INTERNATIONAL JOURNAL OF BEHAVIORAL CONSULTATION AND THERAPY
2012, VOL. 7, NO. 2–3

ISSN: 1555–7855

An Empirical Model of Body Image Disturbance Using Behavioral Principles found in Functional Analytic Psychotherapy and Acceptance and Commitment Therapy

Glenn M. Callaghan[1], Julissa A. Duenas[1], Sarah E. Nadeau[1], Sabrina M. Darrow[2], Jessica Van der Merwe[1], & Jennifer Misko[1]

[1]San José State University & [2]University of California San Francisco

Abstract

The literature examining body image disturbance and Body Dysmorphic Disorder (BDD) is fraught with competing theoretical constructions of the etiology and nosology of these problems. Recent studies on various forms of psychopathology suggest that intrapersonal processes, including experiential avoidance, and interpersonal processes such as difficulties identifying and expressing emotions with others, correlate with higher levels of psychopathology. The present study aimed to investigate the relationship of body image disturbance and diagnosable BDD to the contemporary behavioral variables of experiential avoidance and interpersonal expression of affect. A large sample of participants including those who are diagnosable with BDD were examined. Results indicate that both intrapersonal and interpersonal variables are significant predictors of both body image disturbance in a large population and of BDD as a subsample and that these variables may be important targets for treatment. This principle-based conceptualization has parsimony and potential utility for clinical interventions of these problems. Implications are discussed for the use of contemporary behavioral treatments such as Functional Analytic Psychotherapy and Acceptance and Commitment Therapy to address both body image disturbance and BDD.

Keywords

Body image disturbance, body dysmorphic disorder, Functional Analytic Psychotherapy (FAP), Acceptance and Commitment Therapy (ACT), assessment

The concept of body image disturbance encompasses a variety of psychological factors including general body dissatisfaction, distressing emotions over one's body image, overinvestment in one's appearance, and poorer quality of life (Cash & Grasso, 2005; Cash, Phillips, Santos, & Hrabosky, 2004). Cash and colleagues (2004) propose that body image disturbance lies on a continuum where less severe negative body image can be considered body image dissatisfaction, while the extreme end of the continuum contains greater distress consistent with Body Dysmorphic Disorder (BDD). BDD is characterized by an excessive preoccupation with an imagined or slight physical defect leading to significant distress or impairment in functioning (American Psychiatric Association, 2000). According to the current *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*; APA, 2000), BDD is present if these criteria are met and cannot be attributed to an eating or other psychological disorder. Aside from preoccupation and impairment in functioning, typical characteristics demonstrated by individuals suffering from BDD include concern about several body parts, high frequency of suicidal thoughts and attempts, and comorbidity with other disorders (Phillips, Menard, Fay, & Weisberg, 2005).

This research was supported in part by a grant from the McNair Scholars Program at San José State University and a College of Social Sciences Foundation Research Grant. Dr Darrow was supported in part by NIH T32 MH018261 at the University of California, San Francisco.

Prevalence rates for BDD have been examined for different populations and range from 0.7 to 1.1% in community samples (Faravelli et al., 1997; Otto, Wilhelm, Cohen, & Harlow, 2001; Phillips et al., 2005). College student samples have slightly higher rates (ranging from 4.8 -13%; Biby, 1998; Bohne et al., 2002; Cansever, Uzun, Donmez, & Ozsahin, 2003), and Phillips et al. (2005) found similarly elevated rates (13%) among psychiatric inpatients. The prevalence of BDD is likely higher but may be underreported for a variety of reasons including individual shame and hesitancy to seek treatment (Fuchs, 2002), seeking cosmetic procedures in an attempt to fix the perceived defects (Cansever et al., 2003), and misdiagnosis of other disorders (Zimmerman & Mattia, 1998; see Pavan et al., 2008, for a review). Because it is relatively common in the general population, researchers continue to investigate possible causal variables to further understand and treat both body image disturbance and BDD.

CATEGORIZATION AND CONCEPTUALIZATION OF BDD

The current *DSM-IV-TR* categorizes BDD as a somatoform disorder (APA, 2000; see Phillips et al., 2010, for a review of the history of BDD classification). Due to shared topographical characteristics (i.e., symptoms), there have been efforts to reclassify BDD with other disorders including mood and anxiety disorders (Toh, Russell, & Castle, 2009), as part of the Obsessive-Compulsive Disorders spectrum (McKay, Neziroglu, & Yaryura-Tobias, 1997; Phillips et al., 2010), and as an eating disorder (Grant &

Phillips, 2004; Rosen & Ramirez, 1998). Additionally, the *DSM-IV-TR* inclusion of Delusional Disorder, Somatic Type, as a psychotic variant of BDD has prompted research on comparisons of delusional versus nondelusional types of the disorder (Phillips, 2004; Phillips, Menard, Pagano, Fay, & Stout, 2006; Phillips et al., 2010).

Thus, multiple arguments have been posed in the literature about how best to categorize or frame BDD. While there are merits to re-categorizing BDD, it is unclear this effort will serve to clarify its etiology or suggest appropriate intervention strategies. What results, then, is a nosological endeavor in typology without clinical application. It may be more useful to focus on psychological variables related to etiology and maintenance of body image disturbance. This paper describes a behavior analytic model of body image disturbance. An empirical test of the model is also reported. Inasmuch as BDD represents the more extreme end of the continuum of suffering, this same core conceptualization could be applied to less severe struggles with body image disturbance. This approach to understanding BDD and other less severe forms of suffering from a learning perspective should demonstrate improved treatment utility; understanding how behaviors are shaped and maintained in a social context provides a direct link to shaping more effective behavior in treatment. Within contemporary behavior analysis, there are two different approaches to understanding mental health: intrapersonal and interpersonal. However, there may be reason to include both of these conceptualizations in understanding body image disturbance.

