Chapter 5
Adaptation and Psychological Disorders

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Abstract This chapter reviews the issues of adaptation and psychological disorders. First, the definitions of adaptation and psychological disorders are stated, and the criteria for psychological disorders are given. Depression is introduced as a common and typical example of psychological disorder. You can check your depressive tendency by the self-rating scale presented here. Second, after discussing an example of a person with depression, the biological (neurotransmitter) and psychological mechanisms of depression are explained. Theory of learned helplessness and attribution theory reveal the mechanisms of depression. You can check your attribution type and cognitive style and recognize your susceptibility to depression by following the instruction given here. Third, antidepressant medication and cognitive behavioral therapy (CBT) are each considered as an effective means for the treatment of depression. Fourth, historically famous persons who suffered from depression are introduced, and the risk of suicide in depressive patients is discussed.

Keywords Adaptation • Psychiatric and psychological disorders • Depression • Self-rating depression scale • Antidepressants • Learned helplessness • Theory of attribution • Cognitive behavioral therapy • Five column method • Suicide

5.1 Introduction

The term ‘adaptation’ has two meanings: it means either biological adaptation or psychological adaptation. Our ancestors (Homo sapiens) appeared five million years ago. We developed languages and various kinds of tools. We invented letters and symbols, and managed to control fire. Today, we can fly like a bird using an air-plane. Useful tools provided us with comfortable life, and contributed to our adaptation. For instance, we could not have survived in Siberia without wearing clothes and producing heat. We have developed culture to adapt to and modify the external environment. Human beings live almost all over the world, except for the Antarctic. Culture made it possible for us to live in severe natural environments,

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such as cold areas and deserts. The question of whether culture is a biological or psychological adaptation is very difficult to answer, because we could not have developed our culture without skillful hands and verbal communication. The handicraft and communicative abilities are unique to humans, and they are mainly based on human's highly developed brain. For this reason, it is difficult to discriminate between biological and psychological adaptation; the two types of adaptation are related to each other. However, I wish to separate them in order to clarify my discussion about adaptation.

5.1.1 Biological Adaptation

Biological adaptation is an evolutionary process, and usually called 'phylogenesis.' Animals and plants, bacteria, even viruses, rely on DNA (deoxyribonucleic acid) for reproduction. DNA is a code which consists of four bases: A (adenine), T (thiamine), G (guanine), and C (cytosine). The combinations of four bases (A, T, G, and C) determine the complex components of proteins (Sadava et al. 2008). Mutations in DNA code are responsible for the variation of the spices. Nearly all mutations produce abnormal proteins and cause illness, but a few contribute to adaptive changes for survival. If an animal is born with a longer neck than the necks of other animals, it has a greater chance of survival. For the animal can eat leaves on high branches. The giraffe's neck is a typical example of biological adaptation. Adapted animals can survive. The history of evolution is filled with adaptive changes of forms and functions in animals and plants. Homo sapiens are no exception. We have acquired skillful hands and a large brain by mutation of genes in the process of natural selection.

5.1.2 Psychological Adaptation

Psychological adaptation is an ontogenetic process, and involves biological and psychological developments. The neural and physical development of fetus in uterus is part of biological adaptation. New born babies go through the stages of psychological developments. We are born with immature physical abilities. We cannot walk and eat on our own immediately after birth. We need maternal care and education over 10–20 years before we can live independently. There are many things to learn, e.g., standing, walking, speaking, use of the toilet, and arithmetic. Learning ability is the basic element of psychological adaptation. It may be very difficult to achieve psychological adaptation without learning ability. A simple and broad definition of psychological adaptation is that it is a synonym for learning ability. We learn how to control our body and mind in order to survive, and our learning continues from the cradle to the grave. In a narrow definition, psychological adaptation means mental health, anger and anxiety control, and social skills.

5.1.3 What Is Psychological Disorder?

Psychological disorder is simply defined as a state in which we fail to adapt psychologically. This simple definition is not enough to cover the entire variety of psychological disorders. Psychological disorders can be caused by brain dysfunction, psychological and environmental stressors, and even one's cognitive style. Moreover, culture has an influence on what counts as a psychological disorder. For example, homosexuality was a psychological disorder half a century ago. Today, however, no homosexual person is recommended to see a counsellor unless he/she wants. The definition of psychological disorder changes with culture and age. Several criteria for psychological disorder will be presented in what follows.

