

HUMAN EMOTIONAL AND RATIONAL MIND ANALYTICAL TOOL FOR WISE MIND ESTABLISHMENT PROCESS

U.S.M. Perera, D.J.M. Ganegoda, M.B.M. Fazmy, P.R. Wijenayake, U. Samaratunge
Sri Lanka Institute of Information Technology

ABSTRACT

This study explores the true ability of technology which can be of use to aid the human brain to achieve higher levels of brain productivity by intelligently managing satisfactory factors along with DBT (Dialectical Behavioral Therapy) concept called Wise Mind. The sole purpose of this research is to apply communication technology & computer science in order to make lives better and easier by effectively managing stress & reducing lack of single-mindedness. In this study, human brain is analyzed in terms of productivity & concentration using psychological principles, and the possibility of developing a software application to support the purpose is explored and attempted. It is found that among all beings, it is humans who have a profound brain power and intelligence, but in order to make use of this amazing brain, it is required that the mind of a person is at calm state and single-minded. This research attempts to understand the thinking patterns of the brain along with its satisfactory factors & ultimately how to manipulate the brain using those patterns when it is needed. This study intends to scientifically analyze the interrelation which can be built between brain and information technology. In order to have a high productivity, a good mental state is important. As it is defined in Neuropsychology, the psychological state of the brain is directly interconnected to the brain's physical state. A positive psychological state can help a brain to work better as well as a negative psychological state can cause regression of brain's physical state. So the problem arises, "how do we establish a better mind state to be more productive & to keep human brain healthier?" We have to research more on methodologies which can make humans more productive & healthy by establishing better mind states (Mindfulness State / Wise Mind

state) along with satisfactory factors where it is possible to train the brain to work more efficiently, so that it helps to identify practical approaches for vast human psychological challenges like stress. Prof. M. Linehan who is the founder of Dialectical Behavior Therapy (DBT), has developed a theory to explain the preliminary mindsets of humans [1]. And this theory states that the mind can have three states named, Emotional Mind, Rational Mind & Wise Mind as mentioned in Fig 1. She has explained that when the person is in this Wise mind, it can overcome the lack of concentration & dissatisfaction in order to gain high levels of productivity. Our research team is researching on modifying the primary relationship which was explained by Prof. M. Linehan and creating a technological solution by means of data re-engineering and cutting edge technologies. This particular solution works based on two basic mindsets called, Emotional Mindset and Rational Mindset. [2] Human Emotional and Rational Mind Analytical Scientific Tool for Wise Mind Establishment Process with Efficiently Managed Satisfactory Factors is an application developed to get direct data from the users to access their Emotional Mindset by a Personal Moment Tracking System (PMTS). The proposed system for this research will allow users to capture moments which are important for them and it will act as a personal moment diary where it also gives the freedom to browse and store memories for future references. Moreover, this application will provide an emotional timeline of a person, enabling the study of their emotional lifestyle. While users are adding their special moments to the system, in the back end, the system will analyze the cognitive behavior and the satisfactory factors which we introduce, of the users and maintain statistical records. This data is used in algorithms which are available in the

suggested WMEP (Wise Mind Establishment Process) Model resulting in a process which the user can access to train their brain to be more single minded in order to gain high productivity.

1. INTRODUCTION

This study tends to explore a solution that attempts to control the thinking patterns of a human brain along with DBT (Dialectical Behavioral Therapy) concept called Wise Mind. Marsha M. Linehan is the founder of Dialectical Behavior Therapy (DBT), a type of psychotherapy that combines behavioral science with Zen concepts like acceptance and mindfulness. Currently this concept is adopted by most of the psychotherapists for their treatment sessions. The study of this concept reveals that human beings have two major mind sets;

1. Emotional Mindset
2. Rational Mindset

According to Prof. M. Linehan, one person can reach a high-level of one-pointedness by balancing both emotional mindset and rational mindset where at a point the two mindsets are balanced, the Wise Mind is proved to be established. Accessing emotional mind and rational mind is done separately and the need of a user-driven personal emotion tracking system was identified. “LyfSplash” is a Personal Moment Tracking System (PMTS) developed to aid the study and the outstanding product of it, is a technological solution that will bring the same concept to the user that provides the opportunity to let user’s mind to be balanced accordingly in order to access wise mind. Below Diagram shows as to how people establish mindfulness or single-mindedness by balancing both mindset and coming to a point where both the mind sets intellect. (Figure 1) This intellectual point is known as the Wise Mind state of a person.

