therapy

Clients 1, 2, and 3, received BT as the first treatment after varying baseline periods (Client 1, 7 days; Client 2, 14 days; Client 3, 21 days). These clients were used to test hypotheses regarding BT alone.

Hypothesis 1. It was predicted that BT would result in behavior change as demonstrated by a reduction in daily TCBS. Clients 2 and 3 demonstrated the predicted drop in TCBS coincident with the introduction of BT. Client 1 did not show the effect. (See Figures 1, 2, & 3; Tables 1, 2, & 3).

During baseline, Client 2 demonstrated a wide range of TCBS (90-20; Figure 2), with mean weekly baseline TCBS of 66 and 61 (Table 2). These behaviors decreased over the course of BT, such that TCBS ranged from 25 to 2, with TCBS consistently below 10 during the final week of BT. Mean weekly

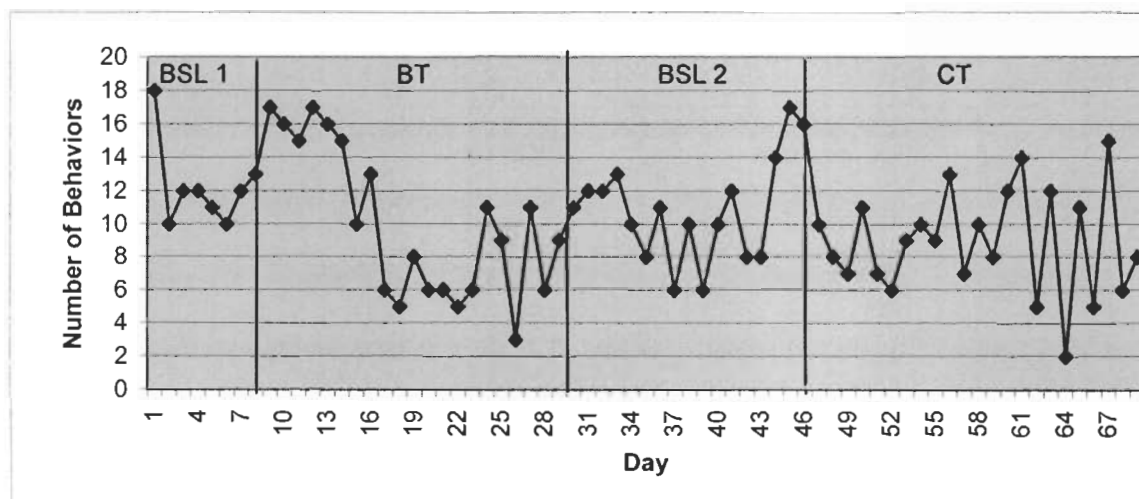


Figure 1. Daily Total Compulsive Behavior Scores (TCBS) across all phases for Client 1.

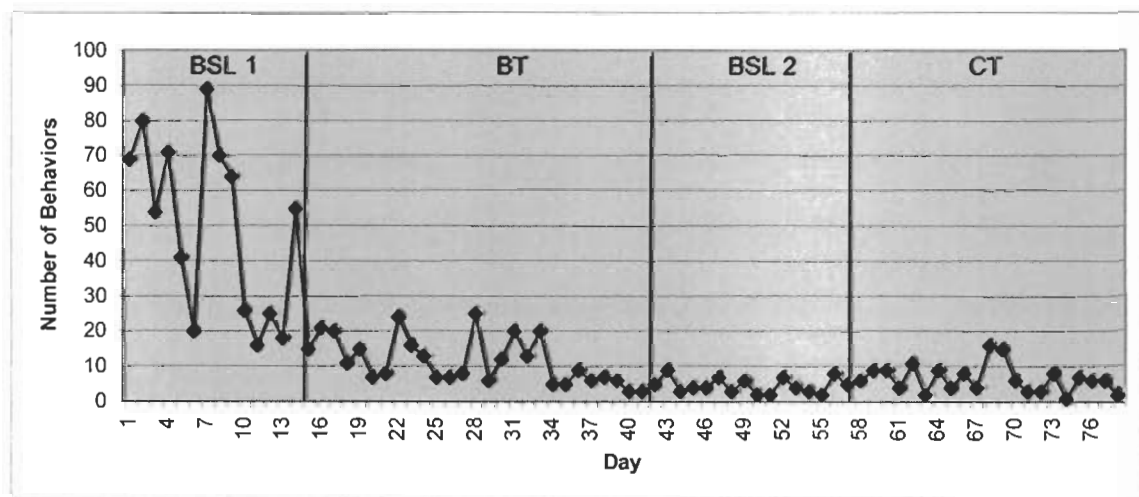


Figure 2. Daily Total Compulsive Behavior Scores (TCBS) across all phases for Client 2.

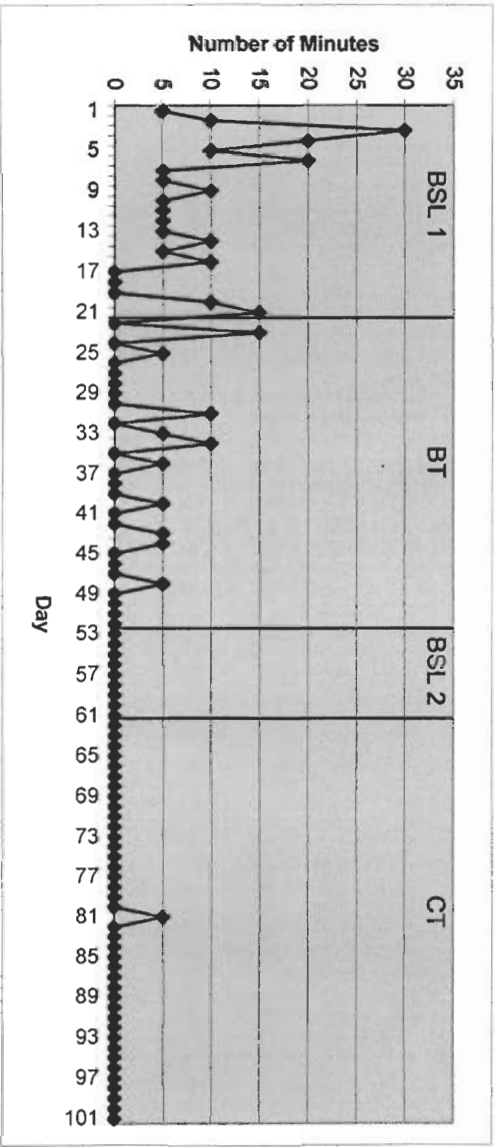


Figure 3. Daily Total Compulsive Behavior Scores (TCBS) across all phases for Client 3.

Table 1.

Mean Weekly TCBS, TNSS, and GDR Across All Phases for Client 1

	BSL 1	BT 1	BT 2	BT 3	BT 4	BSL 2	BSL 3	BSL 4	CT 1	CT 2	CT 3	CT 4
TCBS	9	16	11	7	7	12	9	13	8	10	10	8
TNSS	11	17	10	6	9	7	5	7	5	7	7	5
GDR	60	72	69	65	52	49	44	46	42	41	36	33

Table 2.

Mean Weekly TCBS, TNSS, and GDR Across All Phases for Client 2

	BSL 1	BSL 2	BT 1	BT 2	BT 3	BT 4	BSL 3	BSL4	CT 1	CT 2	CT 3	CT 4
TCBS	66	61	25	14	14	12	7	4	10	14	15	4
TNSS	21	25	12	10	12	6	5	3	7	7	8	4
GDR	64	39	38	41	37	23	29	20	36	30	34	27

Table 3.

Mean Weekly TCBS, TNSS, and GDR Across All Phases for Client 3

	BSL 1	BSL 2	BSL 3	BT 1	BT 2	BT 3	BT 4	BSL 4	CT 1	CT 2	CT 3	CT 4
TCBS	16	9	6	3	4	1	2	0	0	1	0	0
TNSS	5	4	2	1	1	0	1	0	0	1	0	0
GDR	60	37	41	32	35	32	32	21	17	19	14	13

TCBS, during BT, ranged from 25 to 12. In addition, these low scores continued throughout the second baseline and subsequent course of CT.

During baseline, Client 3 demonstrated a wide frequency range in TCBS (30-0; Figure 3), with a slight downward trend (weekly means = 16 & 9; Table 3). However, TCBS decreased in range over the course of BT (15-0), and remained consistently at zero during the second baseline. TCBS also remained at a stable low rate over the subsequent course of CT.

In addition, BT was predicted to result in decreases in third party ratings of reassurance-seeking and behavioral effort. Unfortunately, third party ratings were not available for any of these participants. Due their efforts to maintain secrecy, none of these individuals had disclosed their concerns to the significant others with whom they lived.

Hypothesis 2. It was predicted that that BT also would result in cognitive change, as demonstrated by a decrease in daily TNSS. Client 3 demonstrated a reduction in TNSS over the course of BT. Clients 1 and 2 did not demonstrate the predicted effect. (See Figures 4, 5, & 6)

During baseline, Client 3 recorded a wide frequency range of TNSS (11-0; Figure 6), with a slight downward trend (weekly means = 5, 4, & 2; Table 3). TNSS decreased in range over the course of BT (4-0) for this client and remained consistently at zero during the second baseline. TNSS remained at a stable low rate over the subsequent course of CT.

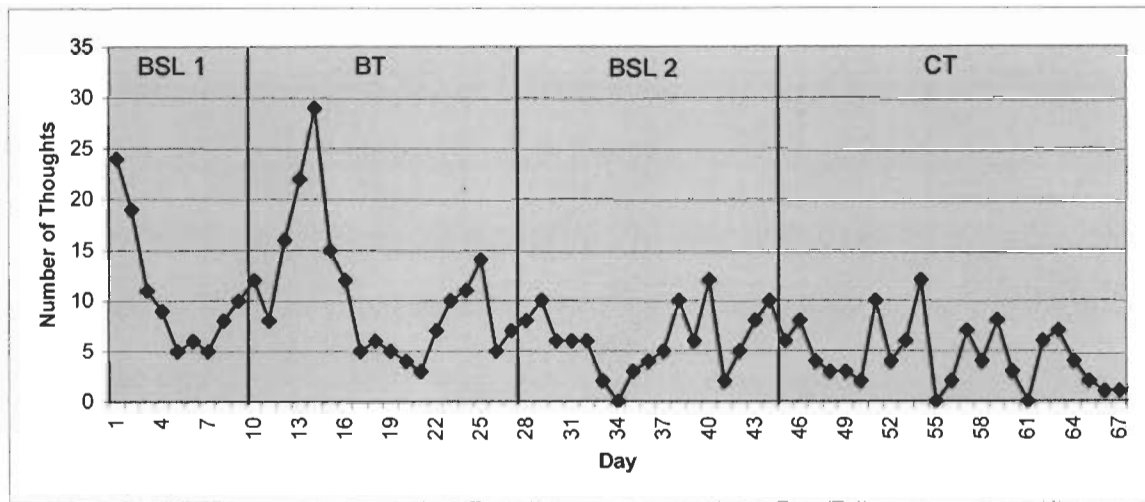


Figure 4. Daily Total Negative Self-Statement Scores (TNSS) across all phases for Client 1.

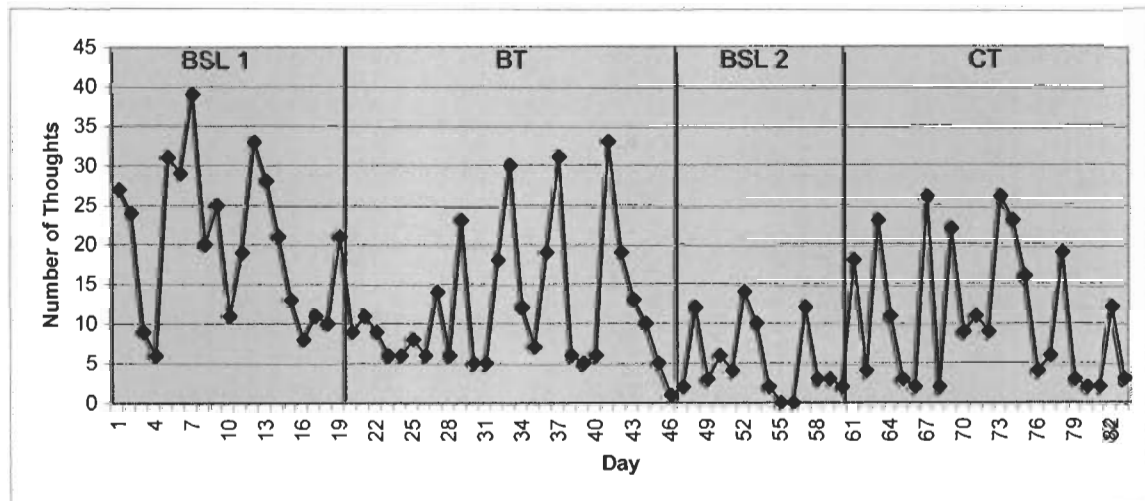


Figure 5. Daily Total Negative Self-Statement Scores (TNSS) across all phases for Client 2.

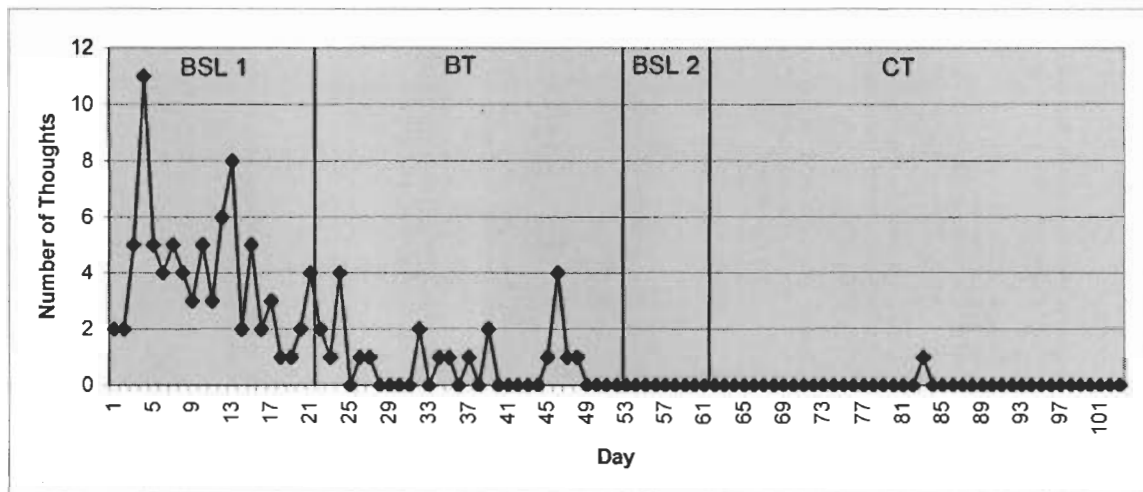


Figure 6. Daily Total Negative Self-Statement Scores (TNSS) across all phases for Client 3.

