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DEPRESSION to **EXPRESSION**

Color as Visual Language to Communicate
Complex Emotions

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DEPRESSION to **EXPRESSION**

Color as Visual Language to Communicate
Complex Emotions

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Abstract

The thesis regards the potent of graphic design in health care as an opportunity to communicate complex emotional experiences of depression. Using color as the design strategy, the idea is an expressional one: right color can communicate right message.

The romance of color exists for everyone. The beginning of every color experience is a physiological response to a stimulus of light. This color experience is enriched in a design by variation in color attributes that open innumerable possibilities for expressive effect. The discrete contrast between colors, in terms of its attributes, creates interest in a design.

The thesis is an effort to connect the emotional dimension of color experience with depression to visualise the illness in a new light. A distinctive color identity is given to the types of depression to portray the necessity of extending deserved sensitivity and sympathy to the subject. These identities are achieved by theoretical research of color concepts relative to perception and psychology, analytical study of survey results, formulation of value – saturation scale and color symbolism referenced to Indian culture. The thesis conceptualizes the methodological approach that can be adopted to develop color palettes in graphic design by considering the focal parameters relevant to the project.

The results are incorporated in the illustration eBook ‘The Quirky Brain’. The final work is an anthology of short stories visualizing the inner thoughts that goes on and on in the mind of a depressed person. A monochromatic palette is adopted to maintain its identity as well as boost impactful message. The book, eventually, narrates that change of emotions follows the change in color.

Keywords: *Depression, Color, Emotion, Color Perception, Color Psychology*

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Achromatic - An achromatic color is a color that lacks hues such as white, grey and black.

Afterimage - A “ghost” image that follows stimulation of the eye by a single color when its complement is not present in the field of vision.

Ayurveda - The traditional Hindu system of medicine which is based on the idea of balance in bodily systems.

Chakras - The distinct energy centres in the body that start at the top of your head and end at the bottom of your spine.

Chromatic - A chromatic color is a color which has even the slightest amount of hue.

Chromotherapy - Chromotherapy is a method of treatment that uses the visible spectrum (colors) of electromagnetic radiation to cure diseases.

Color - The aspect of objects and light sources that may be described in terms of hue, lightness, and saturation of objects and light sources.

Color Contrast - It is the difference in luminance of an object that makes an object distinguishable.

Color Constancy - It is the feature of the human color perception system which ensures that the perceived color of objects remains relatively constant under varying illumination conditions.

Color Harmony - It refers to the property that certain aesthetically pleasing color combinations have. These combinations create pleasing contrasts and consonances that are said to be harmonious.

Color Preference - It is the tendency for an individual or a group to prefer some colors over others.

Color Psychology - Color psychology is the study of hues as a determinant of human behaviour.

Color Symbolism - It refers to the use of color as a symbol in various cultures.

Depression - Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest.

Doshas - The doshas are biological energies found throughout the human body and mind. They govern all physical and mental processes and provide every living being with an individual blueprint for health and fulfilment.

Emotion - A conscious mental reaction subjectively experienced as strong feeling usually directed toward a specific object and typically accompanied by physiological and behavioural changes in the body.

Hypothalamus - A region of the brain which coordinates both the autonomic nervous system and other homeostatic systems, and involved in sleep and emotional activity.

Hue - The name of the color of visible spectrum: red, orange, yellow, green, blue, or violet.

Lymphatic system - It is part of the vascular system and an important part of the immune system.

Metamerism - It is a perceived matching of colors with different spectral power distributions. Colors that match this way are called metamers.

Neologism: It describes a relatively recent or isolated term, word or phrase that may be in the process of entering in common use but has not been accepted yet by mainstream language.

Placebo Effect - Defined as a phenomenon in which some people experience a benefit after the administration of an inactive substance or sham treatment.

Receptor - An organ or cell able to respond to light, heat, or other external stimulus and transmit a signal to a sensory nerve.

Saturation - The degree of purity of a color; its hue intensity or vivid quality, as opposed to muted or dull quality.

Stigma - The disapproval of a person based on physical or behavioural characteristics that distinguishes them from others.

Wavelength - The wavelength is the spatial period of a periodic wave—the distance over which the wave’s shape repeats.

