

Developing and Using a Case Formulation to Guide Cognitive-Behavior Therapy

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Rec date: Feb 16, 2015; Acc date: Apr 28 2015; Pub date: May 05, 2015

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Abstract

This article describes a case formulation-driven approach to cognitive-behavior therapy (CBT) that draws on the formulations and interventions in the ESTs while helping the therapist make many of the clinical decisions that are not directly addressed in the ESTs. We begin the article with an overview of case formulation-driven CBT. Then we describe each of the steps of case formulation-driven CBT, giving special attention to the step of developing a case formulation. We conclude with a brief discussion of alternate approaches to case formulation in CBT, and a brief review of evidence supporting the use of a case formulation approach to CBT.

Keywords: Case formulation; Functional analysis; Empirically-supported treatment

Introduction

The development of Empirically-Supported Treatment (EST) protocols has transformed our field and improved the quality of care that cognitive-behavior therapists can provide. However, the EST protocols do not meet all of the clinician's needs for several reasons. One is that the protocols generally target a single DSM disorder; in contrast, comorbidity is the rule rather than the exception in clinical practice. Clinicians typically treat individuals who have multiple related disorders and problems that can affect one another or the process of treatment.

Another reason EST protocols do not meet all of the clinician's needs is that many patients receive more than one therapy simultaneously. Often patients receive pharmacotherapy or couples therapy or twelve-step or other group therapy in addition to individual CBT. This fact presents the clinician who is providing the individual therapy with the challenge of determining how the therapies might conflict or potentiate one another. EST protocols do not typically address this clinical decision-making issue.

In addition, patients often have unique needs that are not directly addressed by the disorder-focused protocols [1,2]. For example, the EST protocol for a disorder assumes that the patient's goal is to treat the disorder to remission. However, many patients who meet criteria for a DSM disorder have treatment goals that do not necessarily entail treating that disorder to remission. For example, Peter met criteria for social phobia. However, his treatment goal was not to recover from social phobia. His goal was to begin to date and develop a relationship that would lead to marriage. A treatment that addresses Peter's goal will likely include interventions that are not part of the EST for social phobia and exclude some of the interventions in the social phobia EST. Other unique factors can also affect a person's illness or its treatment. For example, a person may be fearful of surrendering longstanding modes of coping, have family members who are ambivalent about his recovery or play a role in the patient's problems, or be addicted to

medications (e.g., benzodiazepines) that interfere with cognitive-behavior therapy (CBT).

This article describes a case formulation-driven approach to cognitive-behavior therapy (CBT) that draws on the formulations and interventions in the ESTs while helping the therapist make many of the clinical decisions that are not directly addressed in the ESTs. We provide an overview of case formulation-driven CBT, and we describe each of the steps of case formulation-driven CBT, giving special attention to the step of developing a case formulation. We conclude with brief reviews of alternate approaches to case formulation in CBT and of evidence supporting the use of a case formulation approach to CBT.

Overview of Case Formulation-driven CBT

In the case formulation-driven approach to cognitive-behavior therapy [3], the therapist begins by collecting assessment data to obtain a diagnosis and an initial formulation (conceptualization) of the case. The formulation is a hypothesis about the mechanisms causing and maintaining the patient's problems. The therapist uses the formulation (and other information) to develop a treatment plan and obtain the patient's informed consent to it. Then treatment begins. The therapist uses the formulation to guide intervention selection and other clinical decisions. As treatment proceeds, the patient and therapist collect data to monitor the progress of the therapy. If the data show that the patient is making good progress, these data provide some indirect support for the formulation hypothesis. When the patient's treatment goals are met, treatment ends (termination). If the data show that progress is poor, the therapist initiates a collaborative problem-solving process with the patient that often includes returning to assessment phase to collect more assessment data to test the hypotheses that a different diagnosis and/or formulation might lead to a different treatment plan that might produce better results. All of these steps are carried out in the context of a collaborative therapeutic relationship.

Assessment to Obtain a Diagnosis and Initial Case Formulation

The therapist begins by working with the patient to obtain a diagnosis and an initial case formulation that guide treatment planning. Diagnosis is important for several reasons, including that much of the scientific literature, especially the treatment literature, is tied to diagnosis.

But diagnosis is not enough to guide treatment. A case formulation is also needed. A case formulation describes and proposes relationships among the psychological mechanisms and other factors that are causing and maintaining all of a particular patient's disorders and problems. The formulation helps the therapist and patient understand how all the patient's disorders and problems are related, describes the unique features of these disorders and problems, and helps the therapist design and carry out an effective treatment plan.

