Cognitive-Behavioral Therapy: Next Generation of Treatments

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Abstract: Cognitive-behavioral therapy (CBT) has been established as an empirically supported treatment for virtually any mental disorder and has usually been conducted in face-to-face individual or group format. In recent years, newer CBT treatments have been developed, including meta-cognitive therapy, mindfulness-based therapy, mindfulness-based cognitive therapy, dialectical behavior therapy, acceptance and commitment therapy, and other transdiagnostic treatments. In order to reach more patients suffering from anxiety and mood disorders, the delivery of psychological treatments has expanded to include Internet-based CBT and the utilization of mobile devices as an augmentation to CBT.

Cognitive-behavioral therapy (CBT) refers to a family of interventions and a general scientific approach to psychological disorders (1–3). The central notion of CBT is that behavioral and emotional responses to external events and situations are not directly caused by these events or situations per se, but by perceptions and interpretations (i.e., thoughts, beliefs, and cognitions) about these events and situations. The word *cognitive* implies that treatment focuses to a great extent on thought processes. However, CBT is not limited to cognitive modification. Effective CBT targets all aspects of a disorder, including cognitions, emotional experience, and behaviors. Aaron T. Beck and Albert Ellis independently developed this therapy in the 1960s and 1970s. Beck refers to these assumptions about events and situations as *automatic thoughts,* because the thoughts arise without much prior reflection or reasoning (4). Ellis called these assumptions *self-statements,* because they are ideas that the person tells himself or herself (5). This is illustrated in Ellis's ABC model, in which A stands for the antecedent event, B for belief, and C for consequence. Thoughts can be maladaptive if they reflect misperceptions and misinterpretations of situations and events and lead to emotional distress, behavior problems, and physiological arousal.

CBT protocols have been developed to address virtually all mental disorders with the strongest support for anxiety disorders, somatoform disorders, bulimia, anger control problems, and general stress (6). A comprehensive description of the various contemporary CBT protocols can be found in a multivolume handbook (7). The major similarity across protocols is the assumption that maladaptive cognitions are causally linked to emotional distress. In fact, the way one appraises a situation or experience is what influences the way one feels and behaves in that context (3). By modifying dysfunctional cognitions through questioning the evidence for and against, and by coming up with alternative hypotheses, emotional distress and maladaptive behaviors will decrease (2, 3, 8).

Modifications and extensions of this CBT model include metacognitive therapy, mindfulness-based approaches, and dialectical behavior therapy (DBT). An alternative treatment model has been described in acceptance and commitment therapy (ACT). Also, a unified treatment protocol for emotional disorders has been developed. These approaches will be discussed in the following paragraphs. Moreover, we will discuss the use of Internet-based CBT.

Meta-cognitive therapy

Metacognition is the knowledge or cognitive processes involved in appraisal, control, and monitoring of thinking (9). A core assumption in meta-cognitive therapy is that all disorders are linked to a higher level

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of metacognitive beliefs about thinking (10). There are positive and negative metacognitive beliefs. The positive metacognitive beliefs are that worry serves a useful function (e.g., worrying helps prepare me for what will happen, if I didn't worry something bad would happen). These beliefs maintain worrying, ruminating, threat monitoring, and controlling cognitions. Psychopathology can result when the negative metabeliefs about loss of control, dangerousness, and importance of thoughts are activated. These negative beliefs result in worry about worry and increased distress. For generalized anxiety disorder (GAD) the negative metabeliefs are that worry is uncontrollable and worry is dangerous to mental and physical health. When these negative metabeliefs are activated, the person begins to worry about worry, leading to increased anxiety. One objective of meta-cognitive therapy is to increase the likelihood that the patient will let the trigger thoughts come and go without engaging in them, called detached mindfulness.

