

Implicit Cognitions and Eating Disorders: Their Application in Research and Treatment

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Cognitive theory has had a prominent role in understanding and treating eating disorders in recent years. The increasing emphasis on implicit cognitions in many areas of psychology raises the question of whether research on implicit cognitions could contribute to our understanding and treatment of eating disorders. In the present article, we discuss our recent work using the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) to explore implicit cognitions in restrained and unrestrained eaters. We also propose several domains in which exploring the utility of the IAT may prove beneficial. These include cognitive restructuring, inaccuracies in self-report, predicting relapse, body dissatisfaction, and treatment selection. Although there are numerous potential applications of the IAT for research and clinical practice with eating disorders, the value of these applications must be tested empirically.

THE COGNITIVE MODEL of eating disorders has been at the forefront of theory, research, and treatment in recent years. The focus of the cognitive model is on the cognitions that influence an individual's feelings and behavior (Vitousek & Hollon, 1990). This model posits that cognitions form an organizational structure (schema) that guides the processing of information in the environment, particularly information that is self-relevant. These cognitions include irrational thoughts related to eating and body weight and shape, as well as the meaning associated with being thin (e.g., self-control; beauty) and with being fat (e.g., being flawed; being a failure; being alone). Furthermore, these cognitions, structures, and associations are probably the result of the individual's learning history (Vitousek & Hollon, 1990). A major focus of treatments based on the cognitive model has been the attempt to modify irrational thoughts, beliefs, and attitudes (Fairburn & Cooper, 1989). In addition to thoughts specifically related to eating and body shape, patients with eating disorders also exhibit more general core beliefs (or schemas) related to, among other things, abandonment, defectiveness/shame, and social isolation (e.g., Waller, Ohanian, Meyer, & Osman, 2000).

In order to understand the influence of cognitions and schemas on eating disorders, researchers have sought to elucidate the information-processing mechanisms that sustain these thoughts and schemas (for a review, see Williamson, Muller, Reas, & Thaw, 1999). This work has focused particularly on selective attention to food and weight stimuli. For example, many studies have used a modified Stroop task, in which participants are asked to name the

color of the ink in which a word is printed. It has generally been found that eating disordered individuals show greater interference (that is, they are slower to name the ink color) for eating- and body-shape-related words (e.g., Cooper & Fairburn, 1992; Sackville, Schotte, Touyz, Griffiths, & Beumont, 1998). Such findings are generally taken as evidence that these individuals show selective/biased attention to (or processing of) food- and body-shape-related information. Some studies have found similar biases among non-eating-disordered dieters (e.g., Green & Rogers, 1993; Stewart & Samoluk, 1997). Unfortunately, it is not particularly surprising to learn that eating disordered patients and chronic dieters pay increased attention to food- and body-shape-related information, and we learn little new from these studies other than to confirm clinical observations that these individuals are preoccupied with food and weight (Polivy & Herman, 2002; cf. Vitousek & Hollon, 1990). This work by itself does not speak to the influence of schematic representations that are important in the development and maintenance of eating disorders. This may in part explain why the flurry of studies in this area appears to have subsided.

Other research has looked at memory and judgment biases, as well as perceptual distortions, among eating disordered individuals. It has been found, for example, that eating disordered individuals and individuals who are preoccupied with body weight and shape show enhanced recall of food- and fatness-related words (e.g., Sebastian, Williamson, & Blouin, 1996). Research has also shown that eating disorder patients and weight- and shape-preoccupied individuals are biased in that they apply a fatness interpretation to their recall of ambiguous sentences, whereas control subjects recall these sentences with a thinness interpretation (e.g., Jackman, Williamson, Netemeyer, & Anderson, 1995). Research focusing on body image among eating disorder patients has found

that, although misrepresentations of body image are common, the inaccuracies are best thought of in terms of cognitive distortions rather than perceptual biases (Williamson, Cubic, & Gleaves, 1993). Others have noted that attitudinal body dissatisfaction, rather than perceptual distortions, helps discriminate between eating disorder patients and normal controls (see Cash & Deagle, 1997). The work on memory and body attitudes in eating disordered patients has brought us somewhat closer to understanding the influence of schematic representations on the processing and interpretation of information, but we are still far from the goal of full comprehension.