Hypothesis 3. It was predicted that the reduction in daily negative self-statements (TNSS) would not be as great as the reduction in compulsive behaviors (TCBS). Client 2 and Client 3 did demonstrate greater decreases in TCBS than TNSS over the course of BT. Client 1 demonstrated no change in either TCBS or TNSS during the course of BT (See Figures 7, 8, & 9).

Hypothesis 4. It was predicted that BT would result in reductions in daily distress levels (GDR). Client 3 demonstrated a notable decrease in GDR over the course of BT (See Figures 10, 11, & 12).

During baseline, Client 3 endorsed a wide range of GDR (90-20; Figure 12), with weekly means of 60, 37, & 41 (Table 3). GDR decreased over the course of BT (range = 50 - 20), and decreased further during the second baseline (range = 30-15). Client 1 demonstrated a moderate decrease in GDR (Figure 10), whereas Client 2 did not demonstrate any notable change in GDR over the course of BT (Figure 11).

Hypotheses Related to Cognitive Therapy

Clients 4 and 5 received CT as the first treatment after varying baselines (Client 4, 7 days; Client 5, 14 days). These clients were used to test hypotheses regarding CT alone.

Hypothesis 5. It was predicted that CT would result in cognitive change, as demonstrated by a reduction in daily TNSS. Client 5 demonstrated the predicted decrease in TNSS over the course of CT (See Figures 13 & 14; Tables 4 & 5).

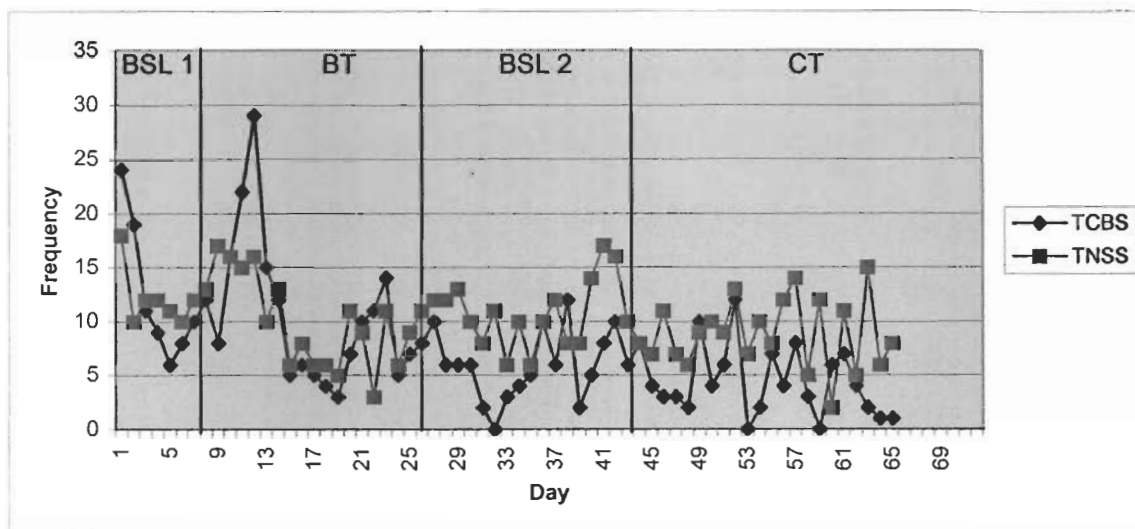


Figure 7. Daily Total Compulsive Behavior Scores (TCBS) and Total Negative Self-Statement Scores (TNSS) across all phases for Client 1.

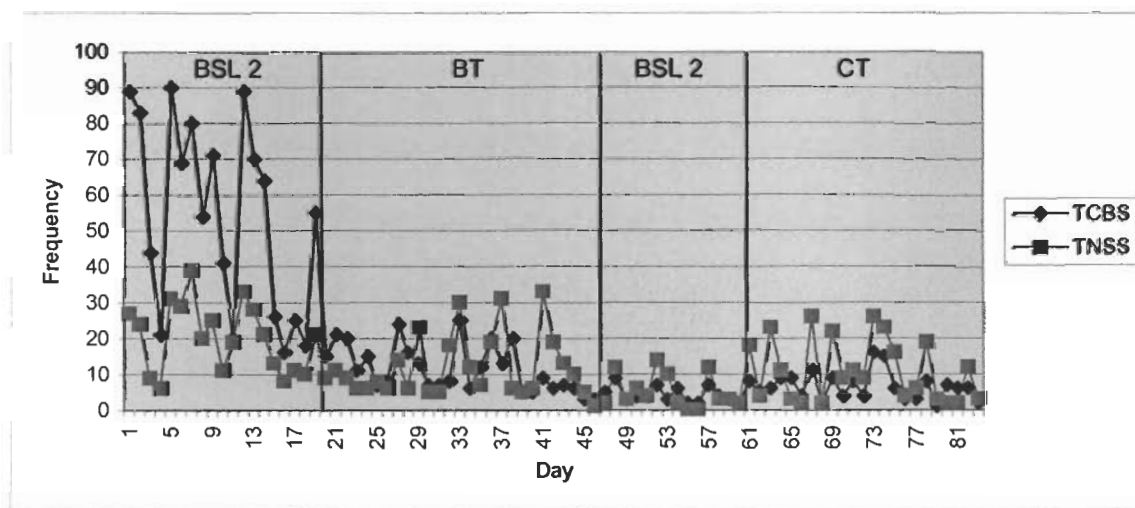


Figure 8. Daily Total Compulsive Behavior Scores (TCBS) and Total Negative Self-Statement Scores (TNSS) across all phases for Client 2.

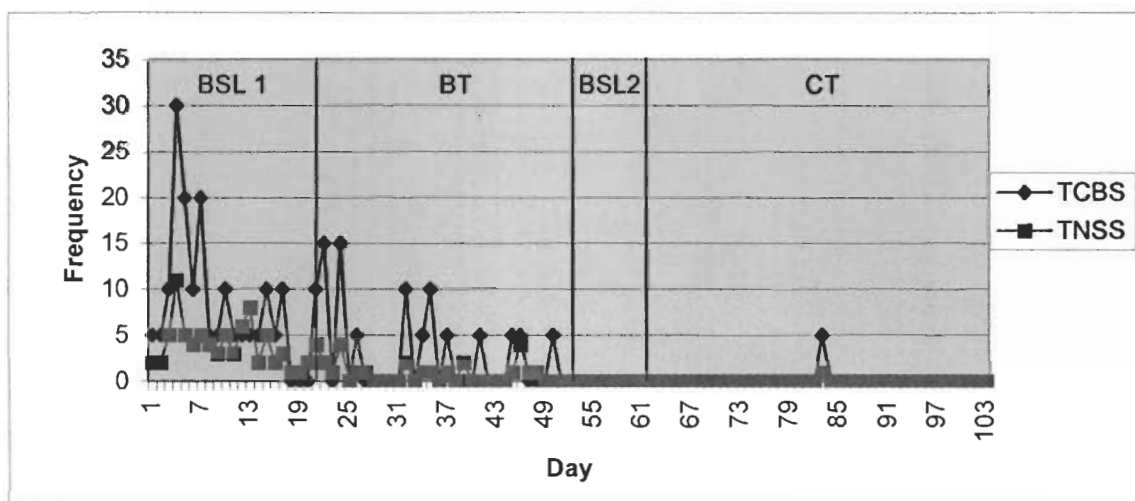


Figure 9. Daily Total Compulsive Behavior Scores (TCBS) and Total Negative Self-Statement Scores (TNSS) across all phases for Client 3.

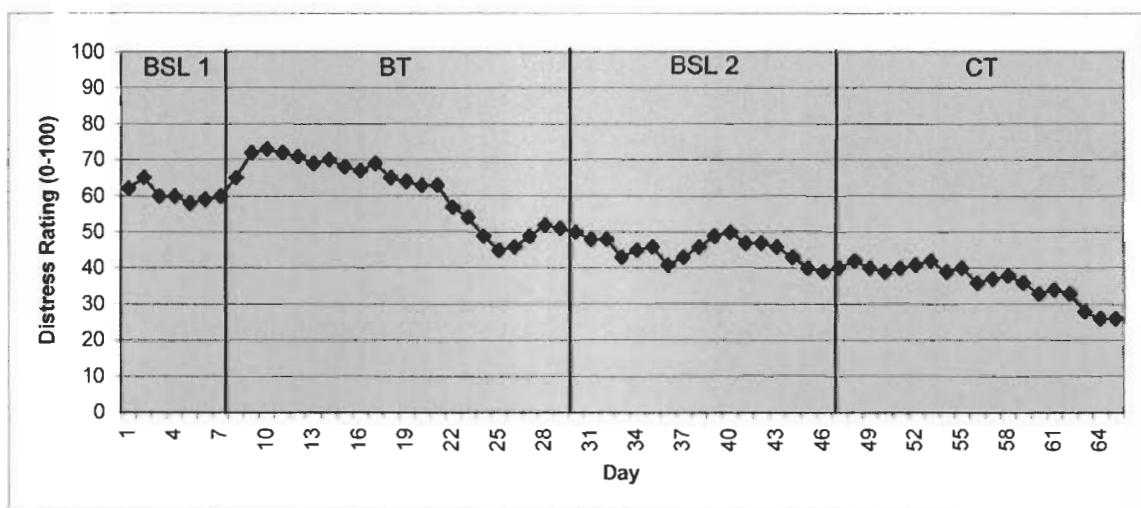


Figure 10. Daily Global Distress Ratings (GDR) across all phases for Client 1.

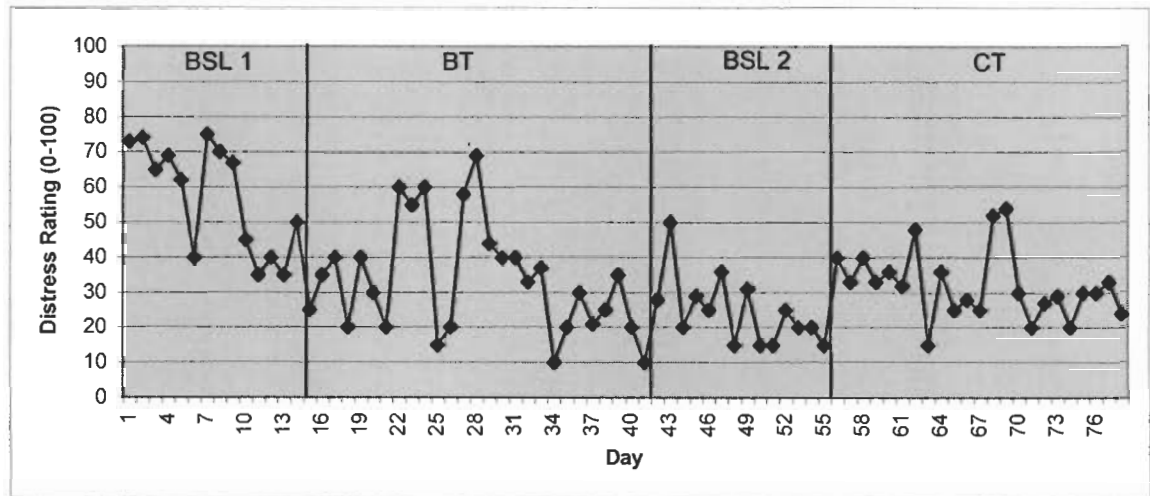


Figure 11. Daily Global Distress Ratings (GDR) across all phases for Client 2.

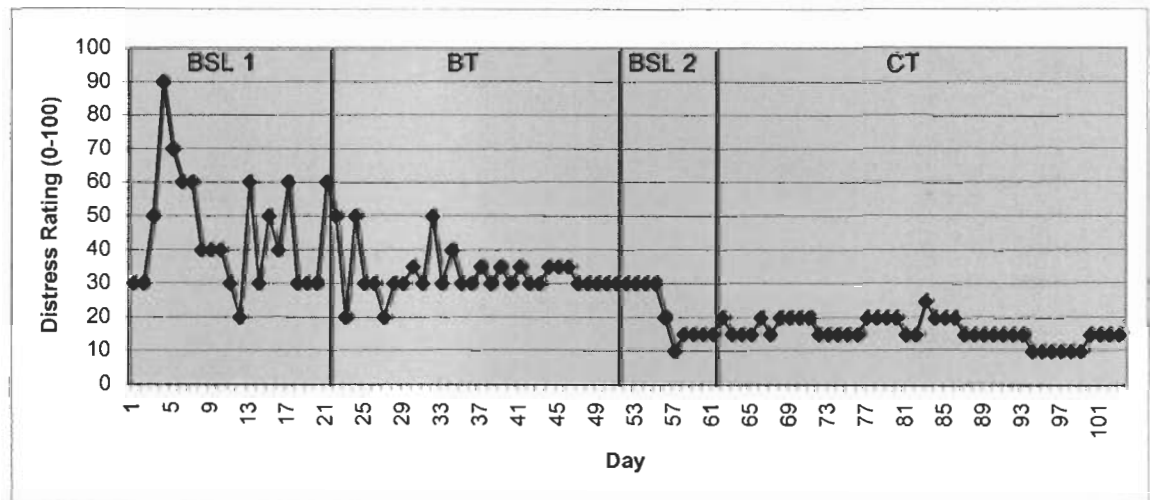


Figure 12. Daily Global Distress Ratings (GDR) across all phases for Client 3.

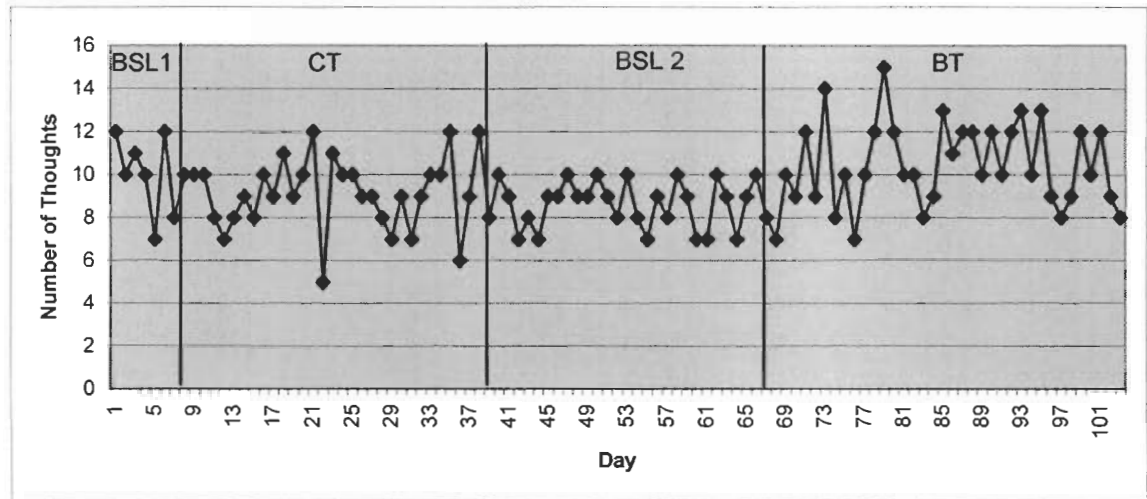


Figure 13. Daily Total Negative Self-Statement Scores (TNSS) across all phases for Client 4.