The central goal of meta-cognitive therapy is to change metacognitive beliefs about worrying, leading to a more flexible use of alternative strategies, rather than changing the worry cognitions themselves, as is typically done in CBT (11). For patients with GAD, changing metacognitions is achieved by questioning the evidence for these beliefs and worry experiments. Some of the worry experiments involve a "pushing worry to the limit" or "losing control" experiment in which patients are asked to worry more during worry episodes to test the negative beliefs about the danger of worry. For example, patients may believe that worry is dangerous to their mental health and that if they worry to such a great extent, they may lose control or go crazy. The therapist would ask the patient to define what losing control or going crazy would look like and have the patient write down a clear description of this. The therapist would then ask the patient about his/her previous experiences and if he/she has lost control or gone crazy before. Finally, the patient would be instructed to try to lose control of his/her worry by activating the trigger (e.g., think about your husband coming home late from work during a thunderstorm), worrying about it (e.g., what if he got into a car accident), and try to lose control. The worry experiment tests the hypothesis that if the patient worries, he/she will lose control. Positive beliefs about worry are targeted by worry modulation experiments during which patients are asked to increase their worry on one day and reduce worry on another day to see whether worry actually leads to more beneficial results. This experiment allows patients to see whether worry did allow them to function better (e.g., get more accomplished at work, at home, with their family) compared with the days when they put off worry.

Meta-cognitive therapy has been shown to be more effective than applied relaxation at reducing trait anxiety, worry, and metacognitions; and increasing clinical global improvement and recovery at posttreatment, 6-month, and 12-month follow-up (12). Also, in a second study, meta-cognitive therapy was more effective than delayed treatment at reducing GAD symptoms of trait anxiety and worry at posttreatment and 6-month follow-up (13).

Mindfulness-based therapy

Mindfulness refers to a process that leads to a mental state characterized by nonjudgmental awareness of the present moment experience, including one's sensations, thoughts, bodily states, consciousness, and the environment, while encouraging openness, curiosity, and acceptance (14). As part of mindfulness-based therapy, the person is instructed to focus on one primary object (e.g., flow of in-breaths and out-breaths), be aware of it from moment to moment, and when a strong feeling occurs attend to the feeling as it occurs and just be with it, observing it. When this subsides, the person should focus on the primary object again and observe his/her thinking as non-permanent mind events that are not always accurate. The treatment typically consists of eight weekly 150-minute group sessions including mindfulness psychoeducation, mindfulness practice, sharing experiences, and 45 minutes of homework review. The goal is to teach patients to be in mindful states more often, especially in stress-related situations (15). One of the early clinical applications of mindfulness-based therapy was for pain (16, 17). Since then, mindfulness-based therapy has been combined with cognitive therapy in mindfulness-based cognitive therapy (18, 19) to target depression and prevent relapse. Teasdale et al. (15) presented an information processing model of depression relapse and reviewed the role of mindfulness-based treatment in this model. The goal of relapse prevention is to target patterns of cognitive processing that occur in mildly depressed states to prevent depressive thinking patterns analogous to major depression. The model states that in a euthymic mood patients may not have depressive cycles of cognitive processing that can be targeted with cognitive therapy. However, mindfulness-based therapy can be used when patients are in a euthymic mood because the goal of the treatment is for the patient to become more adept at focusing on the present and when thoughts arise that take him/her away from the present moment (e.g., "It may rain today"), perceiving the thought as a thought, letting it pass, and refocusing on the present moment. Thus, Teasdale

et al. (15) proposed that mindfulness-based therapy can be used earlier on to train patients to view their thoughts regardless of their content as just thoughts and letting them pass. The cognitive therapy techniques (20) can be used at a later stage, such as during the recurrence of major depression to challenge the reality of the thoughts (e.g., thoughts are not facts) and the cognitive distortions.

In mindfulness-based cognitive therapy patients are asked to view their negative thoughts and feelings as events occurring within their mind and not representing their "self" or being true (18, 19). The goal is to have patients focus on the present. Patients learn to bring their attention back to the moment, focusing on their breath when their attention is drawn to other thoughts, images, or worries (21). They are taught to take a detached or decentered view of their cognitions, (e.g., I am not my thoughts), which is also applied to emotions and bodily sensations (22). Patients learn that pushing away or trying to control unpleasant feelings or thoughts maintains them, and that only when they are able to accept the feelings of sadness or depression in the moment can they make a willful decision about what to do (i.e., move attention to their breathing, focus on the body, examine the pattern of their thinking, take mindful action). Taking mindful action is a behavioral activation technique offered during the last two sessions of mindfulness-based cognitive therapy. When the patient becomes depressed, both cognitive therapy techniques and behavioral activation techniques can be offered. The patient is asked to think of times when activities or inactivities have maintained depression in the past, and instructed to increase activities or change the quality of the activities, incorporating them into their daily routine (19).