1. Deviation from mean value
   Intelligence quotient (IQ) is a measure of intellectual ability, and it is presumed to show normal distribution. If a person's IQ score is far below the normal range, he/she may be regarded as abnormal. Generally, a low IQ (under 70) is defined as mental retardation (DSM-IV-TR). IQ is measured by an intelligence test, and hence based on an operational definition. One of the limitations of this criterion for psychological disorder is that low IQ persons do not always have psychological disorder. Many persons with mental retardation have a job, enjoy spare time, and contribute to the society.
2. Violation of social rules
   When one violates social rules and standards, one makes others disturbed and anxious. Persons with mania and antisocial personality disorder tend to bring about one or another trouble with other people. A person with mania tends to ignore traffic signals and spends excessive money. A person with antisocial personality disorder is likely to commit a crime. Are persons who violate social rules all abnormal and have psychological disorder? Almost everyone violates speed limit when they drive. It is illegal in many countries to drink alcohol in a park, but it is not, e.g., in Japan; many people drink under the cherry blossoms. Social rules vary from culture to culture.
3. Subjective distress
   Patients with pain disorder experience serious distress about their bodies. Some patients have a headache, and others have pain in joints or stomach. Pain is subjective experience. It is very difficult to evaluate pain objectively. If subjective distress disturbs our daily life, it may provide a criterion for abnormality and psychological disorder. But cases of malingering imply that one's subjective distress may not be a reliable criterion. If one can get some benefits, e.g., social insurance, by complaining about pain, one's subjective distress may continue while one has no physical cause of pain.
4. Malfunction
   If a person cannot perform desired behavior, he/she may suffer from malfunction. Examples of malfunction are plane phobia, social phobia, and obsessional disorder. A person with plane phobia wants to use an airplane to go abroad,

but he/she cannot enter it as his/her anxiety increases. Patients with obsessional disorder check the safety of gas and electric appliances repeatedly, when they are about to leave home; they have to spend long before they leave home. In the most serious case, a person with obsessional disorder cannot even leave home. Such a malfunction is usually accompanied by distress.

These criteria are defined operationally and behaviorally. This means that they are not as absolute standards as measurable quantities are. Moreover, criteria for psychological disorder may change, depending on culture and age. Either way, these criteria are useful to give a diagnosis of patients with psychiatric and psychological disorders.

5.2 Psychiatric and Psychological Disorders

There are a number of psychiatric and psychological disorders. DSM-IV-TR (American Psychiatric Association 2000) has 17 large categories of psychiatric disorders: schizophrenia and other psychiatric disorders, mood disorders, anxiety disorders, and so on. Each large category has many diagnostic subcategories. For example, anxiety disorders have 11 diagnostic subcategories, including panic attack, agoraphobia, social phobia, and so on. More than five hundreds of psychiatric disorders are described in DSM-IV-TR. However, school non-attendance is not included in DSM-IV-TR, because, only in Japan, school non-attendance is a serious social problem and associated with a psychiatric disorder. School non-attendance is defined as a refusal to go to school for more than 30 days a year, for a psychological reason, as opposed to a physical or financial reason. The number of cases of school non-attendance is estimated about 130,000 in elementally and junior high schools in Japan. Interestingly, there were few cases of school non-attendance in the 1960s, and the number of cases blew up in the 1970s and 1980s. The education system and child-parents relationship are taken to have an influence on the increase in school non-attendance in Japan. If culture-based psychological disorders like school non-attendance are added to DSM-IV-TR, there are innumerable psychiatric and psychological disorders in the world.

5.2.1 Depression

Depression is a mental illness categorized as a mood disorder. Mood disorders have 15 diagnostic subcategories, such as major depressive disorders (single episode), dysthymic disorder, bipolar disorders, and so on. The prevalence rate of major depressive disorder (MDD) is 12–17 % (Angust 1997). This rate is higher than that of schizophrenia (0.7 %). Depression has a crucial impact on our daily life: it deteriorates quality of life (QOL), makes us feel sad and hopeless, and limits our

activity; and it jeopardizes our employment, academic activity, and family relationship. Depression is caused by biological, psychological, and environmental risk factors. The prevalence rate of bipolar disorder is 69.3 % in monozygotic twins and 20 % in dizygotic twins (Sevy et al. 1995). The difference in prevalence rate between the two groups means that genetic factors are very important in depression, and more generally in mood disorders. In addition, psychological and environmental stressors influence the onset of depression. For example, a person is likely to suffer from depression after the death of the person's spouse, since the death of a spouse is one of the most stressful events in life. Even a job promotion may be a stressor for depression because it increases one's responsibility. Many cases of depression including this one are reviewed in the subsequent sections.

The diagnostic criteria for major depressive disorder are as follows (DSM-IV-TR).

A. At least five of the following symptoms have been present during the same 2-week period and represent a change from previous functioning: at least one of the symptoms is either (1) Depressed mood or (2) Loss of interest or pleasure.

    1. Depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful)
    2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated either by subjective account or observation made by others)
    3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5 % of body weight in a month), or decrease or increase in appetite nearly every day
    4. Insomnia or hypersomnia nearly every day
    5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)
    6. Fatigue or loss of energy nearly every day
    7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)
    8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)
    9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

B. The symptoms do not meet criteria for a mixed episode.
C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
D. The symptoms are not due to the direct physiological effects of a substance (e.g. a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

5.2.2 Check Yourself by SDS (Self-Rating Depression Scale)

The Zung Self-Rating Depression Scale (SDS) was designed by W.W. Zung (1965) as a short self-administered survey to quantify the depressed status of a person. There are 20 items on the scale that rate four common characteristics of depression: the pervasive effect, the physiological equivalents, other disturbances, and psychomotor activities. There are 10 positively worded and 10 negatively worded questions. Each question is scored on a scale of 1–4 (a little of the time, some of the time, good part of the time, and most of the time) (Table 5.1).