Elements of a case formulation

A complete case formulation includes all of the following elements and ties them together into a coherent whole: all of the patient's symptoms, disorders, and problems; the mechanisms causing the symptoms, disorders, and problems; the precipitants of the symptoms, disorders, and problems; and the origins of the mechanisms.

So, for example, a case formulation for a patient, Ann, reads as follows. The elements of the formulation are identified with CAPITAL LETTERS.

During early adolescence, Ann was devastated by a harsh rejection by a longtime very close friend (ORIGINS). As a result, during interactions with others, Ann began to judge that they were very likely to find her unacceptable in some way and reject her (MECHANISM). As a result, in social interactions, Ann focused her attention not on the person she was talking to, but instead on comparing a mental representation of herself as she believed she appeared to that person with her perception of how she ought to appear in order to be acceptable and appealing to that person (MECHANISM). She became hyper-vigilant about others' reactions during interactions (MECHANISM). If she noticed a frown or puzzled look on her conversational partner, she interpreted it to mean that her actual performance deviated from her ideal, and she experienced cognitive ("She doesn't like me"), physical (increased heart rate, churning stomach, flushing), and behavioral (abruptly ending the conversation) SYMPTOMS of anxiety. Ann coped with her anxiety by avoiding interactions with others (SYMPTOM/MECHANISM), and when she did interact with others, being careful to minimize self-disclosure (SYMPTOM/MECHANISM) so as to avoid exposing features of herself that the other person might dislike. These MECHANISMS were activated when Ann began college and needed to make new friends (PRECIPITANT). As a result of her avoidance (SYMPTOM/MECHANISM), Ann did not join small groups to work on class assignments, which resulted in her submitting less thorough assignments and achieving lower grades (PROBLEM). She also failed to make new friends and she withdrew from her old ones (PROBLEMS). Ann's poor academic performance and social isolation led to self-criticism, low mood, hopelessness, loss of interest in others, and other depressive symptoms (SYMPTOMS, PROBLEMS).

The process of developing an initial case formulation

We describe the process of developing two of the key elements of the initial case formulation: the comprehensive Problem List, and the initial mechanism hypotheses.

Developing a comprehensive problem list

To obtain a comprehensive list of the patient's problems, the therapist assesses the patient's psychiatric and medical problems, any difficulties the patient is having in obtaining and making good use of treatment for those problems (e.g., noncompliance), as well as any difficulties in the arenas of interpersonal, occupational, school, financial, housing, legal, and leisure functioning.

Note that in the Problem List, the therapist begins to translate diagnostic information into terms that facilitate conceptualization and intervention from a cognitive-behavioral point of view. The Problem List does this in part by detailing the important symptoms of the patient's psychiatric disorders and psychosocial problems and by describing, whenever possible, the cognitive, behavioral, and emotional components of problems. Both of these features of the Problem List are illustrated in the formulation of Ann provided above.

To obtain a Problem List, the therapist collects data from multiple sources, including the clinical interview, structured diagnostic interviews, self-report scales, self-monitoring data provided by the patient, observations of the patient's behavior, and reports from the patient's family members and other treatment providers. At the Cognitive Behavior Therapy and Science Center, we send patients to our website (www.cbtsience.com) and ask them to download and complete and bring to their initial consultation session an intake packet that includes a broad-based measure of a wide range of difficulties (we use a self-report diagnostic screening form that we developed), a tool to assess depression and anxiety (the Depression Anxiety and Stress Scales [4]), and a measure of functioning (our own Functioning and Satisfaction Inventory [5]). Also included in our intake packet is an Adult Intake Questionnaire that asks questions about previous and current treatment, family and social history, previous and current substance use, trauma, and legal and other problems. Many of these measures are available on our website. Based on the information obtained in the initial telephone contact, the therapist may also ask the patient to complete scales to assess other symptoms and problems, such as the Yale-Brown Obsessive Compulsive Scale [6]. When the patient arrives for the initial session, the therapist asks the patient's permission to take the first five minutes of the session to review all of this information, and uses it to guide the interview.

