Behavioral Medicine Approaches to Somatoform Disorders

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This article reviews the research evidence for the efficacy of cognitive–behavioral therapy (CBT) for somatoform disorders. Randomized controlled studies support the efficacy of individual CBT for the treatment of hypochondriasis, body dysmorphic disorder (BDD), and undifferentiated somatoform disorders including medically unexplained symptoms, chronic fatigue syndrome, and noncardiac chest pain, and group CBT for the treatment of BDD and somatization disorder. On the basis of this review of the existing research and a theoretical model of the processes involved in somatoform disorders, the authors offer suggestions for future research and effective treatment.

The somatoform disorders are a group of problems characterized by persistent bodily symptoms or concerns that cannot be fully accounted for by a diagnosable disease (*Diagnostic and Statistical Manual of Mental Disorders—Text Revision; DSM–IV–TR;* American Psychiatric Association, 2000; World Health Organization [WHO], 1992). Hypochondriasis consists of persistent, unfounded worry or conviction that one has a serious medical illness despite adequate medical reassurance. Body dysmorphic disorder (BDD) involves preoccupation with an imagined or exaggerated physical defect. Conversion disorder is characterized by medically unexplained deficits or alterations of motor or sensory function. Somatization disorder is a chronic condition consisting of multiple medically unexplained bodily complaints occurring over a prolonged period of time. Pain disorder simply involves the persistence of medically unexplained pain symptoms.

To a large extent, the category of somatoform disorders reflects the structure of biomedical health care systems, in which psychological practitioners are called on to diagnose and work with patients for whom there are no clear-cut medical diagnoses and treatment. Somatoform disorders are often assumed to result from psychological processes. However, the mechanisms of symptom generation or amplification generally cannot be directly observed but only inferred from the patient's history, illness behavior, and social circumstances. Diagnostic criteria call for the clinician to establish that psychological factors are associated with the onset of the disorder (conversion disorder), that the patient is misinterpreting physical symptoms (hypochondriasis), that appropriate medi-

cal reassurance was provided but ineffective (hypochondriasis), that the patient is excessively distressed by existing medical problems (BDD and somatization disorder), and that appropriate medical assessment has been done to exclude medical causes (all somatoform disorders). All of these judgements involve implicit norms for "illness behavior" that have been little studied (Kirmayer, 1999; Kirmayer & Robbins, 1991). The lack of objective positive criteria results in diagnoses that are made primarily on the basis of the exclusion of medical illness. This promotes "either/or" thinking (psychological or medical, functional or organic) with the attendant risk of overlooking treatable medical conditions that may coexist with psychological distress.

Studies of primary care populations report relatively low rates of patients meeting the full criteria for somatoform diagnoses such as hypochondriasis and somatization disorder, but large numbers of patients with clinically significant subthreshold variants of these syndromes (Garcia-Campayo, Lobo, Perez-Echeverria, & Campos, 1998; Gureje, Simon, Üstün, & Goldberg, 1997; Gureje, Üstün, & Simon, 1997; Kirmayer & Robbins, 1991). Two additional diagnoses are applied in these cases. Undifferentiated somatoform disorder covers medically unexplained symptoms that have persisted for 6 months, and somatoform disorder not otherwise specified is intended to capture any other clinically significant somatoform problem. When used liberally, these diagnoses apply to a broad range of patients in primary care, where medically unexplained symptoms account for approximately 25%–50% of patient visits (Barsky & Borus, 1995). This points to a problem in the clinical application of the somatoform diagnoses: The more precisely defined diagnoses do not describe the majority of the clinical cases seen in primary care, whereas the more diffuse residual categories collect a vast array of disparate symptoms and syndromes. If there is any validity to the overarching category of somatoform disorders, it is because the various problems involve common processes of bodily preoccupation and symptom amplification. Thus, although the treatment research literature is structured around the discrete diagnoses, it is helpful to conceptualize the clinical problem in terms of dimensions of illness cognition and behavior.

The management of somatoform disorders poses particular challenges for clinicians. Patients with medically unexplained symptoms experience a high level of distress that often prompts re-

peated requests for medical care. The physician's initial concern tends to be that of ruling out treatable medical conditions, and when none are found, the physician shifts to containing "excessive" help-seeking behavior. This shift often is associated with a deterioration in the doctor–patient relationship, as patients sense the clinician has lost interest in them or views them as vexatious (Kirmayer, 1994). Although many clinicians are eager to refer patients for psychological and psychiatric treatment, patients may see the act of referral itself as calling into question the bodily reality of their symptoms and disability and conferring the stigma of having a psychiatric condition (Kirmayer, 1988). If they accept the referral, patients may find the initial focus of conventional psychological treatments as incongruent with their own perception of being medically ill (Kirmayer, 2000).

This challenge has spurred the development of treatment approaches for patients with somatoform disorders that meet the different and occasionally conflicting demands of the patient and referring clinician. The methods of behavioral medicine and symptom focused cognitive–behavioral therapy (CBT) may be particularly suitable for the treatment of somatoform disorders, as they need not assume a psychological etiology of the illness and tend to be acceptable to patients when presented as means of coping with physical problems. Engaging patients in psychological treatment and maintaining a therapeutic alliance is most likely to succeed in the context of a close collaboration between the therapist and medical professionals and the validation of the patient's experience of physical distress, including ongoing medical management. Providing treatment in a medical setting or in the context of "shared-care" may facilitate this alliance.

In this article, we present a model of the mechanisms involved in the production and maintenance of somatoform symptoms, along with corresponding treatment interventions. We then review the treatment studies of CBT for each of the somatoform disorders, with the exception of pain disorder, and somatoform disorder not otherwise specified, which is rarely the focus of research due to the great heterogeneity within the diagnostic group. This review is structured around the best evidence available for the use of CBT in each disorder. Although the size of the literature does not yet warrant a formal meta-analysis, to give a sense of the strength of the findings, we calculated effect sizes. On the basis of the theoretical model and our review of the existing research, we offer suggestions for future research directions in somatoform disorders.

We identified cognitive–behavioral treatment studies (1970 to February 2001) of somatoform disorders with computerized searches of Medline (http://gateway1.ovid.com) and PsycINFO) (http://spider.apa.org/psycinfo/) using the intersection of search words for diagnosis (somatoform disorders, hypochondriasis, hypochondriacal disorder, BDD, dysmorphophobia, conversion disorder, somatization disorder, undifferentiated somatoform disorder, chronic fatigue syndrome, noncardiac chest pain, and cardiac neurosis), and relevant treatments (CBT, cognitive therapy, behavioral therapy), which were augmented by searches of the reference lists of relevant articles. Where studies exist, we based our disorder specific review on randomized controlled trials (RCTs) that included a no-treatment or attention control. When RCTs were not available, we reviewed the treatment approaches and outcomes of single cohort studies.

We calculated effect sizes for RCTs using the primary outcome measure. Where more than one primary outcome measure was available, we selected an objective measure administered by a blind or independent rater. Analysis was carried out with Review Manager 4.0 software (Review Manager, 1999). Treatment effect sizes were calculated as the standardized mean difference of continuous outcome measures, based on the post-treatment means and standard deviations, and odds ratios for dichotomous measures, using a random effects model. Summary effect sizes were calculated where at least three comparisons were available.

The interpretation of the magnitude of the effect sizes was based on the convention suggested by Cohen (1988) that identifies 0.2 as a small effect size, 0.5 as medium, and 0.8 as large. We used the criteria of Chambless and Hollon (1998) as a guide to decide if CBT was effective for the treatment of each somatoform disorder reviewed. This requires at least two supporting RCTs of good methodological quality for a designation of effective, and one for a designation of possibly effective.

Mechanisms and Interventions

Figure 1 outlines a model of perceptual, cognitive, and interactional processes that may contribute to somatic distress (Kirmayer & Taillefer, 1997), with corresponding treatment strategies that address specific processes or feedback loops. Physiological disturbance may be produced by new or chronic medical problems, as well as bodily sensations that arise from perturbations that are part of daily living. The amount of attention that is focused on the body will give rise to varying degrees of awareness of these physical sensations (Hanback & Revelle, 1978; Hansell & Mechanic, 1986). Once specific bodily sensations enter into awareness, the evaluation of their relative importance and dangerousness may be amplified (Barsky, Goodson, Lane, & Cleary, 1988; Hitchcock & Mathews, 1992). This may occur through patterns of attribution favoring illness interpretations rather than benign causes (Haenen, de Jong, Schmidt, Stevens, & Visser, 2000; MacLeod, Haynes, & Sensky, 1998; Robbins & Kirmayer, 1991; Sensky, MacLeod, & Rigby, 1996), cognitive distortions, and schemas of vulnerability based on developmental and past illness experiences (Barsky, Coeytaux, Sarnie, & Cleary, 1993; Cox, Borger, Asmundson, & Taylor, 2000; Parker & Lipscombe, 1980). Cognitive and emotional reactions to physical sensations prompt illness behaviors of help-seeking and reassurance-seeking. Avoidance behaviors limit social and occupational activity and may cause further functional limitations through physical deconditioning. The interpersonal, family, and social environment of the individual may have the effect of reinforcing these patterns, or promoting recovery (Kirmayer, 1999; Kirmayer & Young, 1998; Lippel, 1999; McDaniel, Hepworth, & Doherty, 1995). The various psychological and social mechanisms may in turn increase physiological reactivity (Grambling, Clawson, & McDonald, 1996). Although these mechanisms are presented in a linear fashion with only a few feedback loops indicated, their interaction may be much more complex with multiple pathways and feedback loops that contribute to symptom modulation or runaway amplification.