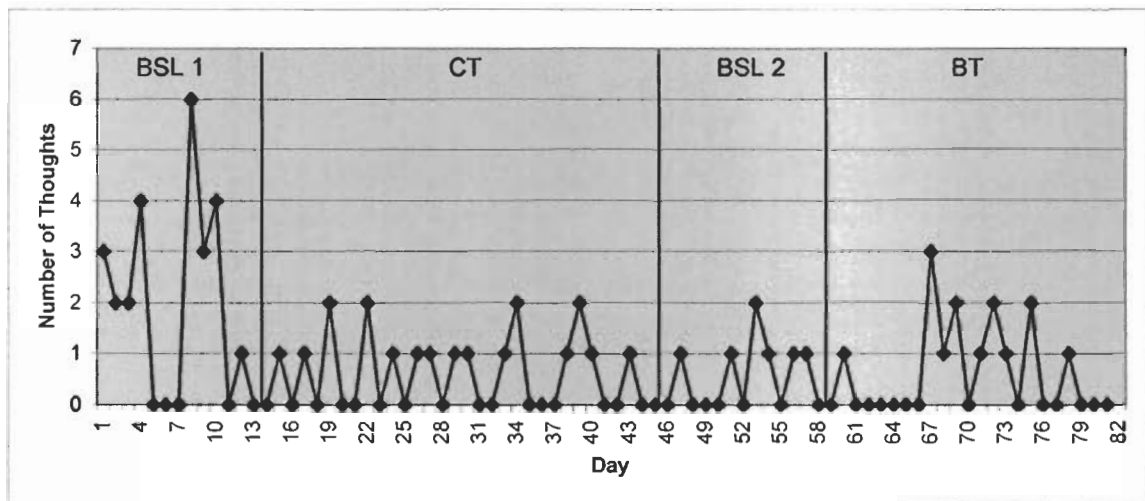


Figure 14. Daily Total Negative Self-Statement Scores (TNSS) across all phases for Client 5.

Table 4.
Mean Weekly TCBS, TNSS, and GDR Across All Phases for Client 4

	BSL 1	CT 1	CT 2	CT 3	CT 4	BSL 2	BSL 3	BSL 4	BT 1	BT 2	BT 3	BT 4
TCBS	46	44	51	41	38	42	49	42	39	44	46	45
TNSS	11	10	9	10	9	8	9	9	8	9	11	12
GDR	75	71	72	70	76	75	80	79	77	78	82	84

Table 5.
Mean Weekly TCBS, TNSS, and GDR Across All Phases for Client 5

	BSL 1	BSL 2	CT 1	CT 2	CT 3	CT 4	BSL 3	BSL 4	BT 1	BT 2	BT 3	BT 4
TCBS	2	2	2	2	2	2	2	2	2	1	2	2
TNSS	3	2	1	1	1	0	0	1	0	1	1	0
GDR	54	44	33	40	28	24	22	26	25	27	12	18

During baseline, Client 5 demonstrated a moderate frequency range of TNSS (6-0; Figure 14), with mean weekly baseline TNSS of 3 and 2 (Table 5). As predicted, TNSS decreased in range over the course of CT (2-0), with mean weekly TNSS ranging from 1 to 0. In addition, these low scores continued throughout the second baseline. Client 4 did not demonstrate a decrease in TNSS over the course of CT.

Hypothesis 6. It was predicted that CT also would result in behavior change as demonstrated by a reduction in daily TCBS and a reduction in third party measures of behavioral effort. Neither Client 4 nor Client 5 demonstrated decreases in TCBS over the course of CT (Figures 15 & 16; Tables 4 & 5). However, compared to baseline, Client 5 did demonstrate a decrease in third-party ratings of reassurance-seeking (Figure 17) and behavioral effort (Figure 18) over the course of CT. The recording of third party ratings was considered inappropriate for Client 4 due to the current abuse by her significant other.

Hypothesis 7. It was predicted that the reduction in daily compulsive behaviors (TCBS) would not be as great as the decrease in negative self-statements (TNSS). Client 5 demonstrated a greater decrease in TNSS than TCBS over the course of CT (Figure 20). Client 4 demonstrated no change in either TNSS or TCBS during the course of CT (Figure 19).

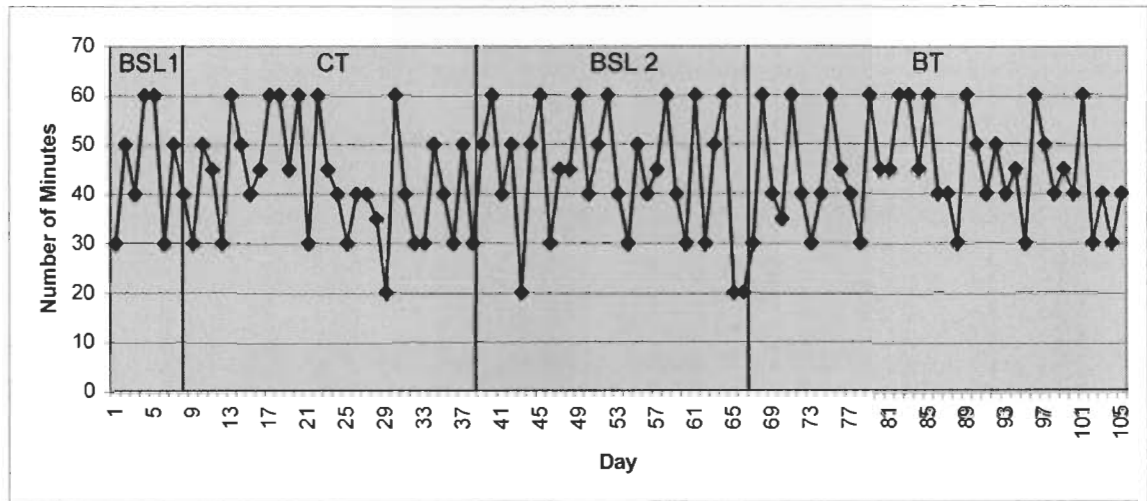


Figure 15. Daily Total Compulsive Behavior Scores (TCBS) across all phases for Client 4.

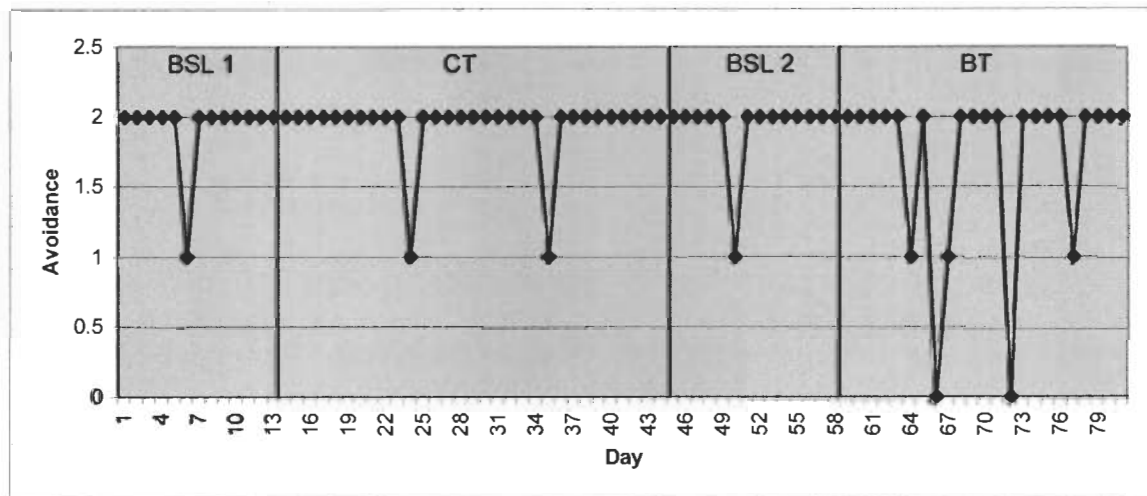


Figure 16. Daily Total Compulsive Behavior Scores (TCBS) across all phases for Client 5.

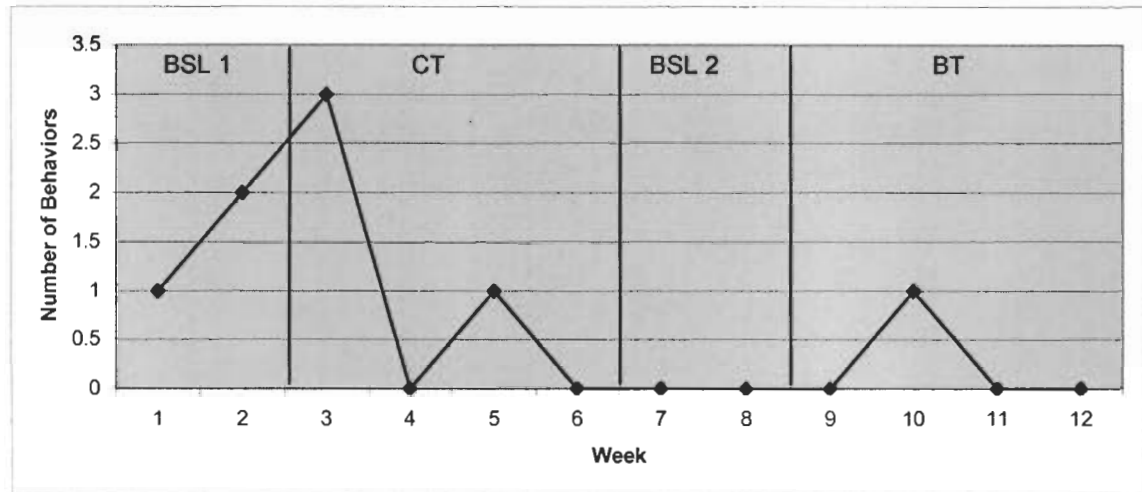


Figure 17. Number of reassurance-seeking behaviors recorded by a third party over a one day per week period for Client 5.

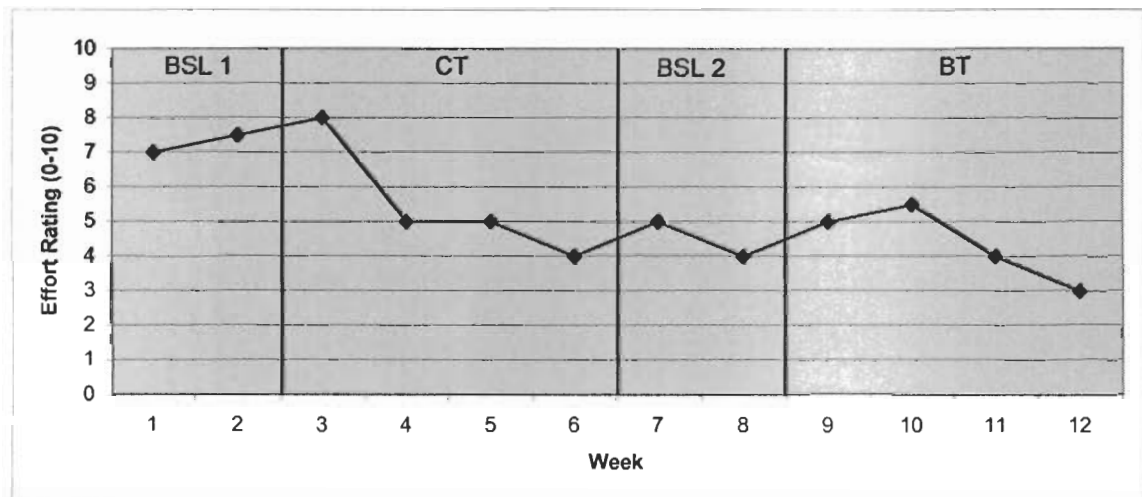


Figure 18. Weekly average ratings of appearance-related behavioral effort recorded by a third party for Client 5.

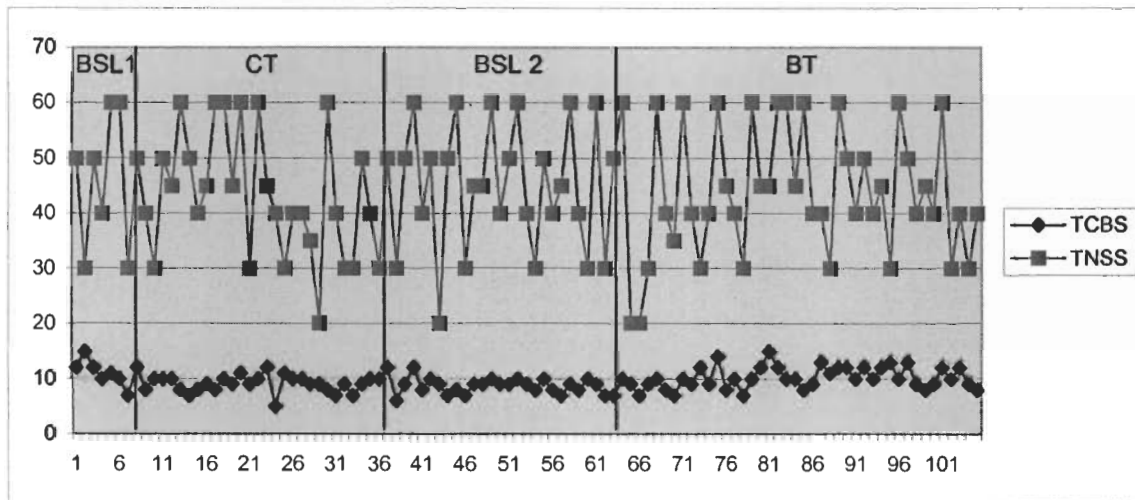


Figure 19. Daily Total Compulsive Behavior Scores (TCBS) and Total Negative Self-Statement Scores (TNSS) across all phases for Client 4.

