RETRAINING BRAIN TO CURE MENTAL HEALTH ISSUES

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Dedicated to my family

DISCLAIMER

- The author of this book does not have any formal/informal medical education.
- The ways to retrain the brain described in this book are never tested.
- There is no clinical evidence at the time this book is published which proves that the ways to retrain the brain described in this book will actually help improve mental health.
- The ways to train the brain described in this book are not replacement of a proper medical treatment administrated by the medical staff.
- All people with mental health issues and their care giver must follow the advice of their medical doctors/psychologists.
- The targeted audience of this book is medical staff.
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Chapter 1

Introduction

Mental health issues are difficult to treat. This book focuses on the the thinking process of the brain and proposes a logical model of the thinking process. It identifies flaws in the logical model of the thinking process, which may be related to several mostly non-treatable mental health issues. This book also proposes some thinking exercises which may train the brain to restore to a normal thinking process. Figure 1.1 illustrates the methodology of this book.

- Identify the basic thinking process of the brain.
- Identify different important details/features of the basic thinking process.
- Associate flaws in the thinking process of the brain to different mental health issues.
- Identify method to removes the flaws of the thinking process.

The book is divided into different chapters dealing with different aspects of the think process.

Chapter 1: Introduction

This chapter introduces the purpose and structure of this book.

Chapter 2: Thinking process of the brain

This chapter discusses the details of the identified thinking process.

Chapter 3: Flaws in the thinking process

This chapter flaws in the thinking process which may be known as different mental health issues.

Chapter 4: Retraining the brain

This chapter discusses different methods to train the brain to cure different mental health issues.

Chapter 7: Summary

This chapter summarizes the finding of the previous chapters.

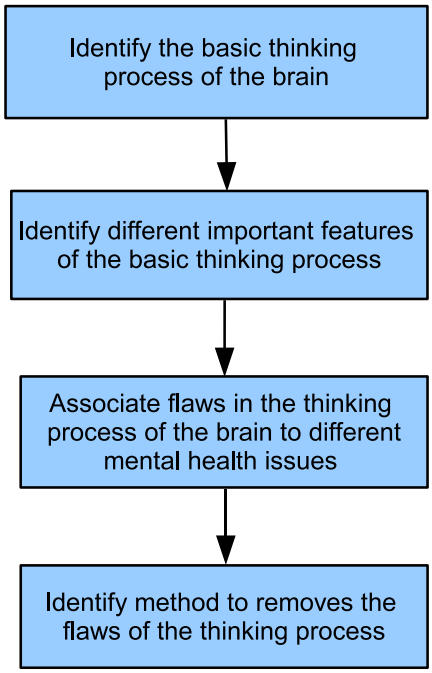

Figure 1.1: Methodology

Chapter 2

Thinking process of the brain

This chapter focuses on the thinking process of the brain.

2.1 Brain as a computer

Brains main role is to think or process logic. Logic processing of the brain is somewhat similar to information processing by the computer. Different areas of brain are thought to perform different functions as shown in Figure 2.1. Available medical literature can provide further details about roles of different areas of the brain.

Figure 2.2 illustrates the brain as a computer or an information processing device.

- There is an input of signals from different sources such as eyes, ears, nose and the skin. Figure 2.2 illustrates only information from eyes and ear.
- Signals from eyes and ears is converted into information.
- This information is processed.
- Short-term memory of brain is thought to store information that is required for short period of time.
- Long-term memory of brain keeps the information for long period of time.
- Brain also issues signals to different parts of the body.
- The information that is processed by the brain is not only from eyes, ears, nose and skin. The information that is processed by the brain can also be from the short-term memory and long-term memory.

2.2 Limited information storage capacity of the brain

We all are aware of limited capacity of different parts of our body. For example:

- We can lift limited amount of weight with our arms.
- We can run to a certain speed with our legs and that is for a limited period of time.
- We can eat and drink limited amount of food within a specific period of time.

Let's see how much information is being fed to brain during its life.

- Let's assume a person who has a life of 70 years.
- Let's assume the eyes are two very high resolution cameras which are capturing images from the surrounding. This camera keep on capturing very high resolution images continuously for 70 years.
- The volume of brain is not so big. Let's assume that the brain has the same capacity to store information as a hard disk available in the market has.
- The volume of brain cannot contain many hard disks.

Brain is like other organs of the body which have limited capability. The brain needs to filter the information as it cannot handle all the information it receives. The brain also needs a smart mechanism to be able to store information in compressed form. Based on above observation, lets assume that:

- The brain has limited capacity to process the information, in the same way a computer has limited capacity.
- Like the computer, the brain has limited capacity to store information is short-term memory areas (cache) and long-term memory areas (hard-disk).

