The past 3 decades have witnessed a significant growth in the status of cognitive theory and practice of cognitive therapy in the treatment of depression. Although a number of authors have discussed how cognitive therapy (CT) can be modified and refined, all current variations share a conceptual framework that emphasizes the role of dysfunctional schemas in the onset and course of depression. It follows, then, that schema change is a central goal for the treatment of depression. In this chapter we present a brief description of the role of cognitive schemas in cognitive theory, an overview of research supporting the concept of cognitive schemas, and a number of strategies and techniques for schema identification and change.

Negative automatic thoughts (ATs) are the observable, often conscious, products of errors in processing through which perceptions and interpretations of experience are distorted. Examples include “My life is meaningless” or “Nobody cares about me.” These thoughts are automatic insofar as they are not readily controllable (A. T. Beck, 1963).

Underlying negative ATs are inferred errors in information processing that bias and distort the meaning attached to experiences. Errors in processing include an emphasis on the negative aspects of life events, a pervasive
preoccupation with the possible adverse meanings of events, and self-attribution and self-blame for problems across all situations (A. T. Beck, 2002).

Negative ATs and errors in processing are both byproducts of underlying cognitive schemas, which can be defined as cognitive structures that screen, code, and evaluate incoming information (A. T. Beck, 1967). Attention is necessarily selective as it would be impossible to process all information gathered from the senses, and schemas act as screening templates to determine what is processed and what is not. Although all cognitive theories of depression assume the existence of schemas (e.g., Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978; A. T. Beck, 1967; Young, 1990), the definitions and descriptions of schemas vary considerably. Dysfunctional schemas are generally believed to develop early in life and, once activated, negatively distort and bias the categorization and interpretation of information, bringing about depression (A. T. Beck, 1967; Young, 1994).

A key postulate of cognitive theory is that depressive schemas are stable cognitive structures that become latent during times of symptomatic recovery (A. T. Beck, 2002). These latent structures become activated by stressful life events and provide access to a tightly organized network of stored personal information that is mostly unfavorable, precipitating the depression (A. T. Beck, Rush, Shaw, & Emery, 1979; Segal & Shaw, 1986).

According to A. T. Beck (1987, 2002), two specific personality types, sociotropic and autonomous, may render an individual more vulnerable to depression. Highly sociotropic individuals are excessively concerned about and sensitive to the possibility of disapproval from others whereas autonomous individuals have a need for independence and goal achievement. The interaction between negative life events and a congruent sociotropic or autonomous personality activates dysfunctional schemas and precipitates depression (a diathesis-stress model).

To characterize the interpersonal nature of the self, Safran (1990; Safran, Vallis, Segal, & Shaw, 1986) introduced the notion of the interpersonal schema. Interpersonal schemas are generalized cognitive representations of interactions with others that initially develop from patterns of interactions with attachment figures, and allow an individual to predict interactions with significant others and maximize the probability of maintaining interpersonal relatedness (Hill & Safran, 1994). These representations contain information in this form: "If I do X, others will do Y" (e.g., "If I assert myself, others will put me down").

The introduction to this volume (chap. 1) describes the progression of research and thought in measuring schemas. In summary, early efforts to
measure schemas used self-report questionnaires. Although these studies found elevations of dysfunctional schemas while individuals were acutely symptomatic, these elevations tended to normalize with symptomatic improvement. The next generation of research used information-processing paradigms (e.g., memory, modified Stroop, and dichotic listening tasks). This next wave of studies found that existence of dysfunctional schemas could be demonstrated in both acutely ill and recovered individuals. When induced into a negative mood, recovered individuals exhibited dysfunctional schematic processing. Overall, the results of this series of studies suggested that cognitive schemas are stable structures that lie dormant until activated, and, once activated, they negatively bias attention, memory, and perception.

A novel application of the mood-priming paradigm to schema research in major depressive disorder (MDD) has been to test whether cognitive reactivity (e.g., to negative mood) can be differentially reduced according to treatment and is predictive of relapse (Segal, Gemar, & Williams, 1999). Segal and colleagues compared dysfunctional attitudes before and after a negative mood induction for patients who had recovered from major depression through either CT or pharmacotherapy. Patients who were treated pharmacologically and had recovered from depression showed significantly larger increases in dysfunctional cognitions (i.e., greater cognitive reactivity) compared with patients who were treated with CT. Moreover, patients’ reactions to the mood induction procedure were predictive of subsequent depressive relapse, with greater levels of cognitive reactivity being associated with increased risk. Although these results have considerable implications, it should be noted that the conclusions are limited by the fact that the groups were not randomly assigned to treatment conditions, which introduced the possibility of some unassessed variables serving as confounds. Segal and colleagues have recently completed a study that specifically addresses this limitation.

In the remainder of this chapter, we present the clinical application of the schema concept in the treatment of MDD. The following two cases help illustrate schema assessment, case formulation, and schema change interventions.