Implicit Cognitions

In recent years, researchers in many areas of psychology (including, in particular, cognitive and social psychology) have focused on implicit cognitions and implicit cognitive processes as a means of understanding people's thoughts, attitudes, and behaviors. Implicit cognitions are thoughts that occur automatically and that are not under conscious control. As described by Underwood and Bright (1996), the defining features of automatic thoughts and activities are "that they develop with extensive practice; are performed smoothly and efficiently; are resistant to modification; are unaffected by other activities; do not interfere with other activities; are initiated without intention; are not under conscious control; and do not require mental effort" (p. 26). Because they are not under conscious control, implicit cognitions are not influenced by pressures to appear socially desirable or by other potential response biases. Thus, these nonvolitional cognitions might provide an entry into the mind of the eating disordered patient that cannot be achieved with explicit self-reports of attitudes and belief.

The crucial distinction between implicit cognitions and more conscious or deliberate cognitions is reflected in how they are measured. Measures of explicit cognitions rely on conscious and deliberate self-reports, whereas individuals are unaware of, and unable to exercise control over, the processes or cognitions being assessed by tests of implicit cognitions. Some of the work on information processing described above may well have involved implicit cognitions insofar as thought processes that were presumably automatic and outside of conscious control were assessed. Still, although research using the Stroop paradigm has demonstrated selective attention toward weight information, for example, using such measures to understand either the development or even the nature of the cognitive schemas that are prevalent among eating disordered patients does have its limitations. These schemas, which seem to be an integral part of the development and maintenance of eating disorders, are often based on the associations between two (or more) classes

of stimuli (e.g., between high-fat foods and body fat, or between body fat and abandonment). Although the Stroop task allows for the detection of selective attention toward single categories of stimuli (e.g., stimuli related to fatness, food, or shape), it cannot be used to assess the connections among multiple categories of stimuli. More recently developed measures of implicit cognitions allow for the assessment of such connections (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998), and may be useful for arriving at a more complete understanding of the thought processes that underlie eating disorders. This enriched understanding of schematic associations can in turn lead to a better understanding of the ways in which the cognitive representations influence behavior.

Implicit Cognitions and the Implicit Association Test

Our own research thus far has focused on differences in implicit cognitions between restrained eaters (chronic dieters) and unrestrained eaters (nondieters). Restrained eaters resemble eating disorder patients in many ways, including their dissatisfaction with their bodies (McFarlane, Polivy, & Herman, 1998), excessive attention to food- and weight-related information (e.g., King, Polivy, & Herman, 1987), and their tendency to alternate between periods of food restriction and bouts of overeating (Polivy & Herman, 1985). Restrained eaters thus represent a reasonable population for beginning to investigate implicit cognitions that might be associated with pathological eating. Our research on implicit cognitions has employed the Implicit Association Test (IAT; Greenwald et al., 1998).

The IAT is a computer-based reaction-time measure that assesses the relative strength of association between two concept categories. The IAT assesses these associations by representing categories of stimuli on a pair of computer response keys in a series of five discrimination tasks. The third and fifth tasks are the ones of primary importance. The first two stages involve simple discrimination tasks in which participants are asked to categorize sets of stimuli (e.g., flowers vs. insects; positive words vs. negative words) into their appropriate categories by pressing one of two response keys. In the third stage, the first two discrimination tasks are combined so that participants respond, for example, to flowers and positive words (and insects and negative words) with the same response key. If the concepts are cognitively related, it should be easy to respond when stimuli from both categories are represented on a single response key; these are called "congruent trials." The fourth stage involves a reversal in the response requirements for one of the category sets (e.g., positive and negative words). Finally, the fifth stage of the procedure incorporates the response-category reversal from the fourth stage so that participants respond,

for example, to flowers and negative words (and insects and positive words) with the same response key. If these concepts conflict cognitively, it should be relatively difficult to respond when stimuli from the conflicting categories are both represented on the same response key; these are “incongruent trials.” In this case, reaction times should be inflated. The *IAT effect*, an index of the strength of association between the concept categories, is the difference in mean response time between congruent and incongruent trials. Obviously, if there is no connection between the two concepts, it should not make a difference on which key the stimuli are represented.