INTRAPERSONAL FACTORS

Intrapersonal factors can include psychological processes such as cognitions and emotional experience. Much of the research on intrapersonal processes and body image has focused on the role of cognitive variables. This research has demonstrated a relationship between negative cognitive processes and body image disturbance (Altabe & Thompson, 1996; Jakatdar, Cash, & Engle, 2006).Veale et al. (1996) and Cash (2002) suggested that avoidant behaviors are used in response to distressing thoughts and feelings regarding body image. They describe these behavioral strategies as becoming negatively reinforced in that they temporarily reduce discomfort, though they often ultimately lead to greater distress. Additionally, Cash, Santos, and Williams (2005) found that individuals who engaged in avoidance coping strategies experienced higher degrees of body image disturbance, believed their appearance influenced their self-worth, and had poorer quality of life. As predicted by the researchers, those who showed alternative strategies, including acceptance, had a more positive body image and better quality of life. This understanding of the role of negative reinforcement in reducing distress is conceptually similar to constructions of Obsessive-Compulsive spectrum problems (e.g., Franklin & Foa, 2008) as well as Bulimia Nervosa (Hilbert & Tuschen-Caffier, 2007). These findings align with previous research suggesting that avoidant coping strategies exacerbate psychological struggles (Chawla & Ostafin, 2007; Neziroglu, Khemlani-Patel, & Veale, 2008; Rosen, Reiter, & Orosan, 1995).

One principle-based understanding of avoidance of emotions and thoughts can be found in contemporary behavioral models of language and cognition (e.g., Hayes, Strosahl, & Wilson, 1999). From this perspective, the inability to experience these intrapersonal processes (e.g., distressing emotional states) leads to engaging in behaviors that attempt to get rid of or ignore them (Blackledge & Hayes, 2001). These strategies, while temporarily effective and negatively reinforced, often result in creating more problems for the person, and, hence, more suffering. That is, while the desire to escape or avoid an aversive emotion makes some sense, the ways to do that (e.g., leaving a relationship, using drugs or alcohol) are often only temporary solutions and simply add more distress (e.g., loneliness, substance abuse or dependence). On the other hand, learning to experience those events and abandoning attempts to control or eliminate thoughts and feelings provides an opportunity to lessen psychological suffering.

In the case of body image disturbance and BDD, it can be argued that a person has distinct experiences such as aversive affect following self-evaluative statements (about one's appearance) that then prompt attempts to escape or otherwise "neutralize" those intrapersonal events (for an analysis using relational frame theory as a model of developing and maintaining BDD, see Neziroglu et al., 2008). These attempts, however, do not decrease the rate of occurrence of those thoughts or feelings and may in fact increase them over time. The strategy of experiential avoidance becomes unworkable and can escalate into a variety of problematic behaviors.

Acceptance and Commitment Therapy (ACT) is a contemporary behavioral therapy based on the idea that individuals commonly label their internal processes as aversive and make ineffective attempts to change them (Hayes, Strosahl, & Wilson, 1999). ACT assists individuals with realizing that experiential avoidance is ineffective and helps them to develop more effective ways of experiencing unpleasant internal processes through emotional acceptance and living in accordance with one's values (Hayes et al., 1999). Thus, it appears that a behavioral conceptualization of body image disturbance should include intrapersonal factors. For an application of ACT with a broad set of problems related to body image dissatisfaction and disturbance see Pearson, Heffner, and Follette (2010).

INTERPERSONAL FACTORS

In addition to intrapersonal factors, the manner in which people engage others may also be an essential factor in understanding BDD and related problems. Several researchers point out the importance of examining body image disturbance in the context of interpersonal processes to further understand the variables that cause distress (Boyes, Fletcher, & Latner, 2007; Cash, Theriault, & Annis, 2004; Davison & McCabe, 2005; Tantleff-Dunn & Gokee, 2002). Research has linked higher body image disturbance with higher levels of social withdrawal, increased reassurance seeking, increased concern for social approval, and increased sensitivity to rejection (Boyes, Fletcher, & Latner, 2007; Calogero, Park, Rahemtulla, & Williams, 2010; Cash et al., 2004).

Behavioral processes within interpersonal reactions can explain these findings. For example, the frequency or manner in which a person seeks support or reassurance will impact the likelihood of receiving said support or other social reinforce-

ment. Similarly, if a person ineffectively expresses his or her emotions about body image concerns to another, he or she will likely not receive support or compassion, or more plainly, social reinforcement. This may then increase the concern the person has about his or her perceived defect and could even result in social isolation. In any case, interpersonal factors such as these can exacerbate aversive feelings and decrease the likelihood of seeking support or being socially engaged in the future.

Interpersonally problematic repertoires have been addressed from a contemporary behavioral perspective using both basic operant and modern verbal behavior analyses (e.g., Follette, Naugle, & Callaghan, 1996). Problems identifying and expressing emotions may lead to ineffective social interactions and engaging in problematic behaviors that reduce the likelihood of attaining social reinforcement (Callaghan, 2006; Kohlenberg, Hayes, & Tsai, 1993). In contrast, an effective repertoire for expression of feelings helps individuals obtain social reinforcement in the form of getting their needs met and maintaining fulfilling relationships with others (Kohlenberg & Tsai, 1991). These ideas are realized in the behavioral therapy, Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991; see also Kanter, Tsai, Kohlenberg, 2010; Tsai et al., 2009). FAP is an interpersonal-based approach rooted in behavior analytic theory that uses the therapeutic relationship to help develop more effective interpersonal skills.

COMBINATION OF FACTORS

While numerous studies support the idea that both intrapersonal and interpersonal processes play a role in body image disturbance, the literature is scant with empirical investigations of the integration of these factors and how they affect body image disturbance or BDD. One example of an empirical study of BDD that highlights the role of both interpersonal and intrapersonal factors can be found in Kelly, Walters, and Phillips (2010), who note the impact of both experiential and social factors on functional impairment. In their empirical research, Calogero and colleagues (2010) emphasized the importance of addressing interpersonal variables in the context of intrapersonal processes surrounding body image concerns.

From a behavioral framework, there are advantages to assuming either an ACT approach for intrapersonal factors or a FAP perspective to focus on the interpersonal variables. Still, there are limitations to conceptualizations from either approach when used independently. The focus on intrapersonal factors such as experiential avoidance in ACT does not fully account for the impact this avoidance repertoire has on the individual's interpersonal relationships with others (Callaghan, Gregg, Marx, Kohlenberg, & Gifford, 2004). Likewise, the therapist may unintentionally neglect problematic intrapersonal factors while focusing on interpersonal repertoire skills in FAP (Kohlenberg & Callaghan, 2010). The integration of intrapersonal and interpersonal conceptualizations is suggested as a more effective way of understanding body image disturbance and BDD.