Questions 2, 5, 6, 11, 12, 14, 16, 17, 18 and 20 are reversed questions. Scores on these questions are converted as follows: $1 \Rightarrow 4$, $2 \Rightarrow 3$, $3 \Rightarrow 2$, and $4 \Rightarrow 1$. For example, 1 point on question 2 is converted to 4 points. The sum of original scores (Q1, 3, 4, 7, 8, 9, 10, 19) and converted scores (Q2, 5, 6, 11, 12, 14, 16, 17, 18, 20) is assessed as follows:

The scores range from 25 to 100.
25–49 Normal Range
50–59 Mildly Depressed
60–69 Moderately Depressed
70 and above Severely Depressed

SDS is useful not only for the evaluation of depression severity but also for the screening of depressive disorder. If one gets a high score on SDS, 70 and above, one is recommended to see a mental health professional. Since SDS is a self-rating scale, rater bias is unavoidable. To make a correct diagnosis of depression, it is necessary to be interviewed by a psychiatrist.

5.3 Case Example of Major Depressive Disorder

In order to understand the illness course and treatment details of depression, it is helpful to look at a case example. Mr. A was in his 40s, and he worked for a company as a specialist. He had been in a depressive state when he was a college student. He recovered from depression without seeing a doctor. He got a job and his job performance was good, although he sometimes had difficulties with his supervisors. He was promoted to a manager before his 40th birthday. He was required to move his office. But then, he found himself not be able to move; he could not help standing in front of cardboard boxes filled with papers. A colleague recommended

Table 5.1 Self-rating depression scale (Zung 1965)

Place evaluate yourself in correct column on a scale of 1–4.	A little of the time (1)	Some of the time (2)	Good part of the time (3)	Most of the time (4)
1. I feel down-hearted and blue				
2. Morning is when I feel the best				
3. I have crying spells or feel like it				
4. I have trouble sleeping at night				
5. I eat as much as I used to				
6. I still enjoy sex				
7. I notice that I am losing weight				
8. I have trouble with constipation				
9. My heart beats faster than usual				
10. I get tired for no reason				
11. My mind is as clear as it used to be				
12. I find it easy to do the things I used to				
13. I am restless and can't keep still				
14. I feel hopeful about the future				
15. I am more irritable than usual				
16. I find it easy to make decisions				
17. I feel that I am useful and needed				
18. My life is pretty full				
19. I feel that others would be better off if I were dead				
20. I still enjoy the things I used to do				

him to see an industrial psychologist. She referred him to a psychiatrist, who diagnosed Mr. A with depression.

Mr. A was allowed to take a medical leave for his illness. He did not accept that he was suffering from depression, and refused to take antidepressants. As a result, his symptoms were not improved; He had difficulty in sleeping, and was not able to enjoy watching TV anymore. He stayed home all day, doing nothing. He was in a depressive mood, although he did not plan to commit suicide. Mr. A and his wife were impatient with this situation. The company extended the medical leave for another 3 months. He felt uneasy and lonely during his leave. He thought that it would be impossible to go back to work. At the end of the extended leave, he decided to go to his office and work, ignoring his psychiatrist's advice that he needed more time for treatment. He was not able to work as well as before. Being flooded with complaints from customers, he broke down again in 2 weeks. Then, his psychiatrist advised him to change his lifestyle.

He now accepted that he was a patient with depression. He went to a mental clinic regularly and took antidepressants. He became to be able to walk around home in the evening. His sleeping problem became less serious, and his depressive mood and other symptoms were improved gradually. Then, his psychiatrist and office manager recommended him to return to work. He started to work again, but not too hard; he worked at office only in the morning, and went home in the afternoon. He became more and more confident in his work abilities, and finally decided to work full time. He is now an active specialist in a responsible position. He enjoys everyday life with his wife.

5.3.1 Mr. A's Comments About His Experience

- Although he felt happy about the promotion, he was afraid of increased responsibility.
- He made a small mistake before the promotion.
- He lost his self-confidence in his ability as a specialist.
- He did not recognize the presence of depression. He thought that he was just tired.
- When he was advised to take antidepressants, he was afraid that it might change his personality.
- If he took the drug, he thought, he would have to accept that he was the patient.
- The failure to return to work helped him to admit his illness.
- He was encouraged by the warm support of his wife and the manager.