Typically, the IAT has been used to assess positive and negative evaluations of certain social stimuli, such as different races (Dasgupta, McGhee, Greenwald, & Banaji, 2000; Greenwald et al., 1998) and religions (Rudman, Greenwald, Mellott, & Schwartz, 1999). These attitudinal IATs are constructed, for example, by pairing a set of race-related stimuli (e.g., Black faces vs. White faces) with a set of evaluative stimuli (e.g., positive words vs. negative words). If respondents have an implicit preference for Whites over Blacks, they should respond more quickly when positive words and White faces are paired on a single response key than when positive words and Black faces are paired on the same response key.

The applicability of the IAT to various domains is limited only by the imagination of the researchers in generating appropriate category pairings. For example, the IAT has been used as a measure of self-esteem, which was accomplished by pairing positive and negative words with the concepts “Me” and “Not Me” (Farnham, Greenwald, & Banaji, 1999). Similar Me/Not-Me IATs have been used to assess group identification among smokers and vegetarians (Swanson, Rudman, & Greenwald, 2001). More recently, the IAT has been used to investigate areas of abnormal behavior. For example, Teachman, Gregg, and Woody (2001) used the IAT as a measure of fear-related automatic associations among spider- and snake-phobic individuals by pairing pictures of spiders or snakes with various attributes (such as danger vs. safety). Individuals with specific animal phobias do indeed show evidence of strong automatic associations with pictures of the feared stimulus that are consistent with their respective phobias. Another study (de Jong, Pasman, Kindt, & van den Hout, 2001) found similar effects for socially anxious individuals compared to individuals without social anxiety. Although the finding in these studies that implicit and explicit measures coincide is not particularly surprising, these studies do indicate that the IAT is a flexible tool that is useful in a broad range of domains. Moreover, as we shall see, it is not always the case that implicit and explicit measures coincide, and it is therefore worth exploring the role of the IAT in clinical research and practice.

Questions have been raised regarding the relation

between the IAT and explicit measures. Karpinski and Hilton (2001) asked the important question, What exactly does the IAT measure? Does it simply assess learned associations—knowing that certain constructs or sets of stimuli generally tend to “go with” other constructs or sets of stimuli—that are not necessarily endorsed by an individual as attitudes or beliefs? In this case, one might not expect any particular relation between implicit measures and explicit measures of attitude and behavior. Or does the IAT measure the extent to which an individual has internalized or endorsed these associations as personal beliefs, in which case explicit attitudes and behavior should parallel attitudes measured by the IAT? As we will see below, both descriptions of the IAT may be accurate.

Recently, an interesting series of studies has compared implicit and explicit self-esteem measures, emphasizing the importance of similarities and differences between implicit and explicit self-esteem (Jordan, Spencer, & Zanna, 2003). This work has shown that individuals whose implicit and explicit self-esteem are both high have genuinely high self-esteem, whereas those individuals with low implicit but high explicit self-esteem display what has been called defensiveness or defensive high self-esteem. Jordan et al. argue that both implicit and explicit measures are needed for an accurate portrayal of an individual’s self-esteem.

The IAT and Dietary Restraint

Our work with the IAT began with the aim of testing the hypothesis that restrained eaters had stronger schematic associations between meal size and body size than did unrestrained eaters, specifically associating large meals with fatness and small meals with thinness (Vartanian, Herman, & Polivy, 2004). This hypothesis was based on our observation that restrained eaters, but not unrestrained eaters, perceive women who eat smaller meals as being thinner and weighing less than they do women who eat larger meals. We reasoned that this difference in social judgments could be accounted for by differences in schematic associations between meal size and body size. In this first IAT study, we paired pictures of large meals and small meals with words related to “fatness” (e.g., chubby, heavy, obese) and words related to “thinness” (e.g., lean, skinny, slim). On congruent trials, participants responded to large meals and fat words (and small meals and thin words) with a single response key; on incongruent trials, the thin and fat words were reversed such that participants responded to large meals and thin words (and small meals and fat words) with a single response key. If restrained eaters have strong schematic associations between meals size and body size, they should respond more quickly to congruent trials compared to incongruent trials. We did not expect unrestrained eaters to be entirely without a meal-size/body-size

schema, but we did expect the associations to be much less pronounced among these individuals.