The present study investigated the relationship of intrapersonal and interpersonal factors in body image disturbance and Body Dysmorphic Disorder (BDD) using behavioral principles and assessment approaches from these contemporary therapies. Specifically, intrapersonal variables were assessed from an experiential avoidance perspective as seen in ACT. Interpersonal variables were assessed examining the ability to identify and express emotions with other people consistent with FAP. It was hypothesized that higher levels of body image disturbance would be related to both (1) greater levels of experiential avoidance, and (2) increased difficulties in participants' interpersonal expression of emotions with others. It was also predicted that experiential avoidance and problems with interpersonal expression of emotions would predict meeting criteria for being diagnosable with BDD as well as the severity of BDD symptomatology.

METHOD

PARTICIPANTS

A sample of convenience consisting of 544 undergraduate students at a diverse university participated in this study, which was conducted in classrooms on campus. The sample included 373 women and 171 men aged 18 to 52 years (M = 19.32, SD = 3.1). The participants identified themselves as White/Caucasian (n = 132; 24.3%); Asian (n = 186; 34.2%); Black/African-American (n = 29; 5.3%); Hispanic/Latino/Spanish (n = 105; 19.3%); American Indian (n = 1; 0.2%); Pacific Islander (n = 8; 1.5%); Other (n = 11; 2%); or multiple ethnicities (n = 72; 13.2%). All participants gave their informed consent before completing the questionnaire. Before data collection, this study received approval by a university Human Subjects Institutional Review Board. Participants received university course credit without any other compensation. This study was part of a larger research effort; see Callaghan, Lopez, Wong, Northcross, & Anderson (2011) for further methodological details.

MATERIALS AND DEVICES

Participants completed a questionnaire packet containing: (a) a brief demographic questionnaire; (b) the Functional Idiographic Assessment Template Questionnaire-E (FIAT-Q-E; Callaghan, 2006); (c) the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011); (d) the Body Image Disturbance Questionnaire (BIDQ; Cash et al., 2004); and (e) the Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, 2005). Participants who met criteria for and participated in the interview portion of the study were interviewed using the Body Dysmorphic Disorder Module for Adults (Phillips, 2005) and the Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS; Phillips et al., 1997).

Brief demographic questionnaire. A demographic questionnaire constructed by the researchers consisted of questions about the participants' age, height, weight (used to calculate body mass index [BMI; Keys, Fidanza, Karvonen, Kimura, & Taylor, 1972]), gender, ethnicity, and past or current diagnosed eating disorders.

Functional Idiographic Assessment Template Questionnaire-E (FIAT-Q-E). The Functional Idiographic Assessment Template (FIAT; Callaghan, 2006) is an assessment system designed for use with FAP (Kohlenberg & Tsai, 1991). The FIAT organizes behavior into five classes that are often targets of change in FAP and other interpersonally based psychotherapies. Each of these five domains of responding is assessed using the corresponding subscales of the FIAT-Questionnaire. One of those subscales, the

FIAT-Q-E, assesses the expression of emotional experiences to others. While the FIAT-Q-E does have several items assessing a client's ability to identify an emotional experience, the majority of items help determine how those emotions are expressed in the context of a variety of relationships. Respondents react to a series of 24 statements using a Likert scale consisting of six options ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher scores indicate higher levels of these problematic behaviors.

Studies on the psychometric properties of the FIAT-Q and its subscales show promising data supporting the reliability and validity of this assessment. A reliability study using an ethnically diverse nonclinical sample of 619 participants demonstrated high internal consistency and good test-retest reliability for both the FIAT-Q's overall assessment of interpersonal effectiveness and the FIAT-Q-E subscale (Gummeson, Callaghan, Weidman, Nzerem, & Kirby, 2004). In the current study, the internal consistency was also good (a = .83). Furthermore, convergent validity has been demonstrated for both the FIAT-Q and its subscales (Gummeson et al., 2004).

Acceptance and Action Questionnaire-II (AAQ-II). The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) is based on the AAQ (Hayes et al., 2004). It was developed as a broad measure of experiential avoidance and psychological inflexibility, the proposed mechanism of change in ACT. These constructs include the need to control thoughts and emotions, avoidance of private experiences, and immobility in taking action (Hayes et al., 2004). The AAQ-II is predominantly a measure of a respondent's ability to experience emotions and it does not focus on the interpersonal expression of those experiences to others. The AAQ-II consists of 10 items on a 7-point Likert scale ranging from 1 (*never true*) to 7 (*always true*). The measure can be scored so that higher scores indicate greater acceptance and action or, conversely, with higher scores indicating higher avoidance and psychological inflexibility (Hayes et al., 2004). This study used the latter scoring method where higher scores indicate greater levels of experiential avoidance or psychological inflexibility. In the preliminary study on the psychometric properties of the measure, the AAQ-II demonstrated good internal consistency ranging from .81 to .87 (Bond et al., 2011). In the current study, internal consistency was high (a = .87).

Body Image Disturbance Questionnaire (BIDQ). The Body Image Disturbance Questionnaire (BIDQ) is a self-report measure developed to assess body image disturbance on a continuum including body image dissatisfaction, distress, and dysfunction (Cash & Grasso, 2005). It was derived from Phillips' (2005) Body Dysmorphic Disorder Questionnaire (BDDQ), a clinical screening instrument used as an aid in diagnosing BDD (described in the following section). The BIDQ contains seven questions measuring preoccupation, distress, impairment in functioning, and behavioral avoidance in relation to body image. Each question contains a 5-point rating scale and is scored by calculating the mean of all seven questions (Cash & Grasso, 2005). In the main study on the psychometric properties of the BIDQ, Cash and colleagues (2004) found good internal consistency for both women and men (a = .89). They found that the BIDQ correlates with other measures of body image dissatisfaction, dysphoria, and quality of life. Additionally, the BIDQ demonstrates good test-retest reliability (*r* = .88; Cash & Grasso, 2005). Overall, the BIDQ demonstrates adequate validity and reliability in measuring body image disturbance in nonclinical samples. Internal consistency in the present study was also good (a = .88).