Treatment interventions may be selected to address the various mechanisms involved in the production and maintenance of somatoform symptoms. Medical treatments focused on symptom management decrease physiological disturbance, whereas psychopharmacological treatments address emotional disturbance and comorbid psychiatric symptoms. Relaxation, biofeedback, and
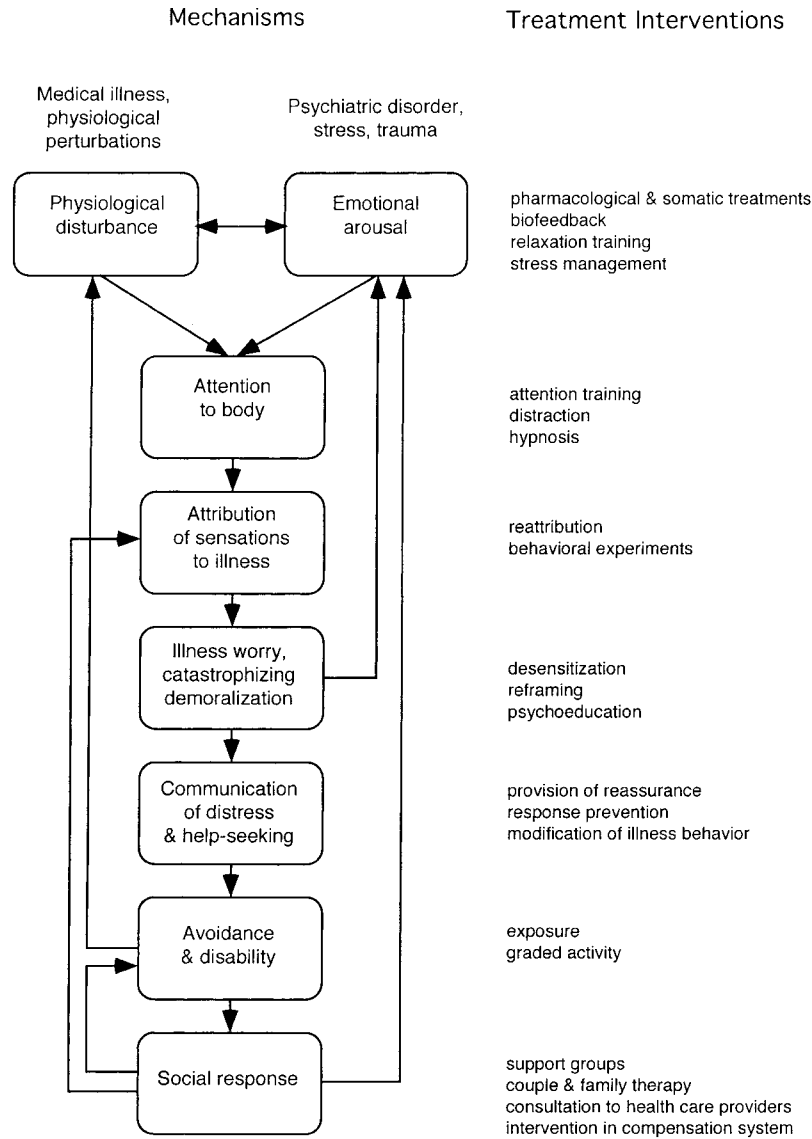
Mechanisms   Treatment Interventions

Figure 1. Mechanisms underlying somatoform symptoms and corresponding treatment interventions.

stress management also have a role in reducing physiological and emotional arousal. Specific perceptual and attentional processes may be the focus of psychological interventions, such as attention training, the use of distraction, hypnosis, or environmental manipulations that decrease the focus of attention on the body and awareness of physiological disturbance.

Cognitive restructuring involves modifying automatic thoughts and distortions of perceived physical sensations and reattributing sensations to ordinary events rather than pathological causes. Cognitive strategies may also address past illness experiences, learned patterns, and schemas related to personal and family developmental issues. Behavioral techniques are directed at illness behaviors such as help-seeking, avoidance, and disability. This may include graded increases in activity to promote a return to previous functional ability, desensitization, and exposure techniques to treat phobic avoidance, and response prevention to diminish maladaptive responses to distressing thoughts and situations.

Treatment strategies may also be directed at the social environment, such as consultations to physicians to advise them on how to structure treatment programs in anticipation of the needs of the patient and validate the patient's experience without reinforcing illness preoccupation. The involvement of significant others and family members is helpful in modifying interpersonal and environmental contingencies that contribute to the maintenance of illness. Social systems that need to be considered include working conditions, disability policies, and the compensation process that may inadvertently reinforce the sick role, if for example they lack the flexibility to accommodate brief periods of disability or a gradual return to work.

This model suggests the value of a comprehensive clinical assessment that identifies interacting mechanisms involved in symptom formation and maintenance. It also supports a multimodal treatment strategy including interventions directed at the most active mechanisms involved in generating symptoms, and to in-

terrupt feedback loops that tend to maintain and reinforce the condition.

Hypochondriasis

The essential feature of hypochondriasis is a fear or conviction of having a serious illness despite receiving the appropriate medical assessment, and reassurance that the disease has been ruled out (*DSM–IV–TR*; WHO, 1992). The diagnosis is made when the symptoms have persisted for at least 6 months. The full syndrome of hypochondriasis is uncommon, with a prevalence of about 0.2% in a community survey (Looper & Kirmayer, 2001) and 0.8% in a large international study in primary care (Gureje, Üstün, & Simon, 1997). Other studies using different criteria to identify clinically significant cases reported rates ranging from 3% to 9% in primary care or medical settings (Escobar et al., 1998; Kirmayer & Robbins, 1991; Kellner, 1983). Many patients in primary care present with acute hypochondriacal concerns that resolve spontaneously or with physician reassurance (Barksy et al., 1993; Kirmayer & Looper, 2001). Patients with such transient hypochondrasis tend to have less psychiatric comorbidity and may be responding with health anxiety to changes in their physical health or to life events (Barsky, Wyshak, & Klerman, 1990; Robbins, & Kirmayer, 1996).

Although the diagnosis of hypochondriasis requires that patients have received adequate reassurance, this is not always the case. Consequently, the treatment of hypochondriasis may begin with the provision of effective reassurance (Starcevic, 1991). *Explanatory therapy* (Kellner, 1982, 1983; Kellner & Sheffield, 1971), provides this by assessing the patient's illness beliefs, explaining the role of selective perception in the development of illness fears, and modifying misinterpretations of bodily sensations. This approach was tested in a waitlist control study of 20 patients with hypochondriasis diagnosed according to the *DSM–IV* (4th ed.; American Psychiatric Association, 1994; Fava, Grandi, Rafanelli, Fabbri, & Cazzaro, 2000). The group was treated with eight sessions of explanatory therapy and had a large symptomatic improvement as measured by the Illness Attitudes Scale (IAS; Kellner, 1986), with a posttreatment effect size of 1.42. Improvements in general psychological symptoms, illness behavior, and health care use were also observed, including a 50% reduction of physician visits, compared with no significant change in the waitlist control group, measured by blind raters. The changes seen in the treatment group were maintained at 6-months follow-up.

