

MENTAL HEALTH CLARITY TEST

A RAPID ASSESSMENT METHODOLOGY
FOR DETERMINING EMOTIONAL STATES



MINDSPA
CLEAR YOUR MIND

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With the Mental Health Clarity test, mental clarity has been put into a measurable scale. Developed by psychologists and mental health experts, MindSpa's "Mental Health Clarity Test" considers a great variety of factors that shape mental clarity, including happiness, confidence, sense of purpose, and personal relationships.

RAISING AWARENESS

Most of us understand that physical activity is necessary to maintain healthy and fit bodies. We find ourselves in a time when we need to understand that keeping the mind healthy is just as important. About 300 years ago, medicine systems treated the mind and body as a whole. From the 17th century onwards, the Western world finally began seeing the mind and body as separate entities. The body became a vessel, a machine made of independent and replaceable parts, which held no meaningful connection to the mind. In the 21st century, this view has shifted once more as research continues demonstrating the complex links between the body and the mind and their overall impact on our health.

OUR GIFT TO THE WORLD

Over a decade ago, our team at Synctuition Mindspa started educating ourselves as to how to improve our mental health. On this journey, we've encountered and teamed up with a significant number of scientists, psychologists, neurologists, spiritual leaders, and meditators.

We see this project as the act of planting a seed of positivity. And although we are fully aware that we cannot help everyone personally affected by the COVID crisis, nor can we assist everyone who struggles with their mental health, we wish to provide a window of tranquility and hope.

AT A TIME OF CRISIS

We know that at a time of crisis, the most prominent emotion is panic. The Mindspa Clarity Test and other tools available in our system help you avoid irrational panic, stress, and anxiety and achieve a clear and focused state of mind that benefits you in the long run. The Mental Health Clarity test will help you set a new direction and provide the necessary feedback to re-focus and put yourself back in charge of your decisions.

ON MENTAL HEALTH



According to the WHO, nearly 1 billion people suffer from a mental health condition.

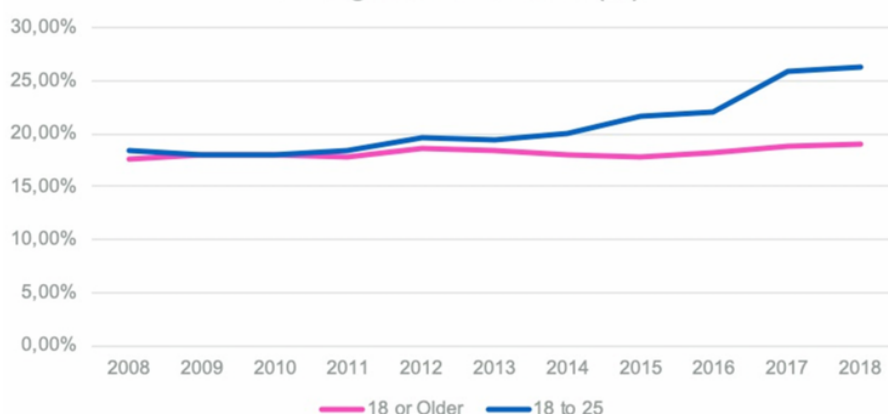
We live in an era of deteriorating mental health caused by various addictions and powerful stressors at work and home. Mental health conditions have become so commonplace that about 1 in 8 people worldwide—nearly 1 billion—live with a mental health disorder, according to the WHO’s World Mental Health Report.

Suicide accounts for 1 in every 100 deaths and is a leading cause of adolescent death. Yet on average, governments spend just 2% of their health budgets on mental health care, and low- and middle-income countries spend just 1%. Roughly half the world’s population lives in a country with one psychiatrist for 200 000 or more people. Therefore, according to the WHO report, most people with mental illness do not receive adequate care. For example, 71% of individuals with psychosis go untreated. In many low- and middle-income countries, essential psychotropic drugs are often unavailable or unaffordable.

Mental illness is also the leading cause of disability worldwide, exacting an enormous financial toll. The World Economic Forum has estimated that mental health conditions cost \$2.5 trillion in 2010, and this figure is predicted to rise to \$6 trillion by 2030.

Shifting mindsets is not always easy; the report challenges conventional perceptions, highlighting that mental health is not isolated within the health sector but rather a common denominator in all aspects of life and a prerequisite for overall well-being and quality of life.