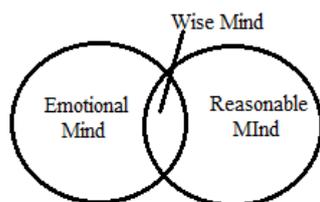


Fig 1: Connection of Three Main Mindsets

The proposed application for this research is based on a wide research which was carried out by merging different disciplines like Human Cognitive Psychology, Communication Technology and Artificial Intelligence etc. which will eventually help the users to access their wise mind in a more efficient manner.

Mark McGonigle(LCSW, owner of Wise Mind Therapy Services, Masters in Applied Spirituality, obtained in 1985 from University of San Francisco) believes that spirituality offers unique ways to develop inner wisdom, to get in touch with your own Wise Mind. In Medical Terms there are immense numbers of ways to reach Wise Mind including Meditation, listening to music or poetry, Thoughts and Feelings Exercises, and so on, but it takes time and dedication.

As found in most of the studies, it is humans who have a profound brain power and intelligence, but in order to make use of this amazing brain, it is a requirement that the mind of a person is at a calm state with one-pointedness. In this study, human brain is analyzed in terms of productivity & concentration using psychological principles and the possibility of developing a software application to support the purpose is observed. The Personal Moment Tracking System (PMTS), as known as “LyfSplash” takes users emotions as the input and then processes them with the data mining algorithmic modules. This application attempts to understand the thinking patterns of the brain along with its satisfactory factors & ultimately how to manipulate the brain’s chemical state using correct multimedia and use it as a stimulus to make brain’s state better when it is needed. The sole purpose of developing this application is to apply communication technology & computer science in order to make lives better and easier by effectively managing stress & by reducing lack of concentration, with which the application will eventually render an easier solution to reach the said Wise Mind of an individual.

2. TECHNOLOGICAL ASPECTS

Computational Cognitive Modeling, or simply computational psychology, explores the essence of cognition (broadly defined, including motivation, emotion, perception, etc.) and various cognitive

functionalities through developing detailed, process-based understanding by specifying corresponding computational models (in a broad sense) of representations, mechanisms, and processes. It embodies descriptions of cognition in computer algorithms and programs, based on computer science.[3]

Many Computational Cognitive Models are used in a way to broadly define the behavior of a human mind. Researches carried out in the history have concluded saying that human mind is a complex system to come up with an effective Computational Model. Most Famous Computational Cognitive Models include CLARION, SOAR and ACT-R. But none of these models are based on DBT.

Developed application intends to scientifically analyze the interrelation which can be built between brain and information technology. In order to have a high productivity, a good mental state is important. As it is defined in Neuropsychology, the psychological state of the brain is directly interconnected to the brain's physical state. [4] A person can achieve higher levels of productivity easily if one is in a single-minded state (mindfulness state / wise mind state) where he/she can concentrate highly along with satisfactory factors where these individuals will train their brain to work more efficiently, so that it helps to identify practical approaches for vast human psychological challenges like stress and dissatisfaction.

As Prof. Linehan has explained that when the person is in this wise mind, it can overcome the lack of concentration & dissatisfaction in order to gain high-levels of productivity. This study will explore in modifying the primary relationship which was explained by Prof. M. Linehan and creating a technological solution by means of data re-engineering and cutting edge technologies. This particular solution works based in two basic mindsets called, Emotional Mindset and Rational Mindset as explained by Prof. Linehan. Human Emotional and Rational Mind Analytical Tool for Wise Mind Establishment Process will be achieved with efficiently managed satisfactory factors as said is a technological solution where the conclusion will be presented in the form of an application developed to get direct data from the

users to access their Emotional Mindset by a Personal Moment Tracking System (PMTS) also known as "LyfSplash". This will allow users to capture moments which are important to their life and it will act as a personal moment diary where it will provide the ultimate freedom for the algorithms developed in back-end and the user to browse them and store them for the future references. Moreover, this application will also provide an emotional timeline of a person, enabling a study of an individual's emotional lifestyle. While users are adding their special moments to the system, in the back end, the system will analyze the cognitive behavior and the satisfactory factors of each individual and maintain statistical records via the said algorithms introduced. Also the system identifies the correlations between the person and different entities (living and non-living) giving a broad idea of the state of those relations. The collected data are been used in algorithms which are available in suggested WMEP (Wise Mind Establishment Process) Model enabling users to train their brain to be more concentrated in order to gain high productivity.