Other treatment approaches combine cognitive strategies similar to those used in explanatory therapy, with behavioral techniques to address illness behaviors commonly seen in patients with hypochondriasis. These include behavioral experiments in which innocuous symptoms are induced by deliberate bodily focusing to facilitate reattribution, graded exposure to address avoidance behaviors, and response prevention for repeated bodily checking, and repetitive reassurance seeking. Two randomized controlled studies have investigated the effect of this type of CBT. Warwick, Clark, Cobb, and Salkovskis (1996) randomized 32 patients with hypochondriasis diagnosed with the Structured Clinical Interview for the *DSM–III–R* (SCID–III–R; Spitzer & Williams, 1986) to CBT or a waitlist control. The therapy was conducted in 16 individual sessions over 4 months. Global problem severity, as measured by blind raters on a visual analogue scale, improved by 76% in the CBT group compared with 5% in the control group

(effect size 1.67), which was maintained at 3-months follow-up. Self-report scales indicated greater improvements in mood and anxiety symptoms in the treatment group. Clark et al. (1998) compared CBT treatment with stress-management therapy and a waitlist control in a randomized trial of 48 patients with hypochondriasis based on the SCID–III–R. The CBT treatment was as previously described, with the addition of up to three booster sessions. Stress management involved 10 sessions of relaxation training, exposure, and desensitization to anxiety evoking situations, and the teaching of problem-solving skills. Independent assessors using a visual analogue scale of distress and disability due to health worry found a large improvement in each treatment group compared with the waitlist control, with effect sizes of 1.98 and 1.57 for CBT and stress-management therapy, respectively, compared to the control group. Greater reductions occurred in self-report scales of mood and anxiety in the treated groups compared with the controls. There was a small significant advantage of CBT as compared with stress management posttreatment. However, as the follow-up progressed, the differences between treatment groups diminished and were comparable at 12-months posttreatment.

Visser and Bouman (2001) also investigated different treatment approaches in a study of 78 patients diagnosed with hypochondriasis based on a structured interview. Subjects were randomly assigned to 12 weekly sessions of predominantly cognitive therapy (including behavioral experimentation), exposure and response prevention (ERP), or a waitlist control group. Moderate to large effects were seen for each treatment compared with the waitlist control, on the health anxiety score of the self-report Illness Attitudes Scale, with effect sizes of 1.31 and 0.69 for CBT and ERP, respectively. Although Visser and Bouman noted a nonsignificant trend of greater benefit in the patients receiving cognitive therapy as compared with behavioral stress management, the results of this study must be viewed with caution because of possible bias of a large number of dropouts that were not included in the analysis. An earlier, smaller study by the same authors did not find any differential treatment effect between cognitive and behavioral treatments (Bouman & Visser, 1998).

A group CBT treatment of hypochondriasis has been developed by Barsky, Geringer, and Wool (1988). This six-session treatment involves reducing the amplification of somatic symptoms through education regarding the role of attention, attribution, and stress in the development of the disorder. Relaxation and attention exercises are used to demonstrate and change patterns of amplification. This treatment approach was compared with a waitlist control group in a study of 14 patients (Avia et al., 1996), only 8 of which fulfilled standardized criteria for hypochondriasis. This study found significant reductions in illness fears and attitudes, somatic symptoms, and dysfunctional beliefs between the treatment and control groups.

In summary, as seen in Table 1, there is evidence from four RCTs that relatively brief individual CBT can be an effective treatment of hypochondriasis. The posttreatment effect sizes were of medium to large magnitude, ranging from 0.51 to 1.72, with an overall effect of 1.43 (see Table 1). These studies also noted improvements in mood and anxiety symptoms, and one observed a decrease in health care use (Fava et al., 2000), however, no studies investigated changes in physical functioning. Control groups were not available at follow-up, but reassessments of

Table 1
Randomized Controlled Trials of Individual Cognitive–Behavioral Therapy (CBT) for Hypochondriasis

Author	N	Intervention and control groups	Sessions/ duration	Measure/ raters	Dropouts (analysis)	Follow-up	Outcome: Standardized mean difference [95% CI]
Fava et al., 2000	20	1. ET: education, reassurance, reattribution, attention exercises 2. WL	8/30 min	Self-report	2 CBT 1 WL (all included)	6 months	Posttreatment: 1.42 [0.41–2.42] Improvement with ET Maintained at follow-up
Warwick et al., 1996	32	1. CBT: cognitive restructuring, ERP 2. WL	16	Blind rater	1 CBT (included)	3 months	Posttreatment: 1.67 [0.85–2.49] Improvement with CBT maintained at follow-up
Clark et al., 1998	48	1. CBT: cognitive restructuring, ERP 2. SMT: including relaxation, problem solving 3. WL	16/60 min	Blind rater	1 CBT (included) 1 SMT (excluded)	12 months	Posttreatment: CBT = 1.98 [1.15–2.82] SMT = 1.57 [0.81–2.34] Improvement maintained in CBT and SMT at follow-up
Visser & Bouman, 2001	56	1. CBT: cognitive restructuring, behavioral experimentation 2. ERP 3. WL	12/60 min	Self-report	22 (excluded or group changed)	30 weeks	Posttreatment: CBT = 1.31 [0.47–2.14] ERP = 0.69 [0.08–1.46] Improvement maintained in ERP and CBT at follow-up

Note. Overall standardized mean difference [95% CI] = 1.43 [1.06–1.79]; test of homogeneity: $\chi^2(5) = 5.78$, $p > .03$. ET = explanatory therapy; WL = waitlist; ERP = exposure and response prevention; SMT = stress management therapy; CI = confidence interval.

treatment groups demonstrated that improvements were maintained. Although none of the studies reported the use of an explicit manual, all treatment techniques were well described and two studies verified treatment adherence with audio-taped sessions (Clark et al., 1998; Visser & Bouman, 2001). Dropouts were accounted for or minimal in three studies whereas one had a large number of dropouts that were not accounted for in the data analysis (Visser & Bouman, 2001).

There may be a greater benefit with symptom-focused strategies as opposed to general stress management (Clark et al., 1998), and a small advantage of cognitive interventions as compared with behavioral (Visser & Bouman, 2001). However, these differences can not be clearly established by the existing research due to small sample sizes, lack of replication of results, and the overlap between treatments in the studies comparing predominantly cognitive approaches with behavioral approaches. Careful evaluation of particular illness features may find specific treatment effects of different interventions, such as greater effectiveness of ERP for avoidance behaviors, and cognitive strategies for illness worry. Future studies comparing individual CBT with attention control groups are required to confirm that the effect is due to the particular CBT treatment and not due to nonspecific effects such as attention. The effectiveness of group CBT for hypochondriasis needs to be confirmed by a randomized controlled study with a larger sample size.

Body Dysmorphic Disorder

BDD is characterized by a preoccupation with an imagined defect in appearance that results in distress and impairment of functioning. In cases where a physical anomaly is present, the preoccupation must be markedly excessive (*DSM–IV–TR*). The International Classification of Diseases (ICD–10) classification system places BDD as a subtype of hypochondriacal disorder (World Health Organization, 1992). The focus of the patient's concern is usually an aspect of the face or head but may involve any area of the body, multiple body parts, or the overall shape and size of the body (Phillips, McElroy, Keck, Pope, & Hudson, 1993). Mood, anxiety, and personality disorders are common in patients with BDD (Veale, Boocock, et al., 1996). Although approximately a third of cases in one study fulfilled the diagnostic criteria for obsessive compulsive disorder (Phillips et al., 1993), this is only given as a comorbid diagnosis if the obsessions and compulsions involve other themes than a preoccupation with the body. The range of insight into the imagined defect and excessive concern varies widely including an extreme at which the additional diagnosis of delusional disorder, somatic type, is applied (Phillips & McElroy, 1993). Patients with BDD tend to not present spontaneously to mental health professionals, but are often referred by primary care physicians, surgeons, and specialists who identify patients displaying excessive distress and pursuit of interventions for a subjectively perceived defect.

Two studies have compared CBT with no-treatment control groups. Butters and Cash (1987) randomly assigned 32 female subjects with body-image dissatisfaction to receive either CBT or waitlist. Subjects were identified by a score below the 25th percentile of the Body–Self Relations Questionnaire (BSRQ; Winstead & Cash, 1984) Appearance Evaluation, but having a weight within 25% of the median desirable weight for height. Therapy

consisted of six highly structured sessions that began with education, progressive muscle relaxation, and imagery. This was followed by systemic desensitization by first visualizing then exposing themselves to images of the areas of their body that evoke distress. Finally, cognitive strategies were used, which included monitoring and correcting automatic thoughts. The size of the treatment effect was 1.34, based on the BSRQ. This improvement was maintained in the CBT group at 7-weeks follow-up. In the second study, Veale, Gournay, et al. (1996) randomly assigned 19 subjects with BDD, diagnosed with a structured interview—the Body Dysmorphic Disorder Examination (BDDE; Rosen & Reiter, 1996)—to CBT or a waitlist control group. In this study, patients with general body image or weight dissatisfaction were excluded. Treatment strategies included attentional training to shift attention away from self-observation, response prevention to inhibit compulsive body checking in reflective surfaces, and cognitive restructuring including challenging underlying assumptions and developing alternative beliefs about appearance. After 12 sessions of CBT, the treatment effect was 2.65, as measured on the BDDE by nonblind raters, and 7 of 9 patients treated with CBT no longer met the criteria for the diagnosis (Veale, Gournay, et al., 1996). Treated subjects improved in subjective ratings of depression but not anxiety, and no changes occurred in these measures in the control group.