**Case 1:** Stephanie, a 21-year-old woman, presents with depression-related symptoms including loss of interest and pleasure, feelings of worthlessness and low self-esteem, memory and concentration difficulties, extreme fatigue, and social withdrawal. She often cries, for no apparent reason, and has lost 10 pounds in the past month. She is no longer attending classes at the university, and tends to spend her days sleeping. Her friends and family are concerned and have noticed her restlessness and irritation. Stephanie was referred for cognitive therapy by her family doctor, and she reported in the initial assessment interview...
that her mood started to change noticeably approximately 6 months ago, after her boyfriend of 2 years broke up with her.

**Case 2:** Andrew, a 34-year-old married man with a 14-month-old child, presents with depression-related symptoms including lack of motivation and flat affect. He continues to go to work as a consultant for a large firm but finds that he can't "deal with people anymore." His libido is down, and he is more irritable with his wife. Andrew's sleep has been affected, and he finds that he wakes up at least four or five times a night. He is tired and agitated during the day, and he finds that he is making mistakes at work. Andrew describes himself as a perfectionist and notes that he has always been highly self-critical. At intake, he reported a change in his mood dating to 1 year ago, which coincided with the merger of his company with another consulting firm. He also cites ongoing marital problems as a stressor, especially since the birth of his son.

**COGNITIVE ASSESSMENT AND CASE FORMULATION**

Conducting effective CT requires an ongoing cognitive assessment to aid in the development of a specific case formulation about the nature of the patient's problems. Despite some variation in methods for arriving at and using case formulations, the key aspect of the assessment is that it ties together all of a patient's problems and provides a guide for understanding and treating the patient's current difficulties (Persons, 1989). The case formulation sheet (Appendix 2.1) can be used multiple times during the assessment phase of treatment to construct, discuss, and modify the case formulation with the client and collaboratively determine treatment goals. An example of a completed case formulation is presented in Appendix 2.2.

The schema concept is fundamental to the case formulation, as schemas are the hypothesized underlying mechanism responsible for the patient's overt problem. A good working hypothesis of the relationship between a client's overt difficulties and the underlying schemas helps the therapist understand the association between problems endorsed by the individual, predict behavior, decide on a treatment plan, and choose appropriate interventions. The process of developing hypotheses about underlying schemas is challenging, partly because schemas are not readily accessible to conscious thought. From the outset of treatment a number of methods are available to clinicians to help them generate hypotheses regarding the idiographic schemas of the patient and arrive at a case formulation. Developing the case formulation together with the client helps to strengthen the therapeutic alliance and engage the client in the therapeutic process.
Examining Automatic Thoughts

Automatic thoughts are the first and most easily accessible level of cognition that can provide clues to the activated schemas. One standard and reliable way to elicit ATs is to ask the patient to think of an emotionally charged situation and, through Socratic questioning, probe for the “hot” thoughts: What was going through your mind when you started to feel this way? What did the situation mean to you? What does it say about you? Your world? Others? Your future? What images or memories do you have from this situation? Questioning the meaning of high-affect events soon leads to the identification of schemas, especially if the affect is reproduced in session. If the client has difficulty with this exercise, the therapist may wish to get him or her to track mood changes during the week and write down thoughts during or immediately after an emotionally charged situation. Appendix 2.3 shows an example of an automatic thought record (ATR) that can be given to the client as homework between sessions, and the therapist can use the downward arrow technique (Appendix 2.4) in conjunction with the thought record to elicit core beliefs.

The therapist can also use in-session fluctuations in mood to probe for ATs.

*Therapist:* Did you notice any fluctuations in your mood this week, Andrew?

*Andrew:* Yes, I felt really depressed all day Tuesday.

*Therapist:* Did anything in particular happen on Tuesday that affected your mood?

*Andrew:* Well, in the morning my supervisor came by my desk and handed me a new project to work on.

*Therapist:* Can you describe how you felt when he handed you the new project?

*Andrew:* I don’t know. I guess I felt a lot of pressure. I felt overwhelmed.

*Therapist:* I notice that you are clenching your fist. What are you feeling right now as you think of the new project assigned to you?

*Andrew:* I’m feeling that sense of pressure all over again. Like there’s a lot of pressure for me to perform.

*Therapist:* Let’s examine the thoughts that are connected to that sense of pressure. What is going through your mind right now as you think about the project?
Andrew: I doubt whether or not I can do a good job. I really need to impress my supervisor so that I can get a promotion at work and make more money and I’m not sure if I can do it. I guess I’m expecting to fail.

From Andrew’s ATs, the therapist might begin to theorize that a general theme of inadequacy, incompetence, inferiority, competitive loss, and social defeat might be central to his underlying schemas. It might also be hypothesized that Andrew has a stronger predisposition toward an autonomous personality style, resulting in the need for independence and goal achievement and an overwhelming concern regarding the possibility of failure.

