

Neurointegral Methodology Based Adapted Neurosciences In Mental - Well Being: Case Study - 1

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“Your mental health should not be stigmatized”

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I. Introduction

Mental health is a set of positive attributes intrinsic to health of individuals and communities. Daily life is replete with minor upsets, hassles, and reversals. In most people's experiences, other unavoidable events include illness, rejection, failure, and sometimes devastating trauma. However, those who react strongly to life's ups and downs, who have difficulty shaking off unavoidable information, are malcontent people. Becoming happier means learning how to disengage from overthinking about both major and minor negative experiences, learning to stop searching for all the leaks and cracks, at least for a time, and not let them affect how you feel about yourself and life. This paper deals with strategies for dealing with life's decisions.

Mental health encompasses emotional, psychological, and social well-being. It affects how we think, feel, and act, influencing daily lives, relationships, and overall quality of life. Prioritizing mental health is crucial. Adult mental health encompasses a wide range of conditions and experiences, including depression, anxiety, bipolar disorder, and schizophrenia. It involves emotional, psychological, and social well-being of adults, affecting thoughts, feelings, and behaviors. Child and adolescent mental health focuses on emotional and psychological well-being of individuals aged 0-18. Common issues include ADHD, autism, anxiety, and depression. Early intervention, therapy, parental support, and school-based interventions are crucial for promoting positive mental health outcomes in population. Mindfulness, yoga, and meditation are practices that promote mental well-being. Mindfulness involves being present in moment, yoga combines physical postures with breath awareness, and meditation cultivates calm and focused mind. They reduce stress, enhance self-awareness, and improve taken as a whole mental health. (6th World Congress on Mental Health, May 09-10, 2024, Barcelona, Spain).

It's important to note that mental health is a continuum. And, individuals can experience fluctuations in their mental well-being over time. Mental health problems can range from mild, temporary issues like everyday stress or sadness to severe and persistent conditions such as depression, anxiety disorders, bipolar disorder, schizophrenia, and others. Seeking help from mental health professionals when needed is crucial for managing and improving mental health. Just as physical health requires attention and care, so does mental health to lead a fulfilling and balanced life. Mental health refers to a person's emotional, psychological, and social well-being. It encompasses a wide range of aspects related to how individuals think, feel, and behave.

Good mental health contributes to a person's ability to cope with stress, maintain healthy relationships, work productively, make sound decisions, and lead a fulfilling life. Allied to this is emotional well-being (ability to recognize and manage one's emotions effectively. This includes understanding and expressing emotions in a healthy way), psychological well-being (Having a positive self-esteem, self-confidence, and a sense of purpose in life. It also involves being resilient and able to bounce back from life's challenges), social well-being (Building and maintaining healthy relationships with others, including friends, family, and the broader community. Social support is essential for mental health), cognitive function (The ability to think clearly, make decisions, and solve problems). Mental health is closely tied to cognitive function, as conditions like depression and anxiety can affect one's ability to think rationally.

“An essential starting point for understanding and describing mental health is to also understand mental illness. Essentially, what is mental health, and what is mental illness? From a public health perspective, mental illness is considered a public health concern due to the fact that people with serious mental illnesses often have serious medical problems, co-occurring alcohol and drug problems, and higher mortality rates than the general

population. Conventional descriptions of mental illness refer to individuals who exhibit clinically significant behavioral or psychological syndromes or patterns and in whom these syndromes are associated with present distress (e.g., painful symptom) and disability (e.g., impairment in functioning) and result in increased risk of suffering death, pain, disability, or loss of freedom. Mental health, on the other hand, can be described as both a process and an outcome that includes features such as purpose in life, self-acceptance, autonomy, positive relations, social acceptance, social actualization, and self-esteem. Mental health is considered critical to overall health and cognitive and emotional well-being and includes an individual's ability to enjoy and balance life as well as to achieve emotional and psychological resilience. Strategies for achieving mental health are seen in consumer empowerment and recovery models of care as well as the uptick in the application of evidence-based practices and family- and consumer-friendly policies. The boundary between mental health and mental illness is not rigid but fluid, subject to social, environmental, policy, and individual influences, and there is no one definition of mental health. Until recently the focus of mental health research and writing was on pathology and the reduction of symptoms rather than on finding paths to mental wellness and improving quality of life. While there are many published works discussing mental illness and pathology, fewer explore mental health as an interdisciplinary field of philosophy, practice, and policy that emphasizes wellness and consumer preference. However, with the growing emphasis on mental health care reform, the number is growing. Although it would be impossible to provide an exhaustive list of all published resources in mental health, this article provides a broad list of common and not so common resources for any reader who wants to familiarize himself or herself with the intersection of mental health and public health”Vikki Vandiver, Nikki Hozac

Aim

Aim of this paper is to cast a view on mental health issues and how adaptive neurosciences can manage it via neurointegral methodology. A live case study has been adopted to lend credence to the study.

Scope

This methodology (“Brainwave Entrainment” therapy used to help regulate and restore natural rhythms) aims to highlight full potential of brain stimulation in effective and forceful way. The commitment to help Subject recover life and well-being became a shared mission, showing that, with right support and determination, significant transformations can be achieved in people's lives.

To quote Cambridge University, “Adaptive Brain Computation (ABC) theme brings together a cross cutting theme with relevance for how the brain represents and computes information at different stages of development, instantiates social cognition, and in coordinating reflexive and higher-order behaviours, all of which depend fundamentally on neural circuits and networks, including neuronal-glia interactions. Moreover, elucidating how the brain captures and integrates information is imperative as a starting point to gain a richer mechanistic understanding of the biological and environmental pressures that extend the brain beyond its normal operating limits, ultimately to cause outward expression of brain disorders such as autism spectrum disorder, schizophrenia, depression, ADHD, OCD, and addiction. Research in this theme aims to elucidate brain mechanisms that mediate neuronal plasticity and adaptive behaviour across species and scales. It works towards building a mechanistic understanding of how the brain senses, accumulates, maps, and combines present and past information about external and internal environments, and uses them for decision-making, learning, and memory. It seeks to characterize the processes giving rise to flexible responses that adapt to changing environments and shifting goals, while maintaining operational stability and overall homeostasis. It wishes to understand principles and mechanisms by which evolution moulds brain circuits adaptively to distinct ecological niches and behavioural needs.”

Case Study

This is the case of a Subject (Subject name and gender concealed), born on the 16th of May, 1972 (about 52 Years) with 65 Kgs in weight.