Value - Relative light and dark, with or without the presence of hue. High-value samples are light; low-value samples are dark.

Vedic Science - Vedic science refers to a number of disciplines: ancient and modern, scientific, metaphysical, proto-scientific, found in or based in the Hindu scriptures.

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01

INTRO

DUCTION

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Symbolic of new beginnings.

Humans are social animals and advertising our problems, especially ones that have historically been misunderstood, runs counter to our social conditioning. The problems get more distressing to discuss when they are related to our mental health. Despite the leap in progress made in diagnosing and treating depression, people are still afraid to talk about it or even say the word depression. This acts as a major setback in diagnosing depression which, eventually, is growing at an alarming rate. According to the survey reports by *World Health Organization* (2012), depression was ranked as the third leading cause of the global burden of disease in 2004 and will move into the first place by 2030.

Depression is a common and serious medical illness that negatively affects the way we feel, the way we think and the way we act (American Psychiatric Association). Hence, focused on portraying depression well deserving of empathy, the motivation for the research work was to study the interaction of graphic design with mental health to formulate a medium to change the way it can be communicated within society. The research regards the role of graphic design to construct and communicate healthcare messages using color as the design element. The objective was to express the complex emotions experienced in different types of depression through color.

Color is one such graphic design element that evokes spontaneous emotional reactions on its presence. In any design work, a tremendous amount of care and thought goes into the selection of every color giving it a meaning. Picture your favourite color. How does seeing that color make you feel? Is it a calming green or a vibrant yellow or a classic black? We do not always realize it, but color is closely tied to our emotions. Even our language reflects this. We are *'tickled pink'*, *'seeing red'*, or *'feeling blue'*. As a visual language, color attracts the eyes and focus attention on the intended messages. Josef Albers said *"Whether bright or dull, singular or complex, physiological or psychological, theoretical or experiential, the persuasive power of color attracts and motivates"* (Adams and Stone, p.46, 2006). In physical sense, we see the world in color because the human eye can distinguish between light waves of different wavelengths. However, the human brain perceives more. Color has biological, psychological, emotional, social and cultural dimensions that can enhance – or impede – communication efforts (Holtzschue, 1994). Hence, color proved to be the apt tool to address the objectives of this research.

Mental health is the foundation for thinking, communication, learning, resilience and self-esteem. It is also the key to relationships, personal and emotional well-being and contributing to society. The health conditions involving changes in thinking, emotion or behaviour or a combination to these is referred to as mental illness. Due to there being no obvious indicator for these disorders, diagnosis has always been challenging. In case of health issues like cancer and HIV, it becomes crucial to raise awareness to ensure that people take appropriate action in time to improve their health and reduce the risks. These conditions require focused attention to prevent them, in which we can all play a part once we are well informed. Likewise, it should not be any different for mental health well-being. It is the time to provide people the information they need and to equip families and communities, who can do so much to protect mental health and prevent problems escalating into crisis. When someone goes through poor mental health, they need to be confident that it is acceptable to be 'not okay' at times, and the vulnerability they are going through will be listened to and will receive a caring, appropriate response. It also becomes important for us as a society to learn and educate ourselves about mental illness, its repercussions and how we can extend our support and appropriate responses to the sufferers by having a true understanding of their emotions. Thus, there is a need to focus on awareness and information for everyone on how to look after our mental health, why there is a need to take immediate action in case of crisis and why there is a call for early intervention support in our communities.

Graphic design ‘illuminates and guides’ and links the importance of design as a tool for educating society. Aggressive attacks on stigma such as vivid colour and the strong typefaces are becoming a common approach to tackle mental illness stigma in recent campaigns conducted around the world. With regard to mental illness, there is a call for such creative campaigns and projects (Chapter 5) more in number that can help in accurate portrayal of mental illness as deserving of sympathy and sensitivity as important as any other illness or disease.

Hence, the questions to be investigated by this work would be “how we perceive depression as a society?”; “why is it necessary to talk about and create awareness about depression?”; “how willing are we as a society to sympathize towards mentally ill?”; “what are the general misconceptions and stigma related to depression which forbids the people to talk about it openly?”; “what are daily challenges faced by those suffering with depression and how the society can be supportive in seeking them comfort?” and “what are the kinds of depression and what is the difference between the emotions experienced in each of them?”.