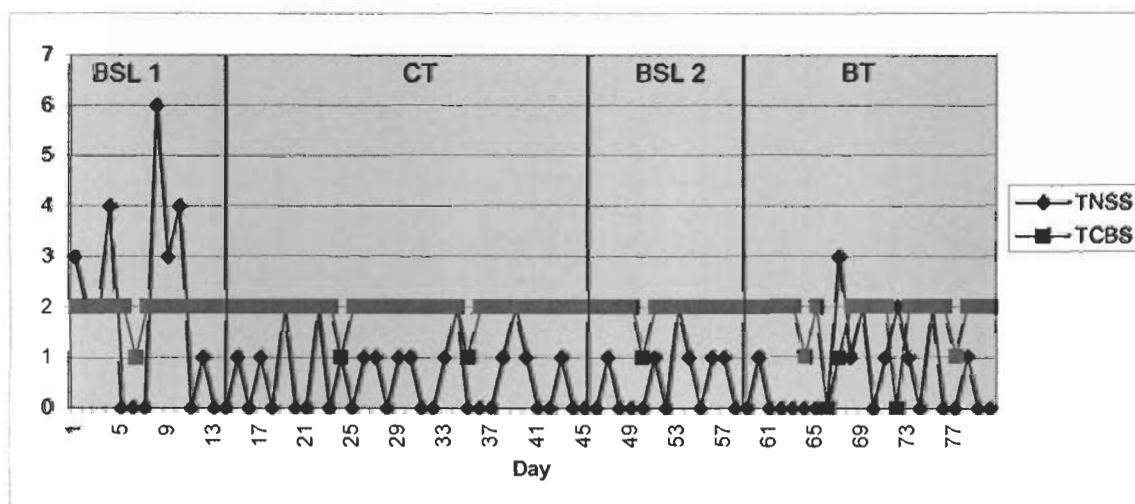


Figure 20. Daily Total Compulsive Behavior Scores (TCBS) and Total Negative Self-Statement Scores (TNSS) across all phases for Client 5.

Hypothesis 8. It was predicted that CT would result in reductions in daily distress levels (GDR). Client 5 demonstrated a decrease in GDR during the end of the CT period (See Figures 21 & 22). During the baseline, Client 5 recorded a wide range of distress ratings (76-20; Figure 22), with weekly means of 54 and 44 (Table 5). As predicted, overall distress decreased such that, during the final week of CT, GDR ranged from 36 to 15 with a mean of 24.

Client 4 did not demonstrate a decrease in distress ratings over the course of CT (Figure 21, Table 4).

Hypothesis Related to Combined Cognitive and Behavioral Therapies –

Hypothesis 9

It was predicted that both BT and CT would be necessary to result in clinically significant reductions on self-report measures and on the structured interview. Details regarding the computation of clinical significance are presented in Appendix N.

As predicted, Client 5 demonstrated clinically significant reductions on the YBOCS-BDD and BDI-II following the completion of both CT and BT (Table 6). In addition, Client 5 no longer met criteria for BDD following the completion of both treatments, as determined by BDDE scores. Clinically significant decreases were not demonstrated for the ASI, OVIS, or SADS.

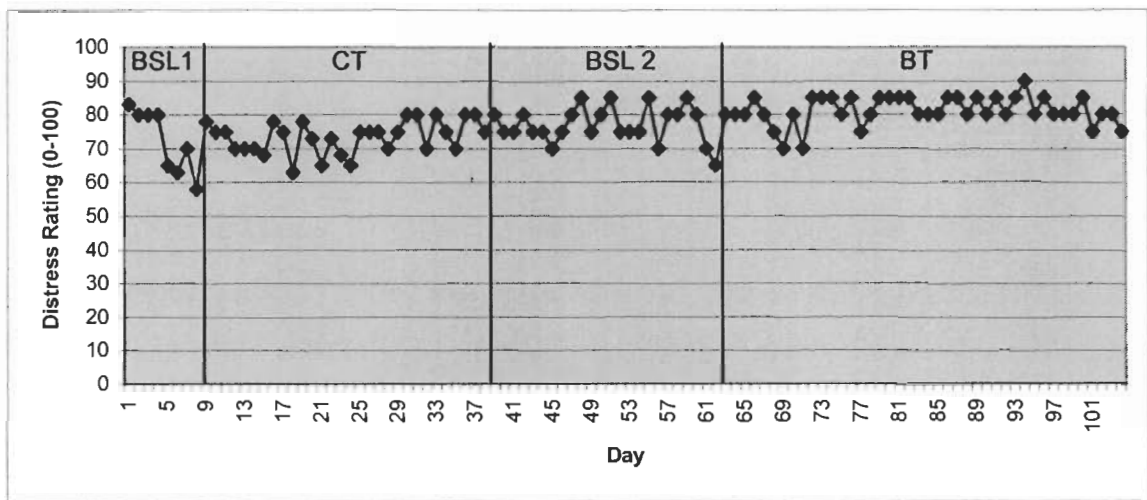


Figure 21. Daily Global Distress Ratings (GDR) across all phases for Client 4.

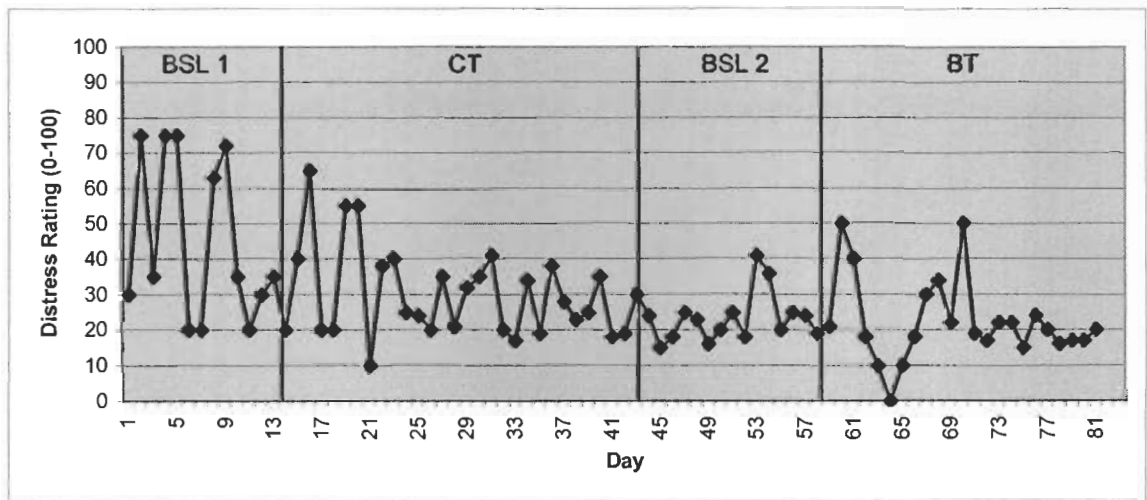


Figure 22. Daily Global Distress Ratings (GDR) across all phases for Client 5.

Table 6.
Questionnaire and Structured Interview Data for Client 5

	PRE-BSL	PRE-CT	POST-CT	PRE-BT	POST-BT	FOLLOW-UP
BDDE	104	105	65	68	40++	31++
YBOCS-BDD	22	20	13	14	9+	8+
ASI	2.85	2.50	2.36	2.57	2.14	2.29
OVIS	8.38	8.5	5.75	5.88	2.88	6.38
SADS	24	24	24	24	10	8
BDI-II	23	27	17	17	6+	10

+ clinically significant improvement
 ++ no longer meets criteria for BDD

Also as predicted, Client 2 demonstrated clinically significant improvement following the completion of both treatments, as determined by BDDE and BDI-II scores (Table 7). However, Client 2 also showed clinically significant reductions in YBOCS-BDD scores following the completion of BT only. This improvement in YBOCS-BDD scores was maintained throughout CT and at follow-up.

Client 3 met criteria for clinically significant improvement following completion of BT only, as determined by scores on the BDDE and YBOCS-BDD (Table 8). These improvements in BDDE scores were maintained throughout CT but lost at follow-up. The reductions in YBOCS-BDD scores were lost immediately following the completion of BT.

Client 1 and Client 4 did not demonstrate clinically significant reductions on any of the self-report measures (Tables 9 & 10).

Table 7.
Questionnaire and Structured Interview Data for Client 2

	PRE-BSL	PRE-BT	POST-BT	PRE-CT	POST-CT	FOLLOW-UP
BDDE	62	65	65	68	59	35++
YBOCS-BDD	22	23	10+	12+	12+	10+
ASI	2.29	2.29	1.86	2.57	1.64	1.57
OVIS	4.13	4.13	4.38	3.94	4.38	3.63
SADS	21	21	18	20	15	12
BDI-II	24	23	18	17	7+	8+

+ clinically significant improvement
++ no longer meets criteria for BDD

Table 8.
Questionnaire and Structured Interview Data for Client 3

	PRE-BSL	PRE-BT	POST-BT	PRE-CT	POST-CT	FOLLOW-UP
BDDE	74	89	57	41++	35++	50
YBOCS-BDD	26	28	9+	13+	17	17
ASI	3.36	3.36	3.00	2.86	3.21	2.93
OVIS	4.63	5.88	3.00	2.75	3.50	3.75
SADS	25	21	17	16	18	14
BDI-II	26	31	18	20	20	13

+ clinically significant improvement
++ no longer meets criteria for clinically significant change

Table 9.
Questionnaire and Structured Interview Data for Client 1

	PRE-BSL	PRE-BT	POST-BT	PRE-CT	POST-CT	FOLLOW-UP
BDDE	62	67	74	65	66	83
YBOCS-BDD	17	20	13	16	13	14
ASI	3.57	3.64	3.21	3.57	3.57	3.85
OVIS	6.50	4.63	5.63	5.25	6.88	5.25
SADS	12	9	14	11	9	11
BDI-II	15	16	7	15	8	21

Table 10.
Questionnaire and Structured Interview Data for Client 4

	PRE-BSL	PRE-CT	POST-CT	PRE-BT	POST-BT	FOLLOW-UP
BDDE	134	126	120	113	128	128
YBOCS-BDD	32	34	37	35	33	30
ASI	4.71	4.36	3.79	4.50	4.50	4.29
OVIS	8.50	9.13	7.50	8.63	7.88	8.88
SADS	26	25	26	27	27	27
BDI-II	40	40	37	43	40	32

Chapter 4

DISCUSSION

The current study utilized a multiple baseline, treatment crossover design to investigate the effects of cognitive and behavioral therapies on the reduction of BDD symptoms and the implications of these results on behavioral and cognitive theories of BDD symptom maintenance. Following a careful diagnostic screening, six individuals diagnosed with BDD as the primary disorder were invited to participate. Five participants completed the study. These participants received eight twice-weekly one-hour sessions of either behavior or cognitive therapy, followed by the same number of sessions of the other treatment. Although results demonstrated wide variability, behavior therapy appeared to be more effective in reducing daily ratings of negative thoughts, compulsive behaviors, and global distress. In addition, for three of the five participants, clinically significant improvement was demonstrated following the combination of both cognitive and behavior therapy. Results were more consistent with the behavioral theory of BDD symptom maintenance.

Implications for Behavioral Theory of BDD

The current study investigated implications for behavioral theory of BDD symptom maintenance, which states that BDD rituals and avoidance responses are maintained through negative reinforcement. Through interrupting the reinforcing properties of the behaviors and allowing the habituation process to occur, overall frequencies of BDD-related

behaviors were hypothesized to decrease. In addition, OCD outcome literature has demonstrated that ERP reduces OCD-related cognitions and associated distress. Thus, in the current study, ERP also was hypothesized to decrease the daily frequencies of negative appearance-related self-statements and overall distress levels.

Results were consistent with behavioral theory. Following behavior therapy, one participant improved notably on all three daily measures of behaviors, thoughts, and distress, whereas another improved notably on the daily measure of behaviors. In addition, although both behavior therapy and cognitive therapy were hypothesized to be necessary for clinically significant improvement on questionnaire measures, behavior therapy alone demonstrated clinically significant decreases for two participants on the YBOCS-BDD, one of whom no longer met criteria for BDD following behavior therapy. Furthermore, although definitive conclusions cannot be made due to order effects, one client who received cognitive therapy as the initial treatment demonstrated clinically significant reductions in YBOCS-BDD and BDI-II scores only after behavior therapy had been introduced. Also, this individual no longer met criteria for BDD following the completion of behavior therapy.

One of the three participants who received behavior therapy as the first treatment did not demonstrate improvement on any of the daily measures nor self-report questionnaires. Although this individual appeared to understand the therapeutic principles and to engage fully in

treatment, she did not demonstrate symptom change. The reasons for this lack of improvement remain unclear.

In summary, results make a case for the behavioral theory of BDD. In keeping with studies of behavior therapy for BDD (Marks & Mishan, 1988; McKay et al., 1997), the exposure to feared situations and the prevention of ritual completion often resulted in the reduction of daily compulsive behaviors, as well as related thoughts and distress. In addition, results are consonant with ERP outcome literature for OCD (Foa & Goldstein, 1978; Ito, et al., 1995; Lelliot, et al., 1988), which demonstrates effectiveness in reducing compulsions and, to a lesser degree, frequency of obsessions and strength of conviction in obsessional beliefs. Importantly, however, are the other theories of ERP that could potentially explain therapeutic effects. For instance, as previously mentioned, the success of behavior therapy also could be a consequence of an altered fear structure (Foa & Kozak, 1991), changes in cognitions, or improvements in self-efficacy (Bandura, 1986, 1988). Thus, although the current results are consistent with the behavioral model of BDD, a definitive conclusion regarding the impact of reinforcement contingencies cannot be drawn.

Implications for Cognitive Theory of BDD

The current study also investigated the cognitive theory of BDD symptom maintenance, which states that BDD symptoms are maintained through distorted thinking patterns and ongoing negative self-statements. Due to the interactive nature of cognition, behavior, and affect, the challenging of distorted assumptions was hypothesized to result in a

decrease in daily negative self-statements, BDD-related behaviors, and associated distress.

Results were partially consistent with cognitive theory. Following cognitive therapy, one participant improved notably on daily measures of thoughts, distress, and third party ratings of behavioral effort and reassurance-seeking. However, for this individual, decreases in daily behavioral avoidance were not exhibited as a result of cognitive therapy. In addition, clinically significant reductions on the YBOCS-BDD, BDDE, and BDI-II scores were not demonstrated until a course of ERP had been completed. Unfortunately, however, definitive conclusions regarding the separate effects of cognitive or behavior therapy on these particular improvements cannot be drawn due to order effects.