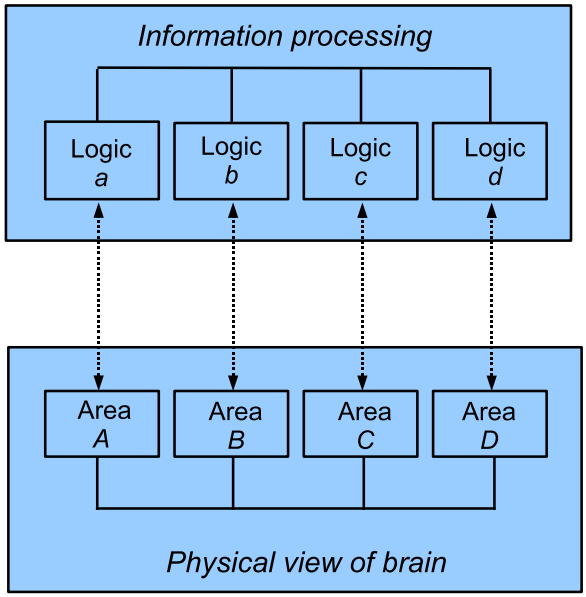

Figure 2.1: Information processing by different areas of brain

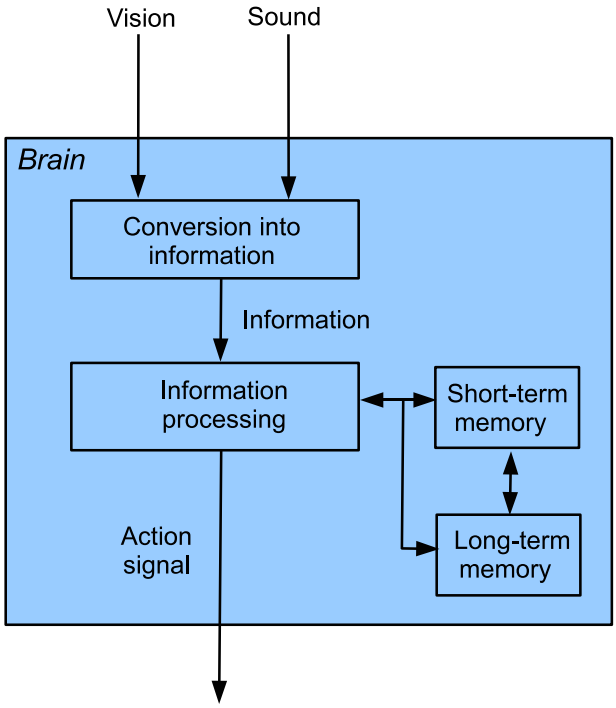

Figure 2.2: Brain as an information processing device

2.3 Information storage and retrieval mechanism

Figure 2.3 illustrates the mechanism the brain uses to store information.

- The information about our surrounding (scene) is collected through our eyes and ears.
- How we perceive the received information depends on our emotional state.
- The brain extracts the features from the scene depending on the emotional state of the mind. When someone is sad, the brain extracts mainly negative features from the scene. When someone is in peaceful emotional state, the brain extracts positive features from the scene.
- The extracted features are stored in the long-term memory area when the extracted features are prominent.
- The extracted features are stored in the short-term memory area when the extracted features are very ordinary.
- The extracted features from the short-term memory area can move to long-term memory area when the ordinary features becomes strong. For example, a mosquitoes start biting again and again.

Figure 2.4 illustrates the information retrieval mechanism of the brain.

- The brain receives information. The brain focus on important feature of the received information.
- The emotional state information is added to the focused feature. For example, when we are sad we add sad emotional state to the feature. When we are happy, happiness is added to the feature.
- The brain scans the scenes stored in the brain using the focused feature and the emotional state. If sadness was added to the focused feature, the brain looks for stored scenes which contain the focused feature and are associated with sad emotional state.
- As observed in section 2.2 the brain needs to store information in compressed form. The retrieved information is not complete and is just basic skeleton of the actual scene that was stored. The brain needs extra information to produce a complete scene. The detailed information

is collected from the environment and added to the basic information structure. The brain may have an area dedicated to non-essential information. The brain might be adding non-essential information from this section.

2.4 Structure of stored scene

Section 2.2 emphasizes the need of brain to store information in compressed form. Let's assume a day of a school going child. Let's see how much information the child needs to store related to three meals he/she have in a day. In the morning, before going to school, the child has breakfast with his parents. At school, child has snack and lunch in the presence of class fellows and school staff. After the child comes back from school, his friends visits him/her. In the evening, the family go to a family restaurant for dinner. Before, going to bed, the child drinks a glass of milk. The childs food intake activities for a single day involves:

- The parents
- The students in class
- Friends who visit the child after the school
- Teacher
- The people in the restaurants

The food items that were consumed or were observed closely were:

- Cereal
- Milk
- Juice
- Candies
- Sandwich
- A lot of other food items

The locations where the food was consumed were:

