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Cognitive Behavioral Therapy (CBT) of Depressive Disorders

Irene Lehner-Adam and Bertalan Dudas

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1. Introduction

Depressive disorders belong to the most frequent psychiatric disorders in Western Europe and the U.S.A. and are associated with high recurrence rates, high resistance to therapy, morbidity and mortality [1-4]. Currently, depressions have a share of 6.1% in total DALYs (DALY = Disability-Adjusted Life Year = as measure for disease burden), and thus are ranked at the 4th place in worldwide causes of disease [4]. It is expected that unipolar depression will become the main health-related cause of death in developed countries by 2020 [5,6]. In the E.U. alone, 18.5 million people have been diagnosed with major depression [7].

Depression involves numerous personal, family-related, social and economic consequences. Due to a high psychological burden, this disorder no longer allows the usual conduct of life; furthermore, not only does it represent a burden on the quality of life of the affected persons and close relatives but it is also connected to a significant economic impact. In the U.S.A. the costs incurred by treatment, morbidity and mortality amount to 83 billion USD per year [8]; in the United Kingdom the annual depression treatment costs for adults amount to 636 million euros [9]. In Europe, 28 billion euros are spent on treatment of affective disorders [10]. The socio-economic costs of depression for society as a whole amount to approx. 1% of the gross domestic product. However, the largest part of economic expenses is generated outside of the health system [11] and is related to the loss of work productivity, leisure-time opportunities and early mortality due to suicide [12,13].

During the past twenty years, there has not only been an enormous growth in the number of depressed patients, but the selection of antidepressant medication has been dramatically increased. Despite major advances in depression research and development of new antidepressant substances, the high rate of therapy-resistant and/or recurrent patients was not improved [14,15].

Although there is a general consensus that, based on evidence-based psychotherapy research in past decades, both antidepressants and psycho-therapeutic procedures are effective for treatment of depressive disorders [16-20], psycho-pharmacological treatment still represents first-choice therapy. However, clinical studies show that only approximately 30% of the patients show remission after first treatment with antidepressants [21]. In case of a severe and acute depression, stabilizing the patient through medication clearly takes precedence; however, in case of slight to moderate depression (without symptoms of delusions) the focus of treatment should initially be placed on psycho-therapeutic methods due to the limited success of psycho-pharmacological therapy [22,23]. There is an increasing number of patients who do not desire pharmacological treatment (pregnant women, children), or do not tolerate such treatment due to undesired side effects and/or interactions (cancer, pain, geriatric patients). In these cases, psychotherapy should be preferred [24-30]. Whilst psychotropic drugs act biologically, psychotherapy is effective via patient self-efficacy by changing cognitions and behavior. To numerous depressed patients, the cause of their disorder is explained as being a chemical imbalance that can only be treated with medication. It can be assumed that the probability of mobilizing self-coping mechanisms in terms of fighting disorders is particularly low in this patient group. The high recurrence rate (50% within one year after treatment) of depressed patients who received pharmacological treatment in the past seems to support this notion [31].

Rush et al. [32] compared the effectiveness of cognitive behavioral therapy (CBT) to pharmacotherapy in a group of depressed patients treated as out-patients and ascertained that CBT is superior to pharmacotherapy. Bellack and colleagues [33] came to similar conclusion in their study and pointed out that combination therapy - which is preferred by some researchers - even shows negative results because pharmacotherapy has an inhibiting effect on behavioral therapy in connection with depression. Kovacs et al. [34] showed that the recurrence rate with behavioral therapy is significantly lower as compared to pharmacotherapy; CBT also shows the termination of therapy less frequently, and, after a one year follow-up, CBT-treated patients show significantly greater favorable progress as compared to patients with antidepressant treatment [19,35-36]. However, in-patient depression treatment in Western Europe indicates a growing trend towards the combination of both approaches.

CBT is a scientifically founded, active, problem- and target-oriented, structured, temporally limited psychological treatment method that shows high effectiveness against both psychiatric disorders (anxiety, phobias, compulsions, addictive disorders) and physical disorders including eating disorders, pain disorders and tinnitus [29,37-38]. During the past four decades there has been a number of scientific studies supporting the significance and effectiveness of CBT in connection with affective disorders, particularly depression [17,19,39-41].

The primary goal of the following section is to provide an overview of the history of CBT as well as its clinical features and the behavior-therapeutic diagnostics of depressive disorder. In the subsequent sections the psychological disorder models of depression and corresponding therapeutic approaches will be explained by using clinical cases. The presented methods represent treatment fundamentals of depressive disorders requiring a competent therapist.

The specific order of the presented elements of treatment does not represent a rigid sequence of treatment steps, but rather a recommendation of therapy. Certain therapeutic elements can only be determined if the patient provides certain basic information, e.g., with severe depression the patient is expected to activate behavioral strategies before the introduction of cognitive techniques [31]. The intensity of depression, current symptoms, cognitive levels, motivation as well as current patient problems determine the speed and the systematic progress of therapy.

The correct duration and sequence of CBT is pivotal for successful treatment. CBT for unipolar depression requires 15 - 30 sessions [42]. In case of moderate and severe depression it is recommended to have two sessions per week for 4 - 5 weeks, followed by weekly sessions during the next 8 - 12 weeks and then sessions every other or every third week. Relatively infrequent contacts are sufficient for the maintenance of therapy success. The described strategies are performed in single-person settings but can be adapted to group and pair therapies. The same applies to age groups: CBT proved to be successful in the treatment of depression in children [43] as well as in aged patients [44,45,46].

2. Symptoms of depression

Depressive disorders are included in the group of affective disorders in the major classification schemes (WHO – ICD-10, APA – DSM-IV). Affective disorders are psychiatric disorders where major symptoms include changes of mood or affectivity. The mood change is accompanied by change of activity levels in most cases (ICD-10). Although the terms "affect", "mood" and "emotion" are defined differently in most cases, many of these concepts exhibit similarities [47-48]. Here, affect is defined as an umbrella term that includes mood and emotion [49].

Feeling depressed does not particularly represent an onset of a disorder. However, depression is more than only a temporal change of mood or short-term sluggishness. The characteristic condition of a depressed patient is most commonly represented by the following symptoms:

Physical symptoms: Most patients with a depression suffer from sleep disturbances ranging from problems with sleeping through the night up to constant tiredness. Decreased or increased appetite, constipation and loss of libido are also characteristic of depression. The patient often complains of feeling of tension, coldness or diffuse pain in the head, back or gastrointestinal tract.

Cognitive symptoms: Depressed patients feel weak and powerless, and they lose most of their interests in people or activities they used to enjoy. These patients feel overwhelmed and they hesitate to make decisions. Their power of concentration decreases; many patients exhibit a decrease in cognitive performance as well. Recurrent negative thoughts are common and may be extremely disturbing, often leading to suicide attempts.

Emotional symptoms: Persistent gloom, feelings of despair, hopelessness, loneliness, forlornness, emotional void, anxiety, feelings of guilt and the feeling of inferiority are often present.

Behavior-specific symptoms: Speaking in a low-key voice, monotonous language, the lack of eye contact, powerless or bent posture, and slow movements are characteristic of depression. In contrast some patients can exhibit psychomotor unrest and agitation often manifesting in tremor or ergomania. Most patients retreat to isolation resulting in decreased communicative and social abilities as well as conflicts in close relationships. Daily activities such as personal hygiene and chores are often neglected. Some patients with depression correspondingly consume large amounts of alcohol, medication or drugs to make their mood more tolerable.

3. Epidemiology and co-morbidity of depressive disorders

Point prevalence of 2.3-4.9% [50-52] and lifetime prevalence between 13.3% and 17.1% have been identified for major depression in the general population [53]. Recent studies estimate that as many as 40% of women and 30% of men suffer from at least one episode of major depression during their life [54-56]. Although prevalence of bipolar disorders is identical in both genders in the western world [57], dysthymia, a relatively mild form of chronic depression, occurs almost twice as much in women as compared to men [53,57]. Significant gender-specific differences do not only apply to the frequency of occurrence of depressive disorders, but rather to their symptoms and accompanying diseases in adults [58-59]. Depressive disorders have also become more frequent in children of less than 11 years of age [56,60,61]; meta-analysis shows a prevalence rate of depression amounting to 2.8% in individuals younger than 13 years, and a rate of 5.7% in persons 13-18 years of age [62]. The symptoms are described similarly in both genders (depressed mood, concentration disorder, sleep problems); only after puberty can gender-specific differences be observed [58,63]. The prevalence rate of depression significantly increases with age and it is closely connected to family status and socio-economic circumstances [64]. However, the highest rate is present in 25-45 years old married women who have at least one child [65,66].