As regards the social background, Subject is quite emotional, with no problems of relationships, no case of death among family members, no problems in friendships, no problems in of job loss, no problems in financial hardships, no problems in housing or school, problems in becoming angry soon, no problems in legal issues, no problems in arrests, no problems in divorce, no problems in parenting problems, no problems of being a victim of physical abuse, no problems in being forced to have sex, no problems in being a victim of sexual abuse, no problems in being afraid of partner and no problems in being a member of family.

Subject has support of his family, especially his sister and an aunt. His sister accompanies to therapy sessions and supports in recovery. His aunt supports emotionally and gives a safe place to stay when he needs it. There is

no instance of resorting to any aspects like; Insomnia, Drugs, Alcohol, Tobacco, etc per se. But, there is a short history of being trapped in abuse of narcotic substances. There is no report of being disabled in any part of body.

Subject's life took a turn when, after a week of abstinence, Subject decided to seek help and joined loved ones. This period of abstinence was not easy for Subject, as there was a tendency to show aggression as a result of internal struggle against addiction. There are reports of being confined in psychiatric centers. However, it was at this crucial moment that Subjects' family and friends came together in a solidarity effort to rescue Subject from shadows of streets and addiction. The focus on supporting integral well-being of human being was fundamental in this process. Subject showed that, regardless of age or initial health, it is possible to give an opportunity to get out of difficult situations and get life back.

In an effort to make it a reality, Subjects family was contacted and presented neurointegral methodology [non-invasive combination therapy that integrates quantitative electroencephalography (qEEG - QEEG) brain mapping with therapies such as neurofeedback, vibro-acoustic therapy, pulsed electromagnetic field therapy (PEMFT, or PEMF therapy) and photic stimulation (light therapy) at no cost. (The field of neurointegral methodology is relatively new and protocols have not been widely standardized. However, global initiatives are being taken to create a common language of information, to promote consistency in education and certification, and to form collaborative alliances with other mental and physical health disciplines). In Subject's family history, there is no history of addictions or the presence of relevant illnesses. His family environment is characterized by the absence of problems related to substance abuse and by good health in general terms. This information is valuable as it provides important context for understanding personal situation and challenges, highlighting that struggle with addiction is not related to pre-existing hereditary or family factors.

Intermediary Comment: Point to be noted is that Subject is quite emotional and a problem in becoming angry soon is to be noted. It is to be recorded that emotion is a complex psychological and physiological response to stimulus or situation that involves range of Subjective feelings, thoughts, and physical reactions. Emotions are natural and adaptive part of human life, helping respond to and navigate world around. They can be influenced by combination of biological, psychological, and environmental factors. Emotions are essential part of human experience and play crucial role in daily lives, influencing behavior, decision-making, and overall well-being. Subjective feelings are recognizable aspect of emotion. This refers to internal experiences and sensations associated with emotional response, such as happiness, sadness, anger, fear, surprise, or disgust. These feelings vary in intensity and duration.

Cognitive emotions involve thoughts and interpretations of situation. For example, feeling angry might involve thoughts of injustice or feeling happy might involve thoughts of achievement. Physiological response emotions are accompanied by changes in body, such as increased heart rate, sweating, changes in breathing, and muscle tension. These physical reactions are part of body's fight-or-flight response and meant to prepare individual to react to emotional stimulus. And, behavioral expression can be expressed through facial expressions, body language, tone of voice, and other non-verbal cues. For example, when someone is happy, they might smile and exhibit open body language, while someone who is angry might frown and display more closed-off or defensive body language. These aspects need observation when analysing the case of the Subject

Reports of being confined in psychiatric centers might point at challenging and complex experience for Subject who requires mental health treatment. It's important to note that experience of being confined in psychiatric center can vary widely depending on factors such as individual's specific mental health condition, quality of care provided, facility's policies and practices, and legal and cultural context of the region. Was Subject experiencing severe mental health issues that require intensive treatment? Was Subject medication, therapy, counseling, and other therapeutic interventions towards rehabilitation and recovery? Did Subject have support network of individual in treatment planning and therapy? Did Subject undergo a stigma associated with being confined in a psychiatric center, which contribute to misconceptions and discrimination against individuals with mental health issues?

Vital Statistics

In Subject's family history, there is no history of addictions or presence of relevant illnesses. His family environment is characterized by the absence of problems related to substance abuse and by good health in general terms. This information is valuable as it provides important context for understanding his personal situation and challenges, highlighting that his struggle with addiction is not related to pre-existing hereditary or family factors. Personal medical history does not reflect upon, headaches, seizures, dizziness, paralysis, mental

disorders, anemia, blood disorders or coagulation problems, ulcer, gastritis, cirrhosis, diverticulitis, colitis, hemorrhoids, cataracts, terygium, near sightedness, colitis, deviated septum, sinusitis, tonsillitis, diabetes, thyroid diseases, alterations in blood fats or uric acids, immunological: lupus, rheumatoid arthritis, others, cancer, tumors, radiotherapy, or chemotherapy, pains, masses, secretions, allergic reactions, skin infections, hypertension, heart attacks, angina, murmurs, arrhythmias, coronary heart disease, asthma, emphysema, laryngeal or bronchi affection, kidney failure, stones, bloody urine, frequent infections, diseased prostate, osteo - articular, spine diseases, knee pain, deformities, hepatitis, tuberculosis, aids or HIV (+), sexually transmitted diseases, surgeries, traumas, (accidents), tumors or masses in ovaries, uterus, abnormal menstruation, etc. pathological or abnormal vaginal cytology and treatment with medication.

Observations: Neuro - Integral Sessions

Session No. 1

The primary objective was to evaluate anxiety levels, interview and case analysis. Preliminary interview revealed a complex history (lack of self-confidence, repeated worries, lack of hope for the future, sleep disorders, mild depression, generalized anxiety and elements of dependent - avoidant personality disorders, without fully meeting the criteria for diagnosing personality disorders) in which Subject sought help from various professionals and has had stays in psychiatric care centers. Among notable aspects, Subject has experienced aggression at unexpected times and has experienced difficulties remembering basic information, which led him to require accompaniment to leave house. One of the first steps was to explain to family the procedure and importance of Subject being accompanied by family member during sessions, since work will be collaborative to obtain best possible results. The session focused on establishing bond of trust with Subject and evaluating his status. During this initial conversation, Subject shared his concerns about problematic substance use and how this had affected his life, including personal relationships and emotional well-being. Subject expressed discomfort due to manic symptoms. Subject had experienced psychoactive substance abuse, which further complicated situation. We set clear goals for session, which included addressing Subjects substance dependence, stabilizing mood, and developing strategies to deal with anxiety.