Developing a mechanism hypothesis

The heart of the formulation is the mechanism hypothesis. A mechanism hypothesis describes mechanisms or processes that cause and maintain symptoms. Mechanisms can include biological mechanisms (e.g., thyroid dysfunction) but we emphasize and focus here on psychological mechanisms. For example, Ehlers and Clark [7] formulated PTSD as resulting from three types of psychological mechanisms: (1) distorted appraisals of the trauma event and/or trauma-related events following the trauma; (2) disturbed autobiographical memory for the trauma; and (3) behavioral and cognitive strategies, especially avoidance, that prevent the person from correcting his or her faulty appraisals and elaborating the autobiographical memory of the event.

To develop an idiographic mechanism hypothesis for a particular case, the therapist can use one of two strategies. First, the therapist can identify a formulation that underpins an EST (e.g., the formulation of PTSD just described) and then individualize it to identify unique details of the case at hand and extrapolate from it to account for all of the patient's problems and disorders. Or the therapist can base the formulation on a more general evidence-based psychological theory (e.g., operant conditioning theory), and then individualize and extrapolate from that nomothetic formulation to account for the details of the case at hand.

The formulation of the earlier-described case of Ann provides an example of the first strategy; it was based on the formulation of social phobia developed by Rapee and Heimberg [8] and the formulation of depression developed by Martell, Addis, and Jacobson [9].

The model developed by Rapee and Heimberg [8] stipulates that individuals with social phobia are hyper-aware of the fact that they are observed by others, whom they perceive as quite critical. When interacting with others, they focus their attention not on the person with whom they are interacting but instead on a mental comparison of how they believe they appear to that person and the other person's standard for them. That is, they monitor for the potential threat of failing to meet the other person's standard. In addition, they experience inflated expectations of the likelihood of failing to meet the standard and the consequences of failing to meet the standard. These processes frequently lead the individual to conclude that s/he failed to meet others' standards and, as a result, experience cognitive, behavioral, and physical symptoms of social anxiety.

Ann's therapist used this model to develop an idiographic case formulation for Ann by filling in the details of the model as they applied to Ann's case. Thus, the therapist determined that Ann's monitoring for potential threat consisted especially of hyper-vigilant attention to the facial expression of the person to whom she was speaking in order to assess whether that person seemed interested in what Ann was saying. Her physiological symptoms of anxiety consisted primarily of increased heartrate, stomach discomfort, and blushing.

In addition, the therapist extrapolated from the model to account not just for Ann's social phobia but for all of her symptoms, problems, and disorders. For instance, Ann's behavioral avoidance that was a symptom of her social phobia led to several other problems, including poor academic functioning (Ann's avoidance interfered with classroom group projects) and social isolation (avoidance prevented Ann from making new friends). The formulation proposed that those two problems, via a loss of positive reinforcers [9], led to depressive symptoms.

The therapist develops the initial case formulation in the context of a collaborative relationship with the patient. Ideally this happens gradually as a process of mutual discovery [10] rather than in a session in which the therapist authoritatively informs the patient about the details of the formulation in one fell swoop.

A key clinical question related to the development of the mechanism hypothesis is: when more than one model can be used to formulate a case, how does the therapist choose? For example, multiple evidence-based formulations are now available for unipolar depression, including Beck's [11] cognitive model, behavioral activation [9], Lewinsohn's behavioral model, and the problem-solving model developed by Nezu and Perri [12]. This question is a fascinating one that cannot be given justice here except to list factors the therapist

considers when selecting a model upon which to base a case formulation. These include: the degree to which the details of the patient's case match any particular formulation [13], the degree to which the patient's formulation of his or her own case or receptiveness to interventions matches any particular formulation, the patient's treatment history (e.g., he may have failed previous treatment guided by a particular formulation), and the therapist's training or experience using particular models.

Another very interesting question is: must the therapist choose one formulation? Might the therapist use more than one formulation simultaneously? For example, the therapist treating a depressed patient might simultaneously use Beck's [11] cognitive model and behavioral activation [9] formulations to guide treatment. This strategy is possible because the cognitive and behavioral activation models, although different, do not conflict with one another. Both could apply to any particular patient.

Whether treatment that is guided by more than one conceptualization is effective is an unanswered empirical question. The main advantage of the strategy is the flexibility it accords the therapist in finding interventions that are helpful to the patient. The main disadvantage of this strategy is that the therapist's use of multiple formulations could lead to a loss of focus and clarity of the treatment.