Disturbances of affective experience, such as anxiety, panic disorders, certain personality disorders and mourning sorrow, often show co-morbidity with depression. Depressive disorders are most frequently accompanied with panic disorders (40-80%), generalized anxiety disorder (50%), obsessive-compulsive disorder (3-30%), alcohol and drug abuse (30%), attention deficit disorder and suicide [67-70]. According to previously published data, 56% of the patients affected by serious depression have at least one suicide attempt, and 15% of the affected commit suicide [71]. Previous studies suggested that as much as 30-88% of suicides can be linked to depressive disorders in Europe [72].

4. Classification and diagnostics of depressive disorder

Currently, there are two major classifications commonly used in describing the severity of depressive disorders. One is established by the Diagnostic and Statistical Manual of Mental Disorders (DSM) of the American Psychological Association (APA) and the other one by the International Classification of Diseases (ICD-10) of WHO (Table 1). The differences between these classification systems are primarily in the number of the listed core symptoms which should be present for at least two weeks in both classifications, and in the classification of additional accompanying symptoms. If five of the described symptoms are present for more than two weeks, DSM-IV refers to the condition as "major depression". If only two to three symptoms have been simultaneously present for at least two years, DSM-IV diagnoses "dysthymia". In addition to diagnosing depressive disorders, both classification systems also determine its **polarity** (unipolar or bipolar), **course** (recurrent, partially remittent or remittent) and, depending on the number of core/additional symptoms, the **degrees of severity** of the disorder (slight, moderate, severe) as well as **additional symptoms** (with or without psychotic/somatic/catatonic/melancholic characteristics).

According to ICD-10, at least 2 core symptoms and 2 other symptoms should be present for the diagnosis of a slight episode; a moderate depressive episode requires at least 2 core symptoms and 3-4 additional symptoms, and a severe episode can be diagnosed by the presence of at least 2 core symptoms and at least 4 other symptoms with less severity.

DSM-IV (296.xx)	ICD-10 (F32.xx; F33.xx)
At last 5 of the following symptoms that are present almost every day for two weeks	at least 2 core symptoms simultaneously that are present for two weeks
<ol style="list-style-type: none"> 1. depressive mood 2. significantly decreased interest/joy 3. tiredness, loss of energy 4. sleeplessness/increased sleep 5. psychomotor unrest, slowing 6. significant weight gain/loss 7. worthlessness, improper feelings of guilt 8. decreased cogitation, concentration problems, decreased decision-making ability 9. recurrent thoughts of death imagination of suicide without plan, or detailed planning of suicide 	<ol style="list-style-type: none"> 1. depressive mood 2. loss of interest, loss of joy 3. increased fatigability plus at least two to four of the following symptoms: <ol style="list-style-type: none"> 1. sleep disorders 2. worthlessness, feelings of guilt 3. decreased concentration and attentiveness 4. decreased appetite 5. suicidal thoughts or acts 6. pessimistic view of future

Table 1. Diagnosis criteria for major depression as per DSM IV [73] and a moderate depressive episode as per ICD-10 [74].

These symptoms cause clinically significant impairments in the social, occupational or other fields of life in the most frequent cases, and cannot be explained by the direct effect of pharmacological treatment, substance abuse, another disease or simple sorrow.

5. Brief history of CBT

In the 1950s, psychology as a scientific theory and practice underwent a major development. During this period, the first steps of behavioral therapy (BT) were developed independently in the USA and in England based on the knowledge gained in experimental psychology and subsequently developed learning theories. Right from the beginning, BT was a collective term for a variety of different therapeutic procedures. The common feature of these procedures is that, unlike personality, behavior - including cognitive, emotional and physical responses - can be built, reduced and modified during the lifetime of the individual [75].

The roots of cognitive BT and behavioral learning theories go back to ancient times. Epictetus, a Greek stoic philosopher, who is considered one of the major influences in the development of psychotherapy, wrote: "Men are disturbed, not by things, but by the principles and notions which they form concerning things". Freud (1900/1953) was the first modern-day scientist addressing the perception that symptoms and feelings are based on unconscious thoughts. Alfred Adler [76], who was an important proponent of individual psychology, noted that humans actually do not suffer from an experienced trauma, but rather from the perception of personal interpretation of the event. In the beginning of the 19th century, the phenomenological direction of philosophy had a great impact on the development of psychology and the maturation of CBT, as authors including Kant, Heidegger and Husserl established their theory on the control of conscious experiences [77].

The principal element of CBT, classical conditioning, is a behavioral learning theory founded by Russian physiologist I. P. Pavlov (1849-1936), stating that new and conditioned reflexes can be added to natural, mostly inherited, unconditioned reflexes by means of learning. Based on the knowledge of classical conditioning it is also possible to generalize or erase behavioral patterns [78]. John B. Watson, who is considered to be the founder of classical behaviorism, described mental processes, e.g. thoughts, as responses to the autonomic nervous system on external stimuli, and he attempted to explain behavior on the basis of conditioned reflexes described by Pavlov. He wrote: "*Give me a dozen healthy infants and I will train them to become any type of specialist I might select*" [79].

Contrary to classical conditioning, operant conditioning theory stated that spontaneous behavior is promoted or inhibited by the consequence that follows. In the 1950s, Burrhus Frederic Skinner further developed the concept of operant or instrumental conditioning. Skinner's approach was to positively or negatively impact behavior by means of subsequent consequences. Based on this theory, behavior is supported by positive consequences, while negative consequences result in reduction or deletion of certain behavioral elements. This concept corresponds to an S-R-C model, with a stimulus (S) followed by the response (R), and the consequences (C). The S-R-C model is considered to be one of

the crucial elements of CBT even today [80]. The 1950s were also significantly influenced by the work of Mowrer (learning theory, 1947) and Dollar & Miller [81; 82], who created the first therapeutic models.

Initially, BT gave a very mechanistic idea of the human mind. Consciousness psychology limited itself to the externally observable human behavior and was based on the idea that such behavior could be shaped by environmental influences without taking genetic circumstances into consideration. Thus, the fundamental statement of BT was that behavior is learned by learning processes, and thus, incorrect behavior can be unlearned while desired behavior can be acquired by learning.

In the 1960s, as part of the so-called cognitive change, thoughts, emotions and attitudes progressively moved to the focus of CBT as principal approaches for explanation and treatment. One of the major sources of this paradigm shift was the integration of cognitive techniques in CBT; consequently, CBT became a valuable tool focusing primarily on strengthening the patient's independent ability to solve problems. The cognitive method described first by Beck addresses negative modes of thoughts and the resulting schemes as the source of psychiatric disorders [77]. The emotion theory of Schachter and Singer [83] was followed by the A-B-C concept by Albert Ellis, the father of the rational-emotive therapy, determining that emotions are triggered by interpretation the current situations. Consequently, by changing the attitude and perception of the event, the emotion/mood can also be altered [84]. In addition to Beck and Ellis, the second wave of BT was also influenced by authors including Jacobson, Eysenck, Wolpe, Bandura, Lazarus, Meichenbaum and Ullrich, whose concepts of model learning, relaxation exercises, stress management, self-instruction and self-assurance training complemented the various methods of CBT.

From the 70s until today,, behavioral therapy has been subject to substantial development based on emotion-focused approaches, methods of self-regulation and training of specific skills, including Dialectical Behavior Therapy (DBT; [85]), Acceptance and Commitment Therapy (ACT; [86]), Cognitive Behavioral Analysis System of Psychotherapy (CBASP; [87]), Mindfulness-Based Cognitive Therapy (MBCT; [88]), Positive Psychology, [89] and Scheme Therapy [90].

In contrast to the psychoanalytical approach, CBT does not perceive psychiatric disorders as consequences of suppression or expression of mental conflicts, but rather as consequences of maladjusted attitudes and errors in reasoning expressed through disturbed behavior. Thus, the disturbed behavior itself represents the problem that requires changing as a response to certain conditions.

Behavioral therapy offers an approach to enhance the patient's own capacities. Its primary objectives include, amongst others, making the patients aware of counterproductive attitudes and disturbing thought patterns. These goals are identified via learning processes performed in the therapeutic situation and then modified step by step until the adequate behavior is generated. In the therapeutic process, the relation of therapist and client represents a pivotal factor. At the onset of therapy, the therapist offers a particularly high amount of support by helping clients with identification and solving their problems, and then in-

creasingly delegating responsibilities and correspondingly promoting the patient's ability to solve problems as well recognizing processes that eventually lead to self-determination and social competence. As Hautzinger stated: *"The current level of CBT is based on the scientific results of years of therapy studies in the USA as well as Great Britain, Germany and Australia, and finally is the result of a productive development of the originally highly behavioristic stimulus-response approach into an explanatory approach of psychiatric disorders, which also includes internal processes such as cognitions and emotions."* [41].