To our surprise, restrained and unrestrained eaters both had equally strong automatic associations between meal-size and body-size stimuli. That is, both groups of individuals were much quicker to respond to large meals and fat words (and small meals and thin words) paired together on a single response key than they were to large meals and thin words (and small meals and fat words) paired together; the IAT effect was 216 ms and 186 ms for restrained and unrestrained eaters, respectively. This finding was particularly intriguing because restrained eaters, more than unrestrained eaters, believe that amount of food eaten is a significant contributor to an individual's body weight and size. That is, they rated "amount of food eaten" as a more important contributor to an individual's body weight than did unrestrained eaters; in contrast, unrestrained eaters rated "genetics" as more important (Vartanian et al., 2004). In this case, therefore, it seems that, at least for unrestrained eaters, the IAT may be measuring learned associations that have not necessarily been internalized as personally relevant; even though unrestrained eaters have learned, in some sense, that meal size is connected to body weight and size, they tend not to believe that amount of food eaten is an important contributor to body weight. Unrestrained eaters, then, may be inhibiting, suppressing, or ignoring these learned associations, whereas restrained eaters may be unable or unmotivated to do so. An alternative possibility is that people may have different implicit and explicit associations (Wilson, Lindsey, & Schooler, 2000), and that the IAT and the explicit measures are assessing different underlying constructs (Karpinski & Hilton, 2001). According to this view, restrained and unrestrained eaters would share the same underlying implicit associations because of similar learning histories, but would have formed different belief systems that they consciously endorse.

In another series of studies (Vartanian, Herman, & Polivy, 2002), we used the IAT to examine the connection between implicit and explicit attitudes toward food and weight. Restrained and unrestrained eaters completed three IATs in which small meals and large meals, low-fat foods and high-fat foods, and thin and fat words were each paired with positive and negative words. Participants also indicated their level of agreement with several statements related to their attitudes and behavior toward each domain (e.g., "I try to keep my food intake to a minimum," "I enjoy trying rich foods," and "I feel disgusted with myself when I gain weight"). Restrained eaters' implicit attitudes toward large meals, high-fat foods, and body fat all paralleled their explicit attitudes and behavior. For example, they had negative implicit attitudes toward high-fat foods and reported explicitly that they should avoid them (although they also reported that they did

not necessarily succeed in avoiding them, suggesting some ambivalence); likewise, they had negative attitudes toward fatness (body fat), and reported being concerned about their weight and becoming fat. (It should be noted that, as is typical with the IAT, the means for implicit and explicit attitudes were in the same direction, but the actual correlations between implicit and explicit measures were generally small and sometimes nonsignificant; see, for example, Greenwald et al., 1998.) Unrestrained eaters' implicit attitudes toward high-fat foods and large meals also paralleled their self-reported attitudes and behaviors; that is, they neither had negative attitudes nor reported avoiding these foods or having negative attitudes toward them. When it came to body fat, however, unrestrained eaters had strongly negative implicit attitudes, but did not explicitly report attitudes or behaviors consonant with these implicit attitudes. We propose that the difference between restrained and unrestrained eaters in explicit attitudes toward body fat reflects a difference in the internalization or self-relevance of the thinness ideal. That is, unrestrained eaters have learned from society that fat is bad, but this ideal has not become self-relevant, nor do they outwardly endorse it as a personal belief.

The results of our IAT research provide evidence for both views of the IAT: (1) In certain domains, the IAT and explicit measures appear to assess the same underlying construct; and (2) in other domains, the IAT can reflect learned associations that have not necessarily been internalized as personal beliefs or attitudes.

Implicit Cognitions and Eating Disorders

Our work with the IAT has shown that the explicit attitudes and behaviors of restrained eaters tend to be supported by their implicit attitudes and beliefs, and we might expect to find similar results among eating disorder patients. But even if we assume that eating disorder patients have the same implicit cognitions and beliefs as do restrained eaters, what is the value of knowing that these thoughts and beliefs are underscored by implicit cognitions? What information is garnered that could not be provided by explicit self-report measures? Recall, as well, that in some instances, we found that restrained and unrestrained eaters had similar implicit cognitions and beliefs. Does this, then, not undermine the potential utility of the IAT in clinical research and practice with eating disorders? We do not think so. First, it is not particularly surprising that restrained and unrestrained eaters share some implicit cognitions; as Vitousek and Hollon (1990) noted, "the source of these associations undoubtedly lies in the common culture and in the learning history of [these individuals]" (p. 196). Second, we suggest that exploring implicit cognitions can provide insight into the underlying cognitive processes, but that this depends on the domain being explored, and that in certain instances