Mr. A was good at his job. He was diligent and earnest, but nervous about evaluation of his work. He made a small mistake before his promotion. He felt responsible for too much and thought that it would be very difficult to work in the promoted position as the manager expected. He became depressive and suffered from a sleeping problem. He was reluctant to accept that he needed psychiatric treatment. These kinds of rejection often occur in psychiatric situations, because psychiatric patients are sometimes socially stigmatized. Many people do not have an enough understanding about antipsychotic medication, and they are usually worried about the side effects of antipsychotic medications (for this reason, psychoeducation is very important). Mr. A changed his negative attitude toward psychiatric treatment after he failed to go back to work. He accepted the medical approach and agreed to pursue the goal offered by his psychiatrist. This pattern of attitude change is typically common among patients with major depressive disorder.

5.3.2 *Diagnosis of Mr. A*

The symptoms of Mr. A meet seven criteria for major depressive disorder. He was depressive for more than 2 weeks (criterion 1), and showed markedly diminished interest or pleasure (criterion 2) (for example, he did not want to watch TV). He suffered from insomnia (criterion 3) and psychomotor retardation (criterion 5). He felt fatigued and inactive almost every day (criterion 6). He felt guilty for his small mistake in work, and found himself worthless when he was absent from work (criterion 7). He was not able to make appropriate decisions and lost concentration when he worked (criterion 8). Nevertheless, he did not have recurrent thoughts of death. His appetite was normal, and his weight was stable.

5.4 Biology and Psychology of Depressive Disorders

The etiology of depressive disorders has been developed since the last century. Although a large body of knowledge of causal risk factors and mechanisms of depression has accumulated, more research is needed for answering every question about depression. In this section, the biological and psychological mechanisms of depression are introduced and discussed.

Figure 5.1 shows what kinds of risk factors affect depressive disorders. Biological factors are larger than psychological factors on the left-hand side, and the latter are larger than the former on the right-hand side. This means that biological factors are more likely to cause depression, as compared to psychological factors. On the other hand, psychological factors are more likely to cause depressive responses and temporal depressive emotion when negative events, e.g., a failure to meet a person on time, happen. Persons with depressive neurosis have a negative cognitive style; they negatively interpret situations and relationships with others. It is assumed that their negative cognitive style is developed through their parents-child relationship and environment of growing up. Persons with adjustment disorder have a normal

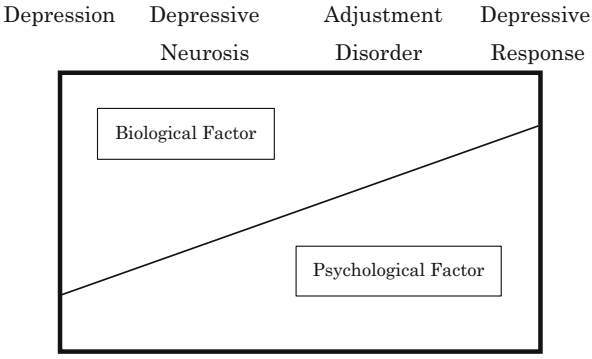

Fig. 5.1 Risk factors of depressive disorders

life before the onset of disorder. An extremely stressful life event, e.g., a spouse being killed by a traffic accident, may trigger adjustment disorder. Biological risk factors, i.e., abnormalities in genes and the brain, are responsible for certain disorders. It is beyond the scope of this chapter to discuss abnormalities in genes in detail. If the reader wants to know more about the genes and brains of patients with depression, I recommend to read Clinical Psychology 4-Abnormal Psychology II (Kameya 2002, pp. 127–146). Abnormalities of neurotransmitters in the brain of patients with depression are introduced in the next section.

5.4.1 Biological Mechanism of Depression

The decrease in serotonin in the synaptic cleft is presumed to be one of the main biological causes of depression and mood disorders. The role of serotonin as a neurotransmitter is depicted in Fig. 5.2. SSRIs (selective serotonin reuptake inhibitors), such as Fluvoxamine and Paroxetine, are used for the treatment of depressive mood, because they block the reuptake of serotonin by presynaptic neurons. SSRIs, then, increase the amount of serotonin in the synaptic cleft, and thereby promote synaptic communication in the nervous system, resulting in the improvement of depressive mood.

Freudenrich (2007) explains the process in a neuron that uses neurotransmitter serotonin, as follows:

1. The presynaptic cell (sending cell) makes serotonin (5-hydroxytryptamine, 5HT) from the amino acid tryptophan and packages it in vesicles in its end terminals.
2. An electrochemical nerve signal passes down the presynaptic cell into its end terminals.
3. The nerve signal stimulates the vesicles containing serotonin to fuse with the cell membrane and dump serotonin into the synaptic cleft.
4. Serotonin passes across the synaptic cleft, binds with special proteins called receptors on the membrane of the postsynaptic cell (receiving cell) and sets up a new electrochemical signal in that cell (the signal can stimulate or inhibit the postsynaptic cell). Serotonin fits with its receptor like a lock and key.
5. The remaining serotonin molecules in the cleft and those released by the receptors after use get destroyed by enzymes in the cleft (monoamine oxidase (MAO) and catechol-o-methyl transferase (COMT)). Some get taken up by specific transporters on the presynaptic cell (reuptake). In the presynaptic cell, the absorbed serotonin molecules get destroyed by MAO and COMT. This enables the nerve signal to be turned "off."