The second participant who received cognitive therapy as the first treatment demonstrated no improvement on daily measures, self-report questionnaires, or the clinical interview. At the time of the study, this individual also was suffering from intense distress associated with extreme physical, verbal, and psychological abuse experienced in childhood. In addition, during the study, she charged her husband with physical assault (which was the culmination of years of physical abuse) and accidentally found her daughter attempting suicide/homicide through carbon monoxide poisoning by locking herself in the garage with her one year-old child. These additional factors were believed to be influential in the lack of treatment response by impeding therapeutic engagement.

This individual was too distressed to complete homework exercises and was often too distracted to fully engage in in-session therapeutic exercises. Thus, therapeutic success was thought to be impeded by these factors.

In summary, results were somewhat consistent with the cognitive theory for BDD. The challenging of cognitive distortions improved daily negative self-statements and global distress for only one of two participants, and did not reduce daily avoidance or result in clinically significant improvement in self-report measures. Mixed results for cognitive therapy also were demonstrated in a previous BDD outcome study (Geremia, 1997). In that study, cognitive therapy resulted in a reduction in BDD-related thoughts and behaviors for only two of the four participants. It is important to realize, however, that poor treatment results do not necessarily refute the theory due to other potential impediments. For instance, in the current study, the opportunity for replication was not as available for the CT-BT condition because the third participant dropped out of the study following cognitive therapy and did not return any data. Therefore, the second replication available for the BT-CT condition was not possible. In addition, the complexity of cognitive therapy may require a much greater number of sessions before effectiveness is demonstrated.

Although results have been interpreted within the cognitive model of BDD, the potential impact of other therapeutic factors prevents firm conclusions regarding the altering of maladaptive schemas. As previously

discussed, other theories have proposed crucial change mechanisms of effective cognitive therapy. For instance, an improved match between perceived threat and coping ability (McFall & Wollersheim, 1979), as well as a subsequent increase in behavioral activity (Abromowitz, 1997) have been hypothesized causes for improved symptoms following cognitive therapy. Thus, a firm conclusion supporting cognitive theory of BDD could not have been possible in this study.

Response Covariation

Predictions were also made regarding the covariation of BDD-related thoughts and behaviors. As previously discussed, response covariation during cognitive and behavior therapies has been demonstrated in a preliminary manner (Geremia, 1997; Marks & Mishan, 1988). However, this research has focused on pre-post or periodic measurements with self-report measures. The current study is the first to examine fluctuations in daily thoughts and behaviors over baseline and treatment phases.

Evidence for daily covariation of intrusive thoughts and compulsive behaviors/avoidance was mixed. Two participants demonstrated strong covariation of thoughts and behaviors over both baseline and treatment phases. Client 3 exhibited similar fluctuations in thoughts and behaviors during baseline, followed by a gradual decrease in both over the course of behavior therapy. Thus, for this individual, behavior therapy was sufficient in reducing compulsive mirror-checking as well as negative self-

statements. In addition, the strong connection between thoughts and behaviors may be seen during the following phase of cognitive therapy, in which a 45-day absence of both negative self-statements and mirror-checking was interrupted by a one-day rise in both thought and behavior scores. Although Client 1 did not improve notably throughout the study, the link between mirror-checking and negative self-statements was clearly demonstrated. Daily scores for both thoughts and behaviors fluctuated widely throughout baseline and treatment phases, with increases and decreases in one score closely following the other.

None of the other three participants demonstrated a clear covariation between thoughts and behaviors. Client 2 exhibited a decrease in distracting behaviors over the course of behavior therapy, which remained throughout the following baseline and cognitive therapy treatment phase. However, negative self-statements did not notably decrease over the course of the study. For Client 5, although negative self-statements and third party ratings of behavioral effort decreased over the course of cognitive therapy, levels of avoidance behaviors remained relatively stable. In addition, over the subsequent course of behavior therapy, levels of avoidance decreased slightly while negative self-statements slightly increased. Finally, Client 4 did not demonstrate improvement over the course of the study.

Traditionally, and in this study, competing cognitive and behavioral theories of treatment success have been discussed as separate and

distinct theoretical models. However, reports of the relatively equal effectiveness of ERP and cognitive therapy in the treatment of OCD (Emmelkamp & Beens, 1991; Emmelkamp, et al., 1988; van Oppen et al., 1995) have led to speculation regarding mechanisms of change and the validity of such separate theoretical distinctions. Abromowitz (1997) suggested two possible explanations. One possibility is that behavior therapy and cognitive therapy achieve similar effects through specific and separate psychological mechanisms. Alternately, these two treatments, considered to be from separate theoretical approaches, may actually share a common psychological mechanism. It has been suggested that the separate mechanisms approach would be supported if cognitive therapy resulted in significantly more cognitive than behavioral change, and vice versa (Abromowitz, 1997). Currently, available data do not support the existence of separate mechanisms for OCD. Likewise, the covariation demonstrated in the present study does not support the idea of separate mechanisms for BDD.

Effects of Combined Cognitive-Behavioral Treatment

In keeping with BDD outcome research, three participants demonstrated improvement in several domains following the completion of both cognitive and behavioral treatments. At post-CBT and a two-month follow-up, Client 5 no longer met criteria for BDD and demonstrated clinically significant reductions on measures of BDD symptom severity and depression. In addition, daily measures of negative cognitions and global

distress, as well as third party assessments of behavioral effort and reassurance-seeking decreased notably over the course of CBT. At post-CBT and follow-up, Client 2 demonstrated clinically significant decreases on measures of BDD symptom severity and depression and, at follow-up, no longer met criteria for BDD. In addition, Client 2 demonstrated a notable reduction in daily frequencies of compulsive behaviors. Finally, at post-CBT, Client 3 exhibited notable decreases in daily measures of negative cognitions, compulsive behaviors, and global distress, and no longer met criteria for BDD. The remaining two participants did not improve during the study.

The results of this study provide previously unknown information regarding the necessary components of CBT. Because cognitive and behavioral therapies were conducted separately and in succession, effects of the first-order treatment versus the combined treatment may be evidenced. Of the three participants who improved, behavior therapy appeared to be the pivotal component in effecting clinically significant change. The improvements gained by Client 2 and Client 3 on questionnaires of symptom severity and daily measures of cognition, behavior, and distress were largely demonstrated following the completion of behavior therapy as the initial treatment and maintained through the course of cognitive therapy. Client 5, who received behavior therapy as the second treatment, demonstrated clinically significant change on measures of BDD symptoms and depression only once behavior therapy

had been completed. Unfortunately, definitive conclusions regarding the cause of those particular improvements cannot be drawn, as the reduction of symptoms could be attributable to either the introduction of behavior therapy or carry-over effects of cognitive therapy. However, the information provided by Client 5 is consistent with results from the additional two participants, which appear to support the behavioral therapy of BDD.

Thus, although some evidence supporting cognitive therapy was demonstrated, the current study lends more support to the behavioral therapy of BDD.

Relation To Other Studies

Results of the current study were consistent with many published findings. First, as with several studies of CBT (Neziroglu & Yaryura-Tobias, 1993; Neziroglu et al., 1996; Rosen et al., 1995; Wilhelm, 1999), the combined effects of cognitive challenging and ERP improved BDD symptoms and depression for some individuals. Due to the use of several commonly used measures (e.g., BDDE, YBOCS-BDD, and BDI-II), similar rates of improvement following CBT are exhibited between the current study and previous research (Neziroglu & Yaryura-Tobias, 1993; Neziroglu et al., 1996; Rosen et al., 1995; Wilhelm, 1999). In addition, the resistance to treatment demonstrated in the above studies, has been replicated here. Current results are consistent with discussions

(Neziroglu, 2000) regarding minimal results often obtained despite high numbers of treatment sessions.

The current data also mirror preliminary results on the effects of ERP and cognitive therapy as separate treatments. McKay and colleagues demonstrated that ERP alone is sufficient in reducing BDD symptoms and depression (McKay et al, 1997). Although the current study cannot claim to show symptom reduction in all participants, consistency can be concluded through the ability of ERP alone to reduce BDD and depressive symptoms in two out of three individuals. In addition, similarity with Geremia (1997) may be seen in the lesser effects of cognitive therapy as a sole treatment. Although cognitive therapy did result in some daily symptom reduction for one client, it did not lead to any clinically significant decreases on the YBOCS-BDD or other self-report measures. Similarly, in Geremia's study, only one of four participants improved on YBOCS-BDD scores following cognitive therapy. Thus, results of the present study are consistent with both treatment improvements and treatment challenges recorded in the outcome literature.

Mechanisms of Change

In an attempt to identify potential mechanisms for therapeutic improvement (i.e., decreases in thoughts or behaviors), the daily changes occurring during successful treatment were examined. Of the three participants who improved to a clinically significant degree, each exhibited

a different pattern of daily symptom improvement. Following CBT, Client 2 did not meet criteria for BDD and demonstrated clinically significant reductions in YBOCS-BDD and BDI-II scores. During treatment, he recorded notable decreases in compulsive behaviors but no such reduction in negative self-statements. Following behavior therapy, Client 3 no longer met BDD criteria and demonstrated clinically significant improvement in YBOCS-BDD scores. Congruently, he also recorded notable reductions in daily thoughts and behaviors. Surprisingly, however, he lost these gains in clinically significant improvement during cognitive therapy and follow-up, but maintained the decrease in daily thoughts and behaviors. Finally, following CBT, Client 5 did not meet criteria for BDD and demonstrated clinically significant improvement in YBOCS-BDD and BDI-II scores. During treatment, she recorded decreases in daily negative self-statements but no notable improvements in avoidance behaviors.

Given the inconsistent patterns of change across participants, no generalized conclusions can be drawn regarding the mechanisms for BDD symptom change. It appears as if different mechanisms may operate for different individuals. Anecdotally, clients have been reported to demonstrate little reduction in BDD-related thoughts coincident with successful treatment, but instead report a decrease in negative meaning attached to those thoughts (Neziroglu, 2000). Thus, perhaps a decrease in negative self-statements is an indicator of success for some, but for others it is the ability to think “my nose is big and ugly, but who cares?”

Another possibility is a lack of connection between negative self-statements and compulsive behaviors, such that a decrease in distress-provoking thoughts leads to clinically significant improvement but allows for some compulsive behaviors to remain. For others who demonstrate a decrease in daily thoughts and behaviors but who still meet criteria for BDD, the important factor may be the ability of the remaining cognitions and rituals to create intense distress. In this case, the change mechanism would not be frequency reduction but perhaps affective reduction. These issues remain unclear.

Sensitivity of Measures

Although improvements were demonstrated by several participants on behavioral, cognitive, and affective measures, such progress was not reflected by other self-report questionnaires employed in the study. This raises questions regarding the sensitivity of those measures. For example, no improvements in ASI scores were demonstrated by any participant. The ASI was designed to assess beliefs and assumptions concerning the importance, meaning, and effects of appearance on one's life. Despite the fact that all participants exhibited clinically significant distress and impairment stemming from appearance-related concerns, three of the five participants' pre-treatment scores fell within the normal range. Further examination revealed that the normative data for the ASI were obtained from a sample of female college students, which may have

inflated the mean artificially. Therefore, the ASI may not have been an appropriate measure of BDD treatment change.

Despite obvious gains in social and occupational functioning for several participants, clinically significant improvements were not demonstrated on the SADS, a measure designed to assess distress and avoidance associated with social and interpersonal situations. For example, prior to treatment, Client 3 had been virtually housebound and rarely left his bedroom for fear of being seen by others. He had discontinued post-secondary education and had recently been divorced due to appearance-related difficulties. During the final treatment sessions, he made regular trips to a music store, went out on a date, and re-enrolled in school. The SADS failed to detect these changes in social functioning. Perhaps the general, trait-like items, such as “I tend to withdraw from people” or “I feel relaxed even in unfamiliar situations,” are incapable of detecting more specific, yet clinically significant, changes in social and interpersonal functioning. An additional difficulty with the SADS is the rectangular distribution and large standard deviation found in the normal sample, which prevents the clinical significance criteria (i.e., the post-treatment score must be two standard deviations below the mean of the normal sample) from being met.

Finally, the detection of daily change for Client 5 was hampered by the particular nature of her symptom presentation. Whereas other participants experienced higher frequencies of thoughts, Client 5

experienced fewer but extremely distressing self-statements regarding her appearance and self-worth. This floor effect hindered the demonstration of more dramatic reductions in daily negative thoughts. In addition, the determination of a measurable daily behavior was not possible because she did not engage in any overt rituals such as mirror-checking.

Therefore, an inverse measure of daily avoidance was chosen, which may have affected the ability to demonstrate reliable reductions.

Limitations of the Study

Inherently present in crossover designs, order effects result in methodological limitations for treatment studies. Due to the fact that the initial treatment is followed by a second type of therapy, it is uncertain whether effects demonstrated in the second phase are due to the second treatment or to delayed effects of the initial intervention. Conclusions can only be drawn regarding the effect of the first treatment and the effect of the two treatments combined. Therefore, in the current study, interpretations regarding cognitive therapy cannot be made for Clients 1 through 3 who received behavior therapy as their initial treatment. Likewise, results from Client 4 and Client 5 cannot provide information on the effects of behavior therapy alone. However, the crossover design is ideal for comparing the initial treatments to the package intervention and was, therefore, chosen as an important component of the current design.

As discussed previously, one important benefit of the multiple baseline design is the increase in confidence it provides in drawing

conclusions. Unlike single-phase change designs, multiple baselines provide protection against time- and environmentally-related effects. Thus, the varying baselines allow for greater confidence in interpreting post-baseline symptom improvement. Unfortunately, in the current study, baseline data sometimes demonstrated wide variability and occasional decreases in scores. Although this could arguably detract from the interpretation of results, the severity and long-term nature of these individuals' symptoms provides support for treatment effectiveness. For example, Client 3 demonstrated wide variability in frequency of negative self-statements, with a moderate decrease toward the end of the three-week baseline period. The remote potential of spontaneous improvement exists. However, severe BDD symptoms had been present for at least seven years and had led to suicide attempts and inpatient hospitalizations. In addition, he had experienced little relief following seven years of pharmacotherapy and numerous courses of supportive counseling. Therefore, a more likely interpretation of the baseline decrease could be an increased sense of hope or self-efficacy due to the preliminary participation in the study or contact with a mental health professional who understood a frequently unrecognized disorder. The ineffectiveness of previous supportive counseling argues against the influence of nonspecific effects in the symptom reduction demonstrated following behavior therapy.

Treatment Failures

Although improvements were demonstrated in several realms, the present results concur with recent outcome literature in the varied and inconsistent nature of treatment success. Two participants did not improve on any of the outcome measures. Possible explanations for this lack of improvement have been discussed above. Client 2 did not improve on daily measures of negative thoughts or global distress, whereas Client 5 did not improve on daily measures of behaviors. Client 3 no longer met criteria for BDD and demonstrated clinically significant improvement on the YBOCS-BDD following a course of behavior therapy but that improvement was lost and never regained once treatment switched to cognitive therapy. In addition, Client 3 never demonstrated clinically significant improvement on a measure of depression.