it may be necessary to go beyond simply examining implicit cognitions by taking into consideration the relation between implicit and explicit cognitions, beliefs, and attitudes. On the basis of our foregoing discussion of implicit cognitions and the IAT, we propose several potential implications and applications of the IAT to clinical practice with eating disorders. What follows is necessarily speculative, and future research is needed to explore these proposed applications. We must also caution that before measures of implicit associations (such as the IAT) are adopted, the added benefit of using such measures must be evaluated empirically.

Implicit Cognitions, Cognitive Schemas, and Cognitive Restructuring

The cognitive model of eating disorders emphasizes the role of thoughts and schemas in influencing feelings and behavior. Measures of implicit cognitions, such as the IAT, can provide access to these thoughts and schemas. As we noted above, the IAT is thought to assess associations between two concepts (e.g., between thinness and happiness). These associations are presumably activated automatically, often without conscious awareness, when a relevant stimulus is present. The dichotomous thinking typical of eating disorder patients may reflect such automatic or implicit cognitions, which in turn influence behavior. Other maladaptive attitudes and beliefs, such as those related to body shape and weight, may reflect learned associations that are triggered automatically when the individual is faced with relevant stimuli (either in the environment or internally generated). Even the more general schemas related to abandonment and shame can be thought of in these terms. Access to these implicit cognitions may therefore assist in understanding which of the symptomatic thoughts and beliefs are triggered automatically and without awareness.

One of the main goals of cognitive-behavioral therapy is to modify these maladaptive thoughts and schemas by encouraging patients to challenge their automatic thoughts, to examine the evidence for and against these thoughts, and to engage in behavioral experiments designed to challenge dysfunctional assumptions (Fairburn, Marcus, & Wilson, 1993). The precise mechanism of action of cognitive-behavioral therapy, however, is not yet clear (Wilson & Fairburn, 1993). If Underwood and Bright's (1996) description of automatic thoughts is accurate, then the thoughts and associations assessed by the IAT should be relatively resistant to change or modification. Similarly, the implicit thoughts, core beliefs, and maladaptive schemas that are common among individuals with eating disorders, including thoughts related to eating, weight, and shape, are activated automatically and are difficult to change. An important question, then, is can these implicit cognitions be modified, and if so, how?

In light of the suggestion that the implicit cognitions measured by the IAT reflect learned associations, some researchers have hypothesized that these implicit cognitions can be "unlearned" by repeated pairings that are contrary to the associations that currently exist. For example, one study found that presenting participants with repeated pairings of the category "old people" with positive words (which is contrary to their preexisting association of "old people" with negative words) resulted in a significant reduction of the strength of the implicit associations assessed by the IAT, whereas explicit attitudes remained unchanged (Karpinski & Hilton, 2001; see also Dasgupta & Greenwald, 2001). Another study influenced implicit self-esteem through classical conditioning (Baldwin, Bacchus, & Packer, 2002). Participants played a computer game in which self-relevant stimuli (e.g., the individual's name) or non-self-relevant stimuli were paired with smiling faces, rejecting faces, or neutral faces. In the experimental condition, every time a participant clicked on a self-relevant stimulus with the computer mouse, a smiling face appeared. Among individuals with low self-esteem, repeated pairing of self-relevant stimuli with smiling faces increased implicit self-esteem as measured with the IAT, although self-reported self-esteem did not change.

Thus, although implicit cognitions are considered to be relatively resistant to change, it appears that repeatedly pairing categories of stimuli can change underlying implicit associations. These repeated pairings, however, did not influence explicit attitudes, perhaps because different processes are responsible for change in implicit compared to explicit cognitions (Dasgupta & Greenwald, 2001). If the implicit cognitions implicated in eating disorders are the result of learned associations, then treatments that involve counter-attitudinal pairings can potentially alter these implicit cognitions. It is not known, however, whether the effects of repeated pairings noted by Karpinski and Hilton (2001) and Baldwin et al. (2002) endure over time. Nor do we know whether prolonged changes in implicit cognitions might affect explicit cognitions. Finally, we do not know whether, in the absence of changes in explicit cognitions, changes in implicit cognitions will affect behavior. Regardless of whether they alter behavior or not, even short-term influences on implicit cognitive processes are promising as a potential new direction in cognitive therapy and cognitive restructuring, and may potentially add to an understanding of the mechanism of action of cognitive-behavioral therapy.