Levels of formulation

We have already described the formulation of the case. In fact, formulations can be developed at three levels. The three levels are case, disorder or problem, and symptom. These three levels are nested. A case consists of one or more disorders/problems, and a disorder consists of symptoms. Thus, a case-level formulation generally consists of an extrapolation or extension of disorder- and symptom-level formulations. For example, the formulation of Ann's case is an extrapolation of the formulation at the level of the disorder (social phobia).

Formulations at the various levels guide different aspects of treatment. The case-level formulation guides the process of treatment planning, especially the process of setting goals, making decisions about which problems or disorders to tackle first, and identifying treatment targets and interventions.

Most interventions happen at the level of the symptom and are guided by a symptom-level formulation. Of course, the symptom-level formulation is often connected to the disorder-level formulation. This integration allows a particular symptom to be conceptualized within the context of the broader disorder-level formulation. For example, consider the treatment for a patient whose key symptom is extreme behavioral passivity. If the therapist conceptualizes the passivity as the behavioral component of depressive symptomatology resulting from a loss of positive reinforcers, then the therapist will use behavioral activity scheduling to encourage the patient to get more active and increase his/her experience of positive reinforcers [9]. On the other hand, if the therapist conceptualizes the passivity as a negative symptom of schizophrenia that results from a cognitive and behavioral system 'shutdown' in response to feeling overwhelmed, then the therapist will work to help the patient identify and reduce pressure and stress [14].

Treatment Planning and Obtaining Informed Consent

Treatment planning

The function of the formulation is to guide effective treatment [15]. A key way the formulation does this is by identifying the targets of treatment, which are generally the mechanisms that the formulation proposes are causing the symptoms. For example, in the earlier-presented case of Ann, the young woman with social phobia, the idiographic case formulation identified several treatment targets: Ann's tendency to allocate her attention to comparing her performance with her view of what the person expects instead of to the situation in which she was participating, her avoidance behavior (avoiding social contact and minimizing self-disclosure), and her distorted beliefs about the likelihood and consequences of failing to meet others' expectations. Consequently, treatment aimed to help Ann shift her attention away from the comparison of herself with her mental ideal to the conversation at hand, drop her avoidance behaviors, and revise her beliefs about others' expectations of her and about the consequences of failing to meet others' expectations.

The case-level formulation also guides treatment planning by helping the therapist think about and coordinate all of the therapies the patient is receiving, not just the individual therapist is providing. For example, consider the case of Amber, who is working on unassertiveness and other social skills deficits in individual therapy and who is also in marital therapy. The individual therapist can share with the marital therapist the formulation that an important reason that Amber fails to assert herself is that when she does, she frequently receives a hostile response from her spouse, in part because her efforts to assert herself are not very skillful. If the marital and individual therapists agree on this formulation, then the two therapists can support each other's efforts on Amber's behalf. While the individual therapist works to help Amber improve her assertiveness skills, the marital therapist can help Amber's spouse to reward instead of punish her assertive behaviors.

Obtaining informed consent for treatment

Informed consent is a process in which the therapist:

- Provides an assessment, including a diagnosis and formulation, of the patient's condition
- Recommends a treatment, describes it, provides a rationale for the recommendation, and describes any risks
- Describes alternative treatment options
- Obtains the patient's agreement to proceed with the recommended treatment plan or a compromise treatment plan

The process of working with the patient to obtain a collaborative case formulation aids in the process of obtaining informed consent because most patients are not willing to go forward in treatment unless they have confidence that the therapist truly understands their difficulties and will provide treatment that addresses them.

Obtaining the patient's consent to treatment before treatment begins is ethically necessary [16]. It is also clinically helpful in numerous ways. It may help prevent non-adherence by obtaining the patient's agreement to the goals and interventions of treatment before beginning it, although it is important to acknowledge that adherence is a complicated issue that often has roots in both psychologist and biological phenomena [17].

A careful process of agreeing on a treatment plan also sets the stage for revisiting that process when treatment fails [18]. For example, a therapist agreed to a compromise treatment plan of psychotherapy only for a patient who had bipolar disorder who refused the psychotherapy plus pharmacotherapy treatment plan the therapist recommended. Patient and therapist agreed to this compromise plan with the understanding that they would monitor progress in session every week to determine whether the patient benefitted. If treatment failed to help, they agreed that the patient would add pharmacotherapy. This formal process of negotiating a compromise treatment plan proved invaluable when monitoring data clearly showed that the patient's symptoms and functioning worsened. At that point, the therapist was able to refer back to the informed consent process to remind the patient that he had agreed that if treatment failed, he would add pharmacotherapy to the treatment plan.