Examining Cognitive Processes

The next level of cognition consists of attitudes (“Being single is a sign of inferiority”), rules (“I should always appear in control”), expectations (“I will be mocked if I assert myself”), and assumptions (“If I’m not perfect, I won’t be liked”) that are less accessible and malleable than automatic thoughts, but are one step closer to the schemas that drive information processing. Therapists work in various ways to access this level of cognition. One popular technique is to have patients complete conditional statements:

Therapist: You said you felt depressed and hopeless after you and Michael broke up.

Stephanie: Yes, I just can’t understand what happened or what I did wrong. I really thought it was going to work out this time. But instead I drove him away, and now I’m alone again.

Therapist: How would you finish this statement? “Being alone means ______.”

Stephanie: It means that there’s something wrong with me. That I’m a loser, and I’ll always be alone.

Ascertaining the patient’s automatic thoughts and interpretation of events during the cognitive assessment is key, not only because they are indicators of underlying schemas, but also because they will become one of the initial targets for therapy. According to Padesky (1994), schema work is most effective if it’s done after having focused cognitive interventions on automatic thoughts and interpretations.

Determining the Life Events Linked to the Onset of the Depression

Another important way to uncover activated schemas is to explore life events that occurred around the time the individual became depressed,
to assess for congruency between what precipitated the depression and an individual’s specific vulnerability. For Stephanie, depression followed a relationship breakup, whereas Andrew became depressed following workplace changes. These findings suggest that interpersonal relatedness is a central theme in Stephanie’s core schemas, and achievement striving is a central theme in Andrew’s core schemas. However, it is important to look for both autonomous and sociotropic concerns for each patient, and discern the extent to which either relatedness or achievement striving, or both, are central to that person’s experiences. Andrew also endorsed marital difficulties as a stressor, which suggests that schemas about relatedness might also be activated and maintaining his depressed state.

Examining Early Childhood Experiences

Cognitive theorists (A. T. Beck, 2002; Young, Klosko, & Weishaar, 2003) have argued that maladaptive schemas that develop the earliest (i.e., within the nuclear family) are the strongest, whereas schemas developed later in life from other influences such as peers and school are somewhat less pervasive and powerful. A careful examination of early childhood experiences, therefore, can be a useful aid during the cognitive formulation.

Stephanie was raised in an intact nuclear middle-class family. She described her parents as “simple folk” and has always had very different interests, often feeling guilty and conflicted about their differences. She depicted a difficult relationship with her mother since childhood, whom she described as controlling, stubborn, and domineering. Areas of conflict between them often related to privacy and independence issues. Memories of her childhood and adolescence included her mother reading her diary, criticizing her choices of friends, and throwing out her possessions without consulting her first. Her father, described as passive and uncommunicative, often acted as a mediator and tried to buffer the conflict. However, this would lead to marital distress and Stephanie would inevitably be blamed. Her parents frequently argued, threatened divorce, and competed against one another for Stephanie’s attention. Despite all the conflict with her mother, she also described her mother as being emotionally dependent and doting. This left Stephanie with the sense that her mother’s identity depended exclusively on her, and Stephanie would often feel guilty if she disagreed with her mother. Stephanie’s chief conflict while growing up was between wanting to please her mother and wanting to assert her own independence.

From this description, the therapist can theorize that Stephanie’s childhood experiences led to the development of schemas of instability and abandonment in relationships, and to schemas of the self as unlovable. “If I assert myself, I will disappoint others,” “My decisions are wrong,” and
"Others disapprove of me" were some schemas that the therapist and Stephanie formulated together.

Formulating Interpersonal Schemas

In addition to exploring the history of significant relationships and patterns in past and current relationships outside of therapy, the therapeutic relationship itself can provide important opportunities for understanding and modifying interpersonal schemas (Safran & Segal, 1990).

Andrew described his father as a "tyrannical" figure who was easily provoked and, as a result, the family "walked on eggshells" when his father was around. He was also a highly critical and overly expectant father who was never satisfied with Andrew’s achievements, particularly in the academic realm. Andrew’s personal, social, and employment history revealed disputes with others as a recurrent theme. He described numerous conflicts at work over the years, remarking that he had no tolerance for people who treated him dismissively, and his expectation was that others were continually trying to take advantage of him. He also noted sensitivity to interpersonal rejection, admitting that he had difficulty concealing his emotions in such instances, and he described a fundamentally competitive relationship with coworkers, which led to strained relations and an impoverished social network. In session, his interpersonal style was abrupt and aggressive.

Andrew’s relationship history revealed a pattern of feelings of anger and resentment, particularly toward authority figures. He was particularly sensitive to criticism and often perceived injustices when there were none. Instability in interpersonal relationships was apparent. Interpersonal schemas that were hypothesized for Andrew included “If I fail, I will be criticized and rejected” and “If I let my guard down, others will take advantage of me.”