3. METHODOLOGY

Learning to control our emotions is the key to Wise Mind Living and bringing together the rationality of Rational Mind and the sensitivity of Emotional Mind to create a balanced state of mind that results in Wise Mind Living. It was identified that like any other skill, mastering human emotions takes practice, just like other human activities; the more humans train more they become success. An interactive approach is used in the system to actively involve the user to get the user engaged in the process. The main goals of the system would be accessing the wise mind of the user, i.e. accessing the emotional mind and the rational mind at the same time.

Dialectical Behavioral Therapy (DBT) assumes that individuals are capable of experiencing wisdom in their lives by achieving "Wise Mind". It was found that individuals can develop wise mind as they learn and practice DBT skills. Skills are learned abilities; skills have the potential to change human behavior, emotions, and thinking patterns associated with problems in living, especially those causing misery and distress. The specific

DBT skills for developing wise mind are interpersonal effectiveness skills, emotion regulation skills, distress tolerance skills, and core mindfulness skills. [13,14]

Problems in living can be separated into two broad categories: problems with emotions and problems with thinking. Emotional problems have to do with acting the way we feel (impulsivity), moodiness, anger, anxiety, and confused feelings. Problems in thinking have to do with what we know (or don't know), and problems with reasons or logic. Any combination of such problems can lead to interpersonal chaos, confusion about self, or the inability to regulate mind which also often called as misery and distress.

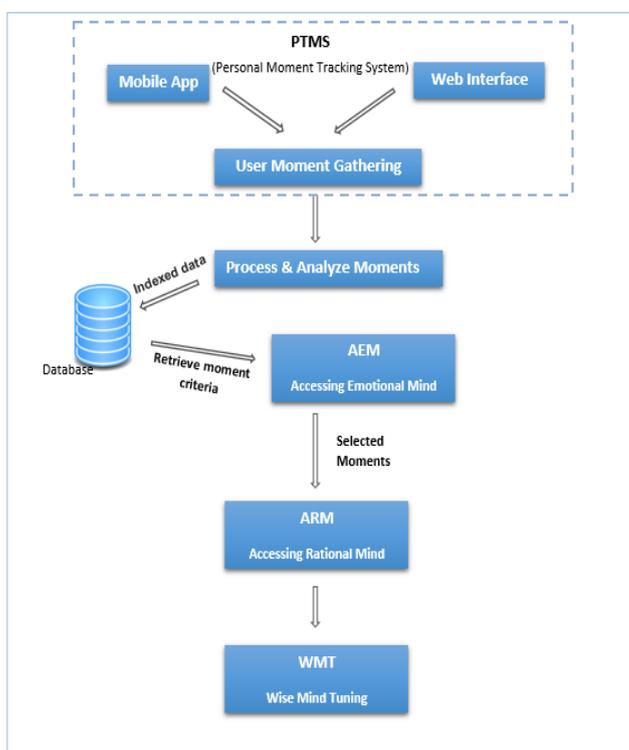


Figure 2: System Overview

Above Diagram (Figure 2) diagrammatically explain the basic flow of the system which is used in approaching to establish wise mind of an individual. The system (PTMS) is accessed by 3 kinds of users; A user who access the system via the web interface, a user via the mobile application interface and our research and development team from the back end. As described in figure 2 diagram, the inputs to our system are the images

and other means of access to social media of the particular user fed by the “Moment Tracking Application.” The expected output is the WMEP of a user.

Gathered information will be going through a process of analyzing. The data base will be fed with the indexed data which is already submitted through the application by the user which is the timeline of pictures inserted by the user in this application. The database will then retrieve the necessary moment criteria which forward the process to the “accessing of the emotional mind”.

3.1. Accessing Emotional Mind

Emotional mind can fill us with energy in anger or zap our energy in depression. [13, 14] Impulsively acting the way we feel can lead to out of control behavior creating chaos, hurt feelings, and more problems. Emotional mind tends to be irresponsible, careless, mindless, impulsive, and impatient. Of course, certain amount of emotional mind can be beneficial. Intense love is a motivation for intimate relationships. Intense devotion or desire motivates staying with very hard tasks and sacrificing oneself for others.