Different therapeutic approaches were compared with no treatment in a randomized controlled study of 79 subjects with body image problems (Dworkin & Kerr, 1987). The treatments involved three 30-min sessions of (a) cognitive therapy, consisting of identifying and changing negative automatic thoughts, (b) CBT, which, in addition to the first treatment, included self-reinforcement exercises, and (c) reflective therapy, which explored body image over the course of developmental periods. All three active treatments produced statistically better results compared with the control group, and cognitive therapy was statistically better than the other treatments. However, the magnitude of the change and its clinical significance is difficult to assess from the reported data.

Many therapists make use of booster sessions to reinforce or prolong the effect of therapy. This was investigated in a study that randomized 10 subjects with BDD to a maintenance program or none after completing 4 weeks of daily behavioral therapy (McKay, 1999). The program consisted of education regarding relapse prevention and 6 months of brief biweekly therapist contact to review behavioral exercises. Improvements in BDD symptoms were sustained in both groups over the 2-year follow-up period, however patients in the maintenance program continued to improve in mood and anxiety symptoms and experienced fewer relapses over this time. This study offers support for the use of maintenance therapy, but was carried out in a setting of intensive treatment, and thus, may not be generalizable to CBT carried out in the usual weekly or biweekly schedule.

Group CBT for BDD has been compared with no-treatment and attention controls by Rosen and colleagues (Rosen, Reiser, & Orosan, 1995; Rosen, Saltzberg, & Srebnik, 1989). In the comparison with no-treatment, 54 subjects were diagnosed based on the BDDE structured interview and randomized to either group (Rosen et al., 1995). CBT, following a treatment manual, was carried out in small groups of 4–5 subjects, over eight 2-hr sessions. Strategies included education, providing objective evidence to correct body image distortions, identifying and modifying intrusive

thoughts, relaxation, exposure by imagining and then viewing their body in the mirror, exposure to social settings in which they fear being observed, and response prevention. This intervention produced a treatment effect of 2.26 on the BDDE assessed by blind raters, and led to the remission of diagnosis in 82% of the treated group, compared with no significant improvement in a no-treatment control group. The remission persisted in 77% of subjects from the treatment group after 2 months. Treated subjects also improved in measures of self-esteem and general psychological functioning compared with the control group. In the comparison study involving the attention control (Rosen et al., 1989), subjects of normal weight with negative body image were identified by a score of one standard deviation above the mean on the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987). Twenty-three subjects were then randomized to six 2-hr sessions of group CBT using similar therapeutic techniques guided by a manual as in the other study, or to an "attention" group receiving only education and support (Rosen et al., 1989). The effect of CBT, based on the self-report Body Shape Questionnaire, was 1.62 at posttreatment and 0.83 at 2-months follow-up. In a third study, Rosen, Cado, Silberg, Srebnik, and Wendt (1990) investigated the role of size perception training, which involved structured exercises to modify the perceptual aspect of the negative body image. In a randomized design, the investigators assigned 23 women with body image disturbance to 6 weeks of small group CBT with or without the body perception training. Both groups improved on measures of body image, but no differences were seen between groups. This may be because both groups had cognitive restructuring to address cognitive distortions about appearance, which might correct body perception without the specific exercises.

Only one study has compared group with individual CBT (Grant & Cash, 1995), the latter consisted of predominantly self-directed therapy with modest contact with a nontherapist assistant. In this study, 23 subjects of normal weight reporting body dissatisfaction on the Appearance Evaluation Scale (Cash, Winstead, & Janda, 1986) were randomly assigned to 4 months of weekly group or self-directed CBT. Both conditions followed a highly structured program using a variety of cognitive and behavioral strategies, aided by cassettes and a workbook (Cash, 1991). The CBT group had eight, weekly 90-min sessions with a therapist in group format, whereas subjects in the self-directed CBT treatment met individually for eight, weekly 30-min sessions with nontherapist assistants. Sessions were similar in preparing and reviewing homework assignments, but in addition, the CBT group reviewed daily experiences, using therapeutic techniques of behavioral rehearsal, modeling, and active problem solving. Both treatments led to significant improvements on symptomatic measures of BDD and depression, which were maintained at 2-months follow-up, but no differential treatment effect was observed between the two therapies. This study demonstrates an alternative to conventional models of therapy delivery, which in this case relies on supported self-directed learning.

In summary, there is evidence from randomized controlled studies that CBT administered in individual or group format is an effective treatment for BDD. Three RCTs involved subjects that predominantly expressed concern over their overall body shape and weight (Butters & Cash, 1987; Rosen et al., 1989, 1995), two of which (Butters & Cash, 1987; Rosen et al., 1989) identified

subjects using psychological measures as opposed to the specific *DSM* or ICD–10 diagnostic criteria. These studies were nonetheless reviewed together, as their inclusion and exclusion criteria appeared to fit those of the *DSM* and ICD–10 guidelines. Furthermore, the remaining study (Veale, Gournay, et al., 1996) excluded subjects whose concern was focused on their overall body shape or weight in favor of those concerned with a specific body part. Diagnostic criteria do not differentiate these groups of patients, although they may have different patterns of illness cognitions and behavior.

A large magnitude of effect was seen in all four RCT studies, ranging from 1.34 to 2.65 (see Table 2), based on measures of symptom severity. Other outcomes such as health care use and physical functioning were not assessed in these studies. Improvements were maintained on follow-up in the active treatment groups of three studies (Butters & Cash, 1987; Rosen et al., 1989, 1995). In the one study that assessed the control group at the time of follow-up, the effect was diminished but remained substantial (Rosen et al., 1989). On the basis of this treatment literature, we conclude that both individual and group CBT are efficacious for the treatment of BDD. In addition, the study comparing group CBT with an attention group (Rosen et al., 1989) supports the possibility of a specific effect of this treatment in BDD.

Conversion Disorder

The predominant symptom in conversion disorder is a medically unexplained impairment of motor or sensory function that is suggestive of a neurological or medical illness (*DSM–IV–TR*). The deficit is presumed to be related to a psychological process when psychological or social stress is associated with the onset or exacerbation of the problem. In contrast to the classification system of the *DSM–IV–TR*, the WHO (1992) identifies conversion as a dissociative disorder in which the loss of control over sensory and motor functions results from dissociation due to psychological conflict or distress (WHO, 1992). Conversion disorder is rare in most North American community populations where prevalence reports range from 11 to 31 per 100,000 (Escobar et al., 1987; Stefansson, Messina, & Meyerwitz, 1976; Tomasson, Kent, & Coryell, 1991), but more common in medical settings where it has been reported as 0.7% (C. G. Smith, Clarke, Handrinos, Dunsis, & McKenzie, 2000) and 5% (Folks, Ford, & Regan, 1984) of patients. Both the *DSM* and WHO provide separate diagnostic subcategories for motor symptoms, sensory abnormalities, seizures, and various combinations. The most common motoric presentations are weakness or paralysis, muscular spasm, dysphagia, and involuntary movements. Typical sensory manifestations are paresthesia or anesthesia, aphonia, and visual disturbance. Other pseudoneurological presentations include dyspnea, vomiting, syncope, and stupor (Folks et al., 1984; Hafeiz, 1980; Pu, Mohamed, Imam, & El-Roey, 1986; Tomasson et al., 1991).

The diagnosis of conversion disorder is usually made by the exclusion of possible medical causes, which has the inherent risk of giving a false positive diagnosis when an important medical process is overlooked. Early studies reported a high rate of undetected neurological disease (Gatfield & Guze, 1962; Watson & Buranen, 1979) whereas more recent studies report lower rates

Table 2
Randomized Controlled Trials of Cognitive–Behavioral Therapy (CBT) for Body Dysmorphic Disorder

Author	N	Study population, intervention and control groups	Sessions/ duration	Measure/ raters	Dropouts (analysis)	Follow-up	Outcome: standardized mean difference [95% CI]
			Individual therapy studies				
Butters & Cash, 1987[a]	32	Female, with negative body image 1. CBT: education, relaxation, desensitization, cognitive restructuring 2. WL	6/60 min	Self-report	1 CBT (excluded)	7 weeks	Posttreatment: 1.34 [0.55–2.13] Improvement with CBT maintained at follow-up
Veale, Gournay, et al., 1996	19	Excludes overall shape or weight dissatisfaction 1. CBT: attention training, cognitive restructuring, response prevention 2. WL	12	Nonblind/ observer rated	0	0	Posttreatment: 2.65 [1.34–3.95]
			Group therapy studies				
Rosen et al., 1995	54	Mixture 1. CBT: cognitive restructuring, exposure, response prevention 2. NT	8/2 hr	Blind raters	0	4.5 months	Posttreatment: 2.26 [1.57–2.95] Improvement with CBT maintained at follow-up
Rosen et al., 1989[a]	23	Negative body image 1. CBT: cognitive restructuring, exposure and response prevention 2. AC	6/2 hr	Self-report	0	2 months	Posttreatment: 1.62 [0.65–2.59] Follow-up: 0.83 [0.03–1.70]

Note. CI = confidence interval; WL = waitlist; NT = no treatment; AC = attention control.
[a] Subjects with negative body image and body weight in normal range (within 25% above or below median for height).