Body Dysmorphic Disorder Questionnaire (BDDQ). The Body Dysmorphic Disorder Questionnaire (BDDQ; Phillips, 2005) is a self-report screening measure developed to determine whether a person meets *DSM-IV-TR* criteria for BDD. The BDDQ was used in the present study to help screen participants for interviews for the presence of BDD. The BDDQ uses a yes/no format to establish whether the respondent experiences a preoccupation with a perceived physical defect and whether the preoccupation causes distress or impairment in functioning. However, even if a respondent meets the criteria on the BDDQ, a face-to-face interview is necessary to make a diagnosis of BDD by visually confirming whether the perceived defect actually exists, whether the distress or impairment is significant, and to rule out the presence of an eating disorder (Phillips, 2005). Published psychometric data on the BDDQ is limited. Phillips and her colleagues have found the BDDQ has high sensitivity and specificity for BDD (Phillips, 2005). Overall, the BDDQ appears to be an acceptable screening measure to determine which participants to invite for an in-person interview.

Body Dysmorphic Disorder Diagnostic Module for Adults. The Body Dysmorphic Disorder Diagnostic Module for Adults (Phillips, 2005) is a clinician-administered in-person interview developed to confirm the diagnosis of BDD in individuals whose self-report responses on the BDDQ indicate the possible presence of BDD. The BDD Diagnostic Module was used for the interview portion of this study. It is based on the *DSM-IV-TR* criteria for BDD and constructed in a format similar to that of the Structured Clinical Interview for DSM (First, Spitzer, Gibbon, & Williams, 1996). The *DSM-IV-TR* criteria are listed next to each question to determine if a criterion is met before continuing with the subsequent questions. An individual must have a preoccupation with an imagined physical defect to meet criterion A and significant distress or impairment to meet criterion B. In order to meet criterion C, the preoccupation must not be attributed to an eating disorder. Clinical judgment is necessary for this assessment, particularly when determining the presence of a real or imagined physical defect and whether the distress or impairment reported for criterion B is significant enough to meet threshold for a diagnosis. The BDD Diagnostic Module shows high inter-rater reliability (k = .96; Phillips, 2005).

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS). Phillips and colleagues (1997) developed the Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS) to measure BDD severity, based on the Yale-Brown Obsessive Compulsive Scale, a measure of Obsessive-Compulsive disorder (OCD) severity (Goodman et al., 1989). This measure was modified for BDD based on the similarities in behavioral patterns between BDD and OCD. The BDD-YBOCS is a measure of BDD symptom severity when a diagnosis is already established (Phillips et al., 1997). This semi-structured clinical interview contains 12 items assessing obsessive thoughts and behaviors, including

resistance and control of thoughts, insight, and avoidance regarding a physical defect, during the past week (Phillips et al., 1997; Phillips, 2005). Each item's score ranges from 0 to 4, with 0 indicating an absence of symptoms and 4 indicating severe symptoms. The sum of the 12 items indicates severity of symptoms, with scores over 20 indicating mild to moderately severe BDD, scores over 30 indicating moderate to severe BDD, and scores over 40 indicating very severe BDD (Phillips, 2005). In a psychometric study (Phillips et al., 1997), the BDD-YBOCS demonstrated good internal consistency (a = .80). Test-retest reliability was also high (r = .88), and inter-rater reliability was extremely high (r = .99). Additionally, the BDD-YBOCS is significantly correlated with global measures of severity of distress and demonstrates discriminant validity with measures of general psychopathology (Phillips et al., 1997). In the current study, the internal consistency was also good (a = 84.).

PROCEDURES

At least two experimenters were present at each session. Once an individual completed the questionnaire packet, a researcher checked the packet for completeness and quickly scored the BDDQ. Participants who answered "yes" to select questions met threshold criteria and were invited to the subsequent interview portion (Phillips, 2005). Those who did not meet criteria received proof of participation. Of those who met criteria using the BDDQ, participants whose primary concern was weight and were overweight (i.e., BMI > 25) were excluded from the interview portion. Participants who listed weight as the main concern but were not overweight according to the BMI scale were eligible for the interview.

Interviews were conducted using the BDD Module for Adults and the BDD-YBOCS. In the interview, an evaluation was made to determine whether the areas of concern were imagined or disproportionate (e.g., concern of acne with no visible blemishes). At the end of the interview, the researcher answered any questions and debriefed participants. Eligible participants received proof of participation if applicable.

To assess for imaginary or minimal defects required of a possible BDD diagnosis, a clinical psychologist instructed interviewers to visually examine participants and to focus the interview questions on the participants' body part(s) of concern. Following each interview, research assistants discussed potentially diagnosable cases with the research team about the presence or absence of a perceived defect. In cases where the body part was not visible or could not be made visible easily and appropriately, the possible defect could not be verified, and the participant was not considered a BDD case. In situations where the defect was possible to visually verify, but was not perceptible to the interviewer, the defect was considered imaginary (i.e., a perceived defect). If the perceived defect was visible to the interviewer, it was judged minor if it was present but not severe (e.g., minimally noticeable scaring or acne). Throughout the study, interviewers discussed questionable cases with the clinical psychologist and research team to make final judgments about possible BDD cases.

Table 1. Means, Standard Deviations, and Correlations Among Measures for all Participants

Measures	*n*	*M*	*SD*	1	2	3
1. BIDQ	542	1.81	0.67	–		
2. FIAT-Q-E	543	66.71	15.45	.38**	–	
3. AAQ-II	544	29.58	10.55	.46**	.67**	–

Note: BIDQ = Body Image Disturbance Questionnaire; FIAT-Q-E = Functional Idiographic Assessment Template Questionnaire-E; AAQ-II = Acceptance and Action Questionnaire-II.
**p < .001.