During the session, attempts explored reasons behind substance use and Subject identified stress and anxiety as triggers. On the other hand, Subject recognized need to find healthier coping strategies. Subject demonstrated determination to address challenges and committed to comprehensive recovery plan that includes individual therapy, self-help group support, and personal wellness plan. The session concluded with reflection on Subjects' personal achievements and strengths, and although we know that road to recovery will be difficult, we were confident that Subject is on his way to healthier and balanced life with determination and support of family. Activities included, interview with patient and family, evaluation of anxiety and attention levels, setting goals for therapy, exploring reasons behind substance use, identification of healthy coping strategies, discussion on relapse prevention, and reflection on patient's achievements and strengths. The case was approached with the help of cognitive-behavioral therapy.

Diagnosis	Signs and symptoms	Consequences
<ul style="list-style-type: none"> • Psychoactive substance abuse, significant physiological dependence, including both alcohol and opiates. • A mood disorder, which may involve episodes of depression or mania. • Manic symptoms induced by use of psychoactive substances. • A picture of generalized anxiety. 	<ul style="list-style-type: none"> • Aggressiveness. • Anxiety. • Addiction to psychoactive substances. • Changes in behavior. • Insomnia. • Fast or incoherent speech. • Apathy. 	<ul style="list-style-type: none"> Deep social isolation. Noticeable deterioration of cognitive functions. Greater risk of being homeless. Clearly antisocial behavior.

Intermediary Comment: Subject presented high levels of anxiety and attention difficulties, problems that may be related to his history of substance abuse and his complex life history. Addressing these issues is essential to improving his well-being and his ability to move toward recovery.

Session No. 2

The primary objective was to evaluate diaphragmatic training (relating to diaphragm in body). A virtual reality session was carried out with purpose of helping Subject regulate emotions and reduce anxiety. The intervention consisted of immersive mindfulness experience that combined practice of diaphragmatic breathing

with virtual ocean environment. The session began with Subject putting on virtual reality headset. When equipment activated, Subject found himself standing on edge of an ocean, with crystal clear waters stretching as far as eye could see. The soft sound of waves crashing on shore filled ears, and feeling of standing in front of sea was palpable. Subject was guided into an underwater diaphragmatic breathing experience. While observing marine environment in virtual reality, Subject was asked to take deep, conscious breath, imagining inhaling and exhaling underwater. This aligned perfectly with image Subject saw before eyes: soft bubbles rising from abdomen, as if breathing underwater naturally. Subject felt connected to sense of calm emanating from ocean.

Waves moved in constant rhythm, reminding Subject of importance of maintaining constant and slow breathing for emotional regulation. Subject was asked to direct attention to tension or uncomfortable emotions experiencing at that moment. Subject was encouraged to release tensions with each exhale, imagining that bubbles coming out of mouth carried any worries or stresses. As session continued, Subject expressed relaxed and centered. Combination of virtual reality and underwater diaphragmatic breathing was having profound effect on emotional state. After minutes of immersion, Subject was invited to gradually return to reality and feel of calm and regulation that Subject experienced in virtual environment. At end of session, Subject shared appreciation for experience. Subject left with renewed sense of inner peace and tools necessary to apply diaphragmatic breathing into daily life as effective way to regulate emotions and reduce anxiety.

Intermediary Comment: The session had positive effect on Subject's emotional state. Anxiety levels recorded through bio-feedback were significantly reduced during session. Subject expressed feeling relaxed and focused at end of session.

Session No. 3

The primary objective of this session was to evaluate virtual reality and neurotechnologies to ascertain benefits of Neurofeedback and meditation, relaxation and attention session is carried out using Neurosky headband and specialized application. Subsequently, virtual reality session is carried out with Jacobson technique (Jacobson's relaxation technique is type of therapy that focuses on tightening and relaxing specific muscle groups in sequence. It's known as progressive relaxation therapy. The session began with explanation of Jacobson technique and how it will be integrated with virtual reality experience to achieve deep state of relaxation. Subject shared experience of high levels of anxiety related to withdrawal process. Subject puts on headphones and immerses himself in virtual environment designed to convey serenity and calm, representing beach with soft sound of waves crashing on shore and seagulls on horizon. This immediate immersion is reflected in breathing, which became slower and deeper, indicating beginning of relaxation. Jacobson's technique begins with Subject focusing on specific muscle groups, starting from feet and gradually moving toward head. Each muscle group is briefly tensed and then completely relaxed, with auditory instructions guiding each step provided through headphones.

With each cycle of tension and relaxation, Subject experienced growing sense of calm and deep relaxation. Virtual reality allowed him to be completely immersed in process, facilitating concentration and ability to relax. As session progresses, Subject describes how body feels lighter and free of tension accumulated throughout day. Combination of Jacobson's technique and virtual environment proves powerful experience. Several cycles of muscle tension and relaxation continue, making sure to address all areas of body. The session concluded with brief conversation to reflect on experience and how Subject can apply this technique his daily life to manage anxiety. Session includes assignment of 3 brain gym exercises to do at home, along with additional recommendations. Activities included: detailed explanation of benefits of neurofeedback, meditation, relaxation and attention session using neurosky headband and specialized application and virtual reality session with Jacobson technique, focused on reducing stress and anxiety.

Intermediary Comment: The session had a positive impact on Subject's emotional state, evidenced by remarkable reduction in anxiety levels recorded through biofeedback. At end of session, Subject describes feeling relaxed and centered, which reinforces benefits of applied techniques. By concentrating on specific areas and tensing and then relaxing them, one can become more aware of body and physical sensations), focused on reducing stress and anxiety.

Session No. 4

The primary objective of session was to evaluate Training reinforcement. Due to Subjects' poor attention and cognitive wear, these first sessions were repetitive with purpose of creating reinforcement in Jacobson technique and brain gymnastics exercises. This aimed to improve Subject's awareness and effectiveness in carrying out these activities. In this session, Jacobson's technique was repeated in virtual reality

environment, followed by performing 03 previously recommended brain gymnastics exercises. In addition, family member of Subject's was included in session so that Subject could receive guidance and perform exercises at home with him. This collaboration provides additional support and cognitive stimulation for Subject. Activities included repetition of Jacobson technique in virtual reality environment and performing 03 brain gymnastics exercises.

Intermediary Comment: Subject responded positively to repetition of activities. Subject demonstrated greater awareness in Jacobson's technique and performed brain gymnastics exercises with greater fluidity. This repetition is contributing to Subjects progress.

Session No. 5

The primary objective was to evaluate change training. After noticing improvements in ease of execution and remembering of brain gymnastics exercises, it was decided to incorporate new gymnastics techniques and add yoga sessions to improve Subject's balance and muscle tension. The session was held in bright and energetic environment, with purpose of promoting Subject's mental and emotional well-being. The session began with brief conversation to evaluate Subject's emotional state. Subject shared experiencing high levels of stress and anxiety, and hoped session would bring relief and relaxation. It began with deep breathing exercises to help Subject connect with body and mind. The importance of conscious breathing was emphasized in preparation for activities to come. The main part of session focused on laughter. They began with group laughter exercises, encouraging Subject and others to become infected with laughter.