Attachment (Bowlby, 1982), defined as the tendency to seek the proximity and care of a specific person whenever one is vulnerable or distressed, can also provide useful information about a patient’s interpersonal schema (Liotti, 2002). According to Liotti (2002), those with an avoidant attachment style construct interpersonal schemas in which the self is portrayed as bound to loneliness and others are portrayed as unwilling to provide comfort. Anxiously attached individuals, in contrast, construct self—other working models in which the self is viewed as helpless and others are viewed as unpredictable and intrusive. Finally, the interpersonal schema of those with a disorganized or disoriented pattern of attachment portrays both self and other as unavailable in times of distress. Appendix 2.5 features a worksheet that the therapist can use when trying to assess interpersonal schemas.
Assessing Implicit Schemas

There has been an increasing realization that core cognitive structures and processes are largely outside the realm of overt awareness and are implicit in nature (Dowd & Courchaine, 2002). Implicit learning has been described as having several properties including being (a) robust and resistant to degradation, (b) phylogenetically older, (c) resistant to consciousness, and (d) less available than explicit knowledge (Schacter, 1987). If core structures are implicit in nature, it follows that they are more robust, less available, and less easily recalled than is explicit knowledge, and may require repeated cognitive challenges and corrective emotional experiences for change (Dowd & Courchaine, 2002). Theory and research on implicit learning can assist cognitive therapists in the development of new assessment and intervention techniques. However, this area is relatively new and much work remains to be done regarding the role of implicit learning in schema theory.

INTERVENTION AND TECHNIQUES

Once maladaptive schemas have been identified and an initial case conceptualization has been developed, schema change can begin. A first step toward schema change is for therapist and client to develop more adaptive alternative schemas. According to Padesky (1994), clinical methods for schema change are more effective if the alternative, more adaptive schema rather than the maladaptive schema is the focus of evaluation. To identify alternative schemas Padesky (1994) suggested asking clients specific questions using constructive language such as “How would you like to be?” or “What would you like other people to be like?” A number of methods are available for schema change. Usually involving a simultaneous weakening of old maladaptive schemas and a strengthening of new adaptive schemas, they include continuum methods (Padesky, 1994), positive data log (Padesky, 1994), historical test of schemas (Young, 1999), and the Core Belief Worksheet (J. S. Beck, 1995).

Continuum Methods

A main purpose of a continuum is to shift maladaptive absolute beliefs (e.g., “I am unlovable”) to more balanced beliefs. In basic terms, the continuum method involves creating a chart on which maladaptive schemas lie on one end (failure 100%) and more adaptive schemas lie on the other end (success 100%). Clients are initially asked to place themselves on the continuum, and through questioning the evidence for his or her
choice and searching for alternative evidence using the standard techniques of CT, the client slowly shifts his or her self-evaluations toward a more adaptive stance.

Padesky (1994) developed a number of strategies to maximize the effectiveness of continua work, including charting on the adaptive continuum, constructing criteria continua, using two-dimensional charting of continua, and using a two-dimensional continuum graphs. Because of space limitations, we present only the process of charting on the adaptive continuum simultaneously with constructing continua criteria using Stephanie’s case to illustrate the method (Appendix 2.6).

Stephanie and her therapist began the continuum method by identifying her maladaptive schema (“I’m unlovable”). Her desired alternative schema was “I’m lovable.” When she was asked to rate herself on a continuum ranging from 0% to 100% for the adaptive schema, she rated herself as 5% lovable and marked this point on the continuum with an X. The next step involved asking Stephanie to develop specific criteria for evaluating the target schema.

The rationale behind constructing specific criteria is that schemas, by nature, are abstract and global, which increases the chances that clients will rate themselves in extreme terms. Reducing the global nature of schemas to specific and concrete criteria decreases the probability that clients will rate themselves in these extremist forms. Stephanie, for example, was quick to judge herself as 5% unlovable; however, once she had dissected 0% lovable to include “not having any friends,” “never caring for others,” and “hurting other’s feelings,” she was able to recognize that she did not meet the these criteria, which forced her to increase her lovability rating. Developing specific criteria for schemas is not an easy task for clients, however, and the therapist must be aware of distortions. Stephanie, for example, initially developed criteria for 0% lovable that included “being fat” and “being ugly.” Once Stephanie and her therapist completed the task of identifying specific criteria, the therapist asked her to place an X on each continuum according to how she rated herself. Through this exercise Stephanie was able to begin the shift in her negative self-perspective by recognizing that on some of the criteria she endorsed as part of being lovable she actually rated herself quite favorably.