Therefore to access a person’s emotional mind, the system requires data about the person to analyze and understand what the touch points would be. By using the PMTS, system will get the user to input data about their life, i.e. moments of their life which are captured with the use of a camera or the phone camera. Every moment that is inserted through the application will have a connection between the user’s feeling and will be able to rate the feeling for the same.

The feeling classification which used in this study is based on the Wheel of Emotions Theory by Robert Plutchik. [5] As described in Fig 3. The human emotions can be categorized into 8 different basic segments and any emotion will be related to one of the segments. These feelings will be available once a user captures a moment and would want the system to store it. Also, user will be given the chance of rating the mode of feeling through the input methods provided by the application.

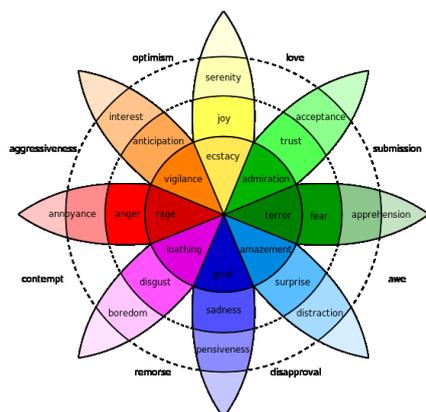


Fig 3: Robert Plutchik’s Wheel of emotions

Psychologist Robert Plutchik created the 2D wheel and a conical 3D version in 1980 as a tool for understanding his psych evolutionary theory of emotion. It was found that ConveyAPI, a web service that interfaces with a text analysis engine which applies the wheel of emotions to sentiment analysis for social media monitoring. This theory provides a thorough base to accurate emotion analysis which is vital for this study. Basic emotions as explained in wheels of emotions are,ss

- Joy
- Anger
- Anticipation
- Disgust
- Sadness
- Surprise
- Fear
- Trust

The PMTS will allow the user to input the moments in their life with a picture along with the aforementioned feelings and the density of the feeling as they feel it using a simple slider. This will allow the system to identify the current cognitive state. If system identifies that the current state is a satisfactory state, it will index the current state as a satisfactory state.

Using the moments inputted by the user, when the user wants to analyze his/her emotional state, the proposed system will calculate and analyze all his/her moments using algorithms which would derive certain conclusions using the ratings provided by the user. Using the derivations, system will create a presentation with the usage of the

moment images inserted by the user and an audio clip will be accompanied in the background which would enable the user to ease their mindset and calm their minds allowing the user to access their emotional mind in a positive manner. These specially designed audio clips would have a major impact in order to fulfill the requirement proven by the psychiatrists. [6] Upon completion of the presentation, the emotional mind of the user will be established.

3.2. Accessing Rational Mind

Accessing Reasonable Mind using the system is widely observed. When it comes to a crucial decision making point, a person gets lost between the two mind sets. The user will require to take the decision based on the emotional mind and sometimes a person want to make the decision looking at the facts and figures and mostly past experiences. Scientifically, to determine the accuracy of a particular decision a person has taken in general is difficult as it will vary from person to person and scenario to scenario.

A person is said to be in either Reasonable Mind when approached at a problem or scenario where he/she has to engage with it in a more logical manner, along with data and proof. Humans have the ability of developing into rational beings. It was identified that humans do not consciously choose to be selfish and egocentric more than they consciously chose to think unclearly, inaccurately, irrelevantly, superficially, narrow-mindedly, or illogically [6]. In the proposed system, the rational mind of the user is tested via various IQ tests and Rational Living Therapy which was developed by Aldo R. Pucci, Psy.D. a recognized cognitive-behavioral therapist[7], where his theory will be used in our research. These questionnaires will be provided to the user each day based on a user’s mostly accessed hour of the day, which will make the user answer few questionnaires.[8] The questionnaires might be either MCQ or image based or related to watching of a video that will lead the user to a certain set of questions to be answered from the video itself. The answers to the questionnaires will be analyzed via data mining algorithms to define a certain user’s state.[9] Status of the user will be displayed accordingly and a report will be sent to the user mentioning of his/her

rational mind behavior at the end of a given time period i.e., each month.