DATA ANALYSIS

Analyses were conducted to examine the relationship between intra- and interpersonal factors and body image disturbance and BDD. First, basic correlations were run for the total sample and the subsample of those participants who met criteria for BDD to demonstrate the relationship between the variables of interest. A backward stepwise regression analysis was conducted on the total sample to demonstrate the ability of intra- and interpersonal variables to predict body image disturbance. Next, a backward logistic regression analysis was conducted to determine which of these variables (FIAT-Q-E, AAQ-II) predicted a diagnosis of BDD. Finally, a backward regression analysis was run on the subsample of BDD cases to determine what variables predicted the severity of BDD symptomatology (BDD –YBOCS).

To briefly explain, a logistic regression is a type of regression analysis that is used with dichotomous variables. In this study, scores on the AAQ-II and the FIAT-Q-E were entered into one equation to predict the dichotomous variable of meeting criteria for BDD ("yes" or "no"). In a backward stepwise regression, scales are eliminated one at a time and the model is retested for significance as each is removed, and the final model includes only those scales that are statistically significant.

RESULTS

Eighty participants met screening criteria and participated in the interview. A total of 55 participants (42 females and 13 males) met criteria for a formal diagnosis of BDD (total prevalence for the sample was 10.1%). While the initial population was non-clinical, this subsample of 55 represents those who are diagnosable with BDD and, thus, can serve as an identified clinical population. The remaining interviewees were excluded from analysis as a BDD case on the basis of not meeting diagnostic criteria of BDD (n = 14), meeting criteria for or reporting a current eating disorder (n = 3), concerns of physical defects that could not be verified (n = 2), and presenting real (not imag-

Table 2. Means, Standard Deviations, and Correlations Among Measures for Participants Meeting BDD Diagnostic Criteria

Measures	*n*	*M*	*SD*	1	2	3
1. BDD-YBOCS	55	20.64	6.25	–		
2. FIAT-Q-E	55	74.12	12.75	.27*	–	
3. AAQ-II	55	36.65	10.13	.26	.65**	–

Note: FIAT-Q-E = Functional Idiographic Assessment Template Questionnaire-E; AAQ-II = Acceptance and Action Questionnaire-II; BDD-YBOCS = Yale Brown Obsessive-Compulsive Scale Modified for Body Dysmorphic Disorder.
*p < .05; **p < .001.

Table 3. Summary of the Regression Analysis on body image disturbance (BIDQ)

Variables	β	S.E.	Standardized β	*t*-value	*p*
AAQ-II	.023	.003	.367	7.152	.000
FIAT-Q-E	.006	.002	.135	2.623	.009

Note. BIDQ = Body Image Disturbance Questionnaire . FIAT-Q-E = Functional Idiographic Assessment Template Questionnaire-E. AAQ-II = Acceptance and Action Questionnaire-II.

ined) defects (e.g. scarring; $n = 6$). Data from these participants remained in the larger data set.

RELATIONSHIP BETWEEN INTRA- AND INTERPERSONAL VARIABLES AND BODY IMAGE DISTURBANCE

The means and standard deviations for these measures and their correlation coefficients are presented in Tables 1 and 2. In Table 1, it can be observed that, for all participants in the sample, there is a significant relationship between increased levels of body image disturbance (BIDQ) and both intrapersonal levels of avoidance (AAQ-II) and interpersonal expression of emotions with others (FIAT-Q-E). Table 2 shows that for the 55 participants diagnosable with BDD, increased levels of interpersonal expression problems (FIAT-Q-E) was significantly related to severity of BDD (BDD-YBOCS), while experiential avoidance (AAQ-II) was not.

REGRESSION ANALYSES AND PREDICTION OF MEETING DIAGNOSTIC CRITERIA AND BDD SEVERITY

A backward regression analysis on the ability of the AAQ-II and the FIAT-Q-E to predict body image distress revealed that both were statistically significant predictors, with the AAQ-II accounting for slightly more variance than the FIAT-Q-E. These results are presented in Table 3. These findings suggest that both intrapersonal and interpersonal variables contribute to and predict the level of severity of body image disturbance.

A backward logistic regression examined whether the psychological variables of experiential avoidance or interpersonal problems with expression of emotions could predict meeting diagnostic criteria for BDD using a backward procedure with diagnosis of BDD (case or non-case; where "case" refers to meeting diagnostic criteria) as the outcome variable. Table 4 presents the results of this analysis. Only the AAQ-II significantly predicted that participants met diagnostic criteria for BDD. The final model was statistically significant, χ^2 (1) = 25.76, $p < .001$, Nagelkerke $R^2 = .096$. Overall the prediction success was 89.7%. These results indicate that higher levels of experiential avoidance predicted meeting diagnostic criteria of BDD, while problems in interpersonal expression of emotions did not.

For the subsample of BDD cases, an additional backwards procedure regression analysis examined whether experiential avoidance or interpersonal problems with expression of emotions predicted severity of BDD symptomatology (BDD-YBOCS). Table 5 presents the results of this analysis. In the final model, elimination of the AAQ-II left the FIAT-Q-E as the only significant predictor of BDD severity ($b = .27$, $t = 2.0$, $p = .045$). This indicates that difficulties in interpersonal expression of emotions were a significant predictor of BDD severity, while experiential avoidance was not.

DISCUSSION

The present study examined the relationship between body image disturbance, experiential avoidance, and interpersonal expression of emotions. The basic correlation data support the hypothesis that there is a relationship between body image disturbance and intrapersonal experiential avoidance as well as interpersonal expression of emotions for all participants. However, when considering those meeting criteria for a diagnosis of BDD as a subsample, only interpersonal problems are related to increased severity of BDD symptoms. This suggests that while experiential avoidance is important in understanding body image disturbance, interpersonal problems are essential to consider in looking at both disturbance and more severe forms of suffering. The basic regression analysis also showed that higher body image disturbance for the entire sample is associated with both higher levels of experiential avoidance and problems with interpersonal expression of emotions.

The present findings are consistent with previous research investigating the relationship between body image disturbance, the intrapersonal process of avoidance (Cash, 2002; Cash et al., 2005), and interpersonal processes (Cash, Theriault, & Annis, 2004). These data provide some initial support for understanding these problems with behavioral principles of negatively reinforced repertoires including both the escape and avoidance of intrapersonal experiences and the skill of interpersonal expression of affect in a social context. This theory-based and empirically supported perspective lends itself to a conceptualization of body image disturbance for non-clinical populations (i.e., those not diagnosed with BDD) not seen previously in the literature.