6. Diagnostics of depressive disorders in behavioral therapy

Behavioral therapy intends to change problematic behavior by applying therapeutic methods. Disturbed behavior should be described precisely in order to enable differentiated use of these methods.

Despite the fact that clinical-psychological diagnostics is focused primarily on the collection of personality characteristics preferably across time and situation by means of clinical-psychological testing procedures, precise descriptions and quantification of behavior started only towards the end of the 1960s [91]. The diagnostics of depressive disorders in behavioral therapy is based on:

1. Criteria diagnostics (ICD-10, and DSM-IV; DSM-V as of May 2013)
2. Test-psychological diagnostics by using self-assessment and external assessment scales (e.g. **BDI** - Beck Depression Inventory [92]; **HAMD** – Hamilton Rating Scale for Depression [93]; **MADRS** – Montgomery Asberg Depression Rating Scale [94]; and structured clinical interviews, (e.g. **CIDI** - Composite International Diagnostic Interview [95]; **SCID** – Structured Clinical Interview for DSM-IV Axis 1 Disorders [96]; **ADIS** – Anxiety Disorders Interview Schedule for DSM-IV [97]; **IMPS**- Inpatient Multidimensional Psychiatric Scale [98]. Special procedures may gather additional psychopathologic symptoms on cognitive and motivational levels such as helplessness and hopelessness as well as on somatic, motor and interaction levels.
3. SORCK model of behavioral analysis

As a detailed description of behavioral-therapeutic diagnostics would exceed the scope of this chapter, we limit ourselves to a brief presentation of the SORCK model. Problem analysis is based on Skinner's learning theory and represents a diagnostic process crucial in behavioral therapy. Problem analysis connotes that the human behavior is controlled by preceding (triggering) and succeeding conditions. This represents the first components of the behavioral-diagnostic SORCK model: S-O-R-C = Stimulus – Organism - Response – Consequence. These conditions should be modified during therapy by using various methods [99]. Thus, behavioral diagnostics gather the patient's responses during various situations of life as well as from the maintaining conditions and the cognitive schemes conditional to problems. Then the patient's own coping efforts are determined, followed by the identification of the method that can be used to alter the disturbed behavior.

6.1. SORCK model of behavioral analysis

The first step of behavioral analysis is to describe in detail the problematic behavior or response (R) with regard to its topography, intensity and duration [100]. **Topography/intensity** refers to the cognitive, emotional, physiological and motor components of the symptoms [101]. **Frequency** is to determine whether an actually proper behavior occurs too rarely (e.g. communication with autistic persons) or too frequently (e.g. obsessive washing), if the behavior is dysfunctional (anxiety in a department store), or if there is a complete lack of the particular behavior.

In the next step, the conditions preceding the disturbed behavior - the so-called triggering situations (S) - and the subsequent conditions - the so-called consequences (C) - are determined. Kanfer and Saslow [102] expanded the SRCK models proposed by Lindsley [103] by adding the variable "O" ("Organism" meaning biologic conditions of behavior). This includes relatively permanent (e.g. brain damage) and short-term functional disorders (e.g. consequences of increased alcohol consumption) [99]. According to Lindsley, every stimulus or situation (S) is followed by a response (R), correspondingly resulting in behavior-supporting or behavior-penalizing consequence (C) and a contingency (K) as long as the consequences follow the behavior. The above described SORCK model has been a subject of further development within the scope of the diagnostic process and has been complemented by the determination of dysfunctional thoughts controlling the behavior.

This model differentiates four types of consequences [104]:

C+ (positive reinforcement)

C- (direct punishment)

℄+ (indirect punishment by omitting positive reinforcement)

℄- (negative reinforcement by omitting direct punishment)

During problem analysis the therapist may collect sufficient information to formulate the intended objective together with the patient.

7. Psychological generation models of depressive disorders

Depressive disorders are characterized by a multifactorial pathogenesis. Thus, above all psycho-social factors (such as stresses and strains, role conflicts, lack of social support), biological factors (genetic predisposition, neuroendocrine regulation), personality factors (introversion, inclination towards melancholy, "typus melancholicus", etc.), outside factors (deprivation of light, etc.) as well as traumatic events all may play an important role. Detailed discussion of these factors would certainly exceed the scope of the present chapter; therefore, in this section we focus primarily on the three psychological generation models as these are mainly relevant for behavior-therapeutic treatment.

The hypothetical causes of generation and maintenance of a depressive syndrome that can be effectively treated with behavioral therapy are linked either to the behavior or the cognition of the patient.

7.1. Cognitive models

7.1.1. Cognition-theoretical explanation model according to Beck

According to the cognition-theoretical explanation, the basis of each depressive development is represented primarily by cognitive dysfunction; the thinking pattern of the depressed patient is characterized by logical errors such as selective perception, random drawing of conclusions, exaggerations, etc. Negative, burdensome life experiences, which manifest themselves as cognitive schemes, are triggering conditions leading to dysfunction by developing a set of negative perceptions (also called "cognitive triads"; [77]) regarding the

- identity ("I am of no worth")
- environment ("nobody loves me; everybody is against me")
- future ("there is no point, nothing will improve").

The cognitive triad forces the depressed individual to deal with irrational negative thoughts that are plausible to him/her over and over again. The patient experiences these thoughts as being automatic, intractable, persistent and unintended. Such thoughts are always about topics such as hopelessness, low self-esteem or suicide. Beck holds this cognitive disorder responsible for all psychiatric features of depression. Depressed individuals usually aim very high and believe that the world always imposes insurmountable obstacles for them. They tend to make their own deficits or low level of ability responsible for unpleasant experiences. Thus, one of the primary goals of therapy is to teach the patients that in addition to their first-person observation (usually actually based on self-contempt), there are other principles of self-control such as self-reinforcement. Depressed individuals show the tendency to consider their thoughts as being a given fact without cross-checking them with reality. When following this theoretical model, the searching, questioning and modifying of automatic, unperceived thoughts - i.e. the basic attitude of the patient characterizing his/her behavior, emotions and thinking - will become the primary objective of therapy as detailed in section 8.3.

For the sake of completeness, it should be mentioned that some authors regard cognitive dysfunctions as being consequences and not the causes [105]. Tringer describes this theory as the theory of "uniform structure" (depressive-cognitive structure – DCS; [106]).

7.1.2. Irrational beliefs according to Ellis

The concept of Ellis regarding the generation and maintenance of depressive symptoms [107] is very similar to Beck's concept. Ellis assumes that irrational thinking will result in

psychiatric disorders and that both rational and logical thinking can be learned, correspondingly resulting in reduction of psychological stress. The main purpose of cognitive therapy according to Ellis is also the change of cognition and irrational beliefs (section 8.3), correspondingly changing emotions and disturbed behaviors. According to Ellis' theory, emotions develop as a result of highly distorted attitudes and assessments accompanied by severe physical reactions and often trigger negative actions by the affected person due to past experiences.. These emotions are often maintained by means of talking to oneself (soliloquies; [107]).

7.1.3. Learned helplessness as per Seligman

If events are deemed to be uncontrollable (i.e. if self-behavior and its consequences are perceived independently from each other within the environment) and this perception is generalized, the individual gets into the stage of "learned helplessness", a term invented by Martin E. P. Seligman in 1967. According to Seligman, depression is co-induced by feelings of helplessness that follow apparently uncontrollable, unpleasant events. The causes a person attributes to the event are decisive for the experienced controllability of the events. In 1978, Abramson, Seligman and Teasdale modified the helplessness model and included into their system an attribution style determining how the non-controllability of situations is processed. In this system, attribution styles are categorized as internal vs. external, global vs. specific, and stable vs. instable. Internal attribution is based on the assumption that the cause of personal helplessness is within the individual itself. Thus, this dimension is also responsible for decreased self-esteem. Global attribution represents a rather general description of the causes of non-controllability; specific attribution is limited to well-describable elements. The stable attribution style includes persistent and/or recurrent uncontrolled conditions and may result in chronic helplessness. According to Seligman, depressed patients interpret failures internally, soundly and globally (e.g. "I am stupid"). In contrast, success is attributed to external, unstable and specific causes ("the good grade was by accident" or "this task was difficult at all"), resulting in feelings of helplessness, and eventually leading to depression [108].

Based on this theoretical model, the first step of therapy is to identify the attribution style of the depressed patient. Then, cognitions should be carefully examined in order to reveal the degree of reality, followed by an attempt to re-attribute them in order to alter the basic attitudes (section 8.3).

7.2. Learning and behavior-theoretical models

While the cognitive models state that the conscious change of cognition will alter behavior and the experience, behavior-theoretical models assume that the change of behavior will modify cognition and mood.