- Kitchen

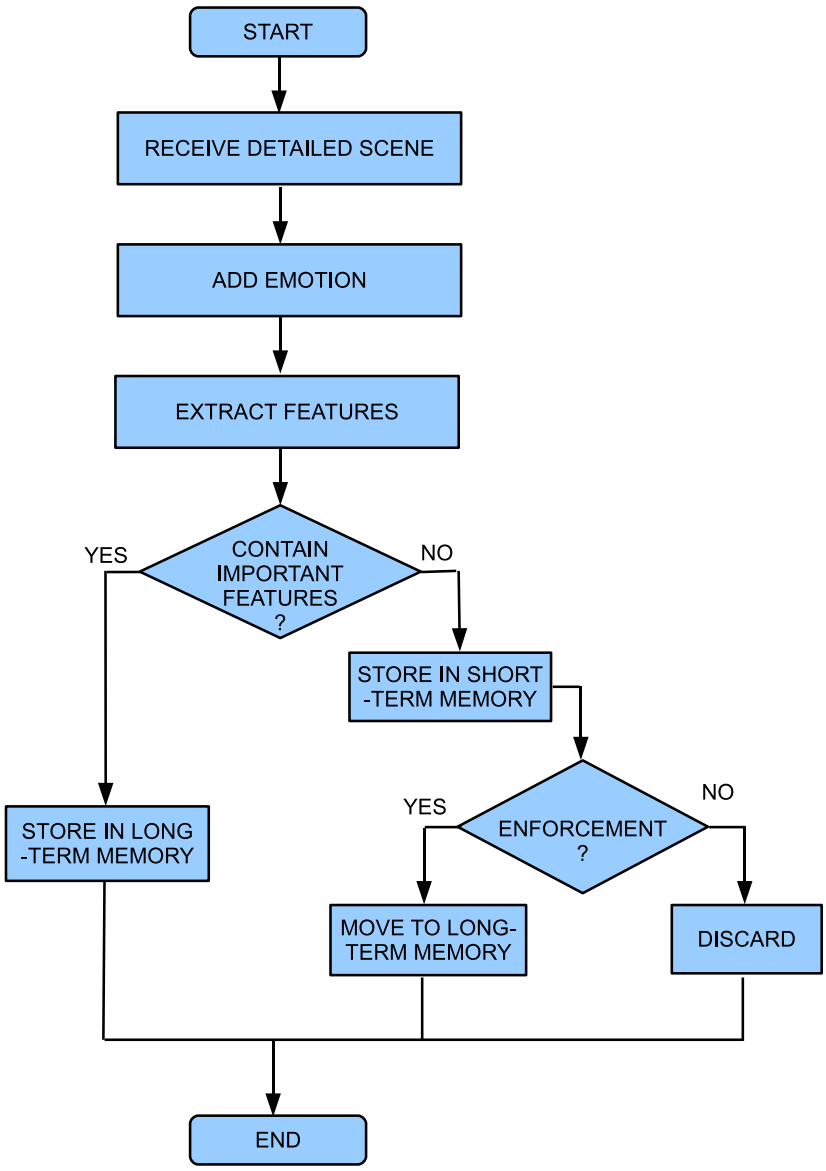

Figure 2.3: Information storage mechanism of brain

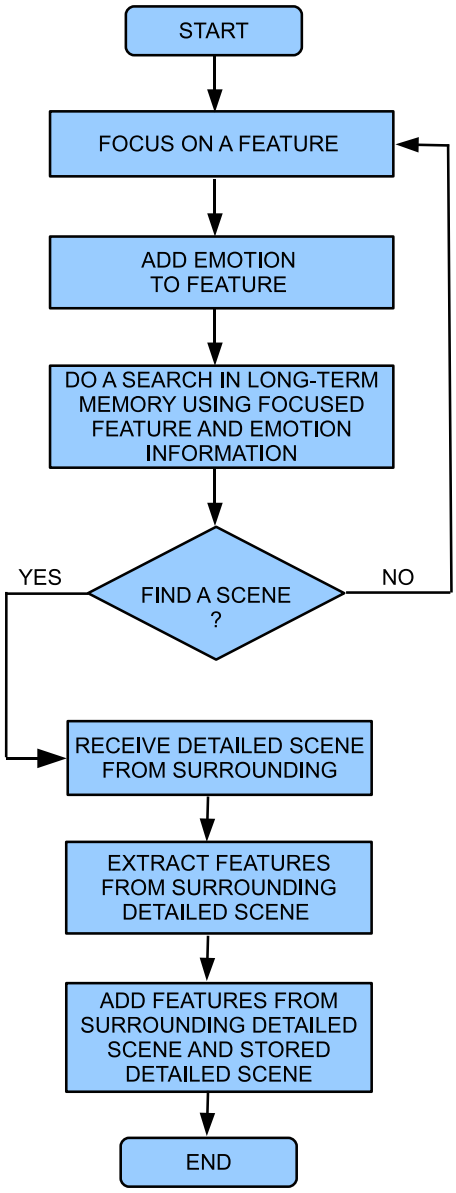

Figure 2.4: Information retrieval mechanism of brain

- Living room
- The Childs room
- School's canteen
- Playground
- Restaurants

Now we need to connect above objects to form complete scenes which can be stored in the brain.

- There is huge amount of information related to one day of activities that needs to be stored in the brain.
- The above cycle of food intake repeats itself almost daily for years. It results in a very huge amount of information.
- Unless there is an unusual event that took place in the daily life, the stored information has no value. In short, the stored information is just wastage of the memory storage area of the brain.

It has been observed before, that the brain is not a special organ which has an unlimited capability. The brain also has limited capacity to store information. The brain simply is not capable of storing such a huge quantity of information.

The best strategy to store information within a limited information storage is to:

- Store only important information.
- For the information that is repeated again and again, just keep a simple copy of the information.
- Rather than storing everything in details, generalize the information for the purpose of saving space.

Figure 2.5 illustrates a very simple method the brain can store information using limited memory storage areas.

- The center point of the stored scene is an action. Any identification part of an action occupies small memory area when stored in its original form. There are very limited number of actions (like walk, run, eat, sleep, play) that occurs in our daily life.

- The actor part of the stored scene takes a general form.
- The subject part of the stored scene also takes a general form.
- Actor and subject are associated with the action. The association has grades like; very weak association, weak association, medium association, strong association and very strong association. In the example of Figure 2.5, the school child enjoys eating with his/her friends compared to anyone else. In this case, the link between friend (actor) is stronger compared to unknown people in the restaurants.
- Each stored scene has emotional state associated with it. For example, there are some combinations of action, actor and the subject which really hurts us whenever we recall them.

To understand why an action is given a central position in a stored scene, let's pay attention to these observations:

- Objects/subjects/things become important when there is an action associated with them.
- Children become fascinated with airplanes because there is an action (airplanes fly) associated with them.
- Children become fascinated with trains as there is an action (train carry people/goods) is associated with it.
- A chocolate/candies becomes important when an action (other kids eat it) becomes associated with it.

To understand why actor takes a general form here, let's pay attention to these observations:

- If we are in our 30's, we remember we had many friends. However, we can recall names of only few. It is because the stored information in our brain is mostly generalized.
- Let's suppose a decade ago, we went to an event which thousands of people attended. Everyone in the event was in great emotional state. After ten years, when we recall the event, we can only recall that there were thousands of people. We do not remember almost anyone who was within our vision field during the event. It may not be our brain fault that we cannot recall everyone we saw during the event. It is our brain which stored only a very limited amount of information as it does not have the capacity to store such huge amount of information.

To understand why subject takes a general form here, let's consider these observations:

- In the example, here we observed the information that was related to the childs daily food intake. The child ate or observed other people eating many food items. However, our brain is smart. It will only store the fact that people ate food rather than storing details of all food item the child observed being eaten in a single day.

- If we are in our 40's and we loved reading books during teenage. We remember that we finished reading a book every third day. However, we cannot recall all the names of the book we read. The reason is that the brain may have generalized the different books we read as simply as a general term 'books'.

Let's take another example to understand how our brain stores information/scenes:

- Lets assume a person who grew up in a country/culture where there is no concept of eating monkeys.

- This person visits shortly another country where monkeys are eaten and this person does not know the language of this country.

- Walking down a street, the person feels very hungry and enters a restaurants. He cannot speak the language and orders by mistake a dish made of monkey meat. He finishes his dish as he was hungry and it did not after all taste so bad.

- After somedays, he mentions some other person the dish he ordered. The other person tells him that the dish is made of monkey meat.

- This person who ate the monkey meat dish by mistake will always remember the scene that he ate the monkey.

There are two possibilities how this scene/information about eating monkeys is stored in his brain.

- Case 1: The brain uses a new area of the brain to store the scene related to the event of eating the monkeys dish by mistake.

- Case 2: The brain reuses the stored scene from Figure 2.5.

In this case, the brain just adds a new branch to the already stored scene and strengthens the emotional state link. Figure 2.6 illustrates when the monkey is added to the already stored information of Figure 2.5.

In case, the brain is using the case 2 method to minimize the amount of information stored, it can be said that:

- There is very limited amount of information that is stored in our brain.
- If we have lived 70 years, the actual amount of information that is stored in the brain, is not more than detailed description of a few days.