Prevalence of any mental illness in the past year, among adult americans (%)



Nevertheless, mental health is not just a single generation's concern. According to WHO, the world's population is rapidly aging, and by 2050, the number of individuals over 60 is estimated to double from 900 million to 2 billion. These adults are at a high risk of developing mental disorders, neurological disorders, substance use problems, and other health conditions that could be alleviated by using more online-based health approaches, especially in the mental health field.

The main factor standing in the way of mental health improvement is stress.

According to the Global Organization for Stress, 80% of workers feel stressed. However, this number is likely to be significantly higher. In 2018, 39% of Americans reported feeling more anxious than the previous year. Nearly 7 in 10 (68%) reported feeling extremely or somewhat anxious about keeping themselves or their family safe, with the same proportion feeling anxious about their health.

Extensive research conducted by Synctuition has also consistently shown that 3 in 10 adults reported feeling severe anxiety most of the time, and the same proportion reported that a mild feeling of anxiety followed them everywhere in life (31%).

HOW TO MEASURE MENTAL HEALTH

The problem with mental health is that it is difficult to measure.

Current test methodologies involve:

- Clinical interviews
- Formalized psychometric tests
- Personality tests
- Intelligence tests
- Neuropsychological tests
- Psychological analysis

While it is possible to measure mental health in a clinical environment when problems already arise, there are fewer test methodologies for presenting a clear picture of the trend of a person's mental health over time in everyday situations, where early intervention is critical in preventing a condition from getting worse by aggregated stress.

The Mental Health Clarity Test uses a specially composed self-assessment questionnaire that is based on clinical interviews and optimized by machine learning and statistical methods to measure mental health parameters on a wide range of scopes, from personal relationship dynamics to a sense of purpose experienced in work situations, to provide a heart-rate like easy to understand measurement scale of a person's mental health and stress level that is calculated in the form of a composite Clarity Level.

Usually, evaluating an individual's mental state is a time-consuming and somewhat uncomfortable process involving conversations and interviews performed by multiple trained specialists. It also involves fulfilling a set of different tests, typically on paper and in unfamiliar environments (e.g., in a hospital or medical center). At the same time, it is important for an individual and/or their close ones (or sometimes employees or employers) to have some estimation of their current mental state or an overview of how this mental state has changed over a period of time, as it will help prevent breakdowns and burnout.

Instead of having a cumbersome test in an unfamiliar environment without possible feelings of embarrassment and/or withholding of answers, a mental health assessment can be done in a series of multiple short (but actually similar) tests on a familiar smartphone (or webpage) environment and in the comfort of one's home or workplace.

The Mental Health Clarity Test relies on self-assessment testing through a series of short questionnaires that are filled in familiar environments without stressful face-to-face awkwardness for providing a good estimation of the mental state of an individual. As a bonus, the Mental Health Clarity Test tracks and provides an overview of mental health changes over a period of time.

In addition, since the testing process is continuous and is spread out over a long time, it is more difficult to provide inaccurate information.

THE MINDSPA MENTAL HEALTH CLARITY TEST

The MindSpa Mental Health Clarity Test is a comprehensive self-assessment study that anyone can do at home.

The initial test completion time is around 15 minutes, depending on the person, and gives an instant result through an automated processing module that compares the results of the answers to a comparison formula and draws up a detailed psychological profile on an individual's clarity level and personality type.

The clarity level is determined in **two parts**:

- a). An initial test assignment that contains up to 30 to 40 multiple-choice questions.

- b). A continuous study phase involving in-app reminder-based test assignments and study feedback in the form of personality type, current emotional state, and clarity level adjustments. These parameters are later used to adjust the Clarity level on an ongoing basis.

The test algorithm determines the mental clarity of each person as a measure of mental, personality, emotional responsiveness, and neuropsychological status produced to quantify the mental state feedback provided in key segments within the program.

HOW TO IMPROVE THE CLARITY LEVEL?

To advance in Clarity Level, an individual must demonstrate exemplary mental state improvements in critical areas of health determined in the initial phase of the study process, where the MindSpa app gathers input and processes it through our data feedback system that provides a convenient overview of a subject's mental state, as well as prescribing clear and actionable recommendations in the form of messages and status updates from Level 1 onwards throughout the MindSpa program.

The test itself is based on a blend of scientifically acclaimed methodologies from areas of work, such as clinical interview methodologies and neuropsychological tests that are integrated into the matrix of the Mental Health Clarity Test for determining individual mental health states and monitoring them through a system of periodical questionnaires that subjects fill out separately. The Mental Health Clarity Test has been carefully constructed to cover a wide range of individuality types based on the answers provided.