All of the elements of therapy described so far (initial assessment, diagnosis, case formulation, treatment planning, and informed consent) comprise the pre-treatment phase of the therapy. This phase of therapy lasts 1 to 4 sessions depending largely on the complexity of the case. If these elements are successfully accomplished and patient and therapist can agree on a treatment plan, treatment begins.

Treatment

Treatment is guided by the formulation. The formulation describes the mechanisms that cause and maintain the patient's symptoms, and the therapist uses this information to plan interventions that reduce the symptoms by modifying the mechanisms that drive the symptoms. The cases of two people who suffered from insomnia illustrate this point. Although both patients experienced insomnia, the formulation of each person's insomnia was different, and therefore the treatment of each person's insomnia was different.

Jane complained that she spent long blocks of time awake in bed each night. As part of the assessment and formulation process, Jane maintained a sleep diary, charting details about her previous night's sleep each morning for two weeks. The diary indicated that Jane generally went to bed at 9 p.m., lay awake for about 60 minutes, and woke twice during the night for 60-75 minutes each time before getting out of bed at about 8 a.m. These long blocks of wake time were very disturbing to Jane, and she was also frustrated about spending so many hours in bed each night. From the diaries, the therapist and Jane determined that she lay in bed for approximately 11 hours nightly but averaged only about 7.5 hours of sleep. Drawing on these data, the therapist hypothesized that Jane's behavior of spending so many hours in bed served as an important mechanism of her insomnia. This behavior contributed to insomnia by promoting poor sleep efficiency; that is, it led Jane to obtain short fragments of sleep throughout the long hours in bed rather than consolidated blocks of several hours of sleep.

This formulation suggested that sleep restriction could be helpful to Jane [19]. The sleep restriction intervention requires the individual to reduce the time spent in bed so that it more closely resembles actual sleep time, and then gradually lengthen the time in bed as sleep efficiency improves. The therapist initially suggested that Jane restrict her time in bed to 7.5 hours (the total number of hours she actually slept each night). Over a few weeks of this intervention, Jane's sleep efficiency improved; that is, the amount of time she spent in bed began to more closely match the time that she was asleep. Jane was happy

with this result, as she was no longer spending long periods of time awake in bed.

Jeffrey also sought treatment for insomnia. He complained that he had difficulty falling asleep at night and that while trying to fall asleep, his mind raced with worry about his job and his insomnia. His sleep diary indicated that he averaged 60-90 minutes to fall asleep each night. He awoke each day at 6 a.m. and almost immediately began to worry about the effects of his insomnia (e.g., "I didn't sleep, so I won't be able to function today."), and he continued to do this throughout the day. The therapist hypothesized that Jeffrey's excessive worry about his job and his sleep, both in bed and during the day, served as a key mechanism of his insomnia by increasing his autonomic arousal and emotional distress [20], both of which made it more difficult for him to fall asleep at night. Furthermore, as part of the daytime worry, Jeffrey monitored signs of fatigue, such as yawning or losing concentration. This monitoring fueled his anxiety about sleep. Jeffrey also spent a lot of time worrying about job problems instead of developing solutions to the problems. Worry about his job and his insomnia was fueled by Jeffrey's exaggerated perception of the negative consequences of a night of insomnia [21].

Based on these mechanism hypotheses, interventions to help Jeffrey targeted the worry and the insomnia by scheduling problem-solving time during the day, teaching skills to disengage from worry at other times, and implementing cognitive restructuring to address unhelpful beliefs about sleep. For instance, the therapist helped Jeffrey carry out a behavioral experiment to test his belief that he would be unproductive the day after a poor night's sleep. The data he collected surprised Jeffrey and showed him that he was quite productive even after a poor night's sleep. Behavioral experiments also addressed the daytime monitoring mechanism. As an example, the therapist and Jeffrey collaboratively designed an experiment in which he spent two hours monitoring for signs of fatigue and two hours in which he instead focused on the sights and sounds around him [21]. After each period, he rated his mood, performance, and fatigue. This experiment taught Jeffrey that when he constantly monitored for signs of fatigue, his fatigue worsened and he became more anxious about his sleep, which made it more difficult to fall asleep. As these interventions helped Jeffrey reduce his worry and monitoring, his sleep improved.