As laughter filled the room, Subject relaxed and released accumulated tension. After series of laughter exercises, they focused on brain gymnastics. Exercises designed to stimulate different areas of brain were performed, addressing coordination, memory and concentration. Subject actively participated, enjoying mental challenges while having fun. The session included brain games such as puzzles, crossword puzzles and mindfulness exercises, which kept Subject and other participants mentally active. The combination of laughter and brain gymnastics provided balance between anxiety release and mental stimulation. Subject expressed feeling lighter and relaxed as session progressed. At the end, everyone participated in brief meditation to integrate experience. Subject experienced feeling of peace and joy. Activities included; deep breathing exercises, group laughter exercises, brain gymnastics exercises, brain games and meditation.

Intermediary Comment: Subject responded positively to laughter yoga and brain gymnastics session. Subject actively participated in exercises and expressed feeling relaxed and relieved of anxiety at end of session.

Session No. 6

The primary objective was to evaluate Training and family classes. During these sessions, educational and therapeutic mentoring was conducted with Subject and family, with goal of addressing struggle with prolonged exposure to opioids. The goal was not only to provide knowledge about brain and recovery, but to involve family in support process. The sessions took place in a large therapy room, where Subject was accompanied by aunt and sister. Information was shared about how opioids affect brain, including effects on reward circuits and overall brain function. Subject's family showed interest in better understanding how they can support recovery process. To illustrate brain function, graphics and visual resources were used to facilitate understanding of how opioids alter brain chemistry and lead to dependence. This opened way to open discussion about challenges Subject faces and how family can be a valuable resource in recovery. Subsequently, virtual reality (VR) experience focused on mindfulness was carried out in conscious walking environment. Subject and family put on headphones and immersed in virtual world designed to encourage awareness and relaxation. In VR environment, they walked together on beautiful trail in middle of nature.

The gentle sounds of breeze, chirping of birds, and babbling of a stream filled their ears as they walked slowly with mindfulness. They were encouraged to focus on breathing and how they were feeling at that moment. During this experience, everyone, including Subject, was guided in practice of diaphragmatic breathing. It was explained how this technique can be a powerful tool to reduce anxiety and improve overall well-being. The family actively participated, learning how to use diaphragmatic breathing as stress management strategy in daily lives. The session concluded with discussion about how experience of mindfulness and shared knowledge about brain can be helpful in Subject's recovery. The family left with deeper understanding of how they can be effective support on road to recovery, and Subject expressed gratitude for support and desire to use these tools to stay on path to healthier, balanced life. Activities included briefing on impact of opioids on brain, virtual reality experience with mindfulness and diaphragmatic breathing practice.

Intermediary Comment: Subject expressed greater understanding of addiction and how to overcome it. The session was well received by Subject and his family. Subject's family promised to support in his recovery.

Session No. 7

The primary objective was to evaluate cognitive work. In this session, cognitive stimulation was carried out with Subject in cozy and bright environment. Subject was sitting comfortably, ready to participate in session aimed at

strengthening cognitive skills. The session began with brief conversation to assess Subject's mood and needs that day. He expressed concern about short-term memory difficulties and desire to improve concentration and mental acuity. Together, they set specific goals for session. To begin, they performed mindfulness exercises that involved practicing conscious breathing for a few minutes. This helped Subject relax and focus on present moment, leaving worries aside. Then, they delved into series of cognitive stimulation exercises. They started with puzzles and riddles designed to challenge logical thinking and memory. Subject demonstrated remarkable problem-solving skills and remembering key information. The session continued with memory exercises, such as word and number association, which strengthened short-term memory. As they progressed, Subject became confident and competent in these activities. Information retrieval exercises were carried out, where Subject had to remember specific data and details of situations. This allowed him to work on long-term memory and retrieving memories. Activities included mindfulness exercises, puzzles and riddles, memory exercises and information retrieval exercises.

Intermediary Comment: Subject responded positively to cognitive stimulation exercises, demonstrated problem-solving skills and accurate recall of information. As session progressed, Subject became confident and competent in activities.

Session No. 8

The primary objective was to evaluate cognitive reinforcement. In this session, we focused on reinforcing Subject's cognitive skills, especially attention and concentration. A brain training app, neurofeedback, and brain gym exercises were used. The session began with short conversation about goals of day and how mindfulness and concentration exercises can have positive impact on everyday life. Subject expressed desire to improve ability to concentrate on daily activities. A brain training app designed to exercise cognitive functions, including attention and working memory, was introduced. Subject interacted with app, solving puzzles, memory games and concentration challenges. As Subject progressed, Subject noticed gradual improvement in performance. During interaction with app, electrodes monitored Subject's brain patterns. This allowed neurofeedback to provide real-time feedback on brain activity. The results of neurofeedback were positive, showing improvements in Subject's attention and concentration. Next, series of brain gymnastics exercises were performed that involved specific physical movements aimed at stimulating various areas of brain. Subject actively participated in these exercises, which included activities such as crossing arms, performing coordinated movements, and body memory games. Throughout session, importance of constant practice and patience in developing attention and concentration was emphasized. Subject was committed and willing to continue working on these skills. The session concluded with discussion about how Subject could apply what Subject learnt in daily life, including strategies to maintain attention and concentration in Subject personal activities. Activities included brain training app, neurofeedback and brain gymnastics exercises.

Intermediary Comment: Subject responded positively to attention and concentration exercises. Subject experienced gradual improvement in performance during the session. The neurofeedback results showed improvements in attention and concentration. Subject demonstrated commitment and willingness to continue working on these skills.

Session No. 9

The primary objective was to evaluate virtual reality training. In these sessions we focused on virtual reality training with Subject, with aim of improving emotional regulation through enriched environment that captured attention. The sessions began with brief talk about purpose of training and how virtual reality can be an effective tool to improve emotional regulation. Subject showed enthusiasm for training and expressed desire to improve ability to control emotions. Subject put on virtual reality headset and immersed in virtual environment full of colors, shapes and sounds. This environment was designed to be relaxing and engaging, in order to help Subject focus on present and let go of worries. From the moment Subject explored virtual environment, Subject was surprised and curious, clearly enjoying experience. During session, Subject was assigned simple tasks, such as counting objects or identifying colors in the virtual environment. These tasks were intended to help Subject focus on present and avoid negative thoughts or emotions. The virtual reality training turned out to be successful, as Subject demonstrated relaxation and concentration throughout session. Additionally, Subject expressed that he felt calmer and in control of emotions. Activities included virtual reality training.