A similar process occurs for norepinephrine, which is also implicated in mood, emotions and MDD. Serotonin, norepinephrine and dopamine are chemically similar and belong to a class of neurotransmitters called 'monoamine

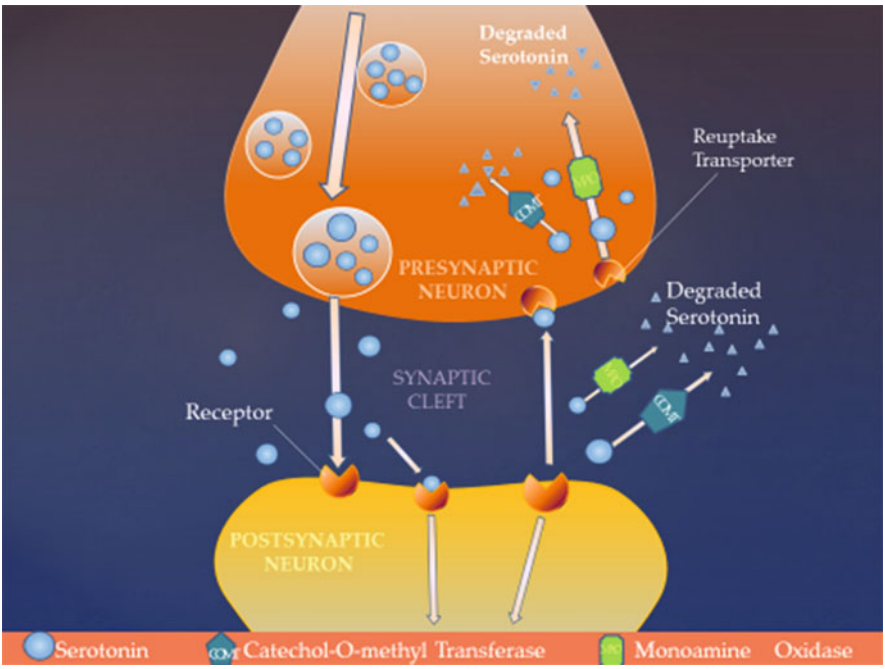

Fig. 5.2 Serotonin in the synaptic cleft (Illustrated by Sugao Shoko)

neurotransmitters.' Because these chemicals are structurally similar, they are all recognized by MAO and COMT.

5.4.2 Psychological Mechanism of Depression

5.4.2.1 The Theory of Learned Helplessness as an Animal Model of Depression

Overmier and Seligman (1967) and Seligman and Maier (1967) found that dogs, when given unavoidable electric shocks repeatedly, did not respond appropriately even in an escapable situation. They called the behavior that dogs showed 'learned helplessness.' It is an animal model of depression. The experimental procedure for this finding is described as follows (Fig. 5.3).

There were three dog groups: contingent, non-contingent (yoked), and control groups. Each group consisted of eight dogs. The dogs in the contingent group were in a position to escape from electric shocks by switched it off. The dogs in the non-contingent group were in no position to escape from electric shocks. They might touch the switch, but it was not wired. Both groups received electric shocks of the same frequency and intensity. The dogs in the control group did not receive

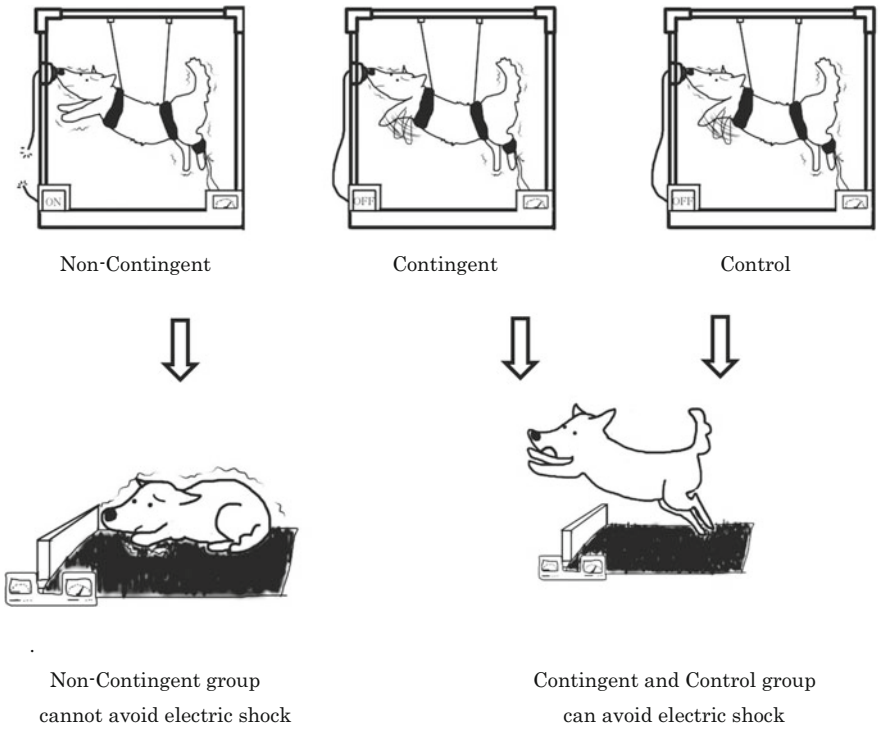

Fig. 5.3 Experiment of learned helplessness (Illustrated Sugao Shoko)