Often formulations at both the symptom and disorder level are helpful in guiding treatment. Consider Fred, a young man who met criteria for schizophrenia. Fred frequently failed to shave or take care of himself in other ways, and was quite distressed about these difficulties. The therapist developed a mechanism hypothesis for these symptoms drawing from the (disorder-level) finding that individuals with schizophrenia have a deficit in anticipatory but not consummatory pleasure [22]. That is, individuals with schizophrenia report as much pleasure in the moment as do healthy individuals but they predict that future events will be less pleasurable than do healthy individuals. Using this finding, the therapist proposed the formulation that although Fred experienced pleasure in the form of relief and satisfaction upon completing his shaving; he did not anticipate these feelings prior to the task and thus could not use them to motivate himself to shave.

The therapist explained the formulation to Fred and tested it informally by asking Fred about his experiences and predictions of pleasure. Consistent with the formulation, Fred reported that indeed he did feel good after he shaved, but that before he shaved he had little awareness of the fact that after he shaved he would feel good about having done it. Fred agreed that this failure to anticipate positive

feelings might be an impediment to shaving, and he was receptive to using this idea to develop an intervention that might help. The therapist worked with Fred in the therapy session to help him practice imagining shaving and experiencing the good feelings of pride and satisfaction that he felt after shaving. The therapist also helped Fred develop and write down some explicit reminders (e.g., "I will feel good after I shave; I will feel calm and ready to start the day after I shave") in order to help him develop anticipatory pleasure and use it to motivate him to shave.

Progress monitoring

As treatment proceeds, the patient and therapist collect data to test the formulation and monitor the process and outcome of therapy. Some data are collected formally, using written tools, and other data are collected informally, using therapist observations or patient verbal self-report. Data collection allows patient and therapist to answer questions like: Are the symptoms remitting? Is the patient accepting and adhering to the interventions the therapist provides? Are the mechanisms changing as expected? Are problems in the therapeutic relationship interfering?

If process (adherence, mechanism change, or the therapeutic alliance) and/or outcome are poor, the therapist works with the patient to collect more assessment data to get information about what is interfering with progress and to evaluate whether a different formulation might lead to a different intervention plan that produces better results. Thus, therapy is an iterative, idiographic, hypothesis-testing process, where the treatment of each case is like an experiment in which the formulation is the hypothesis. Sometimes the therapist carries out assessments to directly test the formulation [23,24]. More commonly, the therapist tests the formulation indirectly by monitoring the degree to which the treatment plan based on the formulation helps the patient accomplish his or her treatment goals and leads to the expected changes in mechanisms.

In addition to its key role in the hypothesis-testing process, progress monitoring strengthens the therapeutic alliance by promoting and building a shared evidence-based collaborative process. It also helps the therapist identify non-adherence and failure early so they can be addressed before they undermine the therapy.

It is difficult to collect formal data to evaluate all aspects of outcome and progress. However, we do recommend that the therapist monitor symptoms at every session in writing or using a software or online tool. This can be done using a standardized assessment instrument (such as the Quick Inventory of Depressive Symptoms [25]) or an idiographic measure like a Diary Card [26] or an Activity Schedule [27].

The earlier-discussed compromise treatment plan for the bipolar patient illustrates the importance of regular monitoring, as monitoring of this patient's behavior and functioning led to a collaborative change in the treatment plan. After a period of good functioning, the patient began missing and arriving late to his therapy sessions, his scores on the Beck Depression Inventory indicated that his symptoms were worse, and three months into treatment he lost his job as a result of manic behavior. These data caused the therapist to conclude that the treatment plan was failing, helped the therapist convince the patient of this, and motivated the patient to agree to meet with a pharmacotherapist.

The case of a married couple provides another example of the benefits of progress monitoring. In reviewing their weekly marital

satisfaction ratings across a number of areas, the therapist saw that the couple moved remarkably in tandem. Not only did these ratings inform the therapist about the couple's progress in treatment, but sharing the data with the couple served as a powerful intervention that helped the husband and wife change their belief that "We're never on the same page."

Termination

Termination occurs when the goals of treatment have been met, when patient and therapist agree that treatment has failed, or when logistical or other obstacles such as non-adherence arise and cannot be solved. The case formulation can aid the termination process in many ways. Sometimes the formulation can help the patient and therapist decide whether termination is indicated. For example, progress monitoring data that indicate that a depressed patient's symptoms remitted because she went on vacation, not because she solved the problems that are making her miserable at work and causing her depressive symptoms, suggest that termination is premature. The fact that no change has occurred in the mechanisms (in this case, problem-solving skill deficits) that appear to cause the depressive symptoms indicates that more treatment is needed.