7.2.1. Reinforcement model according to Lewinsohn

According to Lewinsohn, depressive disorders are generated as a consequence of the loss of positively reinforcing feedback from close environment. This model is connected to operant learning theory and based on the following assumptions:

A low rate of behavior-contingent positive reinforcement has a triggering effect on depressed behavior and maintains depression.

The total amount of positive reinforcers depends on three factors: (1) the scope of potentially reinforcing events and activities; (2) the quantity of reinforcers available at a certain point in time; and (3) the repertoire of the individual behavior to receive reinforcers.

Reduction of the usual positive reinforcers results in reduction of activity, correspondingly resulting in depressed mood, which in turn leads to increased avolition (lack of motivation to pursue meaningful goals) that further decreases normal activity and reduces the effect of positive reinforcers. In the course of time, the ability of positively interpret the reinforcers may significantly decrease due to the lack of "training". This will correspondingly trigger a vicious cycle, a downward spiral [109].

The depressed behavior will also be maintained and positively reinforced, at least in the short term, by social attention. Attention is usually paid to those complaining. However, the social reinforcement of the depressive symptoms may also turn against the depressed person; individuals that complain a lot will eventually be avoided, leading to more frequent complaining and correspondingly being avoided even more.

This theory can be utilized in crucial therapeutic approaches, i.e. promotion of activity level, increase of positive behavior-contingent reinforcers, reduction of depression-promoting activities (section 8.1) and the augmentation of certain social abilities (section 8.2).

7.3. Integrative models

Integrative models, as the term indicates, integrate both approaches mentioned above (cognitive and behavior-theoretical) and assume that depressive symptoms are conditioned both by dysfunctional cognitions as well as by reduction of the activity rate [41]. According to this model, behavior and cognition are in complex interaction with each other. Depressed patients see themselves as being a good-for-nothing due to their own passivity and listlessness. This negative self-perception (cognition) contributes to a further reduction in activity rate (behavior), thus, further promoting negative self-opinion. When increasing their activity rate (behavior), patients will see that their mood will improve and their thoughts will change.

More recent multi-factor models [110, 111] extract six significant factors contributing to the generation and maintenance of depressive disorders (triggering events, vulnerability, increase of self-attentiveness, aversive conditions, disturbed automated behavioral patterns, and dysphoric prevailing mood). Moreover, the interpretation of this explanatory model can yield the three major pillars for depression therapy – support of pleasant ac-

tivities (section 8.1), change of dysfunctional cognitions (section 8.3) and social competence training (section 8.2).

8. CBT in depressive disorders

Since depression is a multi-factorial disorder, its treatment requires a multi-factorial approach. In addition to the stabilization of the patient during a severe acute episode or in case of slight to moderate depression addressed by chemotherapy, psychological approaches are increasingly utilized. Cognitive and behavior-therapeutic techniques are applied depending on the basic theoretical model described above, on the severity of depression and on present problems. Therapy is based on the identification and elimination of disorder-triggering and disorder-maintaining factors in the patient's behavior or cognition. Treatment also has an indirect influence on emotional, somatic and motivational effects of the disorder [41].

CBT integrates behavior-modifying and cognitive techniques. Therapy of depression with CBT is based on three principal pillars:

- building up daily activities (section 8.1);
- training of social competencies (section 8.2); and
- cognitive techniques (section 8.3).

The chapter at hand provides a collection of cognitive behavioral therapeutic strategies that can be utilized in the treatment of depressive disorders. There is a common consensus that the first therapeutic step is to increase the activity level of the unmotivated patient; after an increase in activity, the therapeutic effort can be focused on dysfunctional thoughts and low self-esteem of the patient by introducing cognitive techniques. However, the sequence of the presented methodical steps should be considered as suggestions for therapy only, and addressing the individual problems and requirements of the patient should remain a major focus during course of therapy.

8.1. Building-up daily activities

Most depressed patients reduce their activities dramatically; they seldom participate in enjoyable activities and they usually withdraw themselves into isolation. These patients lose valuable social relationships and also deprive themselves of the possibility of having positive experiences. Such pathological processes often result in a vicious circle; the loss of pleasant events (positive reinforcement) increases depressed moods, tiredness and listlessness, consequently leading to the loss of ability and motivation to engage in activities and in isolation from the rest of the society. Paradoxically, depressed patients justify their self-isolation by the fact that their activity is useless and they only represent a burden to other people.. As a result of this attitude they reduce activities they used to perform in the past without any problems, and even if they start an activity, they will not finish it due to the lack of belief in a successful outcome [31]. Thus, building up of activities that have a positive reinforcing ef-

fect on the patient (pleasant activities) and creation of a daily structure remains the first basic step of behavioral therapeutic treatment.

When the connection between maintaining a balanced activity level and self-controlled management of depression symptoms is established, the patient becomes conscious of the relationship between activity/passivity and mood. On the other hand, based on the basic principles of learning, the consequences of behavior have a significant impact on the frequency of repetition of these particular activities in the future, and consequently, activities with pleasant consequences will be performed more frequently in the future as compared to activities with unpleasant consequences. The principle of reinforcement can be systematically used to modify the patient's behavior and to introduce new elements of behavior. Active build-up of daily activities improves one's mood; a positive mood will contribute to pleasant activities and thus the vicious circle is broken. Furthermore, patients will be aware of the feeling of being able to actively control their own life.

In the initial part of the therapy the theoretical background of the concept of reinforcement as well as the importance of therapeutic exercises at home between individual sessions is explained to the patient. For successful treatment it is extremely important that the affected person understand that activity/passivity and mood are interacting factors. Depressed patients usually spend a lot of time with unyielding, empty activities such as speculation or activities that are absolutely necessary (cleaning, laundry), but don't have any positive reinforcing effect and/or are not pleasant. A low activity level suppresses mood and forces the patient to retreat even more to a passive attitude, correspondingly reducing the probability of having positive experiences (i.e., lack of positive reinforcers). The reduction in frequency of pleasant experiences leading to increasingly suppressed mood eventually results in passivity and self-isolation. However, this downwards spiral can be reversed by systematically emphasizing that performing pleasant activities generates a positive mood and also increases the probability of planning further activities [41].

Depressed patients often report that they feel like they are in a continuous pointless and meaningless condition. According to Beck and colleagues [31], the most important purpose of the activity-increasing exercises is to give a structural content to the time spent in order to reduce the feeling of aimlessness. Recording the daily activities is crucial and often demonstrates the distorted cognition of the patients stating: *"I have not done anything the whole day."*

The building up of activities is usually done gradually, in small steps by interrupting the patients' passivity and achieving a proper activity level. In the first step, the patient is asked to systematically observe his/her usual daily activities during the week. By using "activity diaries", the activities are recorded along with the associated mood. First-person observation is an important BT technique as it enables both the therapist and the patient to consciously observe a change in the patient's condition, eventually resulting in the identification of depression-supporting behavior that can be corrected by therapy. By utilizing this method, patients learn to observe himself/herself and to associate activity level and the emotions; this provides momentum to the next step, i.e. the targeted increase of the positive activities.

Below there is an example for an activity diary filled in for three days, based on the research of Hautzinger [41]. For recording the mood and the attitude, the scale -5 to +5 is commonly used, with 0 being neutral mood, - 5 being severest negative mood and + 5 being highest positive mood.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
9 am - 11 am		Awake since 5 am, still in bed (-5)	Awake since 6 AM, breakfast in bed (-4)	Awake since 4 AM (-5)		
11 am - 1 pm		Bathroom, breakfast (-2)	Cleaning, ironing (-1)	Fallen asleep (-4)		
1 pm - 3 pm		Sofa, TV (-2)	Lunch with granddaughter (+2)	Eating (0)		
3 pm - 5 pm		Visit of a colleague (+1)	Shopping, snoozing in bed (0)	Sofa, TV (-2)		
5 pm - 7 pm		Dinner, TV (0)	Sofa, TV (-3)	TV in bed, no hunger (-4)		
7 pm - 9 pm		Bed, speculating (-4)	Bed, speculating (-4)	TV in bed (-5)		
9 pm - 11 pm		Bed, speculating (-4)	Fallen asleep	Speculating until 2 am (-5)		

Table 2.

In the following therapy session, the weekly plan is assessed by the therapist and the connection between the activity and corresponding mood is explained to the patient by using personal examples.

Example. Therapist: *“Let’s have a look at Wednesday and Thursday. I see that your mood on Wednesday at 1 pm was much worse as compared to Thursday. Do you have any idea why there is such a difference?”*

In the second step, a list of activities generating positive mood is created together with the patient. Then the patient attempts to integrate as many activities as possible from this list into the next weekly plan. This individual list is also used as a collection of potential reinforcers as therapy progresses [41].

At the next stage, an activity plan for the whole next week, including activities that the patient wants to perform, is created together with the therapist. This time the schedule is more detailed and includes information regarding the place and the people associated with positive activities as well as the corresponding mood.