Intermediary Comment: Subject responded positively to virtual reality training. Subject maintained state of relaxation and concentration throughout the session. Subject reported feeling calmer and able to control emotions. Subject's case is interesting, since Subject shows very small progress, but each training must be repeated lot for Subject understands and to be able to advance in conscious ways that knows what is being done in each training.

Session No. 10

The primary objective was to evaluate social training. During this session, focus was on Subject's social training, with goal of improving his ability to understand and respond to emotions of others. The session began with brief talk about importance of empathy in interpersonal relationships and how understanding emotions, both the own and others can improve communication. Next, Subject shared personal experiences and challenges related to emotional and social regulation. Subject talked about times when he found it difficult to understand and manage own emotions, and how this had impacted relationships with others. Following this introduction, series of practical exercises designed to strengthen empathy and emotional understanding were carried out. These exercises included: practice active listening to other participants, open and honest expression of one's emotions, simulation exercises of challenging social and emotional situations so that Subject could practice effective communication.

The workshop incorporated mindfulness and relaxation activities, with goal of helping Subject connect with own emotions and remain calm in emotionally intense situations. The session concluded with group reflection discussing what was learnt and how each participant planned to apply these new skills in daily lives. Subject shared goals to continue strengthening emotional regulation and social skills, with goal of building healthier relationships. Activities included; talk about importance of empathy, share personal experiences, active listening exercises, exercises for expressing emotions, role - playing exercises, mindfulness and relaxation activities and group reflection.

Intermediary Comment: Subject actively participated in session and got involved in exercises. Subject demonstrated solid understanding of concepts and skills taught and showed motivation to apply what t Subject he learnt in his daily life.

Session No. 11

The primary objective was to evaluate tapping training. During this session, Subject was introduced to Tapping, a self-help technique designed to reduce stress, anxiety and pain. The session began with reflective conversation aimed at understanding specific challenges. Subject was facing at that time. Subject shared feelings of anxiety and worry, particularly when it comes to personal relationships. Together, they identified specific issue they wanted to work on: social anxiety. Tapping was explained to Subject. Subject was provided with information about key acupressure points on the body and how tapping helps release energetic and emotional blockages. The session began with creating positive affirmation aimed at addressing social anxiety. Subject chose statement "I accept and love who I am." Then, they began to perform Tapping sequences while repeating statement out loud. Tapping points on face, upper body and hands, keeping focus on affirmation. They conducted final round of tapping to consolidate progress and reinforce positive statement. at the end of session, Subject expressed feeling lighter and less burdened with anxiety. To conclude, brief relaxation meditation was performed to help Subject integrate experiences and sensations. Subject was reminded that he could use Tapping technique on own when facing challenges in daily life. Subject was provided with plan to practice Tapping at home, emphasizing importance of regular practice for best results. Activities included; reflective conversation, explanation of fundamentals of tapping, creating positive affirmation, and tapping sessions, relaxation meditation.

Intermediary Comment: Subject actively participated in session and was committed to activities. Subject demonstrated good understanding of concepts and skills taught. Subject was motivated to practice tapping on own at home.

Session No. 12

The primary objective was to evaluate recreation spaces with Chi Kung. During this session, Chi Kung class was held with Subject with purpose of providing with space for recreation and relaxation, as well as helping improve emotional control. The session began with brief conversation aimed at connecting with Subject and understanding mood and energy level that day. Subject shared feeling little exhausted and anxious. Next, they focused on breathing. Importance of deep and conscious breathing in Chi Kung was explained. They began with abdominal breathing exercises, encouraging inhaling deeply and exhaling slowly, releasing tension and allowing energy to flow gently. Then, they performed gentle, fluid movements involving arms and hands, encouraging opening and flow of energy through meridians. As Subject immersed himself in movements, Subject could feel tension and anxiety slowly subside. The central part of session involved practicing static Chi Kung postures, known as "static qigong." Subject held a pose called "The Embracing Tree" for few minutes, focusing attention on breathing and allowing energy to balance. The session concluded with deep relaxation. Subject lay back on mat and immersed in a state of serenity as Subject was guided through relaxing visualization. This stage was especially beneficial in relieving anxiety and providing deep sense of calm. At the end of session, Subject expressed sense of peace and lightness that Subject had not experienced in a long time. Activities included; conversation, breathing exercises, gentle movements, static postures and deep relaxation.

Intermediary Comment: Subject actively participated in session and was committed to activities. Subject demonstrated good understanding of concepts and skills taught. Subject was motivated to practice Chi Kung at home.

Session No. 13

The primary objective was to evaluate group laughter yoga exercises. During this session, laughter yoga session was held with Subject with aim of providing with fun and therapeutic experience, as well as helping improve mood and well-being. The session began with short meditation to center minds and connects with breath. Everyone was reminded that they did not need any special reason to laugh, as laughter itself was purpose. Then, they began warm-up exercises aimed at relaxing muscles and stimulating laughter. They performed playful movements, such as stretching and shrugging shoulders, followed by spontaneous laughter. Subject, initially a little shy, soon got carried away by contagious atmosphere. Afterwards, they carried out group laughter exercises, where they looked into each other's eyes and began to laugh in a synchronized manner. Subject's laugh became authentic as session progressed. It was surprising to see how laughter of others infected him. Next, they performed "laughter for no reason" exercises, where they encouraged themselves to laugh without any specific provocation. Everyone was rolling on floor laughing, including Subject, who was increasingly relaxed and participating. Overall, laughter yoga session was success. Subject went from being a little reserved at first to laughing out loud with group. Laughter was not only fun experience, but therapeutic. Everyone left session feeling light and well-being, remembering that laughter is a powerful tool for healing and connecting with oneself and others. Activities included; meditation, warm up, group laughter exercises and laughter for no reason" exercises.

Intermediary Comment: Subject actively participated in session and got involved in activities and demonstrated a good understanding of the concepts and skills taught. Subject was motivated to practice laughter yoga at home.