At the more extreme end of the continuum of body image disturbance, 10% of participants met criteria for diagnosable Body Dysmorphic Disorder, a prevalence rate consistent with other reports in the literature (Biby, 1998; Bohne et al., 2002; Cansever, Uzun, Donmez, & Ozsahin, 2003). Experiential avoidance, based on scores on the AAQ-II, served as the only significant predictor for meeting the diagnostic criteria of BDD,

Table 4. Summary of the Logistic Regression Analysis on BDD Status

Variables	β	S.E.	Wald	Odds Ratio	*p*
FIAT-Q-E	.011	.014	.617	1.011	.432
AAQ-II	.066	.013	25.001	1.068	<.001

FIAT-Q-E = Functional Idiographic Assessment Template Questionnaire-E. AAQ-II = Acceptance and Action Questionnaire-II.

Table 5. Summary of the Regression Analysis on BDD Severity (BDD-YBOCS)

Variables	β	S.E.	Standardized β	*t*-value	*p*
FIAT-Q-E	.133	.065	.272	2.056	.045

BDD-YBOCS = Yale Brown Obsessive-Compulsive Scale Modified for Body Dysmorphic Disorder. FIAT-Q-E = Functional Idiographic Assessment Template Questionnaire-Emotions.

while interpersonal behaviors did not, supporting only part of the original hypothesis. This suggests that the presence of BDD is largely predicted by avoidance of thoughts, feelings, or psychological inflexibility in the experience of affect and thought. This finding is consistent with previous literature emphasizing these strategies (Cash, 2002). Although avoidance is not a *DSM-IV-TR* criterion for diagnosis, Phillips and her colleagues (1997) suggest that it is a common process in individuals with BDD. While the term *avoidance* incorporates a broad range of negatively reinforced behaviors, support for its relationship to body image disturbance and BDD is an important finding that may have implications for targets of change in clinical intervention.

Difficulties in interpersonal expression of emotions, measured by the FIAT-Q-E, was the only significant predictor of the severity of BDD symptomatology in those meeting BDD diagnostic criteria. This finding supports the idea that behavioral repertoire difficulties in interpersonal expression of affect are at the core of more severe psychological problems (Kohlenberg & Tsai, 1991). Experiential avoidance did not significantly predict BDD severity, as it did for meeting criteria for a diagnosis. Interpersonal problems, specifically the expression of emotions to others, appear to be essential to understanding the degree of suffering for those diagnosed with BDD.

In summary, the logistic and standard regression analyses suggest that both intrapersonal variables (as assessed by the AAQ-II) and interpersonal variables (measured by the FIAT-Q-E) are important in predicting aspects of Body Dysmorphic Disorder. Psychological inflexibility or experiential avoidance is the single best predictor of being diagnosed with BDD, while the basic interpersonal repertoire of expressing emotional experiences with others predicts the severity of this type of suffering.

The significant relationship among interpersonal expression of emotions and experiential avoidance to both body image disturbance at the broadest level and BDD specifically support the idea that these behaviors play an important role in conceptualizing body image problems along a continuum. While nosological arguments continue in the literature, the present study attempted to metaphorically cut through an entangled Gordian knot of differing taxonomic categories using empiricism and behavioral principles. These findings provide evidence for both conceptualizing these problems from a coherent theoretical framework and suggestions for corresponding evidence-based treatments. Specifically, contemporary psychotherapies such as ACT and FAP may be useful interventions for individuals presenting these problem behaviors. While suggestions have been made similar to this for therapies treating body image dissatisfaction and disturbance (e.g., Pearson et al., 2010), this study provides empirical evidence to support not only their application but the need to consider *both* intrapersonally focused approaches such as ACT and interpersonal interventions like FAP as integrated treatments (e.g., Callaghan et al., 2004; Callaghan et al., 2011).

One important limitation of this study is that the sample used is one of convenience, comprised of college students, which limits the generalizability of the findings, though the participants in this study represent a diversity of ethnic backgrounds. Previous findings suggest that college student populations report higher rates of body image disturbance compared to general community samples (Biby, 1998). Though the prevalence rates for BDD found in this sample are consistent with the literature including international populations, the findings are still bound to a specific population. In addition, while the subsample of those participants who are diagnosable with BDD represent a group with significant clinical distress, a specific clinical population with participants seeking interventions for body image disturbance or BDD was not used.

In the future, it will be useful to fully operationalize the definition of the constructs of experiential avoidance and interpersonal expression of emotions to provide increased precision in assessing these behavioral repertoires. Measures that more specifically assess these repertoires for those struggling with body image are currently being developed and tested by the authors. To this end, a multitrait-multimethod assessment approach using additional measures of these constructs will be essential in documenting how they relate to body image disturbance and BDD. Continued research on these variables will provide support for whether the implementation of these specific interventions – ACT, FAP, or a combination of the two as a comprehensive contemporary behavioral intervention – is appropriate, but this preliminary study presents a significant foundation. In a programmatic line of research on therapeutic interventions for any problem, a reasonable first step is to establish key causal variables before treatments are built. This study suggests that it is possible to approach the treatment of body image disturbance and BDD targeting both experiential avoidance and repertoire problems with interpersonal expression of emotions in an effort to alleviate this type of suffering.

REFERENCES

Altabe, M., & Thompson, J. K. (1996). Body image: A cognitive self-schema construct? *Cognitive Therapy and Research, 20*(2), 171-193.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*, (fourth ed.-text revision). Washington, DC: American Psychiatric Association.

Biby, E. L. (1998). The relationship between body dysmorphic disorder and depression, self-esteem, somatization, and obsessive-compulsive disorder. *Journal of Clinical Psychology, 54*(4), 489-499.

Blackledge, J. T. & Hayes, S. C. (2001). Emotion regulation in acceptance and commitment therapy. *Journal of Clinical Psychology, 57*(2), 243-255.

Bohne, A., Wilhelm, S., Keuthen, N. J., Florin, I., Baer, L., & Jenike, M. A. (2002). Prevalence of body dysmorphic disorder in a German college student sample. *Psychiatric Research, 109*, 101-104.