Positive Data Log

The positive data log (Appendix 2.7) helps to strengthen new adaptive schemas by correcting information-processing errors (Padesky, 1994). The first step is to provide a clear rationale for the task to the client by explaining how maladaptive schemas are maintained. Padesky (1991) recommended
using the idea of prejudice as a metaphor to explain the idea that schemas, like prejudices, are maintained by discounting, distorting, and ignoring information that is not consistent with them. For example, Andrew’s schema “I’m a failure” was maintained by his overevaluation of mistakes, misinterpretation of people’s comments, and discounting of successes. The positive data log is set up as a task to encourage the client to actively look for information to support the new and more adaptive schema “I’m successful.” The client is encouraged to observe and record on a daily basis information that is consistent with the new schema, no matter how small or insignificant it might seem. As noted by Padesky (1994), the therapist can assume that the client will discount, distort, and resist information that is not consistent with the old schema, and the challenge for the therapist is to support and encourage the client to perceive and record data the client does not believe exist. Persons, Davidson, and Tompkins (2001) offered some helpful hints to ensure that the benefits of this task are maximized:

- start the log early in treatment and during a session;
- reward small steps;
- add items to the log during sessions;
- review obstacles to use of the log;
- review rationale for the log;
- suggest particular life areas to monitor;
- revisit the case formulation with the client;
- treat the task as an experiment; and
- use a thought record to restructure negative expectations about the usefulness of the log.

**Historical Test of Schemas**

The Historical Test of Schemas (Appendix 2.8), developed by Jeffrey Young (1994), is another useful intervention to alter maladaptive schemas. The rationale behind this intervention is that schemas are formed in response to experiences throughout one’s life and can be restructured through a systematic and realistic review of the evidence from life experiences. The first task involves identifying a maladaptive schema and helping the client list both confirming and disconfirming evidence for this core belief that spans the client’s lifetime. For each period specified by the client (e.g., 0–2 years of age), the client and therapist write a summary of the data collected as it pertains to the schema. It is recommended that the historical test of the schema begin with the infancy period, as clients will be less likely to judge themselves harshly during this time period. (See Appendix 2.9 for a section of Andrew’s historical review.)
Core Belief Worksheets

J. S. Beck (1995) developed a Core Belief Worksheet, which asks clients to write down their old maladaptive schemas and their new adaptive schemas and rate the believability (from 0%-100%) of each on a weekly basis. As homework, the client collects evidence that supports the new belief and evidence that seems to support the old belief but, given an alternative explanation, could be consistent with the new belief. A client with an old schema of "I'm not terribly intelligent," for example, could write down "I passed the exam" as evidence to support the new belief "I'm intelligent." Evidence such as "I don't know the answer to this question" might be written down as "In the past I would have taken not knowing the answer as proof that I am not intelligent. Not knowing, however, could also be viewed as a challenge and as a way of learning, and as having nothing to do with intelligence." A version of a Core Belief Worksheet is shown in Appendix 2.10.

Irrespective of what method is used to change schemas, some type of written record to document the client's schema learning is recommended (Padesky, 1994). Writing down the learning experience helps the client consolidate the information, increasing the likelihood that the new schema will begin to direct information processing.

Outcome Research

Research suggests that CT is as effective as pharmacotherapy in treating acute episodes of depression, even if severe, and is better at preventing relapse (Antonuccio, Thomas, & Danton, 1997; DeRubeis, Gelfand, Tang, & Simons, 1999; Segal et al., 1999). These findings are consistent with the view that the active mechanisms of CT are the interventions aimed at the core schemas and that schema change can reduce risk of relapse (A. T. Beck et al., 1979).

Some empirical evidence suggests that CT produces schema change, and that schema change reduces relapse (Segal et al., 1999). Segal and colleagues found that patients who were treated with pharmacotherapy and recovered showed a significant increase in dysfunctional cognitions compared with patients treated and recovered with CT. Moreover, a link was found between this cognitive reactivity to mood induction and later relapse.

There is little direct evidence, however, that the actual schema interventions result in schema change. Jacobson and colleagues (Jacobson et al., 1996, 2000) have completed a number of studies in which they have dismantled CT and examined which component of the therapy is related to outcome. In one study, they randomly assigned 150 patients with MDD to a treatment focused exclusively on the behavioral activation (BA) compo-
ment, a treatment that included both BA and the teaching of skills to modify automatic thoughts but excluding the components of CT focused on core schema, or the full CT treatment. They found that both component groups improved as much as did those who received interventions aimed at modifying underlying schemas; this finding raised questions as to the necessary and sufficient conditions for change in CT. Follow-up data they are collecting will answer questions as to the relative effectiveness of schema change interventions compared with the components of CT to prevent relapse and recurrence.