electric shocks. After these conditioning procedures are completed, each of the three groups was moved to a two-way shuttle box, which had two compartments separated by a barrier. Electric shocks were administered through the grid floor of the shuttle box. The barrier was not so tall; dogs could easily jump over it and escape from electric shocks. The dogs in the contingent and control groups jumped over the barrier, whereas the dogs in the non-contingent group did not; they kept sitting, and showed no avoidance behavior.

5.4.2.2 Depression and Theory of Attribution

When we face with a trouble or a negative life event, we usually seek for a reason. Why did I make such a mistake? What is the cause of the accident? Why did I fail the exam? To seek for a reason why a negative event has happened seems to be one of the means to keep our mind stable. Once we find a reason, we feel at ease, even though that reason may not be appropriate or rational. In other words, we are strongly motivated to find a reason why we fail or suffer. Moreover, if the reason we find is appropriate, it is possible for us to avoid similar negative events in the future.

5.4.2.2.1 Check Your Cognitive Style at a Negative Event

If you are a university student, remember your high school days. Imagine the situation in which you failed a math exam. Your score is much lower than you expected. Why did you think you got such a low score? Write down your answer in the column below.

Your reason

Analyze your answer by following the instruction given here (cf. Table 5.2). There are three dimensions of attribution. The first dimension is internal–external. If you think that you failed due to a lack of effort, your attribution is internal. If you think that you failed due to other or environmental factors, your attribution is external. The second dimension is general–specific. General attribution appeals to factors that cause the same event in different situations. Attribution in terms of ability, personality, or effort is general. Specific attribution appeals to factors that are specific to the situation at hand. Attribution in terms of mood, atmosphere, or incompetence in math is specific. The third dimension is stable–unstable. If you appeal to factors that do not change easily, e.g., your ability, your attribution is stable. If you appeal to factors that you can change, e.g., a lack of effort, your attribution is unstable. Fix your responses along the three dimensions. If you attribute your failure to an internal, general and stable reason, you have a tendency to have depression. Internal attributions lower your self-esteem; stable attributions prolong your depressive mood; and general attributions make you feel hopeless in a wide range of situations.

5.4.2.3 Depressive Cognitive Style

It had been assumed that emotional problems were primarily, and cognitive and motivational problems were secondary, in depression. Beck (1976) proposed a new theory of depression against this assumption. According to his theory, cognitive distortion is primarily, and it is the cause of emotional problems. His theory was very unique, because most clinicians and researchers believed that depressive mood caused pessimistic thoughts and lowered motivations. On the basis of Beck's theory,

Table 5.2 Three dimensions of attribution

		Internal	External
General	Stable	I am not smart	The exam was difficult
	Unstable	Lack of effort	It was Friday 13th
Specific	Stable	I am poor at math	The teacher is harsh
	Unstable	Bad physical condition	The room was too hot

he and other clinicians developed cognitive therapy and cognitive behavioral therapy (CBT) for patients with depressive disorders (Shimoyama and Tannno 2002).

Depressive persons have a specific cognitive style, the features of which are summarized as follows:

- Over-generalization: "If I fail A, I will fail B."
- Selective abstraction: "The teacher's advice means that I am incompetent."
- All or nothing: "If I fail the exam, my life will be over.
- Negative thinking: "Her proposal implies that she is teasing me."
- Arbitrary inference: "The absence of Mr. C means that he hates me."
- Over-connection to the self: "I made Miss D ill"
- Over-interpretation: "My mistake reduced the profit of the company."

The depressive cognitive style makes good things smaller and bad things larger. It is very important for a person with depression to change her negative cognitive style to positive one. The five column method is a useful intervention technique to change cognitive styles. The detail of the method is described in the next section.

5.4.2.4 Psychological Treatment for Persons with Depression

Table 5.3 shows the thought recording approach (five column method) in CBT. This approach provides useful procedures for identifying and changing automatic thoughts. In the first column, a patient (or a client) is required to state a stressful event she has experienced. In the second column, the automatic thoughts that precede the negative emotions toward the event are recorded, and the degrees of the patient's beliefs in the automatic thoughts are rated. In the third column, the emotions that are experienced after the occurrences of the automatic thoughts are specified, and the degrees of the emotions are rated. In the fourth column, the patient is asked to identify her cognitive errors, such as listed in the previous section; and then to write rational responses to the automatic thoughts, and to rate the degrees of beliefs in them. In the fifth column, re-evaluation of the emotions toward the event in question is performed. Patients with depressive disorders are required to record their dysfunctional thoughts in their daily life and to modify their cognition and behavior. Please challenge to improve your own depressive mood using the five column method.