Previous treatment studies of BDD have revealed similar patterns (Geremia, 1997; Neziroglu et al., 1996; Rosen et al., 1995; Veale et al., 1996; Wilhelm et al., 1999). In addition, it has been noted that statistically significant improvement in BDD symptoms is an insufficient criterion for treatment success, due to the extremely high scores on outcome measures and the debilitating nature of symptoms (Neziroglu, 2000). Thus, the more meaningful, and sometimes more stringent, criterion of clinically significant improvement has been recommended. Perhaps the focus on clinically significant changes in the current study may explain the varied results on questionnaire measures.

Clinical Implications

Although behavior therapy appears to be more effective in reducing BDD symptoms and related difficulties, cognitive treatment also has been demonstrated to result in some therapeutic change. This is important knowledge due to the aversive nature of exposure therapy and clients' frequent reluctance or refusal to participate (Newell & Shrubbs, 1994). Preliminary findings regarding cognitive therapy suggest that such an approach would be a viable option for clients refusing to engage in exposure exercises. In addition, cognitive therapy may be viewed as an appropriate strategy for initial sessions, to allow for rapport-building and for reducing the rigidity of beliefs that may be preventing the acceptance of behavior therapy. One client from the current study who had received cognitive therapy as the first treatment stated that she would not have been willing to engage in exposure exercises prior to cognitive treatment. She stated that challenging the cognitive distortions provided evidence against the catastrophic conclusions, and that she was able to draw on that evidence to gain strength for exposure trials. Of course, these conclusions were retrospective.

Conclusions

The present study was the first to explore behavioral and cognitive theories of symptom maintenance, and the first to examine daily changes in thoughts, behaviors, and affect during behavior and cognitive therapy of BDD. Results were consistent with the behavioral theory of BDD symptom maintenance. For two out of three participants, interrupting the reinforcing properties of ritual and avoidance behaviors and allowing the

natural course of habituation to take place resulted in a decrease in daily BDD-related symptoms. In addition, selected results were consistent with the cognitive maintenance theory. For one of the two participants, the challenging of cognitive distortions and negative automatic thoughts led to a more limited decrease in some daily symptoms. Although these results have been interpreted within specific behavioral and cognitive frameworks, they do not refute other interpretations of symptom maintenance.

Results of the combined CBT package replicated previous BDD outcome studies. Following the completion of both treatments, three of the five no longer met criteria for the disorder, and two maintained this improvement at a two-month follow-up. In addition, two of the five demonstrated clinically significant reductions on measures of BDD symptoms and depression. A third participant also achieved a clinically significant decrease on the BDD symptom measure, but lost those gains once treatment was switched from behavior to cognitive therapy. Behavior therapy appeared to be the more important component in effecting clinically significant improvement.

For most clients, the covariation of BDD-related thoughts and behaviors was demonstrated across baseline and treatment phases. This information is very useful for the treatment of BDD, due to the strength of conviction often exhibited in BDD-related beliefs. For one client, ERP alone was sufficient in drastically reducing negative appearance-related

self-statements. Finally, results were inconclusive regarding the mechanism of change in successful BDD treatment.

Future Directions

The current study involved a total of 16 one-hour sessions held twice per week and broken down into eight behavior therapy and eight cognitive therapy sessions. Although this design was chosen to investigate the relative effects of cognitive and behavior therapy compared to the combined package, the total number of sessions per modality may have been too abbreviated. Future designs examining daily changes in symptoms could include a behavior therapy condition and/or a cognitive therapy condition to allow investigations of a more complete course of each therapy. For example, rather than implementing a prescribed number of sessions, behavior therapy could be conducted until changes in compulsive behaviors occur. Likewise, a parallel condition could provide cognitive therapy until changes in negative self-statements are demonstrated. Such an investigation would prevent a premature termination of the treatment that could mask imminent effects, allowing sufficient time for the identification of delayed treatment changes. In addition, this type of design would enhance ecological validity, as it would more likely reflect the delivery of treatment in a non-research setting.

Due to the high rate of BDD treatment failures, valuable information could be provided by an intensive study of participants who did not improve. In the current study, two individuals failed to demonstrate

therapeutic changes, and possible explanations were discussed regarding treatment engagement. Therefore, one potential approach would be to examine treatment failures in terms of their ability to understand treatment rationales and their ability to engage fully in the treatment at home and in session. This could assist in determining whether therapeutic engagement is a frequent impeding factor, or whether other factors interfere with treatment once the client has engaged.

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Appendix A

Some Critical Interview Items on the BDDE

1. Has there been anything about your physical appearance which you disliked over the past four weeks?
2. Over the past four weeks, to what extent have you felt that other people have the same feature?
3. Over the past four weeks, have you inspected your _____ in order to check the extent of the problem?
4. Over the past four weeks, how dissatisfied with your _____ have you felt? Have there been days that you have been so dissatisfied it has upset you?
5. Over the past four weeks, how dissatisfied with your appearance overall have you felt?
6. Over the past four weeks, have you tried to get reassurance from others that your _____ is not as bad or abnormal as you think it is?
7. Over the past four weeks, have you spent much time thinking about your _____ and feeling upset?
8. Over the past four weeks, how much have you worried about your _____ when you were in public areas?
9. Over the past four weeks, how much have you worried when you were in social settings?
10. Over the past four weeks, how often have you felt that other people were noticing or paying attention to your _____?
11. Over the past four weeks, how upset have you become when you felt someone was noticing or paying attention to your _____?
12. Over the past four weeks, how often has someone made either a positive or negative comment on your _____?
13. Over the past four weeks, how upset have you become when someone commented on your _____?
14. Over the past four weeks, how often have you been treatment differently by others or in ways you didn't like because of your _____?

15. Over the past four weeks, how upset have you become when people treated you in these ways because of your _____?
16. Over the past four weeks, has your _____ influenced how you think about yourself as a person?
17. Over the past four weeks, have you ever gotten down on yourself or felt negatively about yourself as a person because of your _____?
18. Over the past four weeks, did you ever feel other people judged you negatively because of your _____?
19. Over the past four weeks, how attractive physically do you feel other people thought you were?
20. Over the past four weeks, have you ever thought that your _____ might not be as bad as you generally think?
21. Over the past four weeks, have you avoided public areas because you felt uncomfortable about your _____?
22. Over the past four weeks, have you avoided work or social situations because you felt uncomfortable about your _____?
23. Over the past four weeks, have you avoided close physical contact with others because of your _____.
24. Over the past four weeks, have you deliberately dressed in any way to cover up or disguise your _____?
25. Over the past four weeks, have you deliberately controlled your posture or body movements in order to hide your _____?
26. Over the past four weeks, have you compared your _____ with the appearance of other people around you or in magazines or television?

Appendix B

Participants' Behavioral Measures for the TCBS

Participant 1:	Number of mirror-checks conducted from 9:00AM to 10:00AM
Participant 2:	Number of distracting behaviors (e.g., covering mouth, excessive talking, turning head) completed during the entire day
Participant 3:	Number of mirror-checks conducted from 12:00AM to 1:00AM
Participant 4:	Number of minutes spent mirror-checking from 10:00AM to 11:00 AM
Participant 5:	Amount of avoidance for entire day - measured by computing the inverse of the number of leisure/fun activities conducted in public that day

Appendix C

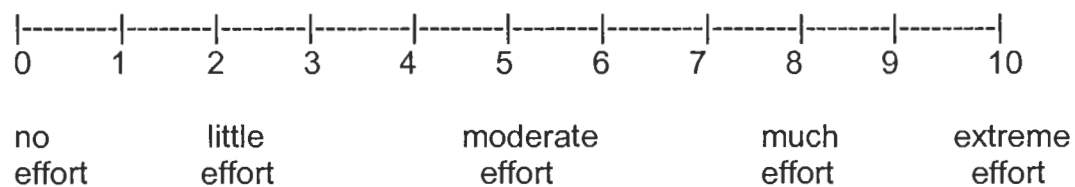
Third Party Form

ID #: _____

Date: _____

Number of times **today** that your family member/friend has sought
reassurance about his/her appearance: _____

Please rate how much effort **this week** that your family member/friend has
put into behaviors related to his/her appearance.



Appendix D

Yale-Brown Obsessive Compulsive Scale
Body Dysmorphic Disorder Version

For each item, please circle the number that best describes the way you have felt and/or behaved over the past week, including today.

1. On average, how much of your time during a given day is occupied by thoughts about a defect or flaw in your appearance or body parts such as your hair, breasts, skin, teeth, genitals, hands, etc.?
 - 0 – None (symptom free)
 - 1 – Mild (less than 1 hour per day), or occasional thoughts (occurring no more than 8 times/day)
 - 2 – Moderate (1-3 hours per day), or frequent thoughts (occurring more than 8 times per day)
 - 3 – Severe (3-8 hours per day), or very frequent thoughts (occurring more than 8 times per day and during most hours of the day)
 - 4 – Extreme (more than 8 hours per day), or near constant thoughts (too numerous to count and an hour rarely passes without several such thoughts occurring)

2. How much do these thoughts interfere with your social or work functioning? Is there anything you don't do because of them?
 - 0 – None (no recognizable interference)
 - 1 – Mild (slight interference with social or occupational functioning, but overall performance is not impaired)
 - 2 – Moderate (thoughts are frequent and disturbing, but still manageable)
 - 3 – Severe (thoughts cause substantial impairment in social or occupational functioning)
 - 4 – Extreme (incapacitating)

3. How much distress do your thoughts about having appearance defects cause?
 - 0 – None (thoughts about body defects do not affect how I feel)
 - 1 – Mild (thoughts are not very disturbing)
 - 2 – Moderate (thoughts are frequent and disturbing, but still manageable)
 - 3 – Severe (thoughts are very frequent and very disturbing)
 - 4 – Extreme (incapacitating)

4. How much of an effort do you make to resist these thoughts? How often do you try to resist or turn your attention away from these thoughts as they enter your mind?
- 0 – Always try to resist these thoughts, or symptoms are so minimal that it is not necessary to resist.
 - 1 – Try to resist most of the time
 - 2 – Make some effort to resist
 - 3 – Yield to all such thoughts without attempting to control them, but do so with some reluctance
 - 4 – Completely and willingly yield to all such thoughts
5. How much control do you have over your thoughts about your appearance defects? How successful are you in stopping or diverting these thoughts?
- 0 – Complete control
 - 1 – Much control, thoughts are stopped or diverted with some effort or concentration
 - 2 – Moderate control, sometimes able to stop or divert these thoughts
 - 3 – Little control, rarely able to stop or divert these thoughts
 - 4 – No control, completely out of control, thoughts are experienced as involuntary and automatic
6. How much time do you spend in activities related to your concern over your appearance or bodily defect (e.g., time spent trying to conceal the defect with makeup, consulting plastic surgeons or dermatologists, looking in the mirror, etc.)
- 0 – No time spent in these behaviors
 - 1 – Mild (spend less than one hour per day in these activities)
 - 2 – Moderate (1-3 hours per day, or no more than 8 times per day)
 - 3 – Severe (3-8 hours per day), or frequent involvement (more than 8 times per day)
 - 4 – Extreme (more than 8 hours per day spent on these activities, or near constant involvement)

7. How much do these activities interfere with your social or work functioning? Is there anything you don't do because of them?
- 0 – None (no interference)
 - 1 – Mild (slight interference with social or occupational functioning, but overall performance is not impaired)
 - 2 – Moderate (definite interference with social or occupational functioning, but still manageable)
 - 3 – Severe (activities cause substantial impairment in social or occupational functioning)
 - 4 – Extreme (incapacitating)
8. How would you feel if prevented from performing these activities (e.g., no mirror-checking, makeup, camouflaging, consulting plastic surgeons or dermatologists, etc.)? How distressed would you become?
- 0 – No distress
 - 1 – Mild (would feel slightly anxious if such behaviors were prevented)
 - 2 – Moderate (anxiety would mount but remain manageable if such behaviors were prevented)
 - 3 – Severe (prominent and very disturbing increase in anxiety would result if behaviors were prevented)
 - 4 – Extreme (incapacitating anxiety would result from any intervention aimed at modifying these behaviors)
9. How much of an effort do you make to resist these behaviors?
- 0 – Always try to resist these compulsions
 - 1 – Try to resist most of the time
 - 2 – Make some effort to resist
 - 3 – Yield to almost all of these behaviors without attempting to control them
 - 4 – Completely and willingly yield to all behaviors related to perceived appearance defect
10. How strong is the drive to perform these behaviors? How much control do you have over them?
- 0 – Complete control
 - 1 – Much control, able to exercise voluntary control over these behaviors
 - 2 – Moderate control, able to control these behaviors with some difficulty
 - 3 – Little control, very strong drive to perform these behaviors, can delay these behaviors with considerable difficulty
 - 4 – No control, completely and willingly yield to all behaviors related to perceived appearance defect

Appendix E

AS Inventory

Indicate your beliefs about these items using the 1 to 5 scale:

Strongly Disagree	Mostly Disagree	Neither Disagree Nor Agree	Mostly Agree	Strongly Agree
1	2	3	4	5
1. What I look like is an important part of who I am.			1 2 3 4 5	
2. What's wrong with my appearance is one of the first things people will notice about me.				1 2 3 4 5
3. One's outward physical appearance is a sign of the character of the inner person.				1 2 3 4 5
4. If I could look just as I wish, my life would be much happier.				1 2 3 4 5
5. If people knew how I <i>really</i> look, they would like me less.				1 2 3 4 5
6. By controlling my appearance, I can control many of the social and emotional events in my life.				1 2 3 4 5
7. My appearance is responsible for much of what has happened to me in my life.				1 2 3 4 5
8. I should do whatever I can to always look my best.				1 2 3 4 5
9. Aging will make me look less attractive.				1 2 3 4 5
10. For women: To be feminine, a woman must be as pretty as possible. For men: To be masculine, a man must be as handsome as possible.				1 2 3 4 5
11. The media's messages in our society make it impossible for me to be satisfied with my appearance.				1 2 3 4 5
12. The only way I could ever like my looks would be to change what I look like.				1 2 3 4 5
13. Attractive people have it all.				1 2 3 4 5
14. Homely people have a hard time finding happiness.				1 2 3 4 5

Appendix F

Social Avoidance and Distress Scale

Please read each question and circle either T (true) or F (false).