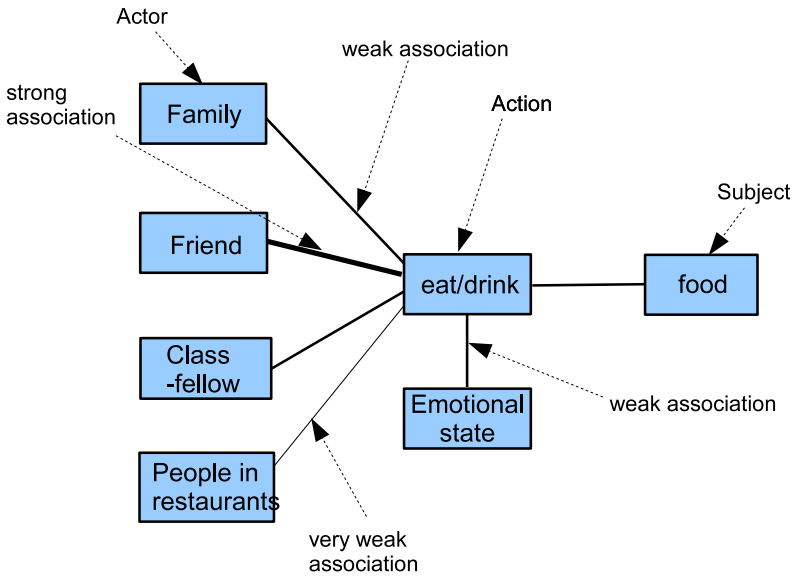

Figure 2.5: Stored scenes

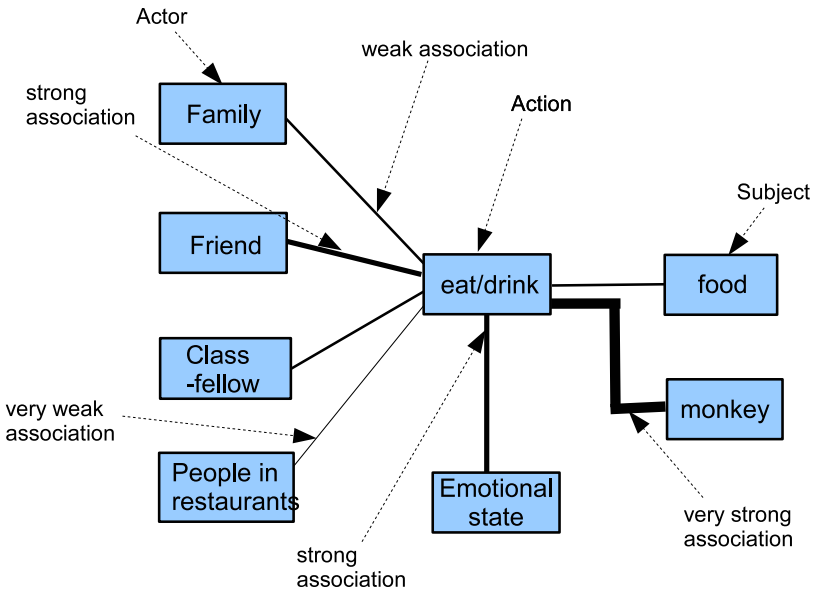

Figure 2.6: Stored scenes with significant events information

2.5 Features of stored scene

In this section, lets observe what are the other important features of a scene which are stored in our brain.

Figure 2.7 illustrates an example which shows that size is the feature that is stored in our brain.

- I go for fishing with my two friends, Friend A and Friend B every weekend to a nearby river.
- The river has small size fishes.
- After a day of fishing, we come back home with a basket full of small size fishes.
- One day, we went and the first fish we caught was one meter long. That was the only day in years, when we caught such a big sized fish.
- For coming years, we will always remember that we caught a big fish.
- An unusual size of the fish created significant activity in our brain, which let me remember the one meter fish for decades.

Figure 2.8 illustrates an example which shows that count of subject is a feature that is stored in our brains.

- I go for fishing with my two friends, Friend A and Friend B every weekend to a nearby river.
- I always come back home with about one to two dozen fishes.
- It was a very hot day and I went to river and came back home empty handed. It was the only time in years that I could not catch a single fish. I did not forget about that unlucky day for years.
- One day I went for fishing and the river was full of fishes. I and my friends were able to catch 10 buckets of fishes. That was the only day in years, when we have such a catch. The unusual count of the fishes I brought home, was a feature that was stored as a part of the stored scene.

Figure 2.9 illustrates an example which shows that shape of the subject is a feature that is stored in the brain.

- I go for fishing with my two friends, Friend A and Friend B every weekend to a nearby river.

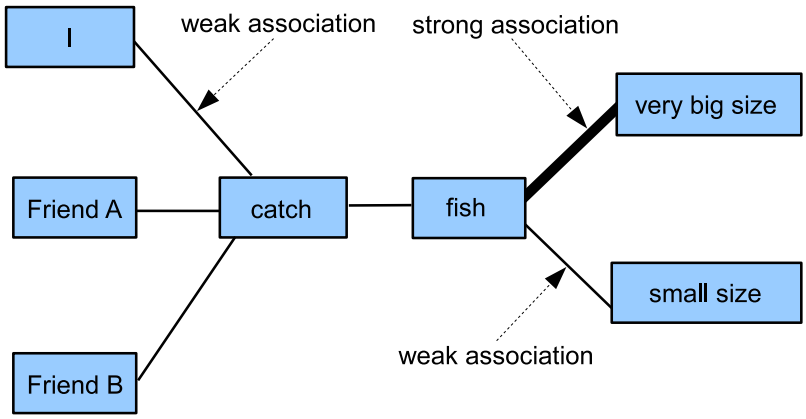

Figure 2.7: Size of subject as a feature being stored in the brain

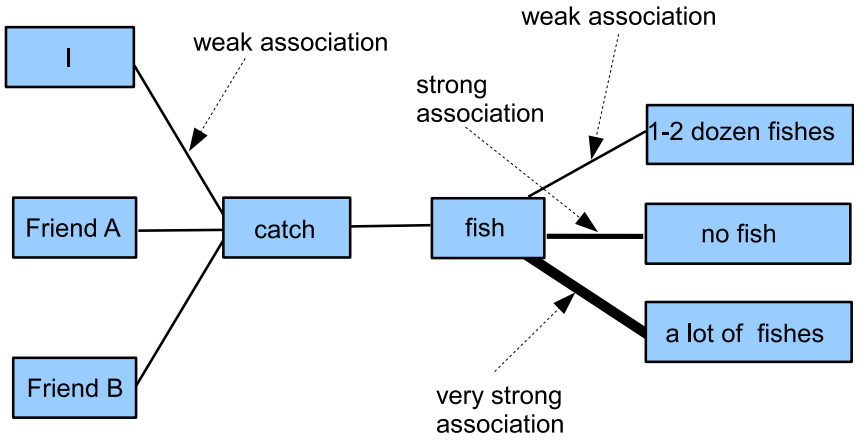

Figure 2.8: Counts of subject as a feature being stored in the brain

- The river has only flat fishes. We never had caught a fish which did not have a flat shape.
- One day, we caught a fish which was a cone shaped fish (just an example).
- That was the only day in years, when we have a cone-shaped fish. I did not forget about that fish for years.