In other cases, even when the patient has learned skills and achieved some change in the mechanisms that underpin the symptoms (e.g., Ann has learned to shift her attention to the interaction in which she is participating rather than to her mental comparison process), the patient is reluctant to end therapy. Assessment might reveal that the reluctance to terminate therapy stems from beliefs like, "If I don't meet with the therapist every week I will be vulnerable; if a problem arises, I won't be able to solve it on my own." In this case, the therapist can help the patient test out the belief and build her confidence about ending therapy in order to move the termination process forward.

The Therapeutic Relationship

The therapeutic relationship supports all of the other elements of the therapy. Additionally, case formulation-driven CBT relies on a dual view of the relationship. One part of the relationship is the necessary-but-not-sufficient (NBNS) view. In this view, the trusting collaborative relationship is the foundation upon which the technical interventions of CBT rest.

The other view of the relationship is as an assessment [28] and intervention tool [29], as illustrated in the case of Ann, the client with social phobia. Ann's therapist observed that Ann tended to describe her problems in vague, general terms, such as, "It's been a nerve-racking week," and to resist giving details of her struggles and distress. When the therapist gently pointed out to Ann how difficult it was to get detailed information from her, a good discussion ensued that provided details about the mechanisms driving Ann's evasive verbal behavior. Ann reported that she feared that if she provided more information, the therapist might find her unappealing and want to stop working with her. It was this discussion that led to the discovery that minimizing self-disclosure was a key avoidance behavior that Ann used to protect herself from harm in social situations. Thus, the interactions between the patient and therapist provided important assessment information that contributed to the case formulation and to the treatment.

The therapist also used the therapeutic relationship to treat Ann's fear of self-disclosure. When Ann shared more personal details, the therapist took care to spontaneously, warmly, and immediately let

Ann know that the therapist felt closer to Ann and experienced her as more interesting and appealing in that moment. The therapist's warmth was rewarding to Ann, and hence this response from the therapist encouraged Ann to self-disclose more frequently, both with the therapist and with others.

The case formulation-driven approach also helps the therapist establish a good relationship at the beginning of therapy because the formulation enables the therapist to develop a treatment plan that addresses the patient's individual needs. Moreover, the monitoring element of the treatment allows the therapist to quickly identify problems in the treatment process and difficulties in the quality of the relationship so they can be addressed early. A useful tool for tracking the quality of the relationship is the Revised Helping Alliance Questionnaire (HAQ-II; [30]). It is available free of charge over the internet. The HAQ-II is a 19-item self-report scale; it can measure the alliance from either the patient or the therapist point of view. [31] showed that outcome of psychotherapy (as measured by the OQ-45) for patients who began treatment with a poor start improved when therapists collected data on the patient's perception of the alliance using the HAQ-II.

In summary, a case formulation-guided approach to CBT calls for the therapist to collect assessment data to develop a diagnosis and case formulation, use the formulation to develop a treatment plan and, after obtaining the patient's informed consent, carry out the treatment plan while monitoring process and progress and maintaining a strong collaborative relationship at every step.

Other Approaches to Case Formulation-Driven CBT

The approach described here is simply one approach to cognitive-behavioral case conceptualization, and it borrows heavily from many of the other cognitive-behavioral approaches to formulation described here, especially the writings of Ira Turkat [32].

Functional analysis is the most important alternate approach to cognitive-behavioral case formulation in that it is the oldest, most developed and most evidence-based (see below). Functional analysis is defined as "the identification of important, controllable, causal functional relationships applicable to a specified set of target behaviors for an individual client" [33]. As this definition indicates, the model is based on conditioning theories, and therefore formulation emphasizes identifying the antecedents and consequences of target behaviors as a route in to identifying the external (e.g., environmental) or internal (e.g., cognitive or emotional, or biological) variables that control these behaviors, which in turn helps identify the function of the problem behaviors.

Several writers have provided illustrations and strategies for developing case conceptualizations based on Beck's cognitive model, including [10,34-38]. Koerner [39] provides a model for conceptualizing and treating problem behaviors in borderline personality disorder based on dialectical behavior therapy (DBT). DBT relies on identification of functional relationships (e.g., self-harm behaviors might serve the function of reducing emotional distress) that cause and maintain problem behavior. DBT interventions are founded on and flow out of idiographic functional analyses that the therapist carries out and teaches the patient to implement.