1. I feel relaxed even in unfamiliar situations. T/F
2. I try to avoid situations which force me to be sociable. T/F
3. It is easy for me to relax when with strangers. T/F
4. I have no particular desire to avoid people. T/F
5. I often find social occasions upsetting. T/F
6. I usually feel calm and comfortable in social situations. T/F
7. I am usually at ease when talking to someone of the opposite sex. T/F
8. I try to avoid talking to people unless I know them well. T/F
9. If the chance comes to meet new people, I often take it. T/F
10. I often feel nervous or tense in casual get-togethers in which both sexes are present. T/F
11. I am usually nervous with people unless I know them well. T/F
12. I usually feel relaxed when I am with a group of people. T/F
13. I often want to get away from people. T/F
14. I usually feel comfortable when I am in a group of people I don't know. T/F
15. I usually feel relaxed when I meet someone for the first time. T/F
16. Being introduced to people makes me feel tense and nervous. T/F
17. Even though a room is full of strangers, I may enter it anyway. T/F
18. I would avoid walking up and joining a large group of people. T/F
19. When superiors want to talk to me, I talk willingly. T/F
20. I often feel on edge when I am with a group of people. T/F
21. I tend to withdraw from people. T/F

- 22. I don't mind talking to people at parties or social gatherings. T/F
- 23. I am seldom at ease in a large group of people. T/F
- 24. I often think up excuses in order to avoid social engagements. T/F
- 25. I sometimes take the responsibility for introducing people to one another. T/F
- 26. I try to avoid formal social gatherings. T/F
- 27. I usually go to whatever social engagements I have. T/F
- 28. I find it easy to relax with other people. T/F

Belief #3 Rating _____

4. In the last week, what was the highest rating for each belief?

<1—2—3—4—5—6—7—8—9—10>
not very strong very strong

Belief #1 Rating _____

Belief #2 Rating _____

Belief #3 Rating _____

5. How accurate or reality based is each belief?

<1—2—3—4—5—6—7—8—9—10>
not very strong very strong

Belief #1 Rating _____

Belief #2 Rating _____

Belief #3 Rating _____

6. How likely is it that others have the same belief about your appearance that you do?

<1—2—3—4—5—6—7—8—9—10>
not very strong very strong

Belief #1 Rating _____

Belief #2 Rating _____

Belief #3 Rating _____

7. What is the likelihood that your compulsive (beautification remedies, avoidance behaviors, mirror-checking, etc.) being effective in changing the way you feel?

<1—2—3—4—5—6—7—8—9—10>
not very strong very strong

Belief #1 Rating _____

Belief #2 Rating _____

Belief #3 Rating _____

8. Compared to others, how unusual is each of your beliefs? (How likely is it that others have the same belief about themselves that you have about yourself?)

<1—2—3—4—5—6—7—8—9—10>
not very strong very strong

Belief #1 Rating _____

Belief #2 Rating _____

Belief #3 Rating _____

Appendix H

Items from the Beck Depression Inventory

1. Sadness
 - 0 I do not feel sad
 - 1 I feel sad much of the time
 - 2 I am sad all the time
 - 3 I am so sad or unhappy that I can't stand it
2. Pessimism
 - 0 I am not discouraged about my future
 - 1 I feel more discouraged about my future than I used to be
 - 2 I do not expect things to work out for me
 - 3 I feel my future is hopeless and will only get worse
3. Past Failure
 - 0 I do not feel like a failure
 - 1 I have failed more than I should have
 - 2 As I look back, I see a lot of failures
 - 3 I feel I am a total failure as a person
4. Loss of Pleasure
 - 0 I get as much pleasure as I ever did from the things I enjoy
 - 1 I don't enjoy things as much as I used to
 - 2 I get very little pleasure from the things I used to enjoy
 - 3 I can't get any pleasure from the things I used to enjoy
5. Guilty Feelings
 - 0 I don't feel particularly guilty
 - 1 I feel guilty over many things I have done or should have done
 - 2 I feel quite guilty most of the time
 - 3 I feel guilty all of the time
6. Punishment Feelings
 - 0 I don't feel I am being punished
 - 1 I feel I may be punished
 - 2 I expect to be punished
 - 3 I feel I am being punished
7. Self-Dislike
 - 0 I feel the same about myself as ever
 - 1 I have lost confidence in myself
 - 2 I am disappointed in myself
 - 3 I dislike myself

8. Self-Criticalness

- 0 I don't criticize or blame myself more than usual
- 1 I am more critical of myself than I used to be
- 2 I criticize myself for all of my faults
- 3 I blame myself for everything bad that happens

9. Suicidal Thoughts or Wishes

- 0 I don't have any thoughts of killing myself
- 1 I have thoughts of killing myself, but I would not carry them out
- 2 I would like to kill myself
- 3 I would kill myself if I had the chance

10. Crying

- 0 I don't cry anymore than I used to
- 1 I cry more than I used to
- 2 I cry over every little thing
- 3 I feel like crying but I can't

11. Agitation

- 0 I am no more restless or wound up than usual
- 1 I feel more restless or wound up than usual
- 2 I am so restless or agitated that it's hard to stay still
- 3 I am so restless or agitated that I have to keep moving or doing something

12. Loss of Interest

- 0 I have not lost interest in other people or activities
- 1 I am less interested in other people or things than before
- 2 I have lost most of my interest in other people or things
- 3 It's hard to get interested in anything

13. Indecisiveness

- 0 I make decisions about as well as ever
- 1 I find it more difficult to make decisions than usual
- 2 I have much greater difficulty in making decisions than I used to
- 3 I have trouble making any decisions

14. Worthlessness

- 0 I do not feel I am worthless
- 1 I don't consider myself as worthwhile and useful as I used to
- 2 I feel more worthless as compared to other people
- 3 I feel utterly worthless

15. Loss of Energy

- 0 I have as much energy as ever
- 1 I have less energy than I used to have
- 2 I don't have enough energy to do very much
- 3 I don't have enough energy to do anything

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern

1a I sleep somewhat more than usual

1b I sleep somewhat less than usual

2a I sleep a lot more than usual

2b I sleep a lot less than usual

3a I sleep most of the day

3b I wake up 1-2 hours early and can't get back to sleep

17. Irritability

0 I am no more irritable than usual

1 I am more irritable than usual

2 I am much more irritable than usual

3 I am irritable all the time

18. Changes in Appetite

0 I have not experienced any change in my appetite

1a My appetite is somewhat less than usual

1b My appetite is somewhat greater than usual

2a My appetite is much less than before

2b My appetite is much greater than before

3a I have no appetite at all

3b I crave food all the time

19. Concentration Difficulty

0 I can concentrate as well as ever

1 I can't concentrate as well as usual

2 It's hard to keep my mind on anything for very long

3 I find I can't concentrate on anything

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual

1 I get more tired or fatigued more easily than usual

2 I am too tired or fatigued to do a lot of things I used to do

3 I am too tired or fatigued to do most of things I used to do

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex

1 I am less interested in sex than I used to be

2 I am much less interested in sex now

3 I have lost interest in sex completely

Appendix I

Treatment Conditions

CONDITION 1:

Client

- | | | | | |
|---|---|--|---|--|
| 1 | Baseline -- Behavior Therapy
(1 week) | -- Baseline -- Cognitive Therapy
(4 weeks/
8 sessions) | -- Baseline -- Cognitive Therapy
(3 weeks) | -- Cognitive Therapy
(4 weeks/
8 sessions) |
| 2 | Baseline -- Behavior Therapy
(2 weeks) | -- Baseline -- Cognitive Therapy
(4 weeks/
8 sessions) | -- Baseline -- Cognitive Therapy
(2 weeks) | -- Cognitive Therapy
(4 weeks/
8 sessions) |
| 3 | Baseline -- Behavior Therapy
(3 weeks) | -- Baseline -- Cognitive Therapy
(4 weeks/
8 sessions) | -- Baseline -- Cognitive Therapy
(1 week) | -- Cognitive Therapy
(4 weeks/
8 sessions) |

CONDITION 2:

Client

- | | | | | |
|----|--|---|--|---|
| 4 | Baseline --- Cognitive Therapy
(1 week) | -- Baseline -- Behavior Therapy
(4 weeks/
8 sessions) | -- Baseline -- Behavior Therapy
(3 weeks) | -- Behavior Therapy
(4 weeks/
8 sessions) |
| 5 | Baseline -- Cognitive Therapy
(2 weeks) | -- Baseline -- Behavior Therapy
(4 weeks/
8 sessions) | -- Baseline -- Behavior Therapy
(2 weeks) | -- Behavior Therapy
(4 weeks/
8 sessions) |
| 6* | Baseline -- Cognitive Therapy
(3 weeks) | -- Baseline -- Behavior Therapy
(4 weeks/
8 sessions) | -- Baseline -- Behavior Therapy
(1 week) | -- Behavior Therapy
(4 weeks/
8 sessions) |

* drop-out

Appendix J

Points of Assessment

(A1*) Baseline (A2) Treatment (A3) Baseline (A4) Treatment (A5)

* A = Assessment Time

Appendix K

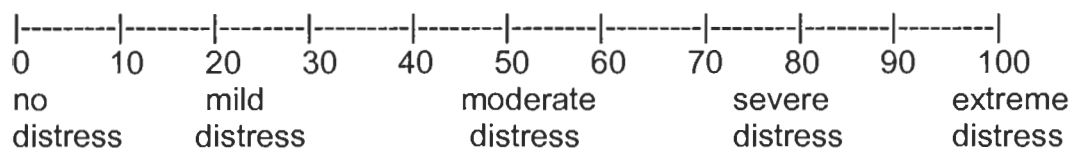
Subjective Units of Distress Scale

Day: _____

Date: _____

ERP exercise: Exposure _____

: Response Prevention _____

Rating

Appendix L

Cognitive Distortions

1. **All-or-None Thinking:** You see things in black and white categories. If your performance falls short of perfect, you see yourself as a total failure.

Example: "I have a blemish, my whole face is ruined."

2. **Overgeneralization:** You see is single negative event as a never-ending pattern of defeat.

Example: "He/she doesn't like me, I'll never get a date."

3. **Mental Filter:** You pick out a single negative detail and dwell on it exclusively so that your vision of reality is darkened, like a drop of ink that discolors the entire contained of water.

4. **Disqualifying the Positive:** You reject positive experiences by insisting the "don't count" for some reason or another. In this way you can maintain a negative belief even though it is contradicted by everyday experiences.

Example: When someone compliments your appearance, you think, "Oh he's just trying to be nice." Or "I did well on this test, but it was just luck."

5. **Jumping to Conclusions:** You make a negative interpretation even though there are no definite facts that convincingly support your conclusion. This includes mind-reading (concluding that someone is reacting negatively to you without actual evidence) and fortune-telling (anticipating that things will turn out badly and mistaking your prediction as fact).

Example: "He didn't say hello. He must think I'm ugly."

Example: "If I ask her out, She'll laugh in my face. I know it."

6. **Magnification or Minimization:** You exaggerate the importance of things not done well and minimize the importance of those done well.

7. **Emotional Reasoning:** You assume that your emotions reflect the way things really are.

Example: "I feel guilty, so I must have done something wrong."

Example: "I feel sad, my life must be awful."

8. **Should Statements:** You try to motivate yourself with “shoulds,” “musts,” and “oughts.” The emotional consequences of not complying with these self-imposed demands is guilt. When shoulds are directed at others, anger, frustration, and resentment results.

Example: “I should get up at 5:30 am and exercise before work.”

Example: “I must lose 10 pounds before the summer.”

Example: “I shouldn’t have such a big nose.”

9. **Labeling:** Instead of describing the behavior, you attach a negative label to yourself or someone else.

Example: “I am a loser.”

Example: “That guy is a jerk.”

10. **Personalization:** You incorrectly see yourself as the cause of some negative event.

Example: “It’s my fault that everyone left the party early.”

Example: “I ruined the holiday for everyone.”

Appendix M

Daily Thought DiarySituation:

Describe the actual event leading to the unpleasant emotion.

Emotion:

Specify the emotion and rate the strength of emotion from 1-100.

Automatic Thoughts:

Write the automatic thoughts that preceded the emotion and rate the degree of belief in those thoughts from 0-100.

Rational Response:

Write rational responses to the irrational automatic thoughts and rate the degree of belief in the rational statements from 0-100.

Appendix N

Visual Inspection Criteria

The following guidelines outlined by Parsonson and Baer (1978) were utilized in the visual analysis of the daily data. The first set of guidelines addresses variability in the data. First, the stability of the baseline will be inspected. Ideally, in order to draw reasonable conclusions about the effect of treatment, any trends in the baseline data should be in the direction opposite to improvement. Second, variability within treatment phases will be examined, with an optimal pattern being one of sudden or steady improvement during treatment. Patterns of high variability within the treatment phase may indicate the influence of external controlling variables. Third, the variability between baseline and treatment phases will be inspected, in which experimental control is indicated by relatively stable treatment phase data that follows variable baseline data. Experimental control is less evident when both treatment and baseline phases are variable. Fourth, attention should be paid to the amount of overlap between baseline and treatment data points. Although there are no set criteria for an acceptable amount of overlap, the most convincing treatment effects show less overlap. In addition, overlap of data in the first few treatment sessions is more acceptable.

The second set of guidelines addresses patterns in the data that may be indicative of treatment success. First, attention will be paid to any changes in overall trend within phases. For instance, in the baseline

phase, any trend toward improvement in the final data points may raise concerns about a natural remission being misconstrued as a positive treatment effect. Likewise, any deterioration in the final stages of treatment would raise concerns about loss of control of the treatment effect. Trends may be determined by drawing a trend line through the data points: data in the phase are divided into two groups, the mean of each is calculated and plotted, and a straight line is drawn to connect the two points. Second, changes in trend, or slope, between baseline and treatment phases will be inspected, in which strong indications of treatment effects are evidenced by a lack of baseline trend followed by downward trend during treatment. Baseline trends toward improvement that increase during treatment suggest that the trend would have continued in the absence of therapy. Third, changes in level between phases will be examined, in which greater and more abrupt changes in level are more indicative of treatment effectiveness.

Appendix O

Clinical Significance

Commonly thought of as a return to normal functioning, clinical significance refers to the meaningfulness of change in the client's daily life, and is a necessary component of treatment research (Jacobson, Roberts, Berns, & McGlinchey, 1999; Kendall, 1997). In order for a treatment to be meaningful, it must create a practical and noticeable improvement in the daily life of the client or in the lives of significant others (Kazdin, 1999; Kendall & Norton-Ford, 1982). The assessment of clinical significance is not meant to replace a statistical evaluation. However, following support that results are not due to chance, the demonstration of clinical meaningfulness is necessary (Chambless & Hollon, 1998; Kendall, 1999).