(Kent, Tomasson, & Coryell, 1995; Lewis, 1982). This decrease in reported rates of misdiagnosis may be due to changes in diagnostic practice, the better characterization of rare neurological syndromes, advances in diagnostic technology, and a greater awareness of the problem (Ron, 2001).

The literature on the treatment of conversion disorder is seriously limited by the absence of randomized controlled studies. Trieschman, Stolov, and Montgomery (1970) described a behavioral approach for patients hospitalized for abnormal ambulation due to conversion disorder. This consisted of stepwise increases in ambulation through specific exercises, and behavioral reinforcement in which improvements were responded to with praise and privileges, whereas all reinforcement of the abnormal gait pattern (i.e., attention and discussion) was removed. The treatment program also included stress management counseling to prevent the recurrence of the abnormal gait, which was understood as a maladaptive response to stress. A recent report describes the outcome of this treatment on 10 consecutive patients hospitalized with conversion disorder affecting their gait (Speed, 1996). All cases achieved normal ambulation after a mean of 12 days, which was maintained in 7 of 9 subjects available for follow-up after a mean of 23.6 months. Several other authors have reported on the outcome of hospitalized patients with motor conversion using similar treatments. In one case series, 6 patients regained ambulation after a mean of 41 days and maintained this improvement after a follow-up period of 10 months (Delargy, Peatfield, & Burt, 1986). The only controlled treatment study was done by Dickes (1974), who treated 16 patients with motor or sensory conversion with either the usual inpatient treatment or a strict behavioral program where privileges were earned by increased ambulation. The behavioral program was successful in removing conversion symptoms 90% of the time compared with 45% for the usual treatment.

Hypnosis has been described for the treatment of hospitalized and nonhospitalized conversion disorder patients (Oakley, 2001). Moene, Hoogduin, and Van Dyck (1998) reported on 8 patients with motor conversion disorder treated with a combination of physiotherapy, hypnosis, individual and group problem-solving therapy. Excluding one dropout, 6 of 7 patients had recovered at discharge, and 5 remained well after 6 months of follow-up. Hafeiz

(1980) reported the outcome of 61 nonhospitalized patients with motor, sensory, or seizure conversion disorder treated with a combination of hypnosis and several somatic treatments. Of 61 patients, all had an initial improvement that was maintained in 45 of 57 patients followed over 12 months.

Other treatments have been investigated in small case series and case reports. These recommend the use of electromyographic biofeedback (Fishbain et al., 1988), behavioral reinforcement combined with strategic "double bind" therapy (Silver, 1996; Teasell & Shapiro, 1994), hypnosis combined with lorazepam (Stevens, 1990), and amobarbital interviewing (Hurwitz, 1988; Stiebel & Kirby, 1994). There are also case series reports of successful treatment with strategic family therapy of pseudoseizures and other conversion symptoms (Griffith, Polles, & Griffith, 1989).

The literature on the treatment of conversion disorder emphasizes physical therapy combined with behavioral reinforcement strategies, stress management or problem solving, and the use of hypnosis (see Table 3). These reports suggest that CBT may be effective, however, sample sizes were small, interventions were often only generally described, only one study had a comparison group (Dickes, 1974), and only one study used a standardized scale to measure change (Speed, 1996). Most reports of behavioral management have focussed on hospitalized patients with predominantly motor symptoms, whereas nonhospitalized patients and the sensory or seizure subtypes of conversion disorder were less often studied. Given the high rate of spontaneous remission, the absence of control groups and randomized design is especially limiting, as reports of positive treatment results may be explained by the natural history of the illness (Couprie, Wijdicks, Rooijmans, & van Gijn, 1995; Folks et al., 1984). There is a need for methodologically rigorous investigation of CBT in conversion disorder. This should include a broader range of cognitive and behavioral strategies, applied to the different subtypes of conversion disorder and in different treatment settings.

Somatization Disorder

Somatization disorder consists of a history of multiple medically unexplained physical symptoms that occur over a period of several

Table 3

Cognitive–Behavioral Therapy for Conversion Disorder

Author	N/subtype	Design	Intervention and control groups	Treatment duration (M)	Follow-up (months)	Outcome
			Inpatient treatment			
Speed et al., 1996	10/motor	Retrospective	Stepwise ambulation, behavioral reinforcement, stress management	12 days	23.6	Normal gait in all subjects on discharge, and 7/9 at follow-up
Delargy et al., 1986	6/motor	Case series	Physiotherapy, behavioral reinforcement	41 days	10	Ambulation recovered in all subjects
Dickes, 1974	16/motor or sensory	Controlled	1. Strict behavioral program 2. Usual inpatient treatment	Variable, unspecified	0	Response rate: 1: 90%; 2: 45%
Moene et al., 1998	8/motor	Case series	Physiotherapy, hypnosis, problem-solving group, & individual therapy	2 months	6	Recovery in 6 of 7 at discharge; 5 of 7 at follow-up
			Outpatient treatment			
Hafeiz, 1980	61/motor, sensory or seizure	Cohort	Hypnosis and somatic treatment	Variable, unspecified	12	Acute response in all subjects, sustained response in 49

years (*DSM–IV–TR*; WHO, 1992). The onset must be prior to the age of 30, and the symptoms must include at least four pain, two gastrointestinal, one sexual, and one pseudoneurological complaints (*DSM–IV–TR*). Epidemiological studies using criteria based on the *DSM–III* report prevalence rates of approximately 1.0%–1.4% in primary care patients (Kirmayer & Robbins, 1991; Simon & Gureje, 1999), and range from 0.05% to 0.4% (Swartz, Blazer, George, & Landerman, 1986; Weissman, Myers, & Harding, 1978) in community populations. The most common symptoms are pain in various parts of the body (head, chest, back, joints, pelvic), dysphagia, nausea, bloating, constipation, palpitations, dizziness, and shortness of breath (Liu, Clark, & Eaton, 1997). Somatic symptoms are strongly associated with general psychological distress (Simon, Gater, Kisely, & Piccinelli, 1996), as well as with comorbid mood and anxiety disorders (Swartz et al., 1986; Wetzel, Guze, Cloninger, Martin, & Clayton, 1994). Patients with somatization disorder are high users of medical services including physician visits, hospitalizations, and surgical procedures (Kent et al., 1995; G. R. Smith, 1994; G. R. Smith et al., 1986), and in one study accounted for 20% of distressed, frequent users of primary care services (Katon et al., 1990).

The generally recommended strategy for the clinical management of patients with somatization disorder is to identify one medical professional (i.e., physician) who will integrate the patient's care. This medical professional schedules regular visits in anticipation of health concerns, provides focused physical examinations in response to new physical complaints but limits investigations and somatic treatments, and addresses psychosocial issues (Bass & Benjamin, 1993). In two randomized studies, researchers have investigated the benefit of sending a written consultation letter to educate the referring physician about somatization disorder and recommend this type of management (Rost, Kashner, & Smith, 1994; G. R. Smith et al., 1986). Smith et al. (1986) randomized 41 patients with *DSM–III* somatization disorder, diagnosed with both clinical and structured interviews, to receive a consultation letter or join a waitlist. Patients were followed at 3-month intervals by research assistants who were blind to group assignment. The assessment included health care use, on the basis of patient and insurance reports, and physical and psychological health using the Rand Health Status Measures (RAND). Patients (Brook et al., 1979) whose physicians were provided with a consultation letter had a 53% decrease in gross health care expenditures over the subsequent months, which was largely due to decreased hospitalization fees. No decrease in health costs was observed in the control group, and no change in physical or psychological status was seen in either group. Rost et al. (1994) repeated the study with a larger sample size of 73 patients with somatization disorder according to the *DSM–III–R* in an effort to identify changes in outpatient costs, and physical and psychological functioning. Compared with controls, subjects in the intervention group had a 21% decrease in health care expenditures, improvement in physical functioning, but no significant difference in psychological symptoms over the course of the year following the consultation. A separate report describes the use of group therapy following the consultation intervention (Kashner, Rost, Cohen, Anderson, & Smith, 1995). Patients were randomly assigned either to no treatment or to eight sessions of group therapy, which focused on problem solving, coping, and promoting assertiveness and emotional expression. There was variation in attendance in the

treatment group, including 20 of 44 subjects who did not attend any sessions. Intent-to-treat analysis showed that patients randomized to the group therapy had a further 27% net saving in health care costs, and also demonstrated significant improvements in both physical and mental health as measured by the RAND (Brook et al., 1979). The more sessions that were attended, the greater their improvement in general and mental health. Another group therapy study randomized 50 patients with somatization disorder to no treatment or eight sessions of group CBT, focusing on education, identifying and coping with stress, and relaxation exercises (Lidbeck, 1997). Patients were diagnosed using less stringent criteria than the *DSM* (Classification Committee of WONCA, 1983). The effect of group therapy was 0.67 at the end of treatment, and 0.8 six months later, as measured by the Illness Behaviour Questionnaire (Bradley, McDonald, & Jaworski, 1992). No changes were seen in mood or anxiety symptoms. Although fairly well described, neither group-therapy study used manuals or procedures to ensure consistent application of proposed techniques.