Other cognitive-behavioral approaches include the problem-solving approach to case formulation and intervention developed by Nezu, Nezu, and Lombardo [40] and the approaches to case formulation and

intervention described by Tarrier and colleagues [41]. In addition, of course, as was illustrated here in the case of Ann, the disorder-focused literature provides cognitive-behavioral conceptualizations of disorders that can be used as templates for formulating and designing treatment for individual cases.

Empirical Support for Case Formulation-Driven CBT

Here we briefly review empirical support for the case formulation approach to cognitive behavior therapy; a more comprehensive review is provided in [42]. We examine the “treatment utility of case formulation,” that is, the degree to which case formulation “is shown to contribute to beneficial treatment outcome” [15]. We also examine evidence that progress monitoring improves outcome of cognitive behavior therapy.

There is more empirical support for the treatment utility of case formulation based on functional analysis than for other methods of case formulation. The evidence is particularly strong for self-injurious behavior. Iwata et al. [23] reported that an examination of 152 single-subject analyses of the reinforcing functions of self-injurious behavior (SIB) in individuals with developmental disabilities showed that when interventions that were relevant to the hypothesized function of the SIB were delivered (e.g., extinction of attention for an individual whose SIB appeared to serve the function of obtaining attention), SIB showed very large changes in the large majority of cases. However, when interventions that did not address the function of the SIB were delivered, almost no change occurred. Several other studies using applied behavioral analysis have examined the degree to which behavioral treatments for severe problem behaviors meet the APA standard as empirically-supported, including studies of Functional Communication Training [43] and Noncontingent Reinforcement [44] and for specific disorders such as pica [45] for individuals with intellectual and developmental disorders.

Several randomized controlled trials have randomly assigned patients to treatment guided by one type or another of a case formulation and treatment that is not individualized based on a formulation or an individualized assessment procedure. These are studies of behavioral marital therapy [46], social skills training of behavioral disordered children [47], individuals with substance abuse problems [48], individuals with phobic disorders [49], internet-based CBT for depression (Johansson and colleagues [50], modular CBT for youths with anxiety, mood, and conduct problems [51,52], and behavioral treatment of alcohol abuse [53]. Our reading is that these studies show that treatment guided by a case formulation based on individualized assessment findings produces outcomes that are superior to or not different from standardized treatment. No study found standardized treatment to be superior to individualized treatment.

The studies reviewed here converge to provide some support for the assertion that reliance on a cognitive-behavioral case formulation can improve treatment outcome. However, relatively few studies have examined the contribution to outcome of the use of a case formulation to guide treatment.

We have some hope this situation will change. The recent National Institute of Mental Health’s (NIMH) Research Domain Criteria Project (RDoc) emphasizes that psychopathology may be optimally addressed by understanding dysfunctions in brain systems, measured dimensionally across diagnoses, rather than through categorical, symptom-defined approaches [54]. The case formulation approach

aligns with this initiative. Specifically, idiographic formulations can target common maintaining factors potentially underlying numerous disorders and/or [21]. Moreover, given the current NIMH strategy, it is likely that additional research on formulation-driven, transdiagnostic therapy will be forthcoming.

As discussed above, the case formulation-driven approach to treatment calls for frequent monitoring of the process and outcome of the therapy. The evidence supporting the benefits of the progress monitoring element of the case formulation-driven approach to CBT is quite compelling. Large numbers of randomized controlled trials have shown that when clinicians collect feedback data to monitor the progress of their patients, those patients have better outcomes [55,56] and a meta-analysis by Knaup, Koesters, Schoefer, Becker, and Puschner [57].

One final word about the evidence base supporting the use of a case formulation-driven approach to cognitive behavior therapy. The empirical question of greatest and most immediate interest to the clinician is not the one answered by the randomized controlled trials, that is, the question of whether a case formulation-driven approach to treatment is superior to another approach not guided by a formulation. The empirical question of greatest and most immediate interest to the clinician is: is the treatment I am offering to this patient helping him or her accomplish his or her treatment goals? This question is best answered by the idiographic data that the therapist collects to monitor each patient’s progress and to test the formulation hypothesis, in an empirical hypothesis-testing approach to each case.

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