This research work also focuses on answering the question of “how can be graphic design effective in addressing mental illness?”; “how can we work with color as a graphic design tool to develop a

visual medium for expression of emotion?”; “how can we follow the change of emotions experienced in different types of depression through colors?”; and “how can the variation in color attributes describe the intensity of emotions?”. When discussing about colors, it is essential to accommodate various factors influencing color preferences. One of the major factors contributing in an individual’s color preference is his/ her association to its ethnic identity or nationality. Hence, for this research work, the significance and symbolism of color in Indian culture has been referenced. This led to a detailed section is focused on exploring “how are colors visualised in Indian culture?”; “what are the meanings hold by different colors culturally?”; “how are these colors significant in day to day lives of an Indian individual with respect to expressing their emotions?” and “what is the role played by colors in ancient Vedic science to cure illnesses?”

Thus, the research work hypothesis is that “the interaction of depression with graphic design using color as a design strategy in addition to the other contributing factors can derive a unique emotional color identity for it.”

The research initiated with understanding about depression, its root causes, the trigger points and notions related to it in depth. The aim was to gain insight about different emotions faced by individuals in different types of depression irrespective of age and gender. This was carried out by intensive research on mental illness through journals, books, articles and blogs. The reports shared by World Health Organization and National Institute of Mental Health on their respective pages, served as a foundational framework for the research work in order to obtain the definition and symptoms of different types of depression. Also, the online presence of ‘The Live Love Laugh Foundation (TLLF)’ which is currently working towards spreading awareness and reducing stigmas related to mental health in India helped a lot in drawing references and understanding key aspects about depression. It helped in attaining a deeper knowledge about the situation with the stories of real-life experiences and their battle story videos shared on the social media pages. The authenticity of data gathered was further verified with ESAD.CR psychologist Luis Filipe Veludo. The discussion with him helped to organize types of depression based on the severity and intensity in terms of occurrence of depression. It also assisted to understand that how depression is experienced differently by each individual, how the intensity of emotion differs in each depression type and how the emotions experienced varies from person to person depending on various factors as age, gender, personality, etc.

Next, a thorough theoretical study was done to understand the concept of color, color vision

properties of color that define its appearance, interrelationship between the color variables and most used color systems. The theories of color contrast by Johannes Itten were studied in detail to learn how to juxtapose colors effectively to achieve desired results. This was supplemented by the concept of ‘Interaction of Color’ by Josef Albers which defines the relativity of colors through visual experiences. This information was further enriched by considering color appearance models which describe the perceptual aspects of human color vision. The models which worked on the parameters of color variables; hue, value and chroma to explain the human color perception were focused upon. A detailed research was done next with the help of articles, journals and books to explain the logics involved behind human color preference, what are contributing factors that induces physiological, psychological, emotional reactions on seeing a particular color. This defined one of the key focuses of the research as it established the power of color to invoke various reaction and emotions based on visual perception.

The next stage involved formulation of a questionnaire to have an insight on the societal perspective of depression and to identify the emotional significance of colors. The analytical study of the survey results sufficed the objectives of the survey and helped to deduce the first color code for the basic emotions. These color codes were further developed with value- saturation scale to obtain the individual color identity for each depression type (detailed discussion in Chapter 6).

1.3.1. Color Symbolism is culturally linked

The formulation of color codes highlighted the other significant part of this investigation that was to identify the symbolism of these color codes in the context to India culture. Colors do not have meaning of their own unless given to them. All color meanings are relative; these interpretations are influenced by variety of factors including age, gender, personal experience, mood, ethnic identity, history and tradition. Every color has its own set of connections that convey information with the color itself acting as signifier of ideas – both positive and negative. People have their own associations with color, but there are conscious and subconscious social and cultural connotations too (Holtzschue, 1994). Said that, strongly associated to my ethnic identity on both conscious and subconscious level, was implied to thoroughly explore the symbolic significance of each color in Indian culture.