Session No. 14

The primary objective was to evaluate relaxation and tension. In this session, cognitive training and relaxation session was carried out with Subject. Main objective was to help Subject improve ability to concentrate and mental clarity, while reducing stress and anxiety in daily life. The session began with initial conversation to evaluate Subject's current state. Subject shared his concerns about stress and anxiety he had been experiencing in daily life. In first part of the session, they focused on cognitive training. A variety of exercises were used designed to stimulate cognitive skills, such as memory, attention and problem solving. Subject actively participated, showing a notable willingness to learn and improve. One of the exercises involved solving puzzles and riddles that required meticulous attention to detail and logic. While working on these challenges, Subject noticed how his ability to concentrate gradually improved. After the cognitive training session, we proceeded to the relaxation part. Subject settled into comfortable chair and closed his eyes as he was guided through a deep relaxation practice. They began with progressive muscle relaxation, where Subject focused on relaxing each muscle group in body, releasing accumulated tension. Subject was guided through relaxing visualization, where Subject imagined calm and serene place, such as beach or a forest. Subject was encouraged to explore this place in mind, paying attention to all details and sensations.

During relaxation practice, Subject practiced deep, conscious breathing techniques, which further contributed to feeling of calm and relaxation. Session concluded with brief conversation about how Subject could apply what he learnt in daily life. They discussed how Subject could use cognitive training techniques to improve focus and relaxation to reduce stress in challenging situations. Subject left session with feeling of well-being and renewed commitment to continue working on cognitive development and emotional well-being. Activities included; Initial conversation to evaluate Subject's condition, Cognitive training that included memory, attention and problem-solving exercises, progressive muscle relaxation to release tension accumulated in muscles, relaxing visualization to help Subject achieve state of calm and serenity, practice deep and conscious breathing techniques to improve relaxation and discussion on the application of techniques learnt in everyday life.

Intermediary Comment: Subject actively participated in session and seemed committed to activities. Subject showed solid understanding of concepts and skills taught during cognitive and relaxation training. Subject expressed motivation to practice techniques at home and apply them to reduce stress and anxiety in daily life. Subject left session with feeling of well-being and renewed willingness to work on cognitive development and emotional well-being.

Session No. 15

The primary objective was to evaluate progressive view. In this session, we worked on exploring personal goals and objectives with Subject. The goal was to help Subject identify and define short- and long-

term goals and create plan to achieve them. The session began with initial conversation to establish atmosphere of trust and comfort. The importance of setting goals in life and how this can provide direction and motivation was explained to Subject. Subject shared thoughts on his personal goals and objectives, expressing desire to advance recovery and lead healthier and balanced life. Together, they began to define specific goals that Subject wanted to achieve. Once goals were identified, they were broken down into smaller, more achievable objectives. This helped Subject visualize process necessary to achieve goals. They worked on creating action plan that included concrete steps that Subject could follow to move towards goals. Potential barriers and challenges that could arise along the way were discussed and strategies to overcome them were identified. The session also included a discussion about the importance of self-care and how Subject could incorporate healthy habits daily life to support goals. Subject left session with renewed sense of determination and a clear plan to work on personal goals. Subject was encouraged to regularly review goals and adjust plan as necessary. Activities included; initial conversation, identification of personal goals, and breakdown of goals into objectives, creating action plan, and discussion on self-care

Intermediary Comment: Subject actively participated in session and was committed to exploring goals and objectives. Subject showed good understanding of importance of setting goals and need to break them down into achievable steps. Subject was motivated to follow action plan and work on personal goals.

Session No. 16

The primary objective was to evaluate contemplative and cognitive aspects. In this session, last session of contemplative practices and cognitive training workshop was held with Subject and family. The goal was to celebrate achievements of workshop and reflect on progress of Subject and family. The session began with brief initial talk to remember objectives of workshop and achievements of Subject and family. Next, a group meditation practice took place, where everyone joined together in silence to meditate together. It was a moment of calm and reflection, where they were encouraged to put into practice mindfulness and relaxation techniques they had learnt throughout the workshop. After meditation, group cognitive training activity took place, where they solved puzzles and logic exercises together. Subject and family showed how they had improved cognitive skills throughout workshop, solving challenges easily and quickly. Next, feedback and discussion session took place, where Subject and family shared goals for future and how they planned to continue applying what they had learnt in daily lives. They discussed importance of staying connected as a family and continuing to support each other in individual paths of growth and well-being. The session concluded with gratitude circle, where each member expressed gratitude for shared experience and lessons learnt. Subject and his family said goodbye with sense of accomplishment and strong sense of community. Activities included; group meditation, group cognitive training activity, feedback and discussion session and circle of gratitude.

Intermediary Comment: Subject and his family actively participated in activities and sincerely shared their experiences and reflections. All showed strong commitment to personal growth and well-being. Subject and family expressed gratitude for shared experience and lessons learnt.

Observations: Neuro - Integral Sessions

Session No. 17

The primary objective was to evaluate cognitive stimulation session. This session marked closing of therapeutic support programme for Subject. The main objective was to review and celebrate achievements achieved during the programme, as well as establish follow-up plan. The session began with reflective conversation about the journey Subject had undertaken since beginning of programme. Subject was encouraged to reflect on how he felt at beginning and how he felt now in terms of emotional well-being and coping skills. Subject shared experiences and positive changes experienced in life. Subject talked about stress and anxiety, and how self-esteem had improved. Next, there was detailed review of goals that Subject had established at beginning of programme. Progress and achievements against these goals were analyzed, and successes were celebrated. After goal review, monitoring plan was discussed. They discussed how Subject could maintain and continue to strengthen skills and strategies learnt during programme in daily life.

Additional resources and supports were identified as available if needed in future. The session concluded with conversation about the importance of maintaining a focus on continued well-being and constant practice of acquired skills. Subject left session with sense of accomplishment and solid plan for future emotional well-being. Activities included; reflective conversation about progress and changes experienced by Subject throughout the programme, detailed review of goals established by Subject at beginning of programme and celebration of achievements achieved, discussion and follow-up planning to ensure that Subject can apply skills and strategies learnt in daily life, identification of additional resources and supports available to Subject should in future and conversation about importance of maintaining focus on continued well-being and constant practice of acquired skills.

Intermediary Comment: Subject actively participated in session and shared achievements and goals sincerely. Subject showed good understanding of importance of consistent practice and monitoring emotional well-being. Subject seemed motivated and committed to continued personal and emotional growth.

Session No. 18

The primary objective was to evaluate virtual reality to fears. In this session, virtual reality was used as a therapeutic tool to help Subject face challenging situations in which he had to perform in front of a crowd and at same time maintain his concentration and calm. The session began with virtual reality setup. Subject put on headset and headphones, instantly immersed in a virtual stage filled with enthusiastic spectators and bright lights. The feeling of being at a concert in front of a crowd was palpable and realistic. The first activity consisted of Subject imitating favorite singer while performing a song on the virtual stage. This exercise allowed Subject to practice maintaining attention on performance despite simulated visual and auditory distractions. Virtual reality provided safe environment to work on this skill without pressure of real setting. As Subject progressed in virtual performance, additional challenges were presented. This included interaction with simulated audience and changes in stage conditions, such as flashing lights and background noises.