Mindfulness-based cognitive therapy has led to more specific autobiographic recall of memories in depressed patients, possibly by having them learn to focus on the environment and present moment (21). This has implications as a protective factor against relapse of depression, because overgeneralization of categorical memories has been indicated as a trait vulnerability factor for mood and anxiety disorders. Both mindfulness-based cognitive therapy and mindfulness-based stress reduction have been found to be effective at treating depression, anxiety, and stress as demonstrated in large-scale meta-analyses (23, 24).

Dialectical behavior therapy

Dialectical Behavior Therapy (DBT) was developed as a behaviorally-oriented outpatient psychotherapy for chronically parasuicidal patients diagnosed with borderline personality disorder (BPD) (25). DBT utilizes treatment strategies from behavioral, cognitive, and supportive psychotherapies. It applies directive, problem-oriented techniques (i.e., behavioral skill training, contingency management, cognitive modification, and exposure to emotional cues) with supportive techniques (i.e., reflection, empathy, and acceptance) (25). The core of the biopsychosocial theory for DBT is that BPD results from a series of exchanges over time between the person factor, a dysfunction of the emotion regulation system, and an environmental factor, an invalidating environment (26–28). The person who displays extreme emotional reactions will bring about invalidating behavior from others who cannot understand the reason for the high level of emotional intensity. Receiving this invalidation of emotional experiences continuously will lead to more emotional dysregulation and lessen the ability to learn emotion regulation skills. Thus, validation is one of the core sets of strategies in DBT. In order to effectively validate the patient's emotions, there must be a strong therapeutic relationship and alliance. This is achieved through building and maintaining a positive, interpersonal, collaborative relationship between the therapist and the patient. The therapist validates the patient's thoughts, feelings, and actions and provides feedback about the functional reason for the behavior. The therapist acts consistently as a consultant to the patient and not to others, and is on the side of the patient (28). In addition to individual therapy, patients also enroll in weekly skills training groups. These groups provide the tools and techniques for patients to utilize when they are changing their past behaviors to modulate emotions (e.g., parasuicidal behaviors) to more healthy behaviors (e.g., calling their individual DBT therapist). The four skills training components for these groups are mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. Mindfulness is the capacity to pay attention, nonjudgmentally, to the present moment. Another component of DBT is distress tolerance, in which the patient learns techniques for accepting, finding meaning within, and tolerating distress. Radical acceptance means that patients must stop fighting reality, and must accept their current situations exactly as they are. To regulate their emotion, patients are taught to identify and label their emotions, identify obstacles to changing emotions, reduce the likelihood of acting out of the "emotion mind," taking the opposing action of what their emotions are telling them to do, and applying distress tolerance. Finally, interpersonal effectiveness skills involve teaching assertiveness where patients assert their own wishes, goals, and opinions in a way that they are taken seriously. Patients are taught strategies for asking what they need, saying

no, and coping with interpersonal conflict. They learn techniques to increase the likelihood that their goals will be met in specific situations without damaging interpersonal relations or their self-respect (28).