The IAT and Inaccuracies in Self-Reports

One of the purported benefits of measures of implicit cognitions is that they are free from response biases and reactivity, such as demand characteristics, socially desirable responding, and other sources self-presentational biases. Accordingly, implicit tests such as the IAT may be

useful as unobtrusive measures of thoughts and beliefs in situations in which one has reason to doubt the validity of self-reports. Denial, loosely defined as the misrepresentation of thoughts, feelings, and behavior, poses a considerable threat to the value of self-reports among eating disorder patients (Vitousek, Daly, & Heiser, 1991). Misrepresentation in self-report is thought to be particularly common among anorexia nervosa patients, who may be motivated to protect their ego-syntonic symptoms from outside interference, or who, alternatively, may be overcompliant and eager to please the researcher or clinician (Vitousek et al., 1991; Vitousek & Manke, 1994). For patients with bulimia nervosa, denial may reflect a sense of shame.

Probably most clinicians have occasionally been faced with patients whose self-reports do not appear to match their clinical presentation. For example, a patient may have an extremely low body weight and show evidence of dysfunctional thoughts related to shape, weight, and eating, yet this patient's profile on an explicit measure of eating disorder pathology is less pathological than would be expected even for non-eating-disordered women. In such cases, implicit measures of the same constructs that are assessed explicitly could provide a more accurate picture of the patient's state.

Insofar as the core symptoms of eating disorders (such as body weight) are relatively transparent and readily observable, denial may not pose a problem for assessment at the diagnostic level. Still, other factors that often play an important role in the development and maintenance of the disorder (such as self-esteem and perfectionism) may be subject to misrepresentation (whether deliberate or not) (Vitousek et al., 1991). Implicit measures may therefore provide important information about a patient's progress in treatment, particularly with respect to those more private constructs (such as self-esteem and body dissatisfaction; Fairburn, Peveler, Jones, Hope, & Doll, 1993) that nonetheless play an important role in patients' recovery. The use of implicit cognitive measures to corroborate self-reports could also be important in cases in which involuntary hospitalization is sought, either because of serious health risk or concern that the patient is at risk for suicide (though this approach also raises concerns from a civil liberties perspective).

The IAT in Predicting Relapse

Another potential application of the IAT is the prediction of relapse among eating disorder patients. Although CBT is recognized as an effective treatment for eating disorders (particularly for bulimia nervosa), a substantial proportion of patients relapse following recovery. Estimates of relapse rates range from 30% within 6 months of recovery (Pyle et al., 1990) to as high as 63% within 18 months of recovery (Keller, Herzog, Lavori, Bradburn, & Mahoney, 1992). Relatively little is known about the factors

that predict partial or full relapse following treatment. A few studies, however, have found body dissatisfaction to be a significant predictor of relapse for bulimia nervosa (Fairburn, Peveler, et al., 1993; Freeman, Beach, Davis, & Solyom, 1985). Indeed, a central tenet of the cognitive approach to eating disorders is that unless shape and weight concerns are adequately addressed, relapse is likely (Fairburn, 1988); this tenet has been supported empirically (Fairburn, Peveler, et al., 1993). Among anorexia nervosa patients, no reliable psychological or cognitive predictors of relapse have been identified (e.g., Strober, Freeman, & Morrell, 1997).

As we noted above, implicit cognitions are thought to be more resistant to change or modification than are explicit cognitions. If body dissatisfaction is supported by implicit cognitive processes, then full recovery may depend on changes in attitudes and beliefs at the implicit level. Although patients may terminate treatment programs after substantial improvements in explicit thoughts and behaviors, their implicit cognitions, attitudes, and beliefs may not have changed. It seems likely, then, that individuals who terminate a treatment program with changes in their explicit attitudes toward body shape, but who have not experienced change in their implicit cognitions, may be at increased risk for relapse.