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole,, N., Orcutt, H. K., Waltz, T. & Zettle, R. D. (2011). Preliminary psychometric properties of the Accep-

tance and Action Questionnaire – II: A revised measure of psychological flexibility and experiential avoidance. *Behavior Therapy, 42*, 676-688.

Boyes, A. D., Fletcher, G. J. O. & Latner, J. D. (2007). Male and female body image and dieting in the context of intimate relationships. *Journal of Family Psychology, 21*(4), 764-768.

Callaghan, G. M. (2006). The functional idiographic assessment template (FIAT) system. *The Behavior Analyst Today, 7*(3), 357-398.

Callaghan, G. M., Gregg, J. A., Marx, B. P., Kohlenberg, B. S., & Gifford, E. (2004). FACT: The utility of an integration of functional analytic psychotherapy and acceptance and commitment therapy to alleviate human suffering. *Psychotherapy: Theory, Research, Practice, Training*, *41*(3), 195-207.

Callaghan, G. M., Lopez, A. Wong, L, Northcross, J., & Anderson, K. R. (2011). Predicting consideration of cosmetic surgery in a college population: a continuum of body image disturbance and the importance of coping strategies. *Body Image, 8*, 267-274.

Calogero, R. M., Park, L. E., Rahemtulla, Z. K., & Williams, K. C. D. (2010). Predicting excessive body image concerns among British university students: The unique role of appearance-based rejection sensitivity. *Body Image*, *7*, 78-81.

Cansever, A., Uzun, O., Donmez, E., & Ozsahin, A. (2003). The prevalence and clinical features of body dysmorphic disorder in college students: A study in a Turkish sample. *Comprehensive Psychiatry, 44*(1), 60-64.

Cash, T. F. (2002). Cognitive-behavioral perspectives on body image. In T. F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 38-46). New York: Guilford Press.

Cash, T.F. & Grasso, K. (2005). The norms and stability of new measures of the multidimensional body image construct. *Body Image, 2*, 199-203.

Cash, T. F., Phillips, K. A., Santos, M. T., & Hrabosky, J. I. (2004). Measuring "negative body image": Validation of the body image disturbance questionnaire in a nonclinical population. *Body Image, 1*, 363-372.

Cash, T. F., Santos, M. T., & Williams, E. F. (2005). Coping with body-image threats and challenges: Validation of the body image coping strategies inventory. *Journal of Psychosomatic Research, 58*, 191-199.

Cash, T. F., Theriault, J., & Annis, N. M. (2004). Body image in an interpersonal context: Adult attachment, fear of intimacy, and social anxiety. *Journal of Social and Clinical Psychology, 23*(1), 89-103.

Chawla, N. & Ostafin, B. (2007). Experiential avoidance as a functional dimensional approach to psychopathology: An empirical review. *Journal of Clinical Psychology, 63*(9), 871-890.

Davison, T. E. & McCabe, M. P. (2005). Relationships between men's and women's body image and their psychological, social, and sexual functioning. *Sex Roles, 52*(7/8), 463-475.

Faravelli, C., Salvatori, S., Galassi, F., Aiazzi, L., Drei, C., & Cabras, P. (1997). Epidemiology of somatoform disorders: A community survey in Florence. *Social Psychiatry and Psychiatric Epidemiology, 32*(1), 24-29.

First, M. B., Spitzer, R. L, Gibbon, M., and Williams, J. B. W.: (1996) *Structured Clinical Interview for DSM-IV Axis I Disorders, Clinician Version (SCID-CV)*. Washington, D.C.: American Psychiatric Press.

Follette, W. C., Naugle, A. E., & Callaghan, G. M. (1996). A radical behavioral understanding of the therapeutic relationship in effecting change. *Behavior Therapy, 27*, 623-641.

Franklin, M. E., & Foa, E. B. (2008). Obsessive-Compulsive disorder. In D. Barlow (Ed.), *Clinical handbook of psychological disorders* (pp. 164-215). New York: Guilford Press.

Fuchs, T. (2002). The phenomenology of shame, guilt and the body in body dysmorphic disorder and depression. *Journal of Phenomenological Psychology, 33*(2), 223-243.

Goodman, W. K., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., Heninger, G. R., & Charney, D. S. (1989). The Yale-Brown obsessive-compulsive scale (Y-BOCS): Part I. Development, use, and reliability. *Archives of General Psychiatry, 46*, 1006-1012.

Grant, J. E. & Phillips, K. A. (2004). Is anorexia nervosa a subtype of body dysmorphic disorder? Probably not, but read on. *Harvard Review of Psychiatry, 12*(2), 123-126.

Gummeson, B., Callaghan, G. M., Weidman, M., Nzerem, C., & Kirby, A. M. (2004, April). *Psychometric properties of an assessment for interpersonal effectiveness*. Paper presented at the 84th annual meeting of the Western Psychological Association, Phoenix, AZ.

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and commitment therapy: Treating human suffering*. New York, NY: Guilford Press.

Hayes, S. C., Strosahl, K. D., Wilson, K. G., Bissett, R. T., Pistorello, J., Toarmino, D., Polusny, M. A., Dykstra, T. A., Batten, S. V., Bergan, J., Stewart, S. H., Zvolensky, M. J., Eifert, G. H., Bond, F. W., Forsyth J. P., Karekla, M., & McCurry, S. M. (2004). Measuring experiential avoidance: A preliminary test of a working model. *The Psychological Record, 54*, 553-578.

Hilbert, A., & Tuschen-Caffier, B. (2007). Maintenance of binge eating through negative mood: A naturalistic comparison of binge eating disorder and bulimia nervosa. *International Journal of Eating Disorders*, *40*(6), 521-530.

Jakatdar, T. A., Cash, T. F., & Engle, E. K. (2006). Body-image thought processes: The development and initial validation of the assessment of body-image cognitive distortions. *Body Image, 3*, 325-333.

Kanter, J., Tsai, M., & Kohlenberg, R. J. (2010). *The practice of Functional Analytic Psychotherapy.* New York: Springer.

Kelly, M. M., Walters, C., & Phillips, K. A. (2010). Social anxiety and its relationship to functional impairment in body dysmorphic disorder. *Behavior Therapy, 41*, 143-153.