In summary, randomized controlled studies demonstrate that consultation letters are effective in reducing the excessive and costly help seeking associated with somatization disorder (see Table 4) but do not improve the psychological distress of patients. This may be because the object of intervention is not the patient directly, but the treating physician. The effectiveness of intervening at the level of the care provider underscores the fact that illness behavior is not an isolated process but occurs in a relational context in which nonpatient factors should be part of the treatment plan. Group therapy provided additional benefit not only in reducing health care costs, but also by improving psychological well-being. Although the effectiveness of group therapy for the treatment of somatization disorder has thus been demonstrated, individual CBT treatment has not yet been investigated.

Undifferentiated Somatoform Disorder

Undifferentiated somatoform disorder is diagnosed when one or more medically unexplained physical complaints persist for a duration of at least 6 months and cause significant distress or impairment (*DSM–III–TR;* WHO, 1992). This residual category may apply to a broad range of patients seen in primary care where medically unexplained symptoms account for 20%–50% of patient visits (Katon & Walker, 1998; Kirmayer & Robbins, 1991; Peveler, Kilkenny, & Kinmonth, 1997). The most common medically unexplained symptoms in primary care are chest pain, fatigue, dizziness, headache, back pain, shortness of breath, insomnia, and numbness (Kroenke & Price, 1993; Simon et al., 1996). Although most unexplained symptoms resolve spontaneously, some develop into clinical syndromes of persisting symptoms that interfere with functioning. The result is a large number of patients with a wide range of different somatic symptoms of variable severity that do not meet the stringent criteria of somatization disorder (Hiller, Rief, & Fichter, 1995; Katon et al., 1991).

G. R. Smith, Rost, and Kashner (1995) repeated their consultation intervention study, originally done with somatization disorder, with patients with undifferentiated somatoform disorder. The study included 56 patients reporting a lifetime history of 6–12 medically unexplained symptoms causing distress and help-seeking. The investigators randomized referring physicians to no intervention or to receive a consultation letter, as described in the previous sec-

Table 4
Randomized Controlled Trial of Consultation Letter or Cognitive–Behavioral Therapy (CBT) for Somatization Disorder

Author	N	Intervention and control group	Sessions/ duration	Measure/ raters	Dropouts (analysis)	Follow-up (months)	Outcome
				Consultation letter studies			
G. R. Smith et al., 1986	41	1. Regular appointments, limit interventions 2. No consultation		Self-report/ blind data collectors	1 consult, 2 control, (excluded)	18	53% decrease in health costs, no change in physical or mental health in the intervention group, no changes in the control group
Rost et al., 1994	73	1. Regular appointments, limit interventions 2. No consultation		Self-report/ blind data collectors	1 consult, 2 control (excluded)	12	Intervention relative to control group: 21% net decrease in health costs, improved physical functioning, no change in mental health
				Group therapy studies			
Kashner et al., 1995	70	1. Consultation letter & group therapy: problem solving, coping skills 2. Consultation letter	8/2 hr	Self-report/ blind data collectors	20 CBT (included)	12	Intervention relative to control group on intent-to-treat analysis: 31% estimated net savings in health care costs, improved mental health, & physical functioning
Lidbeck, 1997	50	1. CBT: education, relaxation, coping skills, problem solving 2. WL	8/3 hr	Self-report	1 CBT (excluded)	6	Standardized mean difference [95% CI] Posttreatment: 0.67 [0.07–1.27] Follow-up: 0.80 [0.19–1.42]

Note. WL = waitlist; CI = confidence interval.

tion. Over the 2-year follow-up period the researchers observed a 33% reduction in annual median medical costs and a small but significant improvement in physical functioning of subjects in the intervention group. No significant changes were seen in general health, mental health, and social functioning, as measured by the RAND (Brook et al., 1979), and no changes were observed in the control condition.

Three randomized controlled studies have compared short-term individual CBT with control conditions for the treatment of undifferentiated somatoform disorder. All three studies identified subjects by referrals from primary care physicians of patients for whom psychological factors seemed to be underlying medically unexplained symptoms. Of these three studies, one used a manual (Sumathipala, Hewege, Hanwella, & Mann, 2000), and the other two interventions were well described and structured. Speckens et al. (1995) randomized 79 primary care patients to optimal medical care or 6–16 sessions of CBT, which included modifying dysfunctional automatic thoughts and conducting behavioral experiments aimed at breaking the cycle of symptoms and their consequences. 73% of treated subjects compared with 59% of the control group were rated as improved or recovered, and the effect of CBT as measured by the Illness Behavior subscale of the Illness Attitudes Scale was 0.54 at 6 months and 0.36 at 12-months follow-up. Other benefits were seen in physical symptoms and social functioning, but no differences in symptoms of anxiety and depression. A second study randomized 68 patients, reporting at least five medically unexplained symptoms, to six sessions of CBT or usual medical care (Sumathipala et al., 2000). Therapy consisted of symptom monitoring, increasing awareness of the psychological component of the disorder, symptom reattribution, and reducing unnecessary consultations and procedures. Intent-to-treat analysis revealed greater improvements in general distress, somatic com-

plaints, and physician visits in the treated group at the end of the intervention. A third study randomized 82 patients to either a 6-week wait-list, or treatment involving meditation and self-observation in which identified patterns of moods and behaviors are modified (McLeod, Budd, & McClelland, 1997). The effect of this intervention was 0.43 at the end of treatment, as measured by the Symptom Checklist–90–Revised somatization subscore. Ratings of anxiety and depression were also decreased in the therapy group, and all changes were maintained at 6-months follow-up. However, the results of this study may be biased by a large number of dropouts from the treated group who were not included in the analysis.

Cognitive behavioral treatments of somatization have also been delivered in a group format. One study used a randomized controlled design to compare two group CBT treatments with an attention control involving two 30-min sessions of information of the effects of stress (Hellman, Budd, Borysenko, McClelland, & Benson, 1990). The two CBT treatments were a "mind/body" group focused on relaxation, and a "ways-to-wellness" group, which used self-observation to change patterns of mood and behavior. The treatment effect, as measured by the Medical Symptom Checklist, was 0.38 and 0.88, respectively. There was also a significantly greater reduction in psychological discomfort and visits to physicians in the 6 months following the intervention. The greater benefit seen in the ways-to-wellness group may have been due to specifically addressing identified patterns of problematic behaviors, whereas the mind/body group seemed to address stress in general through relaxation.

Although most treatment studies have focused on outpatient populations, the severity of symptoms and degree of disability in undifferentiated somatoform disorders occasionally require inpatient treatment. Ehlert, Wagner, and Lupke (1999) compared 21

somatizing patients treated with usual inpatient care with the same number of patients treated with a CBT program. This program included daily 1-hr therapy sessions using strategies such as education, modifying attributions, behavioral analysis, relaxation training, and stress provocation exercises. The CBT intervention had a greater reduction of somatic complaints and depression, a more positive outlook, and an increased motivation for treatment.

Research on the treatment of medically unexplained symptoms (see Table 5) provides further evidence that consultations alone may result in reductions in health care costs by changing the management of patients, but that the effect on psychological parameters seems limited. Three randomized controlled studies demonstrate that individual CBT is effective in reducing somatic symptoms, with effect sizes in the moderate range. The magnitude of this effect is smaller than that seen for CBT in other somatoform disorders, which may be due to the high rates of spontaneous remission in the control groups (Speckens et al., 1995; Sumathipala et al., 2000). This indicates the need for appropriate patient selection, on the basis of a greater knowledge of predictors of both symptom persistence and suitability for therapy. Future studies may also investigate the specificity of this effect using attention control groups. The efficacy of group CBT for the treatment of undifferentiated somatoform disorder, demonstrated in one study, requires replication.

Functional Somatic Syndromes

Many specific constellations of somatic symptoms are recognized by medical specialists (Barsky & Borus, 1999; Wessely, Nimnuan, & Sharpe, 1999). These disorders are sometimes collectively referred to as functional somatic syndromes (Kirmayer & Robbins, 1991). Depending on current diagnostic fashions and the availability of etiological explanations, they may also be categorized as undifferentiated somatoform disorders (Kirmayer & Taillefer, 1997). Although functional somatic syndromes are found in many areas of medicine, this article only reviews the literature of chronic fatigue syndrome and noncardiac chest pain as examples of conditions for which CBT interventions have been developed and investigated.