Figure 2.10 illustrates an example which shows that color is a feature that is stored in the brain.

- Mr. D. had some hens in his farm.
- Hens always laid white and brown eggs.
- One day, Mr. D. finds that hens have laid golden eggs.
- It is the only day, that hens laid the golden eggs. Mr. D. remembered that day for years.

Figure 2.11 illustrates an example which shows that Brains stores the order information.

- We are used to think that when we go out, we put on socks and then shoes. There is an order of actions which is regarded as an normal order of events. In Figure 2.11 order is represented as strength/grade of association. The action with stronger association is initiated before an action with weaker association.
- Now we come across Mr. C. who wears shoes first and then wears the socks. In the brain of Mr. C., the correct actions are stored. The only issues is the order of the actions. The shoe is strongly associated compared to the socks.
- When we observe Mr. C. taking actions in a different order than what is stored in our brain, we remember Mr. C. for a long period of time.

2.6 Link between stored scenes

In previous sections we have concentrated mainly on only one single memory areas. In this section, lets discuss how different stored scenes are linked to one another. Figure 2.12 lists links between different stored scenes. Let's take

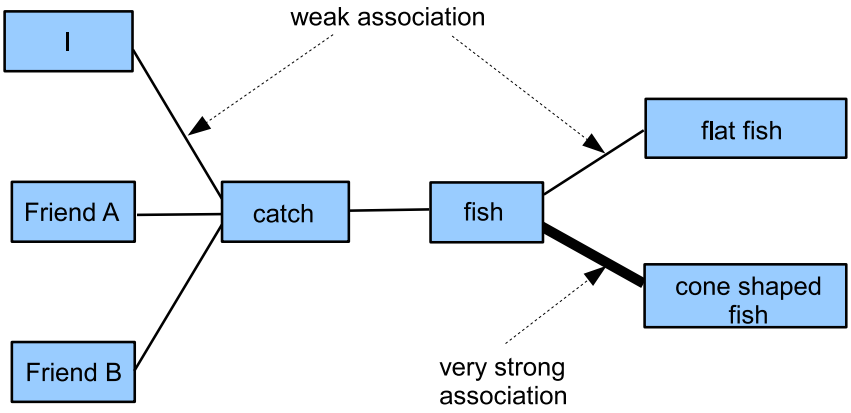

Figure 2.9: Shape of subject as a feature being stored in the brain

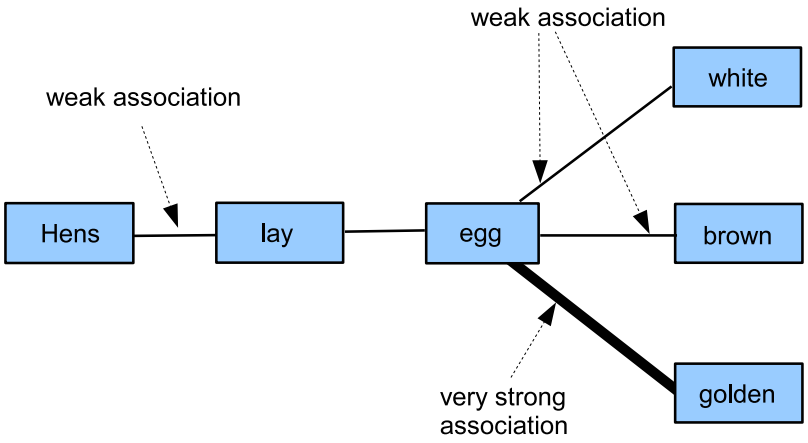

Figure 2.10: Color of subject as a feature being stored in the brain

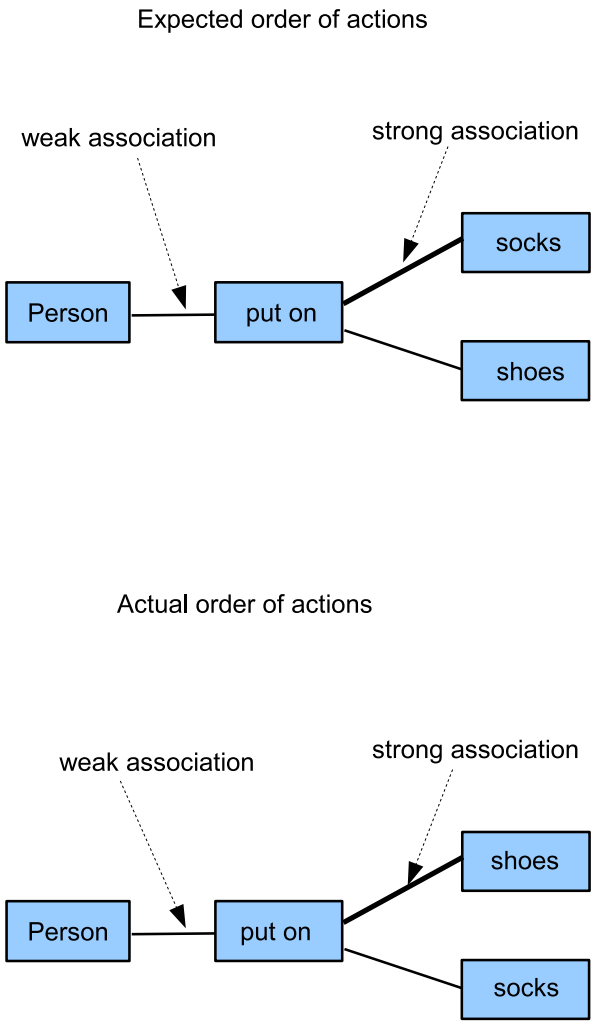

Figure 2.11: Order of actions as a feature being stored in the brain

the example of a kid who is asked by his/her parent to do his/her homework after coming back from school. The child rather than listening to the parents advice, will think about doing other things, like watching TV, calling friends or playing with toys. Let's see how the child thinks about engaging in other activities. In the example here, inside the child's brain there are four scenes stored.