Colors are the most essential defining factors of Indian culture and traditions. The ancient Indian scriptures and Vedic science recognize colors as a vital source of energy – positive and negative, validating the reason to study Indian color symbolism. The Ayurvedic scriptures points that equilibrium can be achieved when these colors are used in balanced form. Colors are an integral part of an Indian life, as the application of colors can be witnessed on every occasion, be it a happy or sad occasion. Indian mythologies have also described the significance of these colors relative to the context they are being used and the effects they induce. In her essay *Future Science in Past Visions* (2011), author Varadaraja Raman elaborates on the relevance of Indian myths, their

meanings and messages on human condition. She wrote, *“We also find in the narratives of ancient India references to episodes and entities that, from a normal historical perspective, could not have happened or existed. Yet, some of these sound like matters that are common in our world of science and technology.”* Her essay also discusses the references of futuristic medical approaches such as test-tube baby and organ transplants in ancient Hindu scriptures. It explains that Indian scriptures and mythology have way more contribution to human life sciences than only religion.

The 3000 year old healing system, *Ayurveda* uses specific colors to define seven chakras or energy wheels that represent organs, emotions and aspects of the spirit. The energy wheel resonates to the seven spectrum colors. From the base of the human’s spine to the top of the head, the chakra colors follow each other like the colors of the rainbow which include **red for base of spine**, orange for reproductive organ, pelvic glands and lymphatic system, yellow for adrenal glands, green for heart, blue for throat, indigo for intuition and violet for nervous system. It emphasizes that as the emotions of the body changes, these colors also change.

On the basis of this, the meanings of colors were extracted from different walks of Indian culture, from mythologies to Vedic medicines, from scriptures to political history, from architecture to food and from traditions to festivals. This defined the relationship between emotions and colors from Indian cultural context.

The research aimed to disseminate factual information about the globally **‘tabooed’** illness and change the way it is perceived in society. The moment anyone talks about mental illness, the immediate reaction is to assume the person **‘being crazy’**. A reaction like these forbids people to talk openly about their daily emotional struggles. The right information in the society could encourage depressed people to share their emotions with near ones. Even if they do not want to talk or do not open up right away, knowing someone does empathize with them could probably save their life. The research aimed to introduce color as a non verbal visual language which would help the depressed people to express their emotions.

The research assessed the potential of color to effectively describe emotions of depression based on the models of color contrast and color appearance. It worked on the concept that **right color can communicate right emotion**. The change in emotions is followed by change in color. This change in color is achieved by varying the color attributes, value and saturation to get the desired result.

The work emphasized on creating a unique identity for each depression type to understand the differences based on the severity of depression which also contributes to the intensity of emotion. The uniqueness of each color was obtained considering the emotional connect to that color, variance in value – saturation scale based on intensity of emotion and severity of depression and color symbolism in India. The derived hue was, later, applied in portrayal of inner thoughts through illustrations.

Despite few proven theories on the influence of color on human psyche, the effect of visual perception of color on human emotions cannot be neglected (Valdez and Mehrabian, 1994). Color is a living language whose meaning keep on changing based on its multi-dimensions and the context they are being used. Thus, the research work intends to establish color as visual code of depression that can communicate feelings and thoughts and influence the way we think. The work also emphasised on the development of a methodological approach that can be adopted to derive base color for a graphic design project considering the factors that would communicate the message effectively and would contribute the most in evoking responses.