DBT has been developed as a treatment involving a progression through four stages. The first stage is moving from being out of control of one's behavior to being within control (29). The goals for treatment at this stage are set by order of importance. The foundation underlying each of these goals is having a strong therapeutic alliance between the therapist and patient and having the therapist provide validation of the patient's emotional experience. The first goal is to reduce parasuicidal and life-threatening behaviors. The second goal is to reduce behaviors that interfere with the process of therapy. Finally, the third goal is to reduce behaviors that seriously interfere with quality of life. One target of change is to get patients out of psychiatric inpatient hospitals as soon as deemed possible and to prevent rehospitalization (30). In order to live a productive, good quality of life, patients must learn alternate skills to prevent them from having to return to the hospital during crises. If the patient engaged in parasuicidal behavior, the therapist asks the patient about the behavioral and environmental events that occurred leading up to the parasuicidal behavior. Alternate solutions that could have been used are discussed, and factors that interfered with the alternative behaviors are identified. During treatment, the therapist teaches and reinforces adaptive behaviors and withholds reinforcement for behaviors that are targets for change (25). For example, any discussion in group treatment of parasuicidal behaviors or fantasies by patients is redirected and not reinforced. Patients meet in individual therapy for 1 hour and group therapy for 2.5 hours every week. During group treatment, interpersonal skills, distress tolerance, reality and acceptance skills, and emotion regulation skills are taught (25). Telephone contact with the therapist in between sessions is part of the treatment.

The second stage of DBT is moving from being emotionally shut down to experiencing emotions fully (29). The goal of this stage is to teach patients how to experience emotions without having to try to avoid them through dissociation, having symptoms of posttraumatic stress disorder (PTSD) (e.g., avoidance of trauma reminders, re-experiencing symptoms) or avoiding life. During this phase, the therapist can treat PTSD, if applicable, with prolonged exposure therapy, which involves in vivo exposure to places, situations, or people that are associated with the trauma and imaginable exposure of the trauma memory, so that the patient fully processes it through repeated exposures. The therapist shows the patient that he/she can experience all of his/her emotions without shutting them down. Research has shown that DBT can be delivered in combination with prolonged exposure for PTSD and is effective at reducing suicidal behaviors, parasuicidal behaviors, and PTSD severity (31). Also, combined DBT and exposure treatment for childhood sexual abuse-related PTSD was more effective than treatment as usual at reducing severity of PTSD for patients in a residential treatment facility, half of whom had BPD (32). In this study, exposure exercises to trauma memory did not result in patients having an increase of dysfunctional behaviors such as nonsuicidal self-injurious behaviors or suicidal behavior (32). DBT has also been found to be effective at treating eating disorders such as anorexia nervosa (33), binge eating disorder (34, 35), and substance abuse/dependence (36–38). Thus, the applicability of DBT for disorders outside of BPD has been shown and further research on how DBT can treat disorders that have an underlying emotion dysregulation component should be carried out.

The third stage of DBT is building an ordinary life and solving ordinary problems (29). Patients learn how to solve everyday problems such as interpersonal conflict with their partner, changing careers, or job dissatisfaction. The fourth stage of DBT is moving from incompleteness to completeness and connection (29). During this stage, patients may be living the lives that they want but still feel emptiness and they might seek meaning through spiritual or religious paths.

In a meta-analysis of DBT for BPD, DBT showed a moderate global effect size and moderate effect sizes for suicidal and self-injurious behaviors when it was compared with the usual treatment, that is, comprehensive validation plus 12-step therapy and community therapy by experts (39). However the effect sizes were small when DBT was compared with other BPD-specific treatments (i.e., transference-focused psychotherapy). In a previous meta-analysis, DBT also showed a moderate effect size (0.58) (40). DBT has been shown to specifically target the expression of anger and acceptance of aversive private experiences, such as negative emotions, and this was not found in a comparison treatment by community experts (41).

Acceptance and commitment therapy

Acceptance and commitment therapy (ACT) was developed as a behavior analysis psychotherapy approach in which the goal is to treat emotional avoidance, excessive literal response to cognitions, and inability to make and keep commitments to behavior change (42). Thoughts are connected to

behavior and emotion in ACT, but the treatment does not attempt to challenge distorted thoughts. ACT is a behavioral and cognitive intervention that uses acceptance and mindfulness processes, and commitment and behavior change processes, to produce psychological flexibility (43). The goal of ACT is not the regulation of emotion and cognitive content, but rather flexibility, which is defined as contacting the moment more fully as it is and persisting or changing in behavior in the service of chosen values (43). Although ACT and CBT are based on different theoretical assumptions about the nature and role of cognitions, the treatment techniques of modern CBT and ACT are highly overlapping (1, 44).

ACT uses mindfulness, acceptance, cognitive defusion (e.g., flexible distancing from the literal meaning of cognitions), self as context, committed values to increase flexibility, and behavior change that is consistent with one's values (45).