- Scene 1: Child studies his/her text books.
- Scene 2: Child plays with toys/video game.
- Scene 3: Child watches TV.
- Scene 4: Child call friends.

The reason the child reaches to all these ideas of engaging in other activities when he should study comes from the relationship that exists in the childs brain. In the model presented in this book, the action is the center of an action. The association exists between:

- The action of stored scene 1 and the action of stored scene 2.
- The action of stored scene 1 and the action of stored scene 3.
- The action of stored scene 1 and the action of stored scene 4.

At the first instance, we will be surprised why this association exists. Let's discuss how the child developed the association among the different stored actions.

- When the child goes to school, the child plays with his/her friends at school. So there exists an association between study (stored scene 1) and (stored scene 2) play.
- When the child goes to school, the child watches new information in the form of research using internet, text books and videos. So there exists an association between study (stored scene 1) and watching (stored scene 2).
- When the child goes to school, the child talks/discuss different subject matters with his/her class fellows at school. So, there exists an association between the study (stored scene 1) and call/talk (stored scene 3)

In the child's brain playing, watching, talking are associated with the studies.

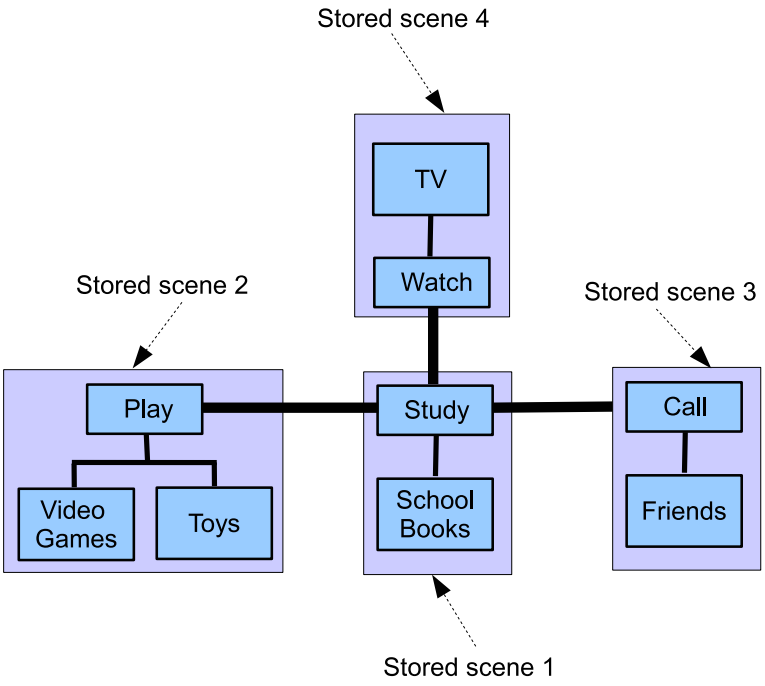

Figure 2.12: Link between stored scenes

Chapter 3

Flaws in the thinking process

In this chapter, the flaws in the thinking processes are discussed. This book does not distinguish between different kinds of mental health issues, such as Autism, Alzheimer and Schizophrenia. It just observe different kinds of behaviors which are classified as symptoms of different health issues.

3.1 Inability to speak

Let's pay attention to Figure 2.5 and Figure 2.6. The Figure 2.5 and Figure 2.6 can be also termed as an abbreviated form of a sentence. All scenes which are stored in our brains are preserved as abbreviated forms of sentences.

Let's see how we are able to utter a sentence:

- Stored scene is retrieved from the memory area of the brain.
- The brain adds more information to it to make it complete. The surrounding environment might be used to add some of this information.
- This information is converted into signal which goes to our mouth.
- The mouth moves and generates sounds.

To be able to speak we need the information stored as shown in Figure 2.5 and Figure 2.6. According to the concepts described in this book, the cause of not being able to utter complete sentences or not being able to utter a word can be due to

- Most of the commonly used scenes are not stored in the memory area of the brain.
- The scenes are not stored properly and cannot be retrieved.

- The inability to create complex sentences might be due to non-existence of links between different stored scenes. Figure 2.12 is an example of such links.

3.2 Inability to interact socially

Let's pay attention to Figure 2.5 and Figure 2.6.

- An action results when a stored map is retrieved and used to generate an action signal.
- Our social behavior is an ordered collection of actions, where a stored scene is used to generate an action. Figure 2.11 illustrated an example how orders of action is realized in the brain.

According to the concepts described in this book, the cause of not being able to interact socially is that:

- Most of the commonly used scenes which form the basis of our interaction are not stored in the memory area of the brain.
- The relevant scenes are not stored properly and cannot be retrieved.

3.3 Memory loss

It has been observed in the Chapter 2 that:

- The brain stores the important features of the past scenes.
- When we recall an old scene, the missing information is filled by the existing environment.

We can loss the past memory when:

- The past scenes which were stored in the brain no longer exists.
- The scenes are not stored properly and cannot be retrieved.

3.4 Hallucination

Let's pay attention to Figure 2.5 and Figure 2.6. The past scenes are stored in the brain. Retrieving and mixing simultaneously of multiple past scenes can create the hallucination. The cause can be lack of association among different scenes. It can be also due to stored scene not being in the proper form/format.

3.5 Summary

Our thinking process has three important aspects:

- Information is received.
- The important features (actor, action, subject, color, shape etc) are extracted .
- The extracted information is stored under fixed rules.
- The stored information is retrieved.

Most of the mental health issues results from problem at any of those steps.

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Chapter 4

Retraining the brain

This chapter discuses training steps which MAY help retrain the brain to work properly again

4.1 Main causes of mental health issues

In Chapter 3, it has been observed that most of the mental health issues results from problem at any of follow steps:

- Information is received.
- The important features (actor, action, subject, color, shape etc) are extracted .
- The extracted information is stored under fixed rules as a stored scene.
- The stored information is retrieved.