Noncardiac Chest Pain

A high proportion of patients seeking help in emergency departments for chest pain are discharged with reassurance that investigations are normal (Karlson, Wiklund, Bengtson, & Herlitz, 1994; Wulsin & Yingling, 1991). A study of outpatients attending a cardiology clinic found that approximately half did not receive a medical diagnosis to explain their chest pain (Mayou, Bryant, Clark, & Forfar, 1994). Anxiety or depression was found in one-

Table 5

Randomized Controlled Trials of Consultation Letter or Cognitive–Behavioral Treatment (CBT) of Undifferentiated Somatoform Disorder: Medically Unexplained Symptoms

Author, year	N	Intervention and control groups	Sessions/duration	Measure/raters	Dropouts (analysis)	Follow-up	Outcome: standardized mean difference [95% CI]
Consultation letter study							
G. R. Smith et al., 1995	56	1. Consultation letter: regular appointments, limited medical interventions 2. No letter of consultation		Self-report/blind data collectors	2 (included)	2 years	33% reduction of medical costs in the intervention group, no change in the control group
Individual therapy studies							
Speckens et al., 1995	79	1. CBT: cognitive restructuring, behavioral experiments 2. Optimal medical care	$M = 12$	Self-report	2 CBT (included)	6 & 12 months	6 months: 0.54 [0.07–1.01] 12 months: 0.36 [−0.11–0.84]
McLeod et al., 1997	82	1. CBT: self-observation, changing problematic behavioral patterns 2. WL	6	Self-report	13 CBT 1 WL (excluded)	6 months	Posttreatment: 0.43 [−0.01–0.87] Change maintained on follow-up in the CBT group
Sumathipala et al., 2000	68	1. CBT: cognitive restructuring, modifying illness behavior 2. Usual medical care	6/30 min	Self-report	10 CBT 13 control (included)	none	Intent-to-treat data: greater improvement in the treated group
Group therapy study							
Hellman et al., 1990	80	1. MBT: meditation and relaxation 2. WTW: self-observation, modifying patterns of mood and behavior 3. SME	MBT & WTW: 6/90 min SME: 2/90 min	Self-report	5 control 6 MBT 5 WTW (excluded)	6 months	Follow-up[a]: MBT = 0.38 [−0.26–1.01] WTW = 0.88 [0.23–1.52]

Note. WL = waitlist; MBT = mind–body therapy; WTW = ways to wellness; SME = stress management education; CI = confidence interval.
[a] Mean and standard deviation of change scores were used.

third of the noncardiac chest pain patients in this study, and most continued to report symptoms and distress when reassessed 6 months later.

Three randomized controlled studies have investigated CBT for noncardiac chest pain. CBT involved reattribution regarding the cause of chest pain, correcting cognitive distortions such as catastrophizing, relaxation and breathing exercises, physical activity, and stress management. The CBT was well structured in all studies, but a therapy manual was used in only one (Van Peski-Oosterbaan et al., 1999). Patients were identified by persistent chest pain in spite of a normal cardiological assessment and investigations; however, these studies did not use standardized diagnostic criteria. Klimes, Mayou, Pearce, Coles, and Fagg (1990) randomized 35 patients referred from a cardiology clinic to CBT or assessment only. After a mean of 7.2 sessions, they found a reduction in chest pain, functional limitations, and psychological distress in the CBT group, with no changes in the control group. After the assessment-only group was crossed over to receive CBT, 66% of subjects had fewer than four episodes of pain per week after treatment, an improvement that was maintained 4–6 months later. These positive findings were replicated in a more recent randomized controlled study (Mayou et al., 1997) that investigated the effectiveness of the intervention by randomizing 37 consecutive (rather than referred) patients who were diagnosed with noncardiac chest pain from a cardiology clinic. Similar differences were seen in this study, with 56% of patients completing the CBT group reporting symptomatic improvement compared with slower and less striking changes in the control group. Greater improvements were seen in activity limitations but not in general psychological distress. In intent-to-treat analysis, the effect size based on symptoms severity reports at the end of treatment was 0.83, which decreased to 0.27 at 3-months follow-up. The reduction in the effect size was not due to deterioration in the treatment group but to spontaneous remissions in the controls. The investigators observed dropouts and refusals to participate in the study because patients objected to the suggestion that psychological factors might be related to their condition, which represents an important barrier to care that may be reduced by addressing it early in treatment.

Van Peski-Oosterbaan et al. (1999) randomized 72 noncardiac chest pain patients to receive CBT or treatment as usual. Complete resolution of chest pain was reported in 15 of 31 (48%) patients who received a mean of nine sessions of CBT as compared with 4 of 33 (13%) patients receiving the usual medical treatment. Greater improvements were seen in physical limitations, mood, and anxiety symptoms in the CBT group. The effect size at 9-months follow-up was 0.83, based on reports of frequency of chest pain. The investigators found that reduction in chest pain was associated with a change in attribution of pain from cardiac illness to stress. One randomized controlled study investigated CBT in a group format (Potts, Lewin, Fox, & Johnstone, 1999). Sixty subjects were randomly assigned to a waitlist or six 2-hr sessions in groups of up to 6 subjects. Treated subjects reported reduced chest pain, and improvements in mood, anxiety, and physical functioning, which were maintained at 6-months follow-up. The investigators noted that subjects who maintained beliefs that their pain was of cardiac origin had fewer pain free days after treatment.

In summary, three randomized controlled studies support the use of individual CBT for the treatment of noncardiac chest pain (see Table 6). The magnitude of change compared with no-treatment or usual-treatment controls was large at the termination of CBT. One study indicates the possible effectiveness of group CBT. Several reports suggest that strict attribution of pain to cardiac causes is a barrier to care, a negative prognostic indicator, and therefore must be a central focus for change in therapy.

Table 6

Randomized Controlled Trials of Cognitive–Behavioral Therapy (CBT) for Undifferentiated Somatoform Disorder: Noncardiac Chest Pain

Author, year	N	Intervention and control groups	Sessions/ duration	Measures/ raters	Dropouts (analysis)	Follow-up (months)	Outcome: standardized mean difference [95% CI]
			Individual therapy studies				
Klimes et al., 1990	35	1. CBT: cognitive restructuring, problem solving, relaxation, breathing exercises 2. NT: crossed over to CBT	M = 7.2	Blind raters	1 CBT 1 NT (excluded)	4–6	Posttreatment: Significant differences between groups Follow-up: both improved
Mayou et al., 1997	37	1. CBT: cognitive restructuring, problem solving, relaxation, breathing exercises 2. NT	12	Self-report	5 CBT 7 NT (included)	3	Posttreatment: 0.83 [0.15–1.50] Follow-up: 0.27 [−0.38–0.92]
Van Peski-Oosterbaan et al., 1999	72	1. CBT: cognitive restructuring, breathing exercises, relaxation, coping skills 2. UT	M = 9	Self-report	5 CBT 2 UT (excluded)	9	Follow-up: 0.82 [0.30–1.33]
			Group therapy study				
Potts et al., 1999	60	1. CBT 2. WL: crossed over	6/2 hr	Self-report	2 CBT 2 WL (excluded)	6	Posttreatment: Significant symptomatic improvement in CBT compared with WL Follow-up: both improved

Note. CI = confidence interval; NT = no treatment; UT = usual treatment; WL = waitlist.

Chronic Fatigue Syndrome

Chronic fatigue syndrome is characterized by disabling fatigue and a variety of nonspecific symptoms (Fukuda et al., 1994), such as myalgia, arthralgia, lymphadenopathy, impaired memory, and headache. Persistent fatigue is a fairly common problem, with a lifetime prevalence of approximately 23% in a community population (Price, North, Wessely, & Fraser, 1992), and 11.3% point prevalence in primary care (Wessely, Chalder, Hirsch, Wallace, & Wright, 1997). However, when more restrictive case definition criteria for chronic fatigue syndrome are used, the prevalence of the full syndrome is reported to be 2.6% of primary care patients (Wessely et al., 1997), and much less in the community (Kawakami, Iwata, Fujihara, & Kitamura, 1998; Price et al., 1992). Chronic fatigue syndrome is associated with psychological distress (Pawlikowska et al., 1995), comorbid psychiatric disorders (Wessely, Chalder, Hirsch, Wallace, & Wright, 1996), considerable disability (Bombardier & Buchwald, 1996), and economic loss (Lloyd & Pender, 1992).