Cognitive fusion occurs when patients place a value on their thoughts, labeling certain thoughts as accurate and indicators that they are a bad person and become fused with their thoughts. Rather than challenging the validity of the thoughts as is done in CBT, ACT changes the function of the thought, making it less emotionally salient. This can be done through cognitive defusion techniques such as decreasing the thought to one word (e.g., "I am fat" to "fat") and repeating the word out loud multiple times until the word loses its literal meaning (46). The goal is to have the patient realize that thoughts are not literal but rather just thoughts that have nothing to do with the quality of the person who is experiencing them (47).

Self as context is a technique in which the patient views himself/herself as an observer in a context where experiences occur, but the experiences and thoughts do not define him/her. Defining committed values is an important part of ACT and involves choosing to behave a certain way based on one's values (i.e., goals that are important, which the patient is willing to work toward). The objective is behavior change by having the patient pursue valued activities even in light of the anxiety or obsessions that he/she may have. The therapist could ask the patient to define his/her values concerning certain areas of life (e.g., family, friends, profession) and to rate the importance of each of these areas. The patient would then be asked whether he/she consistently behaves as if these values are the most important, and if not, asked what stands in the way of following these values (47). In a meta-analysis, ACT was found to be more effective than control conditions on depression, physical health, and other mental health conditions, yet not on distress problems of anxiety/depression (48). Also, ACT was not significantly more effective than established treatments, such as CBT and cognitive therapy (48). In another meta-analysis, Öst et al. (40) found a moderate effect size for ACT, yet reported that it did not meet the empirically established treatment criteria. In a more recent review, ACT was found to be superior to control conditions in the treatment of anxiety disorders and approximately similar to other active psychotherapy conditions (49). However, the latter study was not a meta-analysis.

Unified treatment

In 2004 Barlow et al. (50) proposed a unified treatment for emotional disorders with the goal of improving dissemination of evidence-based treatment with one protocol versus multiple different treatment manuals for each disorder. A secondary reason is that patients often present with comorbid diagnoses, yet the current treatment manuals are geared to target one diagnosis. A unified treatment would presumably be able to target comorbid diagnoses. Also, research on the latent factor structure of anxiety and mood disorders has shown that depression, social phobia, generalized anxiety disorder, panic disorder, and obsessive compulsive disorder all load onto negative affect (51). In addition, Brown et al. (51) found that depression and social anxiety load onto positive affect, such that low positive affect was significantly related to depression and social anxiety disorder. These results align with the theory that neuroticism/negative affectivity and extroversion/positive affectivity are integral to the development and trajectory of emotional disorders (52) and that the emotional disorders are more alike than dissimilar. When developing one unified treatment for emotional disorders, only the significant mediators of behavior change should be included (53). The maintenance factors of anxiety disorders such as avoidance of distressing thoughts, emotions, interoceptive arousal, and places have been well established (54). Therefore, Barlow et al. (53) propose that developing one unified treatment that targets these maintenance factors and teaches patients that they can face intense emotional experiences could prove effective.

The unified protocol is a transdiagnostic treatment for anxiety and unipolar mood disorders which works within a CBT framework (55). The components of the treatment include restructuring maladaptive cognitive appraisals, changing maladaptive action tendencies associated with emotions, preventing emotional avoidance, and using emotion exposure procedures. The treatment stresses the important function of emotions, the interconnection between cognitions, physical sensations, and behavior, and altering behaviors (i.e., avoidance) that are

maladaptive to experiencing emotion (55). In a randomized controlled trial, subjects receiving the unified protocol treatment showed decreases in diagnosis-specific symptom severity in both primary and comorbid disorders and decreases in functional impairment compared with those in a waitlist control condition (55). In a previous study (56), 73% of subjects in the unified protocol treatment were considered treatment responders and 60% achieved high end-state functioning posttreatment, which continued to improve at the 6-month follow-up. Also, targets of change in the unified protocol were found to change posttreatment (57). Negative reactivity to emotions and the frequency of negative emotions experienced decreased posttreatment (57). These studies show preliminary evidence in support of the unified protocol for anxiety disorders and comorbid major depression and ongoing research examining its efficacy compared with single diagnosis psychological treatment protocols is underway.