1.5. Research Framework

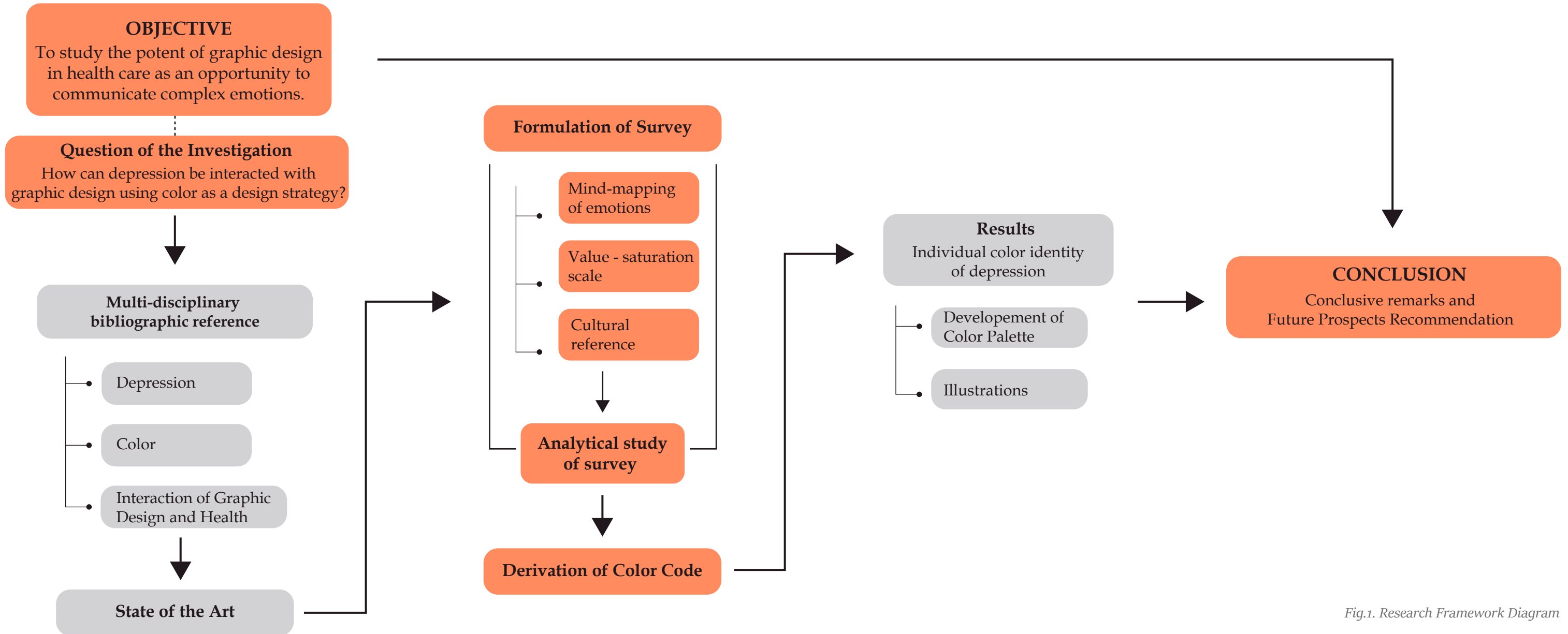


Fig.1. Research Framework Diagram

02

INSIGHT TO
DEPRESSION

R 38 G 47 B 91

Symbolic of deep sorrow.

In recent decades, mental illness and its growth in epidemic proportions has been recognized as one of the major health concerns faced by the world, depression being one of the main. Despite there being a significant leap in medicine and research surrounding depression, it is a rather difficult condition to diagnose as it is usually seen overlapping with other generalized anxiety disorders. Furthermore, the lack of awareness and the stigma associated with the condition has worsened the situation. The ongoing campaigns and surveys have indicated that just increasing awareness about depression is not enough; a holistic approach is needed to address the strong stigma associated with it, to reflect on the consciousness of people's minds and to help them differentiate between myths and facts related to depression.

2.1. Understanding Depression

We all have times when our mood is low, or when we're feeling sad or miserable about life. Usually these feelings pass in due course. But if the feelings don't go away after a couple of weeks, or if they come back over and over again for a few days at a time, it could be a sign that the person is experiencing depression. In its mildest form, depression can mean just being in low spirits. It doesn't stop the person from leading a normal life but makes everything harder to do and seem less worthwhile. And at its most severe, depression can be life-threatening.

As defined by the *World Health Organization* (WHO), depression is a common mental disorder,

characterized by persistent sadness and a loss of interest in activities that we normally enjoy, accompanied by an inability to carry out daily activities, for at least two weeks. In addition, people with depression normally have several of these mentioned symptoms as well: a loss of energy; a change in appetite; sleeping more or less; anxiety; reduced concentration; indecisiveness; restlessness; feelings of worthlessness, guilt, or hopelessness; and thoughts of self-harm or suicide. It is difficult to determine what exactly causes depression but it can occur for a variety of reasons. Research shows that it can result from a complex interaction of social, psychological and biological factors.