The MindSpa Mental Health Clarity test utilizes testing methodologies and principles from psychology and behavioral studies that include topics such as:

- **Anxiety**
- **Sleep quality**
- **Energy and motivation**
- **Confidence**
- **Mood states**
- **Depression**
- **Attitude**
- **ADHD**

THE FORMULA FOR THE MINDSPA MENTAL HEALTH CLARITY TEST

The Mindspa Clarity test integrates several scientific methodologies as a composite remote clinical interview and neuropsychological assessment, which incorporates some elements of known personality tests for determining key parameters about mental health.

While designing the test, the main emphasis was on creating a broad enough scope of research to cover issues concerned with life happiness and satisfaction and their manifestation as a clear state of mind in a person's life.

In determining the concrete parameters of the specific testing process, the following scientific inclinations were adapted from the subsequent studies involving psychological well-being defined as a measure of the absence of stress and mental tension:

- 1. Sischka, Philipp E., Andreia P. Costa, Georges Steffgen, and Alexander F. Schmidt. 2020. "The WHO-5 Well-Being Index – Validation Based on Item Response Theory and the Analysis of Measurement Invariance across 35 Countries." *Journal of Affective Disorders Reports* 1 (December): 100020.**
- 2. Miranti, Riyana, Robert Tanton, Yogi Vidyattama, Jacki Schirmer, and Pia Rowe. 2020. "Examining Evidence of Well-being Indicators: A Practical Method of Assessment." *Journal of Well-Being Assessment* 4 (3): 463–94.**

- 3. Rice, Sean P. M., Tahira M. Probst, and Sergio López Bohle. 2020. "Psychometric Properties and Measurement Invariance of Psychological Capital, Grit, and Gratitude in Selected Samples from Chile and the USA." *Journal of Well-Being Assessment* 4 (3): 369–90.**
- 4. Powell, Marvin, Caryl James Bateman, Daria Gerasimova, André Bateman, and Karl Peltzer. 2020. "Psychometric Properties of the Subjective Happiness Scale in Four Asian Countries." *Journal of Well-Being Assessment* 4 (3): 495–509.**
- 5. White, Mathew P., Ian Alcock, James Grellier, Benedict W. Wheeler, Terry Hartig, Sara L. Warber, Angie Bone, Michael H. Depledge, and Lora E. Fleming. 2019. "Spending at Least 120 Minutes a Week in Nature Is Associated with Good Health and Wellbeing." *Scientific Reports* 9 (1): 7730.**

The main psychological assessment principles were adapted from study methodologies involving the remote determination of mental health:

- 1. Hajar Mat Jani, and Rozita Yati Masri. 2011. "An Improved Online Mental Status Examination System and Mental Health Diagnostic System." *INTERNATIONAL JOURNAL ON Advances in Information Sciences and Service Sciences* 3 (9): 66–75.**
- 2. Maruish, Mark E. 1998. "4.18 - Therapeutic Assessment: Linking Assessment and Treatment." In *Comprehensive Clinical Psychology*, edited by Alan S. Bellack and Michel Hersen, 525–61. Oxford: Pergamon.**
- 3. Wheeler, Elizabeth M. A., and Robert P. Archer. 2022. "Personality Assessment." In *Reference Module in Neuroscience and Biobehavioral Psychology*. Elsevier.**
- 4. John E. Ware, Mark Kosinski And Susan D. Keller, Jr. 1996. "A 12-Item Short-Form Health Survey: Construction of Scales and Preliminary Tests of Reliability and Validity." *Medical Care* 34 (3): 220–33.**

5. Geyti, Christine, Helle Terkildsen Maindal, Else-Marie Dalsgaard, Kaj Sparle Christensen, and Anelli Sandbæk. 2018. "Mental Health Assessment in Health Checks of Participants Aged 30-49 Years: A Large-Scale Cohort Study." *Preventive Medicine Reports* 9 (March): 72–79.

The MindSpa Mental Health Clarity Self-Assessment Test has been created as a fusion of these techniques for providing user-friendly and understandable feedback in the form of a Clarity Level that provides results based on individual personality types. The test works like an inner mirror: the numeric Clarity level is based on the answers given in the test and provides an honest reflection of a person's mental state. It is like a "snapshot" of everything that determines a person's mental state and reflects test score variation in response to changing life situations and determines their effect.