Some patients may voluntarily participate in some activities without enjoying them. This may be due to the fact that 1) they did not perceive these activities as being pleasant even before the depressive episode; 2) negative cognitions suppress any feelings of happiness; or 3) these feelings are disregarded selectively [31]. The exercise described above helps the patient to experience happiness again.

The activities should be defined by the patient (important for intrinsic motivation); the therapist may support the patient's objective by requesting activities enjoyed in the past and/or by using a pre-defined list of pleasant activities [41,112]. Many depressed patients feel that they are not able to perform a particular activity. This should be accepted by the therapist; however, the therapist should motivate patients to perform minor activities and explain to them that since passivity has been of no help in the past, another strategy should be tried. Cognitive testing (imaginative exercise) of certain activities is a good compromise with highly unmotivated patients.

After successfully performing the activities defined as in the daily or weekly plan, the patient then records the mood changes in the diary. It is particularly important to schedule activities that are not performed alone in order to maintain social contacts and improve social skills (described in the next section).

When in a negative mood, depressed patients tend to set unrealistically high expectations for themselves; therefore, often they won't even start the activity because of fear of failure. Consequently, if they do not achieve a particular goal, they attribute the lack of success to their own inability. Often patients start an activity but won't finish it. An activity started but not completed is regarded as a failure by the patient. Therefore, the therapist's task is to make patients understand that it is unlikely that they will be able to perform as originally planned and that even an attempt is much better than doing nothing; additionally, it is important to emphasize that completing an activity depends both on external factors (weather, other people's availability, etc.) as well as internal factors (concentration, fatigue).

Objectives of these activities are generally based on the SMART principle [113]:

Specific: concrete goals in writing

Measurable: achieving the objective should be verifiable

Action-oriented: concrete acts of realization

Realistic: achievable goals that are attractive, challenging, but not scary

Time-bound: setting a definite time frame

Examples for setting of objectives [41]:

Example 1. Objective: I want to look more attractive.

First, the patient should provide a definition of attractiveness. Activities for achieving this objective are integrated into the weekly plan, e.g. going to the hairdresser, participating in a make-up class, going to the gym, performing sports (which?), buying more trendy clothes, etc.

Example 2. Objective: I want to have more contact with friends.

Activities for achieving this objective: Inviting friends for dinner, planning an evening with friends at the movie theatre, inviting friends for a game night, doing sports together with friends etc.

Example 3. Objective: I want to learn a foreign language.

Activities for achieving the objective: Get language books, get a private teacher, take a language class, go abroad, etc.

Introduction of positive reinforcers

The patient needs to learn how to deal with unpleasant experiences. During the course of therapy, the patient needs to understand that certain not very pleasant activities may actually be fun and satisfactory. However, additional reinforcers need to be integrated into weekly activity plans in order to achieve this goal. The patient must learn that some activities have direct pleasant consequences but will have negative consequences in the long term. In contrast, some activities have immediate unpleasant consequences but positive effects in the long term. The problem is that patients suffering from depression tend to have a short-term view on things and therefore, as therapy advances, activities that are less pleasant in the short term but have positive effects in the long term need to be integrated into the weekly plan. Following each activity the patient will record the associated mood and, even more importantly, the reward after successful performance of each activity (from the individual list of pleasant activities). A positive reward for successfully performed but less pleasant activities will increase motivation to start an unpleasant activity with unpleasant short-term but pleasant long-term consequences. The reward or reinforcer becomes the source of positive emotions.

Example 1: A depressed, short-sighted female patient has a counseling interview with an ophthalmologist who can offer laser treatment to improve her short-sightedness. This intervention would give her the opportunity, in the long term, to get rid of her glasses that have highly affected her self-esteem since childhood. In the short term, scheduling an appointment and surgery are connected to aversive emotions. In case of this successfully performed activity (i.e., if the patient actually participates in the counseling interview), she should reward herself immediately (e.g. by buying a new book, a blouse, or a new perfume she has wanted for a long time).

Example 2: A depressed, 30-year old female patient wants to get her driving license in order to be more independent of her husband. The upcoming driver's course (which she already postponed three times) is connected to aversive emotions, costs money and also occupies free evenings. However, in the long term, the patient could move more freely and her self-esteem would increase as well. She could reward herself after each unit of the course.

Example 3: Identifying and correcting depression-supporting behavior.

The patient wakes up every morning at 10 a.m., has breakfast in bed, does not leave bed but instead watches TV or doesn't think about anything specific. During her therapy session it is

agreed that she will get up at 8 a.m., has breakfast in the kitchen and then takes a short walk outside for at least half an hour. In this case, depression-supporting behavior has been replaced by positively perceived activities.

8.1.1. Euthymic therapy

Parallel to the modification of the problematic behavior, it is recommended to develop a cognitive, physiologic and motor behavioral repertoire that corresponds to positive experiences and utilizes the elements of so-called euthymic therapy. During this therapy the patient again learns to consciously enjoy positive experiences without negative emotions. The emphasis is on being happy without any remorse, since most depressed patients feel that they do not get and do not deserve anything positive out of life. Consequently, these patients will do anything, usually subconsciously, to block out positive experiences. Euthymic therapy was used with great success during the treatment of depressed patients in the Psychiatric Clinic in Mannheim, Germany, in the 1980s; since then the method has also been used to treat other psychiatric disorders. During therapeutic sessions patients learn to focus their attention on sensory perception and consciously enjoy various visual, auditory, tactile, gustatory and olfactory stimuli according to the instructions of the therapist and in order to learn to focus on and enjoy the present moment [114]. This therapy eventually increases patient self-confidence and self-perception. The learned pleasant experiences can be utilized during daily activities by developing a list of pleasant experiences the patient mentioned during sessions.

8.1.2. Happiness diaries

The use of so-called 'happiness diaries' has proved to be extremely successful in depression therapy. At the end of the day patients should review their daily activities and record the ones they enjoyed and their corresponding positive thoughts and events. This method is based on 'positive psychology' according to Seligman [89]. With this approach happiness in life depends on conscious optimistic perception that can be learned through practice. Happiness diaries play two pivotal roles in the treatment of depression. The first role is consciously focusing on positive experiences in the present. The second role of happiness diaries is particularly useful when the patient's mood is low. In this case the patient can replay former positive experiences. Since the imagined situation triggers similar physiological processes to the ones that were induced by real events, this method can dramatically improve the patient's mood.

8.2. Social competence training

Introduction to this method

In psychology, social competency has become a very frequent term that is only rarely defined in a clear manner. This term subsumes abilities and skills such as self-confidence, enforcement of desires, denial of requests, emotional freedom, assertiveness, socializing

and cultivating contacts, communication skills etc. [115]. While Wolpe and Salter state that social problems are the result of inhibiting personality characteristics [116,117], Lazarus indicates that these problems may be rooted in incorrectly learned social behavior [118]. Ullrich de Muynck and Ullrich [119] complemented these theories with cognitive variables such as the attitude towards oneself and social perceptions. They define social competence as 'self-confidence' that includes recognizing and enforcing the needs and demands of the individual [120].

Therapeutic examination reveals that depressed people often organize their interpersonal interactions in an impeding manner. They complain constantly, hide their positive emotions, look for contacts with others less actively, are more sensitive to criticism and rejection, do not or only improperly support their own opinion, and lack confidence and assertiveness. These interaction characteristics, combined with unfavorable non-verbal communication forms such as a quiet voice, bent posture, infrequent eye contact, may result in social isolation. Often patients are faced with painful experiences in the beginning of behavioral therapy when experiencing drawbacks in interpersonal interactions during new daily activities.

Example 1: Mr. F. visits an old friend for an evening of games as part of his BT activity planning. Although he is very happy about having been invited he keeps complaining about his bad health so that the other guests soon stop talking to him. Mr. F. feels hurt and decides that he will never participate in such an activity again. The lack of positive reinforcers in this case result in the generation of continued problems with social interactions and make individuals socially isolate themselves as their depressed mood is sustained.

The objective of social competence training is to support the patient's self-confident behavior. During the course of therapy patients learn to properly communicate, to state their wishes, opinions and positive emotions, to use services offered by others, to develop problem-solving skills, and to understand the connection between mood and self-esteem.

8.2.1. Performance of social competence training

Practicing social competence includes several methods that are based on teaching socially expected behavior via modelling and role play. Social competence is composed of skills that include, among others, self-confident behavior, problem solving and communication competencies, the ability to express one's own wants and feelings, and proper reaction to criticism. It has been previously reported that practicing certain behavioral sequences (behavior rehearsal) as well as role plays help to create and maintain socially competent behavior [121]. After explaining the social problem to the patient, a realistic role play situation is designed and verbal (expression, volume), non-verbal (mimic), interactive (such as active listening) and motor components (posture, etc.) of the proper behavior are determined [122]. Following the initial analysis of the strengths and weaknesses of the patient's behavior, the desired outcome of the situation is identified together with the participation of the therapist, and the problematic situation is practiced with any required corrections within the thera-

peutic setting until the required behavior is achieved. Then the learned behavior is transferred to everyday situations and tested regularly.