It is also conclusion of the concepts presented here that there are very limited number of scenes stored in our brain which are actually used. The good aspect of such mechanism is that:

- Even when some parts of the brain are physically damaged, this limited amount of the information can be stored in never used before areas.
- Even when the stored scenes are erased due to some problem, the scenes which forms our daily life can be added to the brain again.

4.2 Main strategies for retraining brain

Let's observe our daily life and what makes association among action/subject and action/actor stronger.

Figure 4.1 illustrates a stored scene in a person brain related to the bite (action). The person was bitten by three different living things; mosquito, honeybee and jelly fish. The strength of the association depends on the extent of the physical impact of the action. The person brains learns that it need to avoid jelly fish and honey bee.

Figure 4.1 illustrates a stored scene in a persons brain related to how a person gets drinking water. The person opens the fridge to get some drinking water. If there is no drinking water in the fridge, he gets it from kitchen water tap. Getting the water from fridge and kitchen tap did not require much physical effort, so getting water from the fridge or kitchen tap does not bother him. Suppose there is no drinking water, the person walks to the nearby shop and buys a bottle of water. It requires more physical activity than getting water from the tap/fridge. Walking to the shop for buying a glass of water bothers him more. Physical activity generates strong association. Once the person needed to walk three miles to a well to get some drinking water. There was huge physical effort involved here and the association between the well and drinking was very strong. The person learns that there is a need of working water supply in the house or he needs to live near the well.

The purpose of above examples is to stress that brain trains quickly when there is a physical effort accompanied by a learning process. There can be different ways the physical effort can be added to the learning process:

- Asking the person to write what he see.
- Asking the person to say what he see, if he/she is unable to write.
- Asking the person to chose an object from a collection of objects, when he is unable to write or speak.
- Asking the person to point toward an object, if he/she is unable to grab an object.

It is said that practice makes a man perfect. Practice is important in the process of retraining the brain. Repeating the learning activity can be the key to success. A person may be able to retrain the brain in short period of time while other might take much longer.

Figure 4.3 illustrates a difference between simple and sophisticated task. The top of the Figure 4.3 illustrates different types of simple tasks. The lower

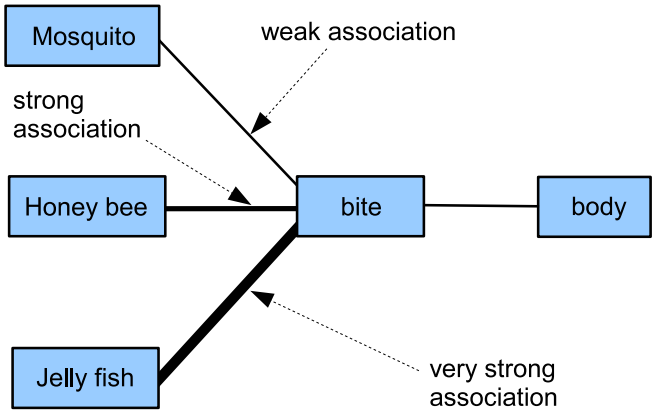

Figure 4.1: Strength of association and physical impact

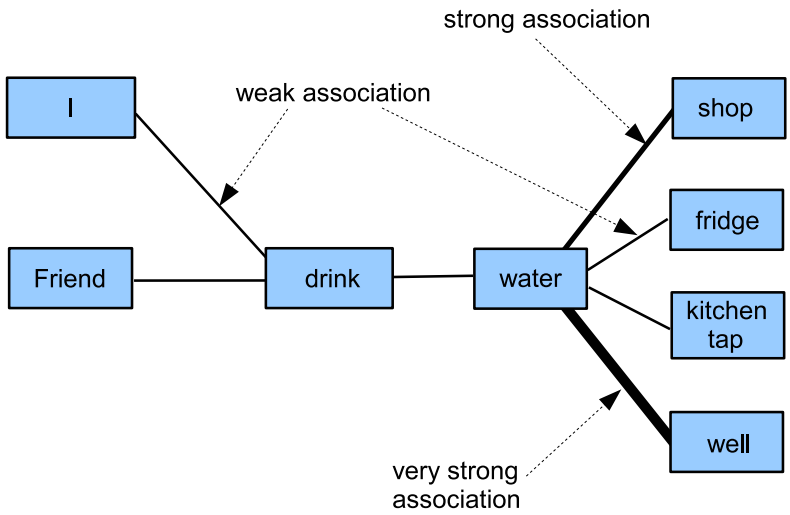

Figure 4.2: Strength of association and physical impact

part of the Figure 4.3 illustrates the sophisticated task. A sophisticated task is a combination of simple takes which are arranged in an order. A person will find it hard to perform a sophisticated task unless the brain masters the simpler tasks. The key to success may be to start from the simpler tasks and then move toward the sophisticated task.

Figure 4.4 illustrates the quantity of information the brain process in a person without mental health issues. The first mode is called here, the meditation mode. In the meditation mode, we reduce the quantity of information we feed in the brain from the external mode. In the normal mode, our brain is capable of processing most of the information the brain receives. After the quantity of information that is fed to our brain from the external environment exceeds a limit, the brain falls to a state where it cannot handle the amount of information. In the case of a person, A person with mental health issues might not have the ability to handle the normal quantity of information. There will be need to adjust the quantity of information.

4.3 Retraining steps

In this section, lets summarize what has been discussed so far.

4.3.1 Preparing braining retraining material

- The person past life or the desirable life be analyzed and the combination of actor, actions and subjects with associated features (colors, shapes etc) be listed.
- Detailed scenes combining the actor, actions and subjects be prepared. It has been observed in this book that the brain may be storing a very limited number of scenes in compressed form. The real desirable life of the person may be described by small numbers of scenes.
- All the actors, actions and subjects which form the scene need to be in their natural shapes and natural colors. Animated images which modifies natural shapes and colors of the objects is not recommended here, as a person with mental health issues need to interact with real persons and not with the characteristics of the animation characters.

4.3.2 Conducting the braining retraining material

Let's see how the prepared brain retraining material can be used to retrain the brain.