Body Dissatisfaction

Body dissatisfaction (or negative body image) features prominently as a symptom in dieting and eating disorders, and in causal models of these disorders (e.g., Stice, 2001); we have just described its importance in treatment outcome and the prediction of relapse. In our IAT study examining attitudes toward body fat, we found that restrained eaters had both explicit and implicit negative attitudes toward fatness and positive attitudes toward thinness, and reported engaging in behaviors consonant with those attitudes (i.e., trying to lose weight). In contrast, unrestrained eaters showed a dissociation between implicit and explicit measures in that they had implicit negative attitudes toward fatness, but did not report parallel explicit attitudes or behaviors. We are not suggesting that unrestrained eaters are denying their beliefs and behavior; rather, we suggest that the discordance between implicit and explicit attitudes in this instance has to do with differences between restrained and unrestrained eaters in the internalization or self-relevance of body weight and shape and of the thinness ideal. The degree to which individuals show concordance or discordance between implicit and explicit measures corresponds with the degree of internalization or adoption of the associations.

These findings suggest that whereas most people have negative attitudes toward body fat, only restrained eaters have internalized these negative attitudes as self-relevant. These findings also suggest that the internalization of the

thinness ideal is an important component of body dissatisfaction, and should be considered a focal point of body-image therapy. Indeed, Thompson (e.g., Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) and Stice (2001) have both noted the importance of the internalization of the thin-body ideal as a contributor to body dissatisfaction and disordered eating, and there is strong empirical support for this position. Cognitive-behavioral treatment of body dissatisfaction does focus in part on the internalization of the thinness-ideal. Patients are educated, for example, regarding the causes of negative body image (e.g., social pressures), and are helped to focus on alternate determinates of self-worth (Cash & Grant, 1996). Incorporating the IAT (or other implicit measures) into research may help to isolate the components of body dissatisfaction (e.g., internalization) that are important contributors to disordered eating and are therefore important targets of treatment programs.

Determining Appropriate Treatments

CBT is the most extensively researched therapy for bulimia nervosa and is regarded as the treatment of choice for bulimia (Fairburn, Agras, & Wilson, 1992). Recall that Jordan et al. (2003) argued for the importance of considering the relation between implicit and explicit measures in order to understand the nature of an individual's self-esteem. In a similar manner, considering the relation between implicit and explicit thoughts and attitudes prominent among eating disordered individuals may provide insight into the state of a given individual's disorder and the most appropriate treatment for that individual. Most eating disorder patients would probably exhibit both implicit and explicit thoughts or attitudes related to their disorder, and would therefore benefit from a standard CBT program. Other patients, however, may have implicit, but not explicit, thoughts and beliefs related to their disorder. Whether the explicit attitudes are genuinely absent, or they are being denied, these patients may be relatively unmotivated to change, and may therefore benefit more from motivational enhancement therapy (Feld, Woodside, Kaplan, Olmsted, & Carter, 2001). Still other patients may hold explicit but not implicit beliefs related to their disorder. We noted earlier that explicit beliefs and attitudes are more easily modified than are implicit beliefs. Thus, for individuals who have explicit, but not implicit, dysfunctional beliefs and attitudes, treatment may progress quite rapidly. Indeed, it has previously been noted that, for a small group of patients, CBT may be an unnecessarily intensive form of treatment, as these individuals respond extremely quickly to therapy and appear not to need the full course of treatment (Fairburn et al., 1993). We also noted that different processes may be responsible for change in explicit and implicit cognitions. Thus, individuals who have only ex-

PLICIT beliefs may benefit more from psychoeducational programs or a briefer form of therapy, compared to individuals with underlying problematic implicit cognitions.

Summary and Conclusions

The cognitive model of eating disorders has been central to research and treatment in recent years. Incorporating implicit cognitive processes into models of eating disorders can potentially serve to further our understanding of these disorders. Our research with restrained eaters has shown that certain food- and weight-related attitudes and behaviors are supported by implicit cognitions. Although research directly examining implicit cognitions among eating disorder patients is lacking, we have proposed a number of potential applications of measures of implicit cognitions, such as the IAT. These proposals certainly require empirical support. In addition, it is necessary to demonstrate that measures of implicit cognition provide added value, both explanatory and predictive, above and beyond that provided by extant measures of eating disorder pathology and models of eating disorders.

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