“*I felt as though I had a physical need, of impossible urgency and discomfort, from which there was no release — as though I were constantly vomiting but had no mouth. My vision began to close. It was like trying to watch TV through terrible static, where you can't distinguish faces, where nothing has edges. The air, too, seemed thick and resistant, as though it were full of mushed-up bread.*”

An Excerpt from the memoir *The Noonday Demon: An Atlas of Depression* (Solomon, 2015)

2.1.1. Types of Depression

According to the level of complexity/severity, depression is classified as follows (definitions retrieved from *National Institute of Mental Health (NIMH)*):

Psychotic

It is a major depressive episode which occurs along with psychosis, a transient mental state characterized by abnormal perceptions that may include delusions and hallucinations. Typically, the person with psychotic depression exhibits a low, sad mood, with poor concentration and feelings of lack of self-worth and guilt.

Bipolar

Also known as manic-depressive illness, it is a brain disorder that causes unusual shifts in mood, energy, activity levels, and the ability to carry out day-to-day tasks. These moods range from periods of extremely ‘up’ elated, and energized behaviour to very sad, ‘down’ or hopeless periods.

Clinical

It is one of the most common mental illnesses observed globally. Also known as major depression, it is characterized by a persistent feeling of sadness or a lack of interest in outside stimuli. It is solely focused on the “lows” or the negative emotions and symptoms that may have been experienced by the person.

Persistent

A person diagnosed with persistent depression may have episodes of major depression along with periods of less severe symptoms, but symptoms must last for two years to be considered persistent depression.

Postpartum

Many women experience full-blown major depression during pregnancy (prenatal) or after delivery (postpartum depression). The feelings of extreme sadness, anxiety, and exhaustion that accompany postpartum depression may make it difficult for the new mothers to complete daily care activities for themselves and/or for their babies.

Due To Illness

It is common to feel discouraged after an illness or while trying to manage a chronic condition. It may be hard to adapt to a new reality and to cope with the changes and ongoing treatment. Temporary feelings of sadness are expected, but if these and other symptoms last longer than a couple of weeks, it may develop into depression.

Seasonal Affective

It is characterized by the onset of depression during the winter months, when there is less natural sunlight. This depression generally lifts during spring and summer. It is typically accompanied by social withdrawal, increased sleep and weight gain.

Premenstrual Dysphoric

It is a condition in which a woman has severe depression symptoms, irritability, and tension before menstruation. The symptoms of PMDD are more severe than those seen with *premenstrual syndrome** (PMS).

*PMS refers to a wide range of physical or emotional symptoms that most often occur about 5 to 11 days before a woman starts her monthly menstrual cycle.

Substance Induced

It is a kind of depression that is caused by using alcohol, drugs, or medications. The irony of substance-induced depression is that most people take drugs to feel better, yet those same drugs make them feel worse. For some people, it involves a complete loss of interest or enjoyment in life.

Subsyndromal

It indicates that a person has two or more symptoms of depression but aren't severe enough for a depression diagnosis. However, it may be considered a risk factor for developing clinically significant major depressive disorder in the future.

Grief

It is a natural response to death or loss. The grieving process is an opportunity to appropriately mourn a loss and then heal. But when grief takes over the person's life and begins to feel hopeless, helpless, and worthless, it is a sign that it has developed into depression.

Depression, like art, can never be adequately described in words alone. Though words can do some justice, unless one has endured the experience, the intangible nature of depression, makes it much more challenging for sufferers and non-sufferers alike to reconcile. And this lack of understanding and emotions of fear breed fertile ground for stigma. In spite of being one of the most common mental illnesses, depression is often misunderstood. Moreover, the myths and misconceptions about depression contribute to the stigma attached to it. And it is disturbing because of such societal stigma; self-internalized stigma and shame are sometimes perpetuated. Given this, a large percentage of those who experience depression do not seek treatment. A report *The Impact of Mental Illness Stigma on Seeking and Participating in Mental Health Care*, published in *Psychological Science* (2014) in the Public Interest, investigates stigma as a significant barrier to care for many individuals with mental illness. "The prejudice and discrimination of mental illness is as disabling as the illness itself. It undermines people attaining their personal goals and dissuades them from pursuing effective treatments," said the psychological scientist Patrick W. Corrigan of the Illinois Institute of Technology, lead author on the report. The public initiative campaign *Stronger Together* (2014) by The Huffington Post battles the stigma surrounding the true origins of depression and how people with the disease suffer in distinct ways by debunking myths and defying stereotypes that have incorrectly defined it for so long.