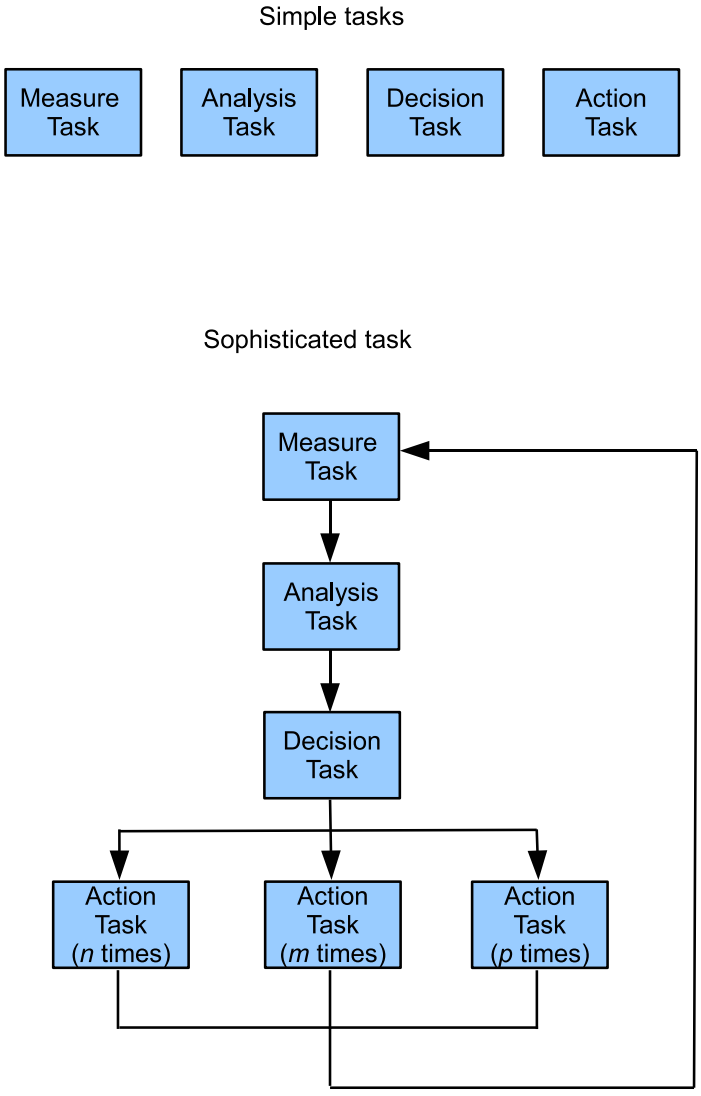

Figure 4.3: Simple and sophisticated thinking process

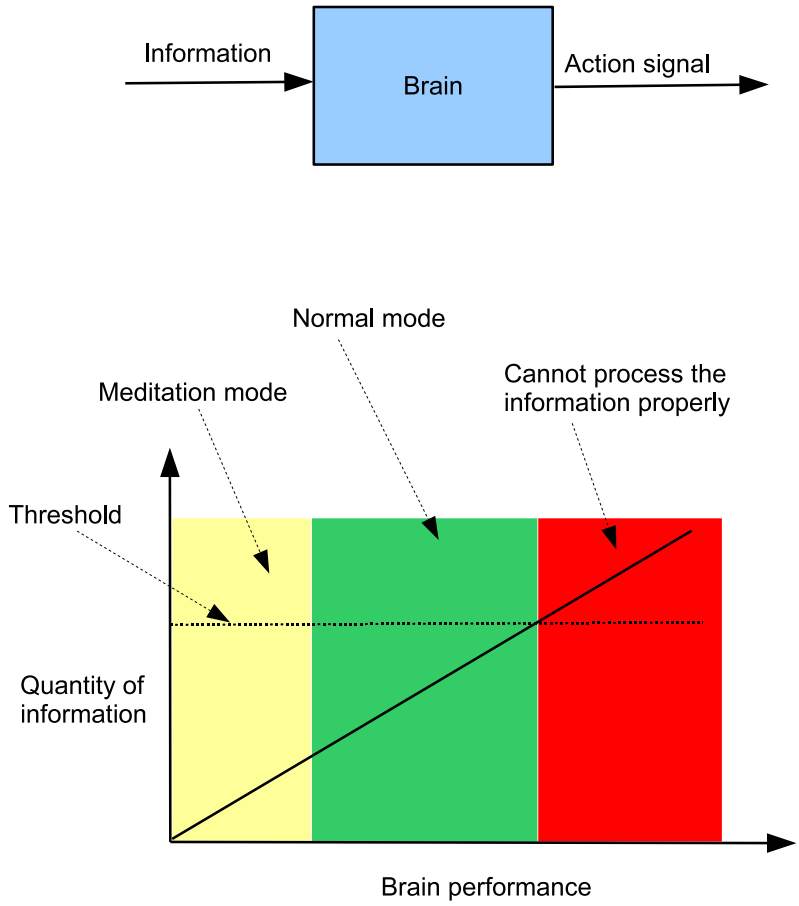

Figure 4.4: Adjusting quantity of information

- It has been observed in this book that the brain uses the information from the environment to supplement the stored scenes in the brain. If possible, pleasant environment such as being in nature is the best location to conduct the exercise.

- It has been also observed in this book that when a person is facing mental health issues, there is a need for adjusting the quantity of information that is fed to the brain. Too much information and too low quantity of information may not be good during the retraining sessions.

- The brain retraining exercises can be of short intervals such as for 15 minutes and be done several time a day with gap of hours between each exercise session. As observed before, practice is the key to success.

- The person with mental health issues is asked to identify the actor, action, subject and other important characteristics (such as shape, color, counts and order of subject).

- The person with mental health conveys the identified actor, action etc through a mean which accompanies a physical activity such as writing the answer.

Computers can be used to help facilitate the preparing the brain retraining material and for managing the schedules of brain retraining sessions.

Chapter 5

Summary

The purpose of this book is to present the idea that it MAY be possible to retrain the brain to cure the mental health issues. The ideas described in this book may be used as a starting point to develop some other way which is more effective than the methods described in this book. Physiotherapy is effective in limited cases only. Similarly the concepts described might be useful to slow down the mental health problems in the very early stages of the mental illness. The work described here is only at the stage of concept. Nothing presented here has ever been tested and there is no clinical evidence which proves that the concepts described here can really cure mental health issues. ALL PEOPLE WITH MENTAL HEALTH ISSUES AND THEIR CARE GIVERS MUST CONSULT THEIR DOCTORS AND MUST FOLLOW THEIR MEDICAL STAFF ADVICE.