5.4.2.5 Effectiveness of Antidepressants and CBT for Patients with Depression

CBT is an effective treatment that enables patients to correct false self-beliefs. The fundamental assumption of CBT is that thought precedes emotion; therefore, to learn healthy ways of thinking will improve a person's mood. There is a good deal of evidence that CBT reduces relapse rates in patients with depression. It is comparable in effectiveness to antidepressants. The combination of CBT and

Table 5.3 Five column method to change cognitive styles

Event	**Automatic thoughts** (Rate beliefs in automatic thought, 0–100)	**Emotions** (Rate emotions, 0–100)	**Rational thoughts** (Rate beliefs in rational responses, 0–100)	**Outcomes** (Specify and rate subsequent emotions, 0–100)
Failure of exam	I am not smart (90)	Regrettable (90) Hopeless (75)	I want to study math more (95)	Regrettable (40) Hopeless (20)
Breakup	I am not attractive (85)	Angry (85) Depressive (80)	She has other priorities (80)	Angry (25) Depressive (30)
Write your event	**Write your automatic thoughts**	**Write your emotions**	**Write your rational thoughts**	**Write your outcomes**

antidepressants has been shown to effectively manage severe or chronic depressions.

As Rupke et al. (2006, pp. 83–86) reported:

> Many studies and meta-analyses show that cognitive therapy or CBT effectively treats patients with unipolar major depression. Several studies have pointed out that cognitive therapy is superior to no treatment or to placebo. Two comprehensive meta-analyses showed that cognitive therapy is as effective as interpersonal or brief psychodynamic therapy in managing depression. They also showed that cognitive therapy is as effective as and possibly more effective than pharmacotherapy in managing mild to moderate unipolar depression.

CBT is an established therapy for depression today. How effective the combination of CBT and antidepressants is in comparison with antidepressants or CBT alone is shown in Table 5.4.

Table 5.4 Summary of the efficacy study by Keller et al. (2000)

Age	Diagnosis	Treatment	Num. of patients	Period (week)	Drop out	HRSD[a]	Efficacy (%)	
18–75	Chronic major depression (DSM-IV) & HRSD≧20	Antidepressant (nefazodone) 200 mg/day Max: 600 mg/day	226	12	6	26.8 → 14.7	Remission	Effective
							29	48
		CBT	228	12	12	26.4 → 15.1	33	48
		Combination (AD + CBT)	227	12	1	27.4 → 9.7	48	73

[a]*HRSD* Hamilton rating scale for depression

5.4.2.5.1 Epilogue: Notable Persons with Depression

According to the biographies and historical records (Wikipedia 2014), there were many notable persons who suffered from depression and bipolar disorder. Bipolar disorder is a type of mood disorder in which depressive and manic episodes occur alternatively. Abraham Lincoln, Fyodor Dostoyevsky, Marilyn Monroe, John Lennon, and others had hard time due to this disorder. In the last part of this chapter, let us review the life of Ernest Miller Hemingway (1899– July 2, 1961), who was an American author and journalist. He won the Nobel Prize in Literature in 1954. (While I was a high school student, I read his masterpiece, *The Old Man and the Sea*. It describes the struggle between a big fish and an old fisherman. The story was boring for me at that time, because I was too young to understand the mental state of an old man.) Hemingway committed suicide and died in 1961. (Fig. 5.4 is a photo of E. M. Hemingway. He looks tough and stable.)

He was a very active man and loved fishing and hunting.
Yet at the same time, he sometimes became gloomy and depressive.
He had typical symptoms of bipolar disorder.

He was the second child and first son, born to Clarence and Grace Hemingway. His father, Clarence, was a physician, and his mother, Grace, was a musician. After high school he reported for a local newspaper for a few months, and serve on the Italian front in World War I. In 1918, he was seriously wounded and sent back home. In 1921, he married Hadley Richardson, the first of his four wives. The couple lived in Paris, where he was influenced by the modernist writers and artists of the "Lost Generation" expatriate community. Hemingway's first novel was published in 1926. After working as a journalist during the Spanish Civil War, he wrote *For Whom the Bell Tolls*. At the end of World War II, he experienced the Normandy Landings and the liberation of Paris. Shortly after the publication of *The Old Man and the Sea* in 1952, Hemingway went to Africa, where he was almost killed in two successive plane crashes; he was left in pain or ill health for much of the rest of his life. In the late 1950s, Hemingway suffered from depression and other