The Clarity Level constantly fluctuates according to everyday life experiences and personal growth. On a continuous basis, the MindSpa Mental Health Clarity Test compensates for short-term variation with continuous strategically placed series of questionnaires throughout the program.

CLARITY OF MIND

Currently, there is no effective method for rapidly determining a baseline life-satisfaction score that is based on a simple-to-follow mental stress indicator displayed as a single quantifiable number. Clinical tests, such as formalized psychometric tests, personality tests, intelligence tests, neuropsychological tests, and clinical interviews, usually rely on a fraction of the broader picture influencing true life satisfaction.

According to research, stress factors that lower mental clarity can be improved when focused on healthy sleep, stress management, and many other factors that influence mental health and wellness. Until now, there was no convenient way to track all of these using a single score that provides a clear overview of a person's mental state.

MINDSPA'S MENTAL HEALTH CLARITY TEST RESULTS

After answering a series of questions composed by our team of experts, the Mental Health Clarity Test algorithm processes a response profile and calculates the initial Clarity Level.

The Clarity Level is not just a number; it is a significant indication of mental well-being and a helpful and practical tool that can show how to gain improvement in crucial areas of life satisfaction.

The MindSpa Mental Health Clarity Test provides a full-length analysis report that is presented in a clear and understandable package that is formulated as a Clarity Level indicator.

The Clarity Level numeric indicator functions both as a diagnosis of well-being and a convenient scale linked to an actionable roadmap for personal growth and improvement.

CLARITY LEVELS

Gifted Mind

Score 120 and above

Clear Mind

Score 101 to 120

Bright Mind

Score 76 to 100

Foggy Mind

Score 51 to 75

Stormy Mind

Score 26 to 50

Messy Mind

Score 0 to 25

TEST SCHEDULE

To generate an accurate psychological well-being profile, the full-range Mental Health Clarity Test is available only once per month for each individual user. This is designed to allow the Clarity Level to have a baseline adjusted against user input data gathered from ongoing short questionnaires that pop up frequently within the MindSpa program. The Clarity Level is designed to indicate motion against previous mental state values provided earlier in time. Clarity levels depend on individual progress, and rate of improvement in addition to the baseline test, so periodic Clarity Level adjustments take ongoing data into account when determining an updated Clarity Level.

MENTAL HEALTH CLARITY TEST ALGORITHM

Test measure points and outcomes

The Mental Health Clarity Test measures current well-being and mental health related personal progress. Mental clarity is connected to deep focus, healthy sleep, and, most importantly, stress management which influences health and wellness.

The Mental Health Clarity Test considers factors that shape mental health - happiness, confidence, sense of purpose, and personal relationships.

Drafting the test

The Mental Health Clarity Test is based on real-world data gathered from observing and interviewing volunteers by conducting expert group studies to collect feedback data to map specific questions to traits that correspond to characterizable properties of measurable mental clarity for which a set of people under observation were used in determining the test questions and algorithm creation. The algorithm validation process used a similar set of randomly selected volunteers.

Test algorithm

The basis of the test algorithm is a single-layer perceptron that was used as an inspiration (or a very simple artificial neural network). This is the application of an operator to an input vector, resulting in a new vector of predictions. This can be represented by the following function f , which maps answers to the input questions, which are presented as a component of vector x with clarity values represented as another vector c . The a represents a function (similar to the perceptron activation function) that applies a weights matrix to input.

$$\mathbf{f}(\mathbf{x}) = \mathbf{a}(\mathbf{W}_N^U, \mathbf{x}) = \mathbf{c}$$

where

$$\mathbf{W} = \begin{bmatrix} w_0^0 & w_0^1 & \cdots & w_0^U \\ w_1^0 & w_1^1 & \cdots & w_1^U \\ \vdots & \vdots & \ddots & \vdots \\ w_N^0 & w_N^1 & \cdots & w_N^U \end{bmatrix},$$

$$\mathbf{x} = \begin{bmatrix} x_0 \\ x_1 \\ \vdots \\ x_N \end{bmatrix}$$

and w_N^U are weights. The indexes N and U represent the number of questions (N) and the number of test stages (U).

TEST VALIDATION

The algorithm and test validation were initially conducted on a set of 209 randomly chosen volunteers. These volunteers performed the test, followed by an interview on the topics related to the characteristics under examination. The test results and analysis of the interviews were then compared to measure the similarities and differences.