The campaign highlighted some of the common myths and misconceptions surrounding depression, which hinder us from truly understanding the illness, are:

“ **It is all in your head. ”**

Emotional symptoms are often thought of as the main characteristics associated with depression, but it doesn't stop there. Many people with depression find themselves coping with ailments all over their bodies. According to the NIMH, depression can manifest as fatigue, insomnia, unusual changes in appetite, chronic muscle aches and chest pains.

“ **Medication is the only way to change depression. ”**

Medication is only one type of depression treatment. Therapy is another option, and research shows that *cognitive behavioural therapy** (CBT) is especially effective in helping people with depression.

* CBT is a form of psychotherapy that focuses on how a person's thoughts, beliefs, and attitudes affect their feelings and behaviors.

“ **Antidepressants alter your personality. ”**

Antidepressants change the brain chemistry. They may help relieve your symptoms of depression without changing your underlying personality. After taking them, many people with depression begin to feel like themselves again.

“ **You can snap out of it. ”**

No one chooses to be depressed. Some people mistakenly believe that it happens when one allow themselves to wallow in their grief or sadness. They may think it can be cured with positive thoughts or a change in attitude.

“ **Depression is a weakness. ”**

No one chooses to develop depression. It is a complex mental disorder that affects a person biologically, psychologically and socially and has nothing to do with how strong we are. The only reason depression is viewed as a weakness is that society has stigmatized the condition. In reality, depression isn't a sign of self-pity, weakness, or laziness.

“ **It is only brought on by a traumatic event. ”**

A life event, like the loss of a loved one, triggers feelings of sadness, loneliness and emptiness in everyone. However, those who deal with depression are more likely to experience those feelings for long periods of time and more frequently. A traumatic event does not cause depression; it only heightens an already existing issue in someone who deals with depression.

“ **Only women get depressed. ”**

Men often express depression differently than women, which make depression among men easier for society to overlook. Afraid of appearing less masculine, strong and stable, men often feel less able to speak up and receive the help they need. This makes depression even more dangerous for men, because they avoid treatment.

2.3. Depression vs Sadness: The Difference

Depression and sadness are linked but are not the same. The feelings of sadness are considered normal to develop in response to situations such as death of loved ones, failures, or experiences that are difficult for the person to endure. People experiencing loss often might describe themselves as feeling depressed. But being sad is not the same as having depression. Sadness usually passes with time. A person experiencing sadness can usually find some relief from crying, venting, or talking out frustrations. If it does not pass, or if the person becomes unable to resume normal function,

Sadness is an Emotion. Depression is a Mental Condition.

this could be a sign of depression. As stated in the blog *Depression versus Sadness*, depression is a mental illness that has an overpowering effect on many parts of a person's life and alters behaviors & attitudes. It often occurs without any apparent reason. If depression begins after a specific event, it was probably the trigger rather than its sole cause. Usually, grieving individuals tend to accept help and support, whereas people with depression pull back and isolate themselves. In sadness, painful feeling comes in waves often intermixed with positive memories. On contrary in depression, low moods last for more than two weeks accompanied with loss of interest in daily activities. In sadness, self-esteem is usually maintained. In major depression, feelings of worthlessness and self-loathing are common (Fitzgerald, 2019).

2.4. India Bleeds Psychiatrically

India is currently home to a population of over one billion citizens. A study conducted by the World Health Organization in 2015 for the National Care Of Medical Health (NCMH) shows that one in five Indians may suffer from depression in their lifetime, equivalent to 200 million people with no discernible rural-urban differences. Though there are effective measures and treatments, there is an extreme shortage of mental health workers like psychologists, psychiatrists, and doctors. As reported in 2014, it was as low as 'one in one million people'. Further, due to the stigma associated with mental illness and lack of awareness, only 10-12% of these sufferers will seek help. According to the Indian government estimation, India accounts for more suicides than any other country in the world. In fact, India accounts for one third of all total global suicides. The average suicide rate in India is 10.9% for every one million people and the majority of people who commit suicide are below 44 years of age. Suicide is considered a criminal act under the *Indian Penal Code**. This, combined with rampant stigma, means many

* The Indian Penal Code is the official criminal code of India intended to cover all substantive aspects of criminal law.

suicide attempts go unreported, and suicidal individuals fear seeking treatment. The government estimated that 6-7% of the population suffer from major to minor mental health issues which is, approximately, 70 million Indians. While most mental health issues are treatable, widespread stigma against mental illness means Indians who need help often get neither diagnosed nor treated. It is a serious concern as this number is increasing every year.