Internet-based CBT

In order to reach more people who have psychiatric disorders and make treatment more readily available to people who may have a hard time seeking clinical services due to stigmatization (e.g., military personnel), researchers have developed Internet-based treatments for major depression (58, 59) and anxiety disorders (60, 61). In a meta-analysis, technology-mediated therapy showed a large treatment effect for anxiety-related disorders and a medium effect for depression (62). In a second meta-analysis, the efficacy of Internet-based CBT was examined in randomized control trials of subjects meeting diagnostic criteria for major depression, social phobia, panic disorder, or generalized anxiety disorder (63). The 22 randomized control trials showed the superiority of Internet-based CBT over control groups, with substantial effect sizes. Subjects showed great levels of adherence and satisfaction with Internet-based CBT and similar results were seen for each disorder (63). These studies indicate the potential efficacy of administering CBT over the Internet for anxiety and mood disorders, reaching a greater number of people suffering from psychiatric disorders, who otherwise may not receive treatment.

Research examining the efficacy of mobile devices used in real time, as an augmentation to traditional DBT or CBT, has been conducted. Rizvi et al. (64) conducted a study examining the efficacy of a 10–14 day course of treatment utilizing a mobile device program, the DBT Coach (1.0), compared with treatment as usual for subjects diagnosed with BPD and substance use disorder. All subjects were in DBT for at least two months. Those in the DBT Coach group were utilizing the application as an augmentation to traditional DBT and were instructed to use it as often as they wanted to. The results show that subjects used the application more than once per day. Those in the DBT Coach condition reported a significant decrease in the intensity of the emotion that was labeled as causing the most distress and in urges to use substances. In a second study, Newman et al. (65) examined the efficacy of a six-session palmtop computer-assisted group CBT for generalized anxiety and found that it was superior to the six-session group CBT-only condition at posttreatment, but not to the standardized 12-session group CBT. The therapies did not significantly differ at 6- and 12-month follow-up time points. These studies show some support for using computer-assisted mobile devices in conjunction with empirically supported treatments, yet more research is needed.

Summary

Conventional CBT is an effective strategy for dealing with virtually all psychiatric disorders. CBT is not a single treatment protocol. Rather, it describes a family of interventions with similar treatment strategies that are focused on cognitive distortions, maladaptive behaviors, and emotion dysregulation. Over the years, the CBT protocols have been developed to be aligned with specific DSM diagnostic categories. Although the DSM is based on a medical model assuming that psychiatric symptoms are expressions of latent diseases, the psychologically-based CBT treatments have often been shown to be more effective than biological interventions for the biologically-defined DSM categories. Although effective, there is clearly room for further improvement of these treatments. For example, some patients may have difficulty exposing themselves to negative affect and therefore may not be compliant with treatment or may drop out of treatment. Acceptance and mindfulness-based strategies such as DBT, mindfulness-based therapy, and meta-cognitive therapy show support in the literature and may be more beneficial for those clients who have a hard time tolerating emotional dysregulation and anxiety during traditional CBT trials. Also, novel technical assisted mobile devices and Internet-delivered CBT have been shown to be effective compared with control conditions, and therefore hold promise at reaching a wider population of patients who face barriers to seeking treatment due to stigmatization, finances, or access to traditional CBT.

More recently, some authors have begun to develop CBT protocols that cut across diagnostic categories and are focused on specific dysfunctional

emotion regulation strategies (unified treatment; e.g., (50)). This advancement is made possible by a deeper understanding of the nature of psychopathology and its maintenance factors (53, 66). The future of CBT—and of psychosocial interventions—is likely to continue in this direction. Some of the current research has been examining strategies to target emotion dysregulation of negative affect (67) and techniques to enhance positive affect using specific meditation practices (68). More research is needed to examine whether these newer CBT treatments incorporating mindfulness-based practices are equally effective as traditional CBT, which has been established as an empirically-supported treatment for mood and anxiety disorders and considered the gold standard treatment.

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