Keys, A., Fidanza, F., Karvonen, M. J., Kimura, N., & Taylor, H. L. (1972). Indices of relative weight and adiposity. *Journal of Chronic Diseases, 25*, 329–343.

Kohlenberg, B. & Callaghan, G. M. (2010). FAP and Acceptance Commitment Therapy: Similarities, divergence, and integration. In J. W. Kanter, M. Tsai, & R. J. Kohlenberg (Eds.), *Advanced topics in Functional Analytic Psychotherapy* (pp. 31-46). New York: Plenum.

Kohlenberg, R. J., Hayes, S. C., & Tsai, M. (1993). Radical behavioral psychotherapy: Two contemporary examples. *Clinical Psychology Review*, *13*, 579-592.

Kohlenberg, R. J., & Tsai, M. (1991). *Functional Analytic Psychotherapy: Creating intense and curative therapeutic relationships*. New York: Plenum.

McKay, D., Neziroglu, F., & Yaryura-Tobias, J.A. (1997). Comparison of clinical characteristics in obsessive-compulsive disorder and body dysmorphic disorder. *Journal of Anxiety Disorders, 11*(4), 447-454.

Neziroglu, F., Khemlani-Patel, S., & Veale, D. (2008). Social learning theory and cognitive behavioral models of body dysmorphic disorder. *Body Image*, *5*(1), 28-38.

Otto, M. W., Wilhelm, S., Cohen, L. S., & Harlow, B. L. (2001). Prevalence of body dysmorphic disorder in a community sample of women. *American Journal of Psychiatry, 158*(12), 2061-2063.

Pavan, C., Simonato, P., Marini, M., Mazzoleni, F., Pavan, L., & Vindigni, V. (2008). Psychopathologic aspects of body dysmorphic disorder: A literature review. *Aesthetic Plastic Surgery, 32*(3), 473-484.

Pearson, A. N., Heffner, M., Follette, V. M. (2010). *Acceptance and commitment therapy for body image dissatisfaction: A practitioner's guide to using mindfulness, acceptance, and values-based behavior change strategies*. Oakland, CA: New Harbinger Publications.

Phillips, K. A. (2004). Psychosis in body dysmorphic disorder. *Journal of Psychiatric Research, 38*, 63-72.

Phillips, K. A. (2005). *The broken mirror: Understanding and treating body dysmorphic disorder.* New York: Oxford University Press.

Phillips, K. A., Hollander, E., Rasmussen, S. A., Aronowitz, B. R., DeCaria, C., & Goodman, W. K. (1997). A severity rating scale for body dysmorphic disorder: Development, reliability, and validity of a modified version of the Yale-Brown Obsessive Compulsive Scale. *Psychopharmacology Bulletin, 33*(1), 17-22.

Phillips, K. A., Menard, W., Fay, C., & Weisberg, R. (2005). Demographic characteristics, phenomenology, comorbidity, and family history in 200 individuals with body dysmorphic disorder. *Psychosomatics, 46*, 317-325.

Phillips, K. A., Menard, W., Pagano, M. E., Fay, C., & Stout, R. L. (2006). Delusional versus nondelusional body dysmorphic disorder: Clinical features and course of illness. *Journal of Psychiatric Research, 40*, 95-104.

Phillips, K. A., Wilhelm, S., Koran, L. M., Didie, E. R., Fallon, B. A., Feusner, J., & Stein, D. J. (2010). Body dysmorphic disorder: some key issues for DSM-V. *Depression and Anxiety, 27*, 573–591.

Rosen, J. C., & Ramirez, E. (1998). A comparison of eating disorders and body dysmorphic disorder on body image and psychological adjustment. *Journal of Psychosomatic Research, 44*(3/4), 441-449.

Rosen, J. C., Reiter, J., & Orosan, P. (1995). Cognitive behavioral body image therapy for body dysmorphic disorder. *Journal of Clinical and Consulting Psychology, 63*, 263-269.

Tantleff-Dunn, S. & Gokee, J. L. (2002). Interpersonal influences on body image development. In T.F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of Theory, research, and clinical practice* (pp. 108-116). New York: Guilford Press.

Toh, W. L., Russell, S. L., & Castle, D. J. (2009). Body dysmorphic disorder: A review of current nosological issues and associated cognitive deficits. *Current Psychiatry Reviews, 5*, 261-270.

Tsai, M., Kohlenberg, R. J., Kanter, J. W., Kohlenberg, B., Follette, W.C., & Callaghan, G. M. (2009). *A guide to Functional Analytic Psychotherapy: Awareness, courage, love and behaviorism.* New York: Plenum.

Veale, D., Gournay, K., Dryden, W., Boocock, A., Shah, F., Willson, R., & Walburn, J. (1996). Body dysmorphic disorder: A cognitive behavioural model and pilot randomised controlled trial. *Behavior Research and Therapy, 34*, 717-729.

Zimmerman, M. & Mattia, J. I. (1998). Body dysmorphic disorder in psychiatric outpatients: Recognition, prevalence, comorbidity, demographic, and clinical correlates. *Comprehensive Psychiatry, 39*(5), 265-270.

CONTACT INFORMATION

GLENN M. CALLAGHAN, PHD

Department of Psychology
San José State University
San José, CA 95192-1020
Phone: 408-924-5610
E-mail: Glenn.Callaghan@sjsu.edu

JULISSA A. DUENAS

Department of Psychology
San José State University
San José, CA 95192-1020
E-mail: julissa.duenas@hotmail.com

SARAH E. NADEAU

Department of Psychology
San José State University
San José, CA 95192-1020
E-mail: sarahenadeau@gmail.com

SABRINA M. DARROW, PHD

UCSF/SFGH Psychiatry Department
2727 Mariposa St. #100
San Francisco, CA 94110
E-mail: sabrina.darrow@gmail.com

JESSICA VAN DER MERWE

Department of Psychology
San José State University
San José, CA 95192-1020
E-mail: jess@elezea.com

JENNIFER MISKO

Department of Psychology
San José State University
San José, CA 95192-1020
E-mail: jennifer.misko@gmail.com