With the usage of the techniques mentioned, we could be able to access the human emotional mind and the rational mind parallel and this would lead us to accessing the wise mind of the user. The proposed system is capable of collecting moments, analyzing moments, presenting moments in order to access the emotional mind and access the rational mind using questionnaires. Eventually once the WEMP is completed, the user will be able to access his peak productivity level. [10]

4. RESULTS AND DISCUSSIONS

Wise Mind is calm. It is almost always quiet and peaceful. Herbert Benson, MD of Harvard Medical School was one of the first to research the therapeutic value of meditation. He found that meditation could elicit what he called the "Relaxation Response," which is the physiological opposite of stress and hypertension. This is the same result the study expects from each individual who were given the chance of using the application.

4.1. Qualities of Wise mind

In wise mind a person is in control of their mind. Behavior is not mood dependent. Wise mind is courageous. Willingness often requires courage. Wise Mind is confident. When Wise Mind becomes clear, fear disappears. Coherent sense of self: In Wise Mind, one can maintain their own feelings, opinions and decisions when around others. Self-description, a core mindfulness skill, helps one know and resist unhealthy urges to please others.

Clear sense of self: Wise Mind is "being in the present on purpose." Conflict resolution is possible in Wise Mind. Not trapped in all-or-nothing thinking, one is able to integrate information from emotion mind and reasonable mind and connect to others with compassion. In this calm, centered place you can focus on what is effective and functional.

4.2. Results

Research team released an alpha version of the system and tested it. We selected three samples to

test this system. Sample 1 consisted randomly selected people and sample 2 with both school students and university students. Sample 3 was taken from professional bodies. The users were given the chance of using the system for a time period of a month. Once the users were familiar with the system and data had been fed to the system the analysis of the Wise Mind of user was taken place. The following table depicts the results of each category in general. Sample size was taken as 10 (n=10).

Sample Name	Results Analysis
Sample #1	80% people had fed positive moments and the rational mind tests were given accordingly.
Sample #2	50% of students of the selected sample had positive moments and the rest slightly negative moments and for each a rational mind test took place resulting in a much slight incensement than the sample #1 categorical results.
Sample #3	40% of professionals were found to have posted negative moments and even the rational mind test were lower than the sample#2 categorical results.

Table 1: Sample System Test Results Analysis

When the application was given to each category different results were resulted as shown in the table (Table 1). Where the team identifies their results through reports generated at the end of each day where system will prompt the user to access emotional mind at the end of each day via methods described and will generate a graph of each individual emotional mind state for themselves and will store it for each day.

According to the system the wise mind can be achieved per user request or when the system identifies that the user is too emotional and has lost in touch with the reasonable/rational mind. Otherwise the system will prompt the user to access the rational mind at the end of each day just as the emotional mind approach and just after that with the results generated from it and will generate the required information to achieve the rational mind of a user in a way that at the end of the

establishment the user has achieved the wise mind with the said qualities mentioned above in section 3.2.

Through the analysis of the above test, it was found that system is capable of catering a very good user experience and an accurate scientific approach to analyze ones wise mind after both the analytical results were given. Some users also showed surprisingly good changes in their behavior after using the system and by being aware of their wise mind state.

5. CONCLUSIONS

This paper has given an account of fulfillment of the objective of successful implementation and release of a Human Emotional and Rational Mind Analytical Scientific Tool for Wise Mind Establishment Process with Efficiently Managed Satisfactory Factors. The main target of development of this system is to make advancements to the current traditional mental exercises for increased productivity and wise mind establishment for good mental health.

Through mindfulness, one will develop the skills that access their Wise Mind. With Wise Mind as the basis for problem solving, people will improve the quality of their lives. The goal here is to reflect on ones thinking and feeling, independent of the circumstances, observing what is going on in one's mind like watching clouds drift through the sky.

The application is an ideal tool for people who are immensely busy with work and have absolutely no time to give a thought about their health and most importantly to keep any human being in a happy mind state which eventually paves the path for a person to use the knowledge gained more effectively and efficiently, which in turn requires a balance of mind and to keep the mind in one-pointedness or in a mindful state rather with total reduction of stress and anxiety levels.

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M.B.B.S.Diploma in Psychology Medicine,
Member of Royal College Psychology (UK),

S.L.M.C. Reg.: 4134, Senior Lecturer at SAIMM Campus, Senior Consultant of Psychology at SAIMM & Dr.Nevil Fernando Teaching Hospital

Dr. A.D.W. Perera

M.B.B.S. (University of Kelaniya), S.L.M.C. Reg.: 28244, Colombo-North Teaching Hospital

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