CONCLUSION

Schema concept has played a pivotal role in both research and clinical treatment of major depression. It provides a useful framework from which to understand the development, maintenance, and high relapse rate in depression, and has led to the development of an array of clinical tools and techniques aimed at treating depression through schema change. As our research knowledge accumulates, researchers and clinicians are beginning to understand more clearly the usefulness as well as the limitations of the schema concept as it applies to the treatment of MDD. The importance of social environment and attachment security in depression, for example, has necessitated a greater differentiation of schema type and greater attention to developmental and interpersonal issues in schema formation and maintenance. Researchers and clinicians are also beginning to understand similarities and differences in women's and men's accounts of depression and how these apply to the schema model. More work, however, is needed to extend the schema model of depression and clinical interventions to include the importance of both relatedness and autonomy concerns for men and women, and take into account individual differences in the extent to which either relatedness or autonomy is central to that person's experiences. From a clinical perspective, therapies that include interventions aimed at schema change have been found to result in lower relapse rates. However, additional studies are needed to better understand the efficacy and mechanism of schema change.

As a descriptive model of how individuals with depression think, the schema concept of cognitive theory has served an important heuristic function, generating research of considerable clinical usefulness. Moreover, the therapeutic application of the model (cognitive theory) is one of the most effective treatments for depression. Nevertheless, schema concept and cognitive theory are vulnerable to a number of criticisms that will likely promote continued evolution of the theory.
One critique of cognitive theory is that researchers interested in the primacy of schemas in depression have not adequately integrated other approaches that emphasize relevant research regarding the neurophysiological substrate of depression. For example, although research has demonstrated that CT effects significant change in the neurobiology of depression (e.g., Joffe, Segal, & Singer, 1996), the model does not currently specify the mechanisms by which schema change effects neurophysiological change and vice versa. Other evidence calls into question the primacy of schemas in the onset and course of MDD. First, it is now an established fact that the dysfunctional schemas thought to underlie depressive cognition are mood-state dependent, and are activated only in the presence of negative affect (Ingram, Miranda, & Segal, 1998; Miranda, Gross, Persons, & Hahn, 1998). Second, cognitive theory does not adequately take into account abundant neurobiological evidence regarding the affective responses that operate prior to the involvement of cognitive processing (Shean, 2001). Third, some evidence suggests that the behavioral component of CT appears to have the greatest effect on changes in depression scores at the end of treatment and subsequent follow-up (e.g., Dobson & Khatri, 2000; Gortner, Gollan, Dobson, & Jacobson, 1998; Jacobson et al., 1996). If dysfunctional schemas cause depression, then presumably treatments targeting maladaptive cognitions and schema change should increase efficacy over and above behavioral treatment alone. Such data suggest that depressive schemas are one component of a more complex system involving synchronous and reciprocal relations among affect, behavior, and cognition (Swallow, 2000).

A second major criticism of the cognitive model relates to its failure to address adequately the question of why individuals with depression and individuals vulnerable to depression think the way they do (D. T. Gilbert, 1992). Some cognitive theorists invoke Piagetian learning concepts to explain the development and persistence of depressive thinking, and propose that individuals generate idiosyncratic schemas as a result of interacting with their environment. However, such a view neglects the inherently purposive nature of human activity and the degree to which schemas may be the product of evolutionary history as well as the learning history of the individual (Swallow, 2000). A third major criticism of cognitive theory and schema concept is the tendency to localize the cause of depression within the individual, and to pay relatively less attention to the broader social, economic, and interpersonal context of depression (e.g., Coyne, 1976; Joiner & Coyne, 1999).

In an attempt to address these criticisms, a number of theorists (P. Gilbert & Allan, 1998; Price, 1972; Swallow, 2000) have proposed a model in which depression is conceptualized as the outworking of a biologically hardwired response pattern that has evolved to inhibit aggression and promote reconciliation following hierarchical or competitive defeat. An
involuntary defeat strategy (IDS) is triggered and inhibits anger when one senses that one is losing (or will lose) an agonistic encounter with another person by generating a powerful affective state of inferiority, shame, worthlessness, sadness, hopelessness, helplessness, anhedonia, and anergia (depression). Escape from this negative state (and deactivation of the IDS response) is possible through flight or acceptance of defeat or subordinate status. However, when escape is blocked, the IDS may continue to intensify, resulting in an intense and prolonged depressive response (P. Gilbert & Allan, 1998; Swallow, 2000). In summary, according to this view, some very general schemas, such as the IDS, are hardwired products of evolutionary history as well as the learning history of the individual. Such an account implies that the maladaptive schemas observed in depression are part of an evolved submissive defense response designed to terminate the motive to keep trying to win in a no-win situation, with the general goal of self-protection in agonistic encounters with other people (Swallow, 2000).