The goal was for Subject to feel comfortable and confident performing in front of any type of audience, regardless of circumstances. During the session, Subject received real-time feedback on performance, allowing to adjust focus and improve ability to maintain attention on singing. Subject practiced breathing and concentration techniques to stay calm and confident. After several virtual performances, Subject showed noticeable improvement in ability to maintain attention on performance and face virtual crowd. Gradual and controlled practice in virtual environment gave confidence to face similar situations in real life. The session concluded with discussion of Subject's achievements and how Subject could apply learnt in live performance situations. Subject left session with sense of accomplishment and greater self-confidence to pursue musical passions. Activities included; performance in virtual reality, interaction with virtual public, adjustment to changes in stage conditions, and practice breathing and concentration techniques.

Intermediary Comment: Subject actively participated in session and got involved in activities. Subject showed good understanding of concepts and skills taught. Subject seemed motivated to continue practicing techniques at home.

Session No. 19

The primary objective of this session was to evaluate development of social interaction skills through virtual reality. In this session, virtual reality follow-up session was conducted with Subject, with specific focus on developing social interaction skills. The session began with setting up virtual reality experience. Subject put on headset and headphones, finding himself in virtual environment that simulated social party. Avatars of other people filled the room, and were presented with several interactive scenarios to work on social skills. Subject participated in a series of virtual conversations with different avatars, each presenting unique challenges for his development. Some avatars were extroverted; while others were more introverted or had diverse personalities. This allowed Subject to practice adapting to different social situations and learn to interact effectively with variety of people. Throughout the session, Subject received feedback and guidance on virtual interactions. Subject used relaxation and anxiety management techniques to stay calm and confident in social situations.

Over time, Subject showed notable improvement in ability to interact effectively in virtual environment. Subject gained self-confidence and became comfortable initiating and maintaining conversations, regardless of the virtual avatars' personalities. The session concluded with discussion on how Subject could apply what Subject learnt in virtual reality to real-world social situations. Subject left session with sense of accomplishment and greater confidence in ability to interact socially. Activities included setting up virtual reality experience, participation in virtual conversations with different avatars, adaptation to different personalities of avatars in virtual environment, receiving feedback and guidance on virtual interactions and use of relaxation and anxiety control techniques in virtual social situations.

Intermediary Comment: Subject actively participated in session and got involved in activities. Subject showed good understanding of concepts and skills taught. Subject seemed motivated to continue practicing techniques at home. It is encouraging to see that Subject was making such positive progress in therapy and in life in general. Subject participation in an impersonator programme and work as stuntman at events demonstrate determination and commitment to dreams and therapeutic goals. Additionally, the fact that Subject is avoiding substance use is an important step toward healthier, balanced life. Subject improvement in social interaction skills is significant achievement, and applying what Subject has learnt in therapy in real situations shows Subject's ability to make positive change in daily life. Subject continues to move forward on his path towards goals and that continues to benefit from therapy and support of family. Subject's story is inspiring and testament to how hard work and determination can lead to positive results.

General Comment

Subject's case is an inspiring example of personal improvement and growth through therapy and support of his family. Throughout the sessions, Subject faced series of emotional challenges, including emotional regulation, anxiety, social interaction, and self-esteem. However, as Subject progressed in therapy, Subject demonstrated remarkable willingness to learn and apply skills and techniques taught. Through variety of therapeutic approaches, such as cognitive behavioral therapy, virtual reality, Chi Kung, Tapping, and progressive visualization, Subject achieved significant improvements in ability to regulate emotions, face fears, and develop skills. Furthermore, commitment to therapy and determination to avoid substance use demonstrated strong will to improve quality of life.

It is particularly encouraging to see how Subject channeled artistic and musical passions into participating in impersonator show and working as stuntman at events. These not only gave Subject a creative outlet, but helped gain self-confidence and apply skills in real-life situations. In general, Subject's case highlights importance of therapeutic and family support in overcoming emotional challenges and achieving personal goals. Subject's story is a testament to how effort, determination, and commitment can lead to significant growth and healthier, more balanced life. Treatment results reflect significant progress in Subject's emotional health and overall well-being. Specifically, Subject has experienced notable improvements in the following areas:

Emotional Regulation: Subject has improved ability to regulate his emotions. Throughout therapy sessions, Subject was observed to show greater calm and control over his emotional reactions. This suggests a reduction in the intensity of his negative emotions, such as anxiety.

Anxiety Control: Subject initially presented anxiety and worries in several areas of his life. Through therapy and relaxation techniques, such as Chi Kung, Tapping, and progressive visualization, Subject has managed to reduce his anxiety and experience a greater sense of calm and tranquility.

Social Interaction: One of Subject's key challenges was Subject's ability to interact socially. The therapy gave Subject the opportunity to practice social interactions in a controlled environment, using virtual reality and other techniques. As a result, Subject has gained confidence and improved his ability to start and maintain conversations.

Self-Esteem: Through therapeutic activities such as karaoke and singer imitation training, Subject has experienced increase in his self-esteem and self-confidence. These activities allowed him to excel in his musical skills and talents, which had a positive impact on Subject's self-perception.

Substance Abstinence: It is mentioned that Subject has avoided substance use throughout treatment. This indicates a strong commitment to his recovery and an improvement in Subject's overall health by avoiding substances that could negatively affect his well-being.

Real Life Application: Perhaps most encouraging is that Subject has applied what he has learnt in therapy to real life situations. Participating in a lookalike programme and working as a stuntman at events shows Subject's ability to face challenges and apply his skills effectively in practical situations.

In summary, Subject has experienced notable improvements in his emotional regulation, anxiety control, social skills, self-esteem, and his ability to avoid harmful substances. These advancements are a testament to his commitment to his mental health and his determination to live a healthier, more balanced life.

Success Factors: Neuro - Integral Sessions

Personal Commitment: Subject demonstrated a high degree of personal commitment from the beginning of treatment. He was willing to actively participate in all sessions and apply the techniques and skills learnt in his daily life.

Family Support: The participation of Subject's family in the treatment was essential. His family supported him at all times, encouraged him to attend the sessions and participated in some of them. This support provided a supportive and understanding environment that facilitated their progress.

Therapeutic Techniques: He used a variety of therapeutic techniques throughout the treatment, including virtual reality, Chi Kung, Tapping, karaoke, and singer imitation training, among others. This diversity made it possible to address different aspects of Subject's mental health and well-being and adapt the treatment to his specific needs.

Safe Environment: Therapy took place in a safe and supportive environment. Subject felt comfortable sharing his concerns and challenges, which facilitated his progress.