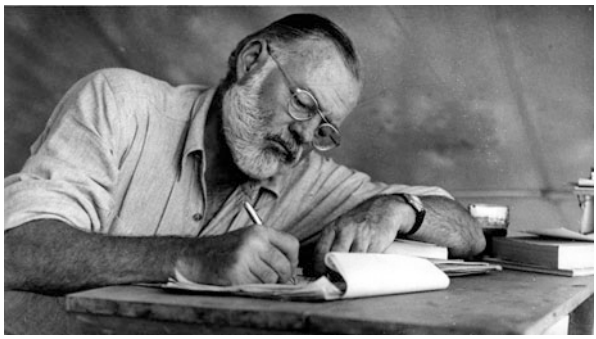

Fig. 5.4 Ernest Hemingway (1899–1961) (Photoshot/AFLO)

conditions, such as high blood pressure and liver disease. He committed suicide at his house in Ketchum, Idaho, in the summer of 1961.

Mariel Hemingway is a granddaughter of Ernest Hemingway. She is a famous actress, and worked on the documentary film *Running from Crazy*, directed by Barbara Kopple and shown at the Sundance Film Festival in 2013. The film chronicles problems of Hemingway's family: suicide, substance abuse, and mental illness. Seven members of Hemingway's family have killed themselves, including Ernest and Mariel Hemingway's older sister Margaux, who was an American fashion model and actress. Margaux seemed to suffer from bipolar disorder as Ernest did. She overdosed antianxiety drugs and died on the same day as her grandfather shot himself by a gun 35 year ago. As mentioned in Sect. 5.2.2, bipolar disorder has higher genetic risk factors than other mood disorders. It may be conjectured that the Hemingway family is genetically susceptive to bipolar disorder. Mariel Hemingway said that they had many family conflicts, despite their family fame. The reader who wants to know more about the Hemingway family is recommended to watch the documentary film *Running from Crazy*.

The risk of committing suicide is very high in patients with mood disorders. The Ministry of Health, Labour and Welfare of Japan (2010) reported that the number of suicides in Japan was 32,845 in 2009, and it included 6949 persons (21 %) with depression, a very high number as compared with the number of persons with other psychiatric disorders. As you have seen in the Hemingway family, suicide is a serious problem for patients and their family. Psychoeducation for patients and family members is important for preventing suicide. Adequate information, proper intervention including medication and psychological treatments, and social support will save their life. The government needs to take actions to reduce the number of suicides (some actions have already been implemented). However, Japan has a serious shortage of psychiatric and psychological professionals and especially CBT experts. An accredited training and license system for clinical psychologists is necessary for teaching and maintaining proper knowledge and skills in their practical fields.

Exercises

1. Choose the correct answer.

   (a) Eating problem is a symptom of depression.
   (b) Visual hallucination is a symptom of depression.
   (c) Sleeping problem is not a symptom of depression.
   (d) Thought disorder is a symptom of depression.
   (e) Lack of interest is not a symptom of depression.

2. Read the following description on serotonin and choose the correct order in which serotonin works as a transmitter.

   1. An electrochemical nerve signal passes down the presynaptic cell into its end terminals.
   2. Serotonin passes across the synaptic cleft, binds with special proteins called receptors on the membrane of the postsynaptic cell (receiving cell) and sets up a new electrochemical signal in that cell (the signal can stimulate or inhibit the postsynaptic cell). Serotonin fits with its receptor like a lock and key.
   3. The remaining serotonin molecules in the cleft and those released by the receptors after use get destroyed by enzymes in the cleft (monoamine oxidase (MAO) and catechol-o-methyl transferase (COMT)). Some get taken up by specific transporters on the presynaptic cell (reuptake).
   4. The presynaptic cell (sending cell) makes serotonin (5-hydroxytryptamine, 5HT) from the amino acid tryptophan and packages it in vesicles in its end terminals.
   5. The nerve signal stimulates the vesicles containing serotonin to fuse with the cell membrane and dump serotonin into the synaptic cleft.

3. Choose the correct answer.

   (a) Contingent aversive stimuli (electric shock) strengthen learned helplessness.
   (b) Non-contingent aversive stimuli weaken learned helplessness.
   (c) Non-contingent aversive stimuli strengthen learned helplessness.
   (d) Contingent aversive stimuli weaken learned helplessness.
   (e) Aversive stimuli always strengthen learned helplessness.

4. Choose the correct answer.

   (a) Internal attributions strengthen depression.
   (b) External attributions strengthen depression.
   (c) Internal attributions weaken depression.
   (d) Stable attributions weaken depression.
   (e) Unstable attributions strengthen depression.

5. Choose the cognitive style that depressive persons usually do not tend to have.

   (a) Over-generalization: “If I fail A, I will fail B.”

(b) Selective abstraction: "The teacher's advice means that I am incompetent."
(c) All or nothing: "If I fail the exam, my life will be over.
(d) Negative thinking: "Her proposal means that she is teasing me."
(e) Rationalization: "I do not like the movie, because I cannot get a ticket."

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