It is important to note that although new ideas, such as ideas about IDS, may contribute to the further development of schema concept, cognitive theory, and clinical applications, it is clear that cognitive models have been responsive to the criticisms leveled at them and adapted as a result. For instance, consider the increasing recognition of the importance of emotional activation in CT so that schemas can be effectively targeted as well as recent attention to the importance of the interpersonal aspect of CT (e.g., Safran & Segal, 1996).
APPENDIX 2.1
Case Formulation Sheet

Name of client: ________________________________
Name of therapist: ________________________________
Problem list: ________________________________
Date of formulation: ________________________________

Step 1: Questions to elicit core schemas

**Automatic thoughts**
Can you think of one or two specific situations in which you felt a change in mood?
Describe situation:
Type of situation: work _____ relationship _____ other _____
Describe your thoughts in the situation:

**Underlying assumptions, expectations, attitudes**
What attitude or expectations do you hold about yourself, others, and the world in work, relationships, and other situations?
Finish these sentences:
  - If I do ______, others will do ______.
  - I am ______.
  - People are ______.
  - The world is ______.
  - It is important to (be/do/have) ______.

**Early life experiences and life events**
What early childhood experiences do you think are relevant?
Describe what was going on around the time you became depressed.

**Relatedness and achievement themes**
How important is it to you to be in a relationship?
How important is it to you to be successful?

Step 2: Hypothesized underlying schemas

Self:
Other:
World:
Future:
Interpersonal:

Step 3: Events that trigger schemas
Step 4: Automatic thoughts triggered by schemas
Step 5: Behavior triggered by schemas
Step 6: Ways in which schemas are maintained
Summary of working hypothesis:
APPENDIX 2.2
Stephanie's Case Formulation Sheet

Name of client: Stephanie
Name of therapist: Dr. Jones
Problem list: Depression, social withdrawal
Date of formulation: May 5, 2003

Step 1: Questions to elicit core schemas

**Automatic thoughts**
Can you think of one or two specific situations in which you felt a change in mood?

**Saturday night**
Describe situation: was alone, writing in diary, started thinking of ex-boyfriend
Type of situation: work _______ relationship _____ other __X__

Describe your thoughts in the situation: Why did he break up with me? I'll always be alone. I wasn’t good enough for him.

**Underlying assumptions, expectations, attitudes**
What attitude or expectations do you hold about yourself, others, and the world in work, relationships, and other situations?

If you’re not in a relationship, then you’re a loser.
Others are better than me.
You have to be smart, pretty, and athletic to be liked.

Finish these sentences:
If I ________, others will __________.
I am not good enough.
People are better than me.
The world is a game.
It is important to (be/do/have) loved.

**Early life experiences and life events**
What early childhood experiences do you think are relevant?
Parents fought a lot; mother was intrusive and controlling.
Describe what was going on around the time you became depressed.
Boyfriend dumped me.

**Relatedness and achievement themes**
How important is it to you to be in a relationship? Extremely important
How important is it to you to be successful? Pretty important

Step 2: Hypothesized underlying schemas

Self: I am unlovable.
Other: Others are better than me. Others’ needs are more important.
World: The world is competitive.
Future: I am destined to be alone.
Interpersonal: If I assert myself, I’ll be put down.
Step 3: Events that trigger schema
Relationship breakup.

Step 4: Automatic thoughts triggered by schema
I'm not good enough.
I'll always be alone.
I'm a loser.

Step 5: Behavior triggered by schema
Submissiveness in relationships.
Social withdrawal.
Not able to express anger.
Tends to please others.

Step 6: Ways in which schema is maintained
Doesn't assert her needs, so others respond by being dominating and controlling.
Tends to be taken advantage of in relationships. Confirms her view that she is not good enough.

Summary of working hypothesis:
## APPENDIX 2.3

### Automatic Thought Record

<table>
<thead>
<tr>
<th>Situation</th>
<th>Mood</th>
<th>Thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe what was going on when you noticed a change in your mood.</td>
<td>Describe what you were feeling in the situation, and rate the intensity of the feeling on a scale of 0 to 100.</td>
<td>What was going through your mind?</td>
</tr>
<tr>
<td>Type of situation:</td>
<td></td>
<td>What did the situation say about you?</td>
</tr>
<tr>
<td>Work</td>
<td></td>
<td>What did the situation say about others?</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td>What did the situation say about your future?</td>
</tr>
<tr>
<td>Home</td>
<td></td>
<td>What did the situation say about the world?</td>
</tr>
<tr>
<td>Relationship</td>
<td></td>
<td>What did the situation say about your relationship?</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>Describe any images that came to mind.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MAJOR DEPRESSIVE DISORDER 29
APPENDIX 2.4

Downward Arrow Technique Identifying Core Beliefs

1. About the self
Situation (from thought record)

What does this say about me?
↓
What does this say about me?
↓
What does this say about me?

2. About others
Situation (from thought record)

What does this say about other people?
↓
What does this say about other people?
↓
What does this say about other people?

3. About the world
Situation (from thought record)

What does this say about the world?
↓
What does this say about the world?
↓
What does this say about the world?