Real Life Application: Subject's ability to take the acquired skills to his work as a stuntman and his participation in an impersonator programme is a clear example of how the treatment translated into concrete actions in his daily life.

Monitoring and Reinforcement: Monitoring sessions were held to evaluate Subject's progress and reinforce the skills acquired. These sessions allowed any challenges or setbacks that might arise to be addressed and provided an ongoing sense of support.

Intrinsic Motivation: Subject showed strong intrinsic motivation to improve his mental health and overall well-being. This motivation prompted him to actively participate in treatment and seek opportunities to apply what he learnt.

II. Recommendations

1. **Maintenance of Practices:** It is important for Subject to continue practicing the skills and techniques he has learnt during his treatment. Consistency in practice is key to maintaining and continuing to improve his mental health and well-being.
2. **Open Communication:** Encourage open and honest communication with his support network, including his family. He should always feel comfortable sharing his thoughts, feelings, and challenges.
3. **Realistic Goal Setting:** Help Subject set realistic and achievable goals for the future. These goals can be both short-term and long-term and should align with his personal values and desires.
4. **Continued Support Network:** Continue to provide support and understanding to Subject. His support network, including family and friends, plays a crucial role in his ongoing well-being.
5. **Coping with Stress:** Help Subject develop healthy coping strategies to manage stress and anxiety in his everyday life. This may include breathing techniques, meditation, and relaxation exercises.
6. **Exploring Passions and Talents:** Encourage Subject to continue exploring and developing his passions and talents. His participation in an impersonator programme and as a stunt double demonstrates his interest in music and entertainment. These interests can be significant sources of personal satisfaction and fulfillment.
7. **Trigger Awareness:** Help him identify and understand the stress or anxiety triggers in his life. The more aware he is of what can trigger his emotions, the better he will be able to manage them.
8. **Self-Care:** Encourages self-care and balance in his life. This includes maintaining a healthy routine, making sure he gets enough rest, and taking care of his physical and mental health.
9. **Follow-Up Sessions:** Consider scheduling regular follow-up sessions to evaluate his progress and address any challenges that may arise in the future.
10. **Celebrating Achievements:** Encourage Subject to celebrate his achievements, big and small. Recognizing his own progress can be a source of motivation and self-esteem.

For Mental Health Risk Assessment, we can use the Perceived Stress Scale (PSS) testing formula. Also, we can recommend the Brief Trauma Questionnaire (BTQ), Combat Exposure Scale (CES), Exposure Scale, Life Events Checklist, Life Stressor Checklist - Revised (LSC-R), Potential Stressful Events Interview (PSEI), Stressful Life Events Screening Questionnaire (SLESQ), Trauma Assessment for Adults (TAA), Trauma History Questionnaire (THQ) and Trauma History Screen (THS). We describe when to use psychological versus physiological indicators of stress. It is crucial that researchers across disciplines utilize the latest methods for measuring and describing psychological stress in order to build a cumulative neuro-integrated science.

For Stress and Anxiety Assessment, we can use HAM-A is a 14-item clinician-rated scale measuring anxiety severity. Each item is defined by a series of symptoms and is rated on a 5-point scale ranging from 0 (no symptoms or absent) to 4 (very severe). Total HAM-A scores range from 0 to 56. The items would assess 1) feeling nervous, anxious, or on edge; 2) being able to stop or control worrying; 3) worrying too much about different things; 4) trouble relaxing; 5) being restless; 6) becoming easily annoyed or irritable; and 7) feeling afraid as if something awful might happen.

For Depression Assessment, we can use the Beck Depression Inventory (BDI) model. It contains 21 self-report items which individuals complete using multiple choice response formats. The BDI takes approximately 10 minutes to complete. Validity and reliability of the BDI has been tested across populations, worldwide. Can include the Hamilton Rating Scale for Depression.

For Evaluation of Affective Balance, we can evaluate the psychometric properties of ABS in a non-probabilistic setting through confirmatory factor analysis. We can prescribe Bradburn's assumptions concerning affect..

For Self-control Evaluation, we can offer this to assess people's ability to control their impulses, alter their emotions and thoughts, and to interrupt undesired behavioural tendencies and refrain from acting on them. We focus on three categories: executive functioning tasks, delay of gratification tasks, and subjective-report surveys. We also include an "additional measures" category to capture measures that do not readily fit in these three categories. Finally, we discuss recent approaches to the scientific exploration of self-control and integrate the categories of measures used here within these approaches.

For Awareness and Attention Scale and Mental Fatigue assessment, we can use blink rate, heart rate variability, respiration, and brain activity models. Magneto encephalography and Electroencephalography is recommended to assess the psychobiological state.

III. Conclusion

Neuroscience and Mental Health group investigates neural and cognitive mechanisms underlying psychiatric symptoms. Mental health is a global issue – here’s how neuroscience can cross international boundaries. To quote Natalia Washington, Cristina Leone, and Laura Niemi, “The fast-developing field of neuroscience has given philosophy, as well as other disciplines and the public broadly, many new tools and perspectives for investigating one of our most pressing challenges: addressing the health and well-being of our mental lives. In some cases, neuroscientific innovation has led to clearer understanding of the mechanisms of mental illness and precise new modes of treatment. In other cases, features of neuroscience itself, such as the enticing nature of the data it produces compared to previous behavioral methods, together with its costliness and “coldness” have complicated understanding of mental illness and decision making about mental illness. Taking neuro-scientific information into account can leave practitioners in psychiatry and law with difficult questions, stemming not only from the complexity of these fields, but also from our rapidly evolving understanding of and facility with neuroscience. In this chapter, we will review several examples of the insights and dilemmas that have unfolded as mental illness has been examined through the lens of neuroscience, covering diagnoses such as obsessive-compulsive disorder (OCD), schizophrenia, addiction, and severe mood disorders. Neuroscience can help us understand the underlying molecular factors behind mental disorders, as well as where and how to focus research and treatment.”

A study at Institute of Cognitive Neuroscience, University College London, London, United Kingdom reveals Neuroimaging and neuropsychological methods have contributed much toward an understanding of the information processing systems of the human brain in the last few decades, but to what extent do cognitive neuroscientific findings represent and generalize to the inter- and intra-brain dynamics engaged in adapting to naturalistic situations? If it is not marked, and experimental designs lack ecological validity, then this stands to potentially impact the practical applications of a paradigm. In no other domain is this more important to acknowledge than in human clinical neuroimaging research, wherein reduced ecological validity could mean a loss in clinical utility. One way to improve the generalizability and representativeness of findings is to adopt a more “real-world” approach to the development and selection of experimental designs and neuroimaging techniques to investigate the clinically-relevant phenomena of interest.

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