Three RCTs have investigated the efficacy of short-term individual CBT for chronic fatigue syndrome (see Table 7). Each study used standardized diagnostic criteria to select subjects. Therapy manuals guided the treatment, which consisted of cognitive strategies to modify negative thoughts and develop an active approach in problem solving, combined with graded exercise to recover physical functioning that had decreased due to avoidance in response to symptoms. Two studies reported a positive effect with CBT. Sharpe et al. (1996) randomized 60 patients to usual treatment or 16 sessions of CBT. The difference in outcome, measured as an endpoint score greater than 80 on the Karnofsky scale of physical functioning (Grieco & Long, 1984; Karnofsky, Abelmann, Craver, & Burchenal, 1948), between the two groups was small at the end of treatment but widened over the course of the follow-up. With all patients assessed at 7-months follow-up, a satisfactory outcome was found in 73% of patients treated with

CBT as compared with 27% of those who had received usual treatment, giving an odds ratio of 7.56. Deale, Chalder, Marks, and Wessely (1997) randomized 60 patients to 13 sessions of CBT or relaxation training. A satisfactory outcome was defined as a 50-point increase or endpoint score greater than 83 on the physical functioning scale of the Medical Outcomes Study Short-Form General Health Survey (Stewart, Hays, & Ware, 1988). In intent-to-treat analysis at 6-months follow-up, 70% of the CBT group reported a good outcome as compared with 19% in the relaxation intervention, giving an odds ratio of 8.64. There was also a greater improvement in depression and general psychological symptoms in the CBT subjects.

The third randomized controlled study investigated CBT and dialyzable leukocyte extract (DLE), an immunological treatment, administered in eight, biweekly intramuscular injections. Lloyd et al. (1993) randomized 90 patients to one of four groups: CBT and DLE, CBT and placebo, clinic visits and DLE, and clinic visits and placebo. CBT consisted of six sessions of variable duration, lasting 30–60 min each. No differences between groups were seen on the Karnofsky scale, or on a measure of depression at 3-months follow-up. This lack of difference may have been due to a lack of sufficient statistical power to detect a difference between CBT and an attention control group, or an insufficient number of sessions, which averaged less than half of that provided in the studies with positive findings (Deale et al., 1997; Sharpe et al., 1996). A lack of effect was also reported in a nonrandomized, controlled study comparing no treatment with group CBT (Friedberg & Krupp, 1994). The therapy consisted of six sessions involving relaxation, cognitive restructuring of negative thoughts, and reducing social and occupational activity due to illness. In this study, the lack of response may be due to the group setting, the limited number of sessions, or the emphasis on reducing activity in contrast to the studies reporting positive results with graded increases in activity. The latter possibility is supported by reports of greater efficacy of

Table 7

Randomized Controlled Trials of Cognitive–Behavioral Therapy (CBT) of Undifferentiated Somatoform Disorder: Chronic Fatigue Syndrome

Author, year	N	Intervention and control groups	Sessions/ duration	Measures/ raters	Dropouts (analysis)	Follow-up (months)	Outcome odds ratio [95% CI]
			Individual therapy studies				
Sharpe et al., 1996	60	1. CBT with graded activity 2. UT	16/60 min	Blind raters	0	7	Good outcome at follow-up CBT = 73%; control = 27% 7.56 [2.41–23.75]
Deale et al., 1997	60	1. CBT with graded activity 2. RT	13	Self-report	3 CBT, 4 RT (included)	6	Good outcome at follow-up CBT = 63%; RT = 17% 8.64 [2.57–29.07]
Fulcher & White, 1997	66	1. AE: graded aerobic exercise 2. FE: flexibility exercises & relaxation, crossed over to AE	12	Self-report	4 AE, 3 FE (included)	12	Good outcome posttreatment AE = 52%; FE = 27% 2.72 [1.02–7.24] Maintained at follow-up
Lloyd et al., 1993	90	1. CBT with graded activity and DLE 2. CBT with graded activity and placebo 3. Clinic visits and DLE 4. Clinic visits and placebo	6/30–60 min	Self-report	1 (Group 3) 1 (Group 4) (excluded)	3	No significant differences

Note. CI = confidence interval; UT = usual treatment; RT = relaxation therapy; AE = aerobic exercise; FE = flexibility exercises; DLE = dialyzable leukocyte extract (immunologic therapy).

graded aerobic exercise in comparison to flexibility exercises and relaxation (Fulcher & White, 1997).

In summary, the use of individual CBT for the treatment of CFS is supported by two randomized controlled studies, one of which used an active treatment for a control group. The CBT in the studies reporting negative results was considerably shorter in length, which may explain the lack of effect. All successful CBT interventions involved graded activity. A comparison between graded exercise with and without additional CBT strategies would establish the additional effect of CBT. One possible benefit may be inferred from reports of high rates of refusal and dropout in exercise treatments (Butler, Chalder, Ron, & Wessely, 1991; Wearden et al., 1998), and the observation that strong initial attribution of the condition to strictly physical causes is associated with a poor prognosis (Butler et al., 1991). Cognitive strategies may improve retention of patients by addressing negative expectations and discouragement during treatment, and may improve outcome by modifying attribution.

Discussion

Over the last decade, considerable progress has been made in establishing the efficacy of CBT for the treatment of somatoform disorders. Randomized controlled studies support the efficacy of individual CBT for the treatment of hypochondriasis, BDD, medically unexplained symptoms, and functional somatic syndromes such as noncardiac chest pain and chronic fatigue syndrome. The efficacy of group CBT has been demonstrated in BDD and somatization disorder, whereas single studies support the possible efficacy of group CBT in the treatment of medically unexplained symptoms and noncardiac chest pain. These CBT interventions produced moderate to large magnitudes of effect. Given the lack of effective medication for most of these conditions, CBT should be considered the first line treatment for somatoform disorders.

The optimal and minimal duration of effective CBT, and the value of maintenance therapy for somatoform disorders have not been established. The duration of CBT in the studies reviewed ranged from 6 to 16 sessions. Two studies offering fewer sessions (Dworkin & Kerr, 1987; Lloyd et al., 1993) reported less or no treatment effect, while the use of a maintenance program was found to lower the rate of relapse (McKay, 1999).

There is some evidence that CBT strategies directed at specific characteristics of the condition are more effective than treatments with a broader or more general focus, such as relaxation training or stress management (Clark et al., 1998; Deale et al., 1997; Hellman et al., 1990). Furthermore, there may be specific effects of different cognitive behavioral strategies. Cognitive strategies targeting the specific thought processes of hypochondriasis (e.g. correcting the misinterpretation of bodily sensations and reattributing sensations to nonmedical causes) had a more rapid and larger effect than the behavioral interventions of ERP (Visser & Bouman, 2001). Consultations letters to physicians referring patients with somatization disorders (Rost et al., 1994; G. R. Smith et al., 1986, 1995) reduced health care cost but had little effect on psychological distress, which was successfully reduced by the addition of group therapy (Kashner et al., 1995).

Most studies in this review used multiple treatment strategies, which limits the detection of differential treatment effects. It is also likely that there is a high degree of interaction between the various

processes that contribute to symptom formation and maintenance, which complicates the study of isolated mechanisms. Future research on the specific effects of different interventions would help clinicians construct treatment plans based on the selection of effective interventions that target the most prominent factors underlying and maintaining somatoform disorders (see Figure 1).

The existing CBT treatment research literature on somatoform disorders has a number of important methodological limitations. Many studies have not used attention controls as comparison groups, standardized treatment manuals, blind ratings of outcome, and methods of data analysis that take dropouts into account. Many studies report the outcome of treatment groups at follow-up, but few continued a comparison group through the follow-up period. The studies included in this article used standard diagnostic criteria, valid outcome measures, and a few studies (Mayou et al., 1997; Speckens et al., 1995), but only a few, investigated the effectiveness of interventions in unselected clinical populations by randomizing consecutive patients with medically unexplained symptoms presenting to a medical clinic, rather than patients referred to a psychiatric clinic. Although a wide range of outcome measures has been used, the most informative studies use multiple measures, including symptom severity of primary and comorbid diagnoses, functional disability, health care use, and financial cost.

Future research should explore the effect of individual CBT for somatization disorder, both individual and group CBT for conversion disorder, and investigate the use of CBT in other functional somatic syndromes. Where CBT has already been established as an effective treatment, the specific effect of particular therapeutic strategies may be the focus of investigation. Comparisons should be made to identify the relative benefits of individual and group format, different lengths of therapy, and the use of emerging psychopharmacological treatments of somatoform disorders (Escobar, 1996; Hollander et al., 1999; Noyes et al., 1998; Phillips, Dwight, & McElroy, 1998) alone or in combination with CBT.

Researchers and clinicians should be encouraged by the results of the last decade of research on the treatment of somatoform disorders, which have often been considered refractory or resistant to therapeutic interventions. The challenge of the next decade will be to refine and expand our knowledge of CBT treatments of somatoform disorders, and to make these treatments practical for health care providers and accessible to patients.

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