Several methods of assessing clinical significance have been proposed in recent years. The reliability change index (RCI) statistically assesses whether the degree of change on a questionnaire measure is due to chance (Jacobson et al., 1999; Jacobson & Truax, 1991). In order to determine whether the amount of change exceeds the margin of measurement error, the RCI is calculated by dividing the magnitude of therapeutic change by the standard error of the difference score (Jacobson et al., 1999). Then, in order to determine clinical significance, the RCI is used in tandem with useful cutoff points. Jacobson and Truax (1991) have suggested three mathematical cutoff points that distinguish

functional from nonfunctional clients. Clinically meaningful improvement may be demonstrated when the level of functioning (a) falls two standard deviations outside the range of the dysfunctional population, (b) falls two standard deviations within the range of the normal population, or (c) is statistically more likely to fall in the normal than the dysfunctional range. The difficulty with this method concerns the need of norms and variances for clinical and nonclinical populations, which are not always available. However, the benefit to the RCI and cutoff combination is the inclusion of statistical, objective calculation in the determination of clinical significance.

Clinical significance also may be assessed by statistically comparing the treatment group to a normal group, with the goal of treated individuals being indistinguishable from the normative sample on the relevant measures (Kendall, Marrs-Garcia, Nath, & Sheldrick, 1999). Other methods of assessing meaningful change include determining the social validity of improvement (Foster & Mash, 1999; Kazdin, 1977; Wolf, 1978) and whether the change in symptoms improves quality of life (Gladis, Gosch, Dishuk, & Crits-Christof, 1999). With these methods, assessment largely depends on self-report of factors such as interpersonal functioning, quality of work, or leisure activities. However, the subjective experience of improved quality of life is a valuable outcome and, therefore, could be an indicator of clinical significance.

The current study assessed clinical significance through two approaches. In keeping with past BDD outcome research (Geremia,

1997; Neziroglu et al., 1996; Rosen et al., 1995), one criteria for clinically significant improvement required the absence of diagnostic criteria for BDD as assessed by scores on the BDDE. Secondly, clinically meaningful change on questionnaire measures was assessed using the statistical approach to clinical significance (Jacobson and Truax, 1991). This method was chosen due to its objective ability to determine meaningful improvement. Of the three suggested mathematical cutoff points described above, two standard deviations below the clinical mean was chosen due to the availability of clinical norms and unavailability of norms for normal populations on many of the measures.

Using BDDE Scores To Assess Clinical Significance

Participants were considered to have met criteria for clinically significant improvement once they no longer met criteria for BDD. The BDDE (Rosen & Reiter, 1994) is a semi-structured interview designed to aid in the diagnosis of BDD. To meet criteria for BDD using the BDDE, individuals must obtain particular scores on items indicating symptom intensity in the moderately severe to severe range. In keeping with other BDD treatment studies (Geremia, 1997; Neziroglu et al., 1996; Rosen et al., 1995), a diagnosis of BDD was considered absent once these item scores no longer met the prescribed cutoff.

Statistical Approach To Clinical Significance

Clinically significant improvements on questionnaire measures were assessed using the statistical approach discussed above (Jacobson & Truax, 1991). First, the reliability change index (RCI) was calculated to

determine whether the amount of change exceeded the margin of measurement error. For each measure, four RCI's were calculated by dividing the magnitude of change from pre- to post-treatment by the standard error of the difference score. These four RCI's were computed for each participant by using four different post-treatment points as a measure of improvement over time. In other words, post-Treatment 1, pre-Treatment 2, post-Treatment 2, and Follow-Up scores, respectively, were subtracted from pre-baseline scores to form the numerator. The denominator (i.e., standard error of the difference score) was calculated by obtaining the square root of the standard error squared multiplied by two. In turn, the standard error of measurement was calculated by obtaining the square root of one minus the test-retest reliability of the questionnaire. Then, in order for post-treatment improvement to be considered beyond the reliability of the measure, the value of the RCI must exceed the standard error of measurement for that questionnaire. Table 11 presents the values used in determining the RCI's for each measure, and Table 12 through Table 16 presents the RCI values for each measure.

Table O.1.
Scores Required in the Calculation of Clinical Significance for All Questionnaire Measures.

	YBOCS-BDD	ASI	OVIS	SADS	BDI-II
sd	7.5	.67	2.4	8.01	11.74
r-xx	.88	.71	.93	.68	.93
SE	2.59	.36	.63	4.53	3.12
s-diff	3.66	.51	.89	6.41	4.41
clinical mean	29.3	2.61	5.7	9.11	29.45
cutoff score	14.3	1.27	.90	--	6

Table O.2.
YBOCS-BDD Reliability Change Index Scores for All Clients.

	Post-Treatment 1	Pre-Treatment 2	Post-Treatment 2	Follow-Up
Client 1	-1.09	-.27	-1.09	-.82
Client 2	-3.27++	-2.73++	-2.73++	-3.27++
Client 3	-4.64++	-3.55++	-2.45	-2.45
Client 4	1.37	.82	.27	.55
Client 5	-2.46	-2.19	-3.55++	-3.83++

+ RCI value greater than standard error of measurement

++ RCI value greater than standard error of measurement and meets criteria for 2 standard deviations below clinical mean

Table O.3.
ASI Reliability Change Index Scores for All Clients.

	Post-Treatment 1	Pre-Treatment 2	Post-Treatment 2	Follow-Up
Client 1	-.71+	0.00	0.00	.55+
Client 2	-.84+	.55+	-1.27+	-1.41+
Client 3	-.96+	-.55+	-1.39+	-1.10+
Client 4	-1.80+	-.41+	-.41+	-.82+
Client 5	-.71+	-.98+	-.29+	-.84+

+ RCI value greater than standard error of measurement

++ RCI value greater than standard error of measurement and meets criteria for 2 standard deviations below clinical mean

Table O.4.
OVIS Reliability Change Index Scores for All Clients.

	Post-Treatment 1	Pre-Treatment 2	Post-Treatment 2	Follow-Up
Client 1	-.98+	-1.40+	.42	-1.40+
Client 2	.28	-.21	.28	-.56
Client 3	-1.83+	-2.11+	-1.27+	-.99+
Client 4	-1.12+	.15	-.67+	.43
Client 5	-2.96+	-2.58+	-5.95+	-2.25+

+ RCI value greater than standard error of measurement

++ RCI value greater than standard error of measurement and meets criteria for 2 standard deviations below clinical mean

Table O.5.
SADS Reliability Change Index Scores for All Clients.

	Post-Treatment 1	Pre-Treatment 2	Post-Treatment 2	Follow-Up
Client 1	.31	-.16	-.47	-.16
Client 2	-.47	-.16	-1.09	-1.72
Client 3	-1.25	-1.40	-1.09	-1.72
Client 4	0.00	.16	.16	.16
Client 5	0.00	0.00	-2.18	-2.50

+ RCI value greater than standard error of measurement

++ RCI value greater than standard error of measurement and meets criteria for 2 standard deviations below clinical mean

Table O.6.
BDI-II Reliability Change Index Scores for All Clients.

	Post-Treatment 1	Pre-Treatment 2	Post-Treatment 2	Follow-Up
Client 1	2.72	.68	.91	4.76
Client 2	-1.36	-1.59	-3.85++	-3.63++
Client 3	-1.81	-1.36	-1.36	-2.95
Client 4	-.68	.68	0.00	-1.81
Client 5	-1.36	-1.36	-3.85++	-2.94

+ RCI value greater than standard error of measurement

++ RCI value greater than standard error of measurement and meets criteria for 2 standard deviations below clinical mean

Secondly, for those comparisons yielding appropriate RCI's, the criteria for clinically significant improvement was assessed. Thus, the post-treatment scores resulting in a sufficient RCI values were examined to determine whether that score was equal to or less than two standard deviations below the clinical population mean (Jacobson & Truax, 1991). Published means, standard deviations, and cutoff scores for the outcome measures are presented in Table 11 (YBOCS: Phillips et al., 1997; ASI: Cash & Labarge, 1996; OVIS: Neziroglu et al., 1998; SADS: Watson & Friend, 1969; BDI-II: Beck et al, 1996).

Appendix P

Summary of Clients

Client 1

Client 1 was a 39 year-old female with a Masters degree in the social sciences. She lived with her daughter and partner, and had several past therapy experiences for depression. She experienced intense preoccupation with the beliefs that her stomach and thighs were extremely large, and that her face and body appeared old. The distress generated from appearance-related thoughts led to excessive mirror-checking, weighing, assessing size through touching, reassurance-seeking, and comparing herself to the appearance of other young women in person and in magazines, television, and other media sources. At the beginning of therapy she avoided many social situations and continually dressed in baggy clothing designed to camouflage her stomach and thighs. She also reported feeling high levels of depression and continually experienced thoughts such as "I am repulsive," "Not only do I not look pretty but I look like I belong to another species," "The way I look is so humiliating," and "I am ugly and worthless."

Following the study, she reported that she was able to gain periods of insight into her appearance beliefs and sometimes was able to challenge her negative thoughts. She stated "I have changed from being all-consumed by my thoughts to being able to attack them. I feel like [the thoughts] are external to me and under my control."

Client 2

Client 2 was a 41 year-old male with a Bachelor's degree in the social sciences. At the time of the study, he lived with his parents and was unemployed due to extreme concern about his appearance. Past therapy experiences included a cognitive-behavioral group for social phobia, and he currently was taking an SSRI for chronic depression. Client 2 spent hours each day worrying about the configuration of his lips, which he described as ugly and weird. He firmly believed that the corners of his mouth turned down dramatically and that others would perceive him as ridiculous and ugly. Interestingly, during his early adolescence, he had worn an external mouth brace and was teased often by peers. In addition, he changed schools several times throughout his childhood and adolescence due to his father's many jobs, and experienced difficulty with teasing each time. At the time of the study, he experienced intense distress in public and social situations, however he forced himself to leave the house, believing that isolation would be detrimental to his emotional health. While in public, he would constantly engage in behaviors designed to hide his lips or to distract others' attention from them (e.g., turning his head, walking sideways, hiding behind trees or other large objects, covering mouth with hand, eating, taking continuous sips of a drink, talking incessantly to avoid stillness of lips). In addition, he experienced thoughts such as "I am so ugly," "I shouldn't expose others to this deformity," "everyone is looking at me and thinking I am ugly," and "I am inferior and inadequate."

Following the study, he stated that his depression had lifted for the

first time in years. In addition, he had gained excellent insight into his appearance, stating that the real problem was not actually with his lips but with his feelings of inferiority. He reported enjoying social situations again, and that he felt hopeful about the future.

Client 3

Client 3 was a 21 year-old male with a high school education. At the time of the study he was unemployed and had discontinued post-secondary education due to appearance-related concerns and depression. In addition, he lived with his parents following a recent divorce, and stated that his wife had left him because he spent too much time obsessing over his appearance and asking for reassurance. He reported experiencing appearance-related concerns for as long as he could remember, and was hospitalized twice in adolescence for suicide attempts related to appearance concerns. He had been taking a stable dose of an SSRI for several years.

At the time of the study, Client 3 believed that his face was covered with pimples, which caused him to appear disgusting and ugly. Due to intense distress, he grew a beard to hide the pimples and avoided most public and social situations, spending his days sleeping or watching television in his bedroom. He refused to leave his bedroom without applying concealing makeup and, if forced to appear in public, would go to great lengths to avoid being seen (e.g., crossing the street, hiding behind objects, walking in the opposite direction). Additional hours were spent checking his complexion in the mirror and picking at perceived

pimples. Following treatment, he reported good insight and a notable decrease in depression and overall distress. In addition, he shaved his beard, enrolled in college classes, and asked a woman out on a date.

Client 4

Client 4 was a 44 year-old female with some post-secondary education. She reported a varied employment history including secretarial work, homecare, and driving 18-wheelers across the country. At the time of the study, she lived with her husband and young daughter, and was unemployed due to appearance-related concerns and incapacitating symptoms related to anxiety and depression. Her home environment was extremely stressful. During the course of the study, she had her husband arrested for assault and interrupted her older daughter attempting to commit suicide. In addition, she was coping with distress related to her own severe childhood abuse perpetrated by her mother. Her distress level was so high that the first five minutes of session typically involved her trembling and pacing back and forth in the therapy room in an effort to calm herself enough to sit down.

At the time of the study, she reported being extremely distressed with the appearance of her face, which she described as repulsive and hideous. In particular, she believed that it was not “put together correctly” and that she had no right to ever expose others to such a shockingly disgusting sight. Leaving her house only to come to session, she wore large sunglasses and a hat pulled down over her face. She chose small back roads to drive to session, in order to reduce the number of people who might see her face as they drove in the opposite

direction. In addition to the avoidance of public situations, she engaged in hours of mirror-checking each day. With regard to negative self-statements, she frequently had thoughts such as “I am disgusting inside and out,” “I am unlovable,” “People would vomit if they really saw my face.” Following completion of the study, Client 4 did not report any decrease in symptoms and was referred for longer-term treatment.

Client 5

Client 5 was a 32 year-old female with a high school education. She lived with her husband and was unemployed due to chronic physical health difficulties. Appearance-related concerns had developed over the past several years, although she recalled always being a socially awkward child. She described herself as a “tomboy” in childhood and indicated that her mother, whom she described as controlling and manipulative, had frequently reprimanded her for not acting sufficiently feminine. Past therapy experiences included one course of supportive psychotherapy for depression, an assertiveness training course, and an SSRI for depression.

At the time of the study, Client 5 firmly believed that her torso and arms were excessively muscular and that she “looked like a boy.” Although she was approximately five feet and four inches tall with a small frame, she reported being extremely embarrassed by her bulky, “wrestler-like” appearance. Negative thoughts about her body (e.g., “I look like a freak,” “I have no right to subject others to this abnormality,” “how can [my

husband] stand to look at me?") led to intense feelings of depression, hopelessness, and inadequacy. In turn, she seldom left the house, even to check the mailbox, and dressed in very baggy clothing in order to camouflage her muscles from her husband. If her husband's friend dropped by to visit, she would run to the bathroom and stay there until the visitor had left. Following treatment, she stated that she wore more form-fitting clothing around her house and that the improved insight regarding appearance had led to a higher quality relationship with her husband and greater self-confidence. During the last session, she stated "Some days I did not want to be. Now life is good."

BIOGRAPHY OF THE AUTHOR

April O'Grady was born in St. John's, Newfoundland on October 31, 1970. She was raised in Brigus, Newfoundland and graduated from Bishop O'Neill Collegiate in 1988. She attended Memorial University of Newfoundland and graduated in 1993 with a Bachelor's degree in Psychology. She moved to Maine and entered the Clinical Psychology graduate program at The University of Maine in the fall of 1996. Her pre-doctoral internship was completed in Winnipeg, Manitoba in August, 2001. April is a candidate for the Doctor of Philosophy degree in Psychology from the University of Maine in May, 2002.