APPENDIX 2.5
Interpersonal Schema Formulation Sheet

Step 1: Ask the client to think of people in his or her life that have made an impact (either positive or negative) on who he or she is today and explore the nature of the relationship, focusing on what the client learned as a result of the interaction.

Example:
Person: Harry
Relationship to Client: brother
Impact: I need to work harder than others do to succeed.

Step 2: Write down patterns noticed in relationships (e.g., lack of assertion, difficulty communicating conflict).

Step 3: What is the client's hypothesized attachment security? Choose from the following:
Secure: “I am OK; others are OK.”
Anxious ambivalent: “I am not OK; others are OK.”
Anxious avoidant: “I am OK; others are not OK.”
Disorganized: “I am not OK; others are not OK.”

Step 4: On Kiesler's interpersonal circumplex, where would you place the client's main interpersonal style? On this basis, what reactions are expected from those who interact with client?

Step 5: Create a working hypothesis of interpersonal schemas and how they are maintained.
APPENDIX 2.6
Stephanie’s Continuum

Maladaptive schema: I’m unlovable.
Adaptive schema: I’m lovable.

Step 1: Rate yourself on the adaptive schema continuum.

\[
\begin{array}{c|c}
0\% & 100\% \\
\hline
\text{Lovable} & \text{Lovable} \\
\end{array}
\]

Step 2: Specify specific criteria for each endpoint of the adaptive schema.

\[
\begin{array}{c|c}
0\% & 100\% \\
\hline
\text{Lovable} & \text{Lovable} \\
\text{Not having any friends} & \text{Having friends} \\
\text{Never caring for others} & \text{Being generous toward others} \\
\text{Hurt others’ feelings} & \text{Being kind} \\
\end{array}
\]

Step 3: Rate yourself on each of the criteria specified.

\[
\begin{array}{c|c}
0\% & 100\% \\
\hline
\text{Not having any friends} & \text{Having friends} \\
\end{array}
\]

\[
\begin{array}{c|c}
0\% & 100\% \\
\hline
\text{Never caring for others} & \text{Being generous toward others} \\
\end{array}
\]

\[
\begin{array}{c|c}
0\% & 100\% \\
\hline
\text{Hurt others’ feelings} & \text{Being kind} \\
\end{array}
\]

Step 3: Rerate yourself on the adaptive schema continuum.

\[
\begin{array}{c|c}
0\% & 100\% \\
\hline
\text{Lovable} & \text{Lovable} \\
\end{array}
\]
APPENDIX 2.7

Positive Data Log

Instructions: Describe your maladaptive schema and alternative schema in the space provided. Then, write down each piece of evidence in support of your alternate schema and the date and time when you observed the evidence. Be as specific as you can, and remember to write down all evidence in support of your alternative schema, regardless of how small or insignificant you might think it is.

Maladaptive schema: ________________________________
Adaptive schema: ________________________________

<table>
<thead>
<tr>
<th>Date and time</th>
<th>Evidence in support of alternative schema</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
APPENDIX 2.8
Historical Test of Schema

Instructions:
1. For each period of your life, list the evidence that supports your maladaptive schema, and the evidence that does not support your maladaptive schema. Be as specific as possible.
2. Review the evidence, both supporting and not supporting, and write down a brief summary of what the evidence suggests.
3. Remember that perception, assumptions, and feelings are not evidence.

Maladaptive schema: __________________________

<table>
<thead>
<tr>
<th>Age range: ___</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence that supports maladaptive schema</td>
</tr>
</tbody>
</table>

Summary of evidence

<table>
<thead>
<tr>
<th>Age range: ___</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence that supports maladaptive schema</td>
</tr>
</tbody>
</table>

Summary of evidence
APPENDIX 2.9

Excerpt From Andrew's Historical Test of Schema

Instructions:
1. For each period of your life, list the evidence that supports your maladaptive schema, and the evidence that does not support your maladaptive schema. Be as specific as possible.
2. Review the evidence, both supporting and not supporting, and write down a brief summary of what the evidence suggests.
3. Remember that perception, assumptions, and feelings are not evidence.

Maladaptive schema:  "I'm a failure."

<table>
<thead>
<tr>
<th>Age range: 14 to 16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evidence that supports maladaptive schema</strong></td>
</tr>
<tr>
<td>I didn't win the math competition.</td>
</tr>
<tr>
<td>My father would always tell me that I could do better.</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Summary of evidence**
Between the ages of 14 and 16, my father's expectations of me were quite high, and I always felt I disappointed him. However, I actually accomplished a lot during that time period.
APPENDIX 2.10
Core Belief Worksheet

Old core belief:

New belief:

<table>
<thead>
<tr>
<th>Evidence that contradicts old core belief and supports new belief</th>
<th>Evidence that supports old core belief with reframe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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REFERENCES