Example 1. Mr. M. works as salesperson at a DIY store. Due to his depressive disorder he has problems approaching customers. Most of the time he is alone in the corner of the store and only helps customers who approach him. The objective of the training is to achieve self-confident active behavior [41].

In the first behavior-therapeutic role play, the therapist takes the role of the customer and Mr. M. plays his own role as the salesperson. The therapist observes the strengths and weaknesses of the patient. Mr. M. approaches the customer but maintains a distance, stops with his side facing towards the customer and talks to the customer in a quiet voice. At the end of role play the therapist gives feedback to Mr. M. First, the therapist describes the positive aspects of behavior.

Therapist: *"Being a customer, I felt welcome because you actively approached me and asked if I need any help."* Then the therapist focuses on the behavioral deficits of the patient observed during the role play. Therapist: *"During the second role play, could you try to speak louder and establish eye contact with me? If you stand closer, the customer would feel that you have the motivation and desire to help him."*

Prior to the role play the therapist explains the verbal and nonverbal aspects of a self-confident behavior (eye contact, relaxed posture, articulate speech, etc.) and emphasizes the importance of repeated positive self-instructions ("I will succeed", "I have a right to do this", "I will be convincing", etc.). After the play it is crucial to acknowledge the enthusiasm and the progress of the patient; it is also important to emphasize that the learning process takes time and effort.

Example 2. Ms. F. is a part-time worker at an office, where she shares a desk with a colleague (who works on alternate days). When Ms. F. does her work at the office, her 2-year old son stays with her mother-in-law. Ms. F. has problems in the following areas and describes them as follows: As Ms. F. uses the desk together with her colleague, it often happens that there is no paper in the printer, the stapler is empty, markers are open and dried out, and there are empty paperclip boxes and non-filed invoices on the desk when Ms. F. arrives. Often she has to start by organizing the desk and completing work that was begun by her colleague. These activities take time from her actual work. Ms. F. gets angry about her colleague's unfairness and wants to talk to her. The objective of the training is to define and enforce self-confidence and self-assured behavior regarding Ms. F.'s own wants.

Ms. F.: *"Since I am at the office twice a week only for three hours, there is a lot of paper work; I have to sort the mail of the entire company weekly. This task alone takes almost three hours. When my colleague does not refill the missing stationery and the desk is not tidy, I have to do this work first before I start with my responsibilities. I do not want to stay longer at the office for this reason, because I do not get paid for overtime and I want to be at home in time to pick up my son from my mother-in-law as soon as possible."*

An additional problem emerges during Ms. F.'s communication of with her mother-in-law. Ms. F. wants her son to take a nap after lunch and does not want him to eat sweets. During

her time off, she can control this by herself; however, on workdays, when her son is with her mother-in-law, her son eats sweets and he can refuse the nap. Ms. F. wants to present her will properly to her mother-in-law.

In this case, two different problem situations are role-played and practiced. In the first role play, the behavior of Ms. F., when interacting with her colleague at the office, is identified by the therapist playing the role of the colleague. Ms. F. is instructed to ask the colleague nicely to refill the stationery by herself during her work time. During the role play, the therapist observes the strengths and weaknesses in Ms. F.'s behavior as she insecurely explains to him with a quiet voice that she does not want the mess on the desk. After the end of the role play, the therapist gives feedback on Ms. F.'s performance. First, the strengths of the patient are highlighted.

Therapist: *"It is courageous that you told me that the mess on the table is disturbing for you although we barely know each other due to our alternating work hours."*

Then, the therapist focuses on the elements of Ms. F.'s behavior that need correction.

Therapist: *"Being a colleague, I could understand better if you give reasons why do the mess and the missing stationery disturb you. Please try to state the aspects given before, i.e. that you want to pick up your son in time. Please try to speak up a little as this sounds more self-confident, and explain that you also refill stationery if it becomes empty during your work time. Please describe your desires in detail, i.e. that you want both of you tidy up the desk and refill stationery at the end of work so that the other colleague can leave in time."*

In the second role play, Ms. F.'s behavior and communication with her mother-in-law are practiced. The therapist asks Ms. F. to clearly state her desires.

Ms. F.: *"I do not want my son to eat sweets, and he should also have an after-lunch nap."*

The therapist explains to Ms. F. the importance of positively formulating the desires and objectives (to not state the things that you do not want, but the things you want).

Ms. F. tries again: *"I want my son to have a healthy diet, stay physically fit, have healthy teeth and enough sleep. When I am at home with my son, this is not a problem. I also want my mother-in-law to have him go to bed after lunch, and I want to make sure that she does this also in case he cries or tries to throw a fit. I also want my mother-in-law to offer fruits to him, but not sweets, and that she would say no when he would request sweets."*

Therapist: *"That was perfect, Ms. F. Now, let us play that I am your mother-in-law, and you try to argue the way stated before. Could you please try to have eye contact during the whole discussion?"*

Using this technique the problematic situation is practiced with the required corrections until the targeted behavior of the patient is fully achieved. The patient's "homework" is to test the learned behavior in everyday situations.

In this session we have discussed the one of the most crucial component of the social competence for the depressed patient, the training of the self-confident behavior. As we have previously described, social competence includes several other skills as well that are not

detailed in this chapter. Obviously, the patient's individual shortages are in focus during the therapy of depression (learn how to say no to an unpleasant request, start a conversation with a stranger, reveal emotions, etc.). These elements are practiced using the similar methodology to the one mentioned above.

8.2.2. Problem-solving training

Problem-solving training belongs to the standard methods of behavioral therapy. It is highly structured didactically and it is usually combined with other therapeutic methods. The various concepts of this method do not differ significantly from each other. In the following, we will present the 5-level model described by D'Zurilla.

According to D'Zurilla and Goldfried [123], problem-solving is a behavioral process, including cognitive operations, that elaborates a number of efficient possible actions for problematic situations and that supports decision for one of these alternatives [120]. For this reason this method is classified as a cognitive strategy by some authors, while others mention it among the behavior-modifying elements. However, the current trend of CBT does not draw a strict boundary between these two fields.

With depressed patients the repertoire of their problem-solving abilities is often insufficient and their motivation to actively deal with problems is inadequate. Patients perceive these problems as being unsolvable per se and they do not attempt to address them because of the possibility of failure. Problem-solving training helps patients identify and name their problems, develop alternatives for problem solving, make decisions and to correspondingly decrease their feeling of hopelessness and at the same time increase self-efficacy.

D'Zurilla and Goldfried [123] describe a 5-level training model for gaining skills in solving problems:

1. The first level is used for general orientation by patients realizing their 'problems.' As this term is quite complex, Fliegel and colleagues [120] proposed the word "difficulties" in a therapeutic context and they state that burdensome situations connected to patient uncertainty, dissatisfaction or anxiety should be avoided.
2. After successful recognition of the problem, the next level includes detailed identification of the 'difficulty' and comprehensive analysis of the problematic situation. During this stage the therapist will ask patients about their own experiences concerning the troublesome situation and their thoughts and emotions. At this point patients should also formulate their own objectives, i.e. describe the desired status so that the situation is not burdensome any more, but instead rather pleasant or at least acceptable. Patients should also consider what they are willing to do to achieve this desired status as well as the impacts or side effects of the new situation.
3. In the next step, alternatives for actions required for achieving the objective are elaborated and recorded. The more practical and problem-solving strategies are developed by the patient, the higher the possibility is that at least one useful idea will be identified to solve the problem.

4. At the decision stage all alternative actions are recorded with their short-term and long-term consequences impacting the patient and the patient's environment. Considerations can be presented as a matrix that simplifies the presentation of the alternative actions and their corresponding consequences.
5. In the last step, the most favorable solution is selected and imposed. Imagination techniques are helpful for improving patient decision-making skills. As stated in section 8.1, patients are instructed to perform the activity in their mind first (compare it with 'covert modelling' Rational-Emotive-Therapy by Ellis [107]) since imagining the situation usually triggers the same physical reaction and emotions as the ones associated with the real situation.

Example. Problem-solving training

A 27-year old female patient wants to move in with her fiancé. Her fiancé's parents own a large rural house that would also offer enough space for the couple and it would only impose a slight financial burden for utility costs. However, the patient and her fiancé work in a city approximately 20 kilometers away and they need to use a car or a bus for commuting. Furthermore, the patient is worried about being forced to helping her parents-in-law with their farm work during her spare time in order to express the couple's gratitude for housing, or to nurse his parents in case of illness, as this is customary in rural regions. She considered a town apartment as the first alternative action. Although the apartment is expensive the couple would not have to commute and they would be independent from his parents. The second possibility would be the rural house of the parents-in-law, which is more favorable in terms of costs but would include the necessity of commuting and also pose a threat of conflicts with his parents and correspondingly with her partner. She also considered a third possibility where the couple would live in the parents' house and pay a reasonable rent in addition on top of utility costs. This solution would also include a contract in the agreement regarding any work she would be willing/not willing to do on the farm. After considering the pros and cons, the patient selected the first solution.

If realization of the most favorable action strategy does not generate the desired benefit for the patient the next best alternative can be tried and the matrix can be supplemented with new aspects.

8.2.3. Helping behavior

Providing help to others offers several benefits regarding the treatment of depression. First, this competence-oriented exercise increases the feeling of personal efficacy; second, self-centered ways of thinking which are typical for depression (speculating on the patient's own problems and sadness) is changed as the affected person focuses on the problems of others [124].

The following section focuses on therapy that is based on the principles of cognitive learning. Nevertheless it must be emphasized that the most accepted structure of CBT does not make a strict separation between classical behavioristic methods and cognitive techniques. Experience shows that these two components a closely correlated and complement each other.

8.3. Cognitive techniques

During life, each individual attains - by learning and undergoing experiences - certain cognitive patterns that are typical for situations – so-called schemes – and that may differ with each person, but that are relatively constant interpersonally. These cognitive patterns define our expectations, attitudes and beliefs that are mainly unconscious and contribute to the structure and assessment of the conscious self.

Psychopathologic conditions such as depression are characterized by dysfunctional schemes that manifest in dysfunctional basic attitudes and are expressed by means of uncontrollable negative thoughts (this sequence also corresponds to the cognitive hierarchy according to Beck [31]). If such schemes are activated, they have a major effect on cognitive information processing, on the type and quality of the experience and eventually on the behavior.

Depressed patients tend to exhibit errant, one-sided, absolutist ways of thinking, so-called cognitive distortions, that are expressed through exaggerations, generalizations, black and white thinking, understatement as well as over-generalizations. Cognitive techniques can be utilized to detect and correct such improper cognitions (automatic thoughts) and their corresponding basic assumptions that result in the disturbed behavior and that are connected to oppressive emotions. Learning cognitive techniques helps the patient replace dysfunctional cognitions with ways of thinking appropriate for a particular situation and to identify and use the central role of cognition for adjusting emotions. Thus, the objectives of the cognitive therapy include manipulating negative expectations and abnormal self-perceptions by means of the identification of abnormal belief systems.

In the cognitive stage of therapy there is a comparatively high amount of verbal communication between the patient and the therapist that enables the therapist to collect sufficient information in order to be able to enter into the patient's world and understand his or her organization of reality. The therapist must clearly understand the patient's thought pattern associated with his or her symptoms as well as the way the patient assesses these symptoms. It is also crucial for the therapist to explain to the patient that they will jointly examine these thoughts that are by no means objective representations of reality, as experience shows that cognition is seriously distorted in depression. The therapist also needs to explain that a particular situation can be interpreted differently depending on the observer. Depressed individuals tend to evaluate situations negatively and thoughts, emotions and behavior generate a chain reaction. The patient must understand that a disorder is created by the way one assesses a situation.

In summary, the objectives of cognitive techniques can be identified as follows. The patient learns

- not to accept his/her thoughts as facts,
- how thoughts, emotions and behavior are connected to each other,
- and how to develop a more objective and distant view concerning his/her own problems.

Cognitive restructuring is a gradual approximation based on the principles of cognitive hierarchy. In the first step, the patient's negative automatic thoughts causing the unpleasant

emotions are identified, as this can be determined most easily. After identifying distorted cognitions, the arduous situation is re-interpreted. Finally, the patient's dysfunctional basic attitudes which are based on deeper levels of consciousness and which are responsible for maintenance of depression can be identified and altered.

8.3.1. Identification of automatic thoughts

8.3.1.1. ABC technique

The ABC technique described by Ellis [107] is intended to differentiate thoughts, emotions and real facts, representing a very important step for identification of dysfunctional automatic thoughts. Using the ABC technique, the affected person learns that a situation or an event can be explained differently depending on the point of view and any consequent emotions depend on the interpretation of the event. In the ABC technique "A" refers to acting event, "B" to beliefs, thoughts and interpretation of the situation, and "C" to consequences, i.e. the emotions that are triggered by the thoughts and beliefs and that determine the subsequent behavior.

Example:A. Situation: The neighbor passes by without saying hello.

B. Thoughts: "She does not like me."

C. Emotions: Feeling depressed.

Using this example, patients realize that their own thoughts actually trigger the negative emotion. The patient may ask: "Does this thought help me to feel the way I want to feel?"

In the next step the patient may try to develop helpful alternative thoughts instead of dysfunctional cognitions:

Example:A. Situation: The neighbor passes by without saying hello.

B. Thoughts: "She did not see me."

C. Emotions: Neutral.

8.3.1.2. Socratic dialogue

The Socratic dialogue is a cognitive CBT intervention technique described by Beck. Instead of didactic explanations and persuasive attempts by the therapist, the objective of this technique is to encourage the patient to uncover his or her own unprofitable way of thinking. This kind of verbal communication scarcely causes resistance since targeted questions enable patients to see their own problems from a different point of view and helps them learn to dissociate from distorted cognitions while gaining an objective view of the situation. As depressed individuals have a deficient ability of adequately understand certain problems, the open-question technique enables patients to see the correlation between mental structures (thoughts, emotions and behavior) and their personal experiences via self-awareness. The therapist uses Socratic questions to collect information regarding a problem and gives feedback to the patient by means of a brief summary showing that the therapist actively listens

and correctly understands the patient. The Socratic dialogue is based on so-called negative automatic thoughts (NAT) that imply dysfunctional attitudes and that can be changed during the course of the therapy. In a first step these dysfunctional attitudes and persuasions are recognized by identifying negative automatic thoughts with the therapist carefully pointing out the embedded conflicts. Eventually, the questioning results in a new and more realistic perception of the problem.

NATs are highly distorted defects (over-generalization, dichotomous thinking), and one of the primary goals of therapy is to verify their degree of reality by the patient explaining a number negatively interpreted past situations. In addition to the Socratic dialogue, recording the patient's troublesome thoughts in writing is a common method for identifying NATs. For depressed patients it is often difficult to describe their cognitions; in this case the therapist should point out that changes of emotions are good indicators for NATs. Experience shows that patients can identify negative emotions more easily than cognitions.

Example. Identifying negative emotions: (*"How did you feel when... ?"*)

Therapist.: *"Identify the emotion you felt when your neighbor was not saying hello...?"*

Patient: *"I was sad."*

The patient should also assess the intensity of his or her emotions on a scale from 1 to 100% and understand that certain emotional variations are not pathological. The patient should also focus on emotions with the intensity of more than 40% since NAT generally associated with intense affects [125].

Example. Questions for NATs identification:

"What did you think when you were sad?"

"What does this mean to you?"

"What is particularly disturbing about this situation?"

If the patient cannot name the depressive cognitions, it may be helpful to illustrate the troubling negative situation in a **three-column table**. This technique also includes -- similar to the ABC technique described above -- simultaneously occurring emotions and cognitions; however, the second column states the emotion associated with the situation since identification of the emotions is generally easier than that of the cognitions.

Situation	Mood/Emotions	Negative Automatic Thoughts
Call from company during vacation	anxiety, doubt 80%	They want to fire me.
The neighbor did not say hello	depressed, sad 50%	She does not like me; she is angry at me.
Thinking of chores	hopeless, depressed 70%	How can I cope with all this?

Table 3. Three-column table for identification of negative automatic thoughts

8.3.2. Change NATs

After successful identification of NATs based on the description of the problematic situation and the recognition of arduous emotions, the patient should perform a **verification of the degree of reality** of the NATs together with the therapist in order to correct any cognitive distortions. Objectivity of the patient during the assessment of the problem can be augmented by **retribution**, **alternative conceptualization** and **changes of perspective**. Reattribution will be particularly beneficial if the patient holds his or her presumable personal deficits responsible for any negative experiences. In this case the patient should write down the situation resulting in the self-criticism and analyze it together with the therapist. Alternative conceptualization refers to the process when the patient gathers alternative solutions in order to explain problematic situations.

Example 1.

The 15-year old son of a female patient is told that he is failing one of his courses.

Patient: *"It is my fault that my son is getting a bad grade in school, because I am a bad mother."*

Cognitive restructuring can be reached by Socratic interviewing performed empathically and carefully within the scope of a collaborative relationship that leads the patient to self-awareness [126]. In this particular case the patient should ask herself if one should really be responsible for everything, and then she should recognize that events usually have multiple causes (reattribution).

Depressed individuals measure themselves and the rest of the world with distorted criteria; they are significantly stricter with themselves than with others. Thus, patients must learn that there are other principles of self-control in addition to their first-person observation focused on self-denunciation, e.g. self-reinforcement.

Change of perspective during role play as well as imagination exercises can be used to give the patient more objectivity concerning her views.

Therapist: *"Please imagine that the sons of Ms. M. and Ms. G. are also told that they are failing school. What do you think about these women as mothers? Are they really bad mothers?"* or:

Therapist: *"Do you know other mothers whose children are failing a class? What do you think about these women? How would you describe these women as mothers?"* or:

Therapist: *"Put yourself in the place of a friend. Which qualities would he or she attribute to you in this situation?"* The following questions can also be useful in broadening the patient's horizon: *"Is it possible that there is another reason for why your son is getting bad grades?"* or *"Do you think that your opinion about being a bad mother is helpful in feeling the way you want to feel?"* (hedonistic approach).

The following questions could also be helpful: *"Do you have evidence that supports your negative thoughts?"* (verification of the degree of reality). Often it is relatively easy to answer this question because depressed individuals are usually highly convinced of the validity of their negative thoughts. They usually tend to remember negative events and often assess pleasant or neutral events as being negative. Thus, their assumptions are not based on reality [127].

Therapist: *“Imagine how you would evaluate this problem in ten years”*.

Or: *“Can you please describe the characteristics of a bad mother in detail?”*

The degree of reality of this statement is verified using a 7-column table [128], where any cognitive distortions can be analyzed. In the thoughts diary, the above described ‘three-column technique’ which includes the problematic situation, the correspondingly connected emotional state as well as the NATs, is complemented with arguments FOR and AGAINST the distorted assumption of the patient. The patient should reassess his or her assumption to find other alternatives for different explanations of the situation; then, the alternative hypothesis should be used to reassess the original emotion.

Situation	Emotions	NAT	Pros	Cons	Alternative thought	New emotion
Call from company during vacation	anxiety, doubt 80%	They want to fire me.	none	I recently got a pay raise.	Maybe they need me to fill in for a sick co-worker.	0%
The neighbour did not say hello.	depressed 50%	She is angry with me.	none	Two days ago we had coffee together.	She did not see me.	10%
I think of chores.	depressed 90%	Nobody needs me, I am good for nothing.	My daughter lives her own life.	She asked for my advice yesterday.	Could do something every day.	30%

Table 4. Seven-column table: Examples for verification of degree of reality of distorted perception and corresponding corrections

The last step of cognitive restructuring is **testing of the alternative thoughts** in real life. In the behavioral experiment, the depressed patient who came up with new thoughts with the seven-column table (*“I know that my family needs me even though they do not tell me all the time.”*) recognizes the indirect clues implying that she is important to her family [126].

However, it is also possible that the gathered ‘evidence’ actually supports the negative assumption of the patient (*“I was fired.”*). In this case, the therapist should focus on the patient coping with this new situation. Here the following questions could be helpful: *“If so, what could be the worst consequence of this situation?”* or *“Have you ever been in a seemingly unsolvable situation? How did you solve the problem? What helped?”*

The seven-column technique helps patients discover cognitive defects that represent the actual basis of their depressed mood. Burns [129] lists 10 cognitive distortions:

dichotomous thinking (*“This cake did not turn out good. I’m a lousy baker.”*)

over-generalization (*“Things always go wrong.”*)

negative filter ("*... that is why I screwed everything up.*")

non-consideration of positive experiences (patient devalue good grades in school by saying that the test was easy)

jumping to conclusions ("*I will never succeed with this.*")

exaggeration/understatement ("*I am completely incapable.*")

emotional reasoning ("*I think everyone hates me. It has to be this way.*")

labelling ("*I am a bad mother.*")

personalization ("*It is my fault that my children get bad grades.*")

"should" statements ("*I 'should' know better.*")

Correction of dysfunctional attitudes

If symptom improvement can be observed, the next step in therapy is to introduce the exploration of dysfunctional attitudes in order to increase the susceptibility to depression [41,130].

Automatic thoughts and dysfunctional attitudes are similar since both are acquired by learning processes; both contain exaggerated and distorted basic principles, they are self-sustaining, and their correction requires special techniques [128].

Dysfunctional basic assumptions are characterized by defective logic and imbalance; their stable attitudes, rules and beliefs form part of our personality. They are organized mainly around topics such as performance, acceptance/rejection and control. Realizing dysfunctional attitudes is not easy, as they are stored in the deeper, hardly accessible layers of our cognitive hierarchy as compared to automatic thoughts, which are usually linked to a situation. However, these basic assumptions can be reduced by applying Socratic questions, using the dysfunctional attitudes scale [131] or by deviation of the cognitive process through cognitive hierarchies as demonstrated by the technique of a vertical arrow pointing down. During the application of this technique the therapist can tackle the problematic situation using the question "*Why is this important to you?*", thus exploring progressively deeper elements of the cognitive hierarchy while revealing any dysfunctional attitudes.

Patient: "*My daughter doesn't mind me.*"

Therapist: "*What is so bad about that?*"

Patient: "*A child this age should mind her mother.*"

Therapist: "*How does that apply to you?*"

Patient: "*... that I am doing something wrong.*"

Therapist: "*What do you mean by that?*"

Patient: "*I guess I'm saying that I'm a bad mother.*" [126]

The following intervention techniques are used for modification of dysfunctional attitudes:

1. Analysis of benefits/disadvantages of the basic belief. Dysfunctional basic assumptions that are highly affect-related tend to reflect personal values. Thus, change of these basic beliefs is not easy because the individual often recognizes the benefits and positive aspects of his or her own assumptions. When recording benefits and disadvantages, the patient is often surprised about the small number of benefits that can be recalled.

2. Provide counter-arguments using Socratic interviewing:

Dysfunctional basic belief: *"If I need someone's help that means I am a weak person."*

Correction: *"When I need and accept help, this means that I have good problem-solving abilities."*

3. Dysfunctional beliefs can also be corrected by a change in perspective.

Example: The patient only considers people to be valuable and useful except when they perform work. The therapist asks her to name people from her circle of acquaintances that she considers to be valuable; then she assesses the amount of work that these individuals do according to her opinion in order to see whether these two parameters are related to each other. After a comprehensive analysis it is shown that this is not the case. Someone who works less can be very valuable because of personal qualities such as kindness, helpfulness, intelligence etc., and a person who works more can be less valuable by being an exhausted and complaining perfectionist who is always dissatisfied [126].

Dysfunctional attitude: *"If I don't work I am of no worth. That is why I am a loser."*

Modified belief: *"Although I cannot work at the moment, I am a good person. It is not only work that makes a person valuable."*

8.4. Completion of therapy, relapse prophylaxis

The final module of the CBT, which usually comprises 2-3 sessions, focuses on making any positive changes achieved during therapy become permanent by conscious comprehension. Therapy success is evaluated together with the patient. During the evaluation the patient rates any subjective changes experienced during the progress of the therapy and compares them to the level of depression recorded at the beginning of therapy. Improvement is measured by comparing the patient's advance on the 10-degree-scale described above. In addition, the patient verbally summarizes the experienced positive changes and identifies the elements of the treatment that contributed most to the healing process. This summary has two purposes: First, it is extremely important to make patients understand that the most important factor of their improvement is their self-efficacy; and second, the therapist should emphasize the necessity of continuous employment of coping strategies after the completion of therapy to prevent relapse. Moreover, with the help of the therapist the patient summarizes the strategies that are pivotal in recognizing the early signs of depression (e.g. sleep disturbances, agitation, mood swings) that can be utilized to prevent relapse. In order to stabilize positive cognitions the therapist should emphasize the importance of self-efficacy tools including cognitive restructuring, maintaining and enhancing social relationships, utilization of 'happiness diaries' as de-

scribed above, etc. It is equally important to make patients aware of their future goals and to help them engage in positive experiences they enjoy.

Despite their improvement some patients may require a prolonged support of his or her therapist. In this case it is recommended that control sessions be scheduled after the first, third and sixth months; these sessions also offer an excellent opportunity to monitor the patient's status during an extended period.

Author details

Irene Lehner-Adam¹ and Bertalan Dudas²

1 Department of Psychiatry and Psychotherapy, Christian Doppler University Clinic Salzburg, Austria

2 Neuroendocrine Organization Laboratory, Lake Erie College of Osteopathic Medicine, Erie, PA, USA

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