In 2018, a nationwide survey *How India Perceives Mental Health* was conducted by The Live, Love Laugh Foundation (TLLF) to help gauge India's mental health landscape with the objective of exploring perceptions surrounding mental health and mental illness in India. The study further explores the level of sensitivity, attitudes towards mental health, and the level of stigma associated with it (Fig.2).

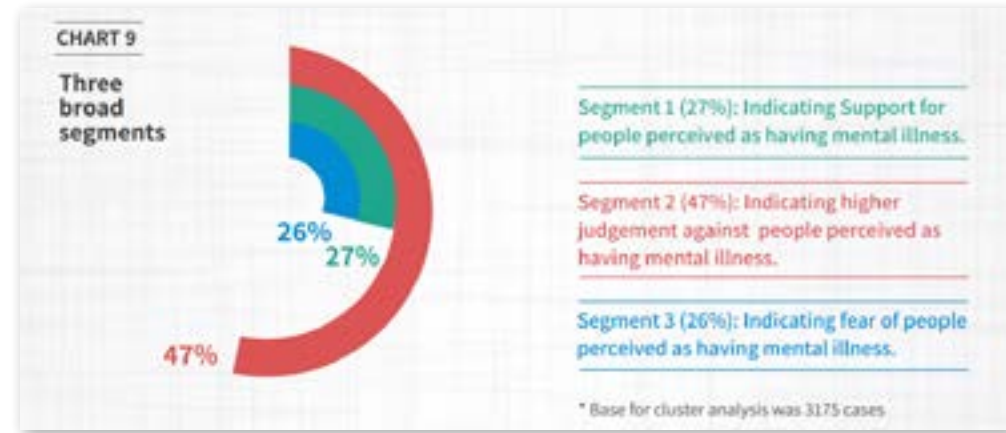


Fig.2. Attitude towards Mental Illness

Another noteworthy result was people's understanding and perception towards mental illness (Fig.3). The study showed that while 87% of the respondents showed some awareness of mental illness, 71% also used terms associated with stigma. This showed that stigma and awareness are two separate issues although interlinked. They need to be addressed in parallel in order to tackle the burden of mental illness in India.

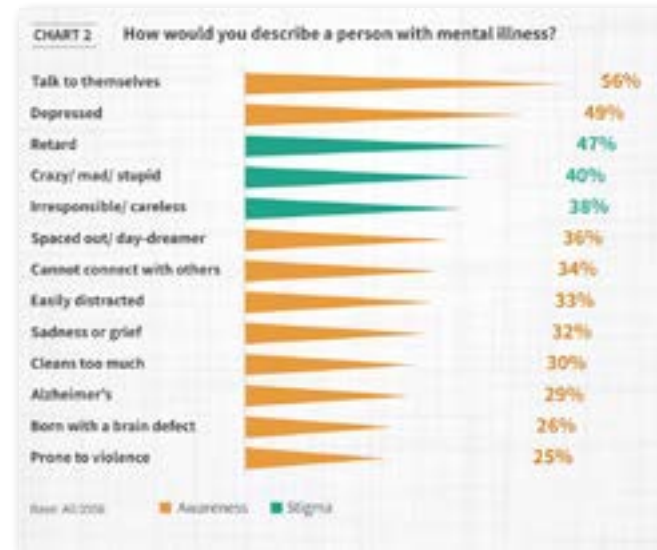


Fig.3. Perception towards Mental Illness

The study also reflected a positive sign with responses on the social inclusion of the patients (Fig.4). A majority of respondents appreciated the importance of social support for people with mental illness, but while 68% agree that we have a responsibility to provide the best possible care for sufferers, the number of people who believe no one has the right to exclude people with mental illness from their neighbourhoods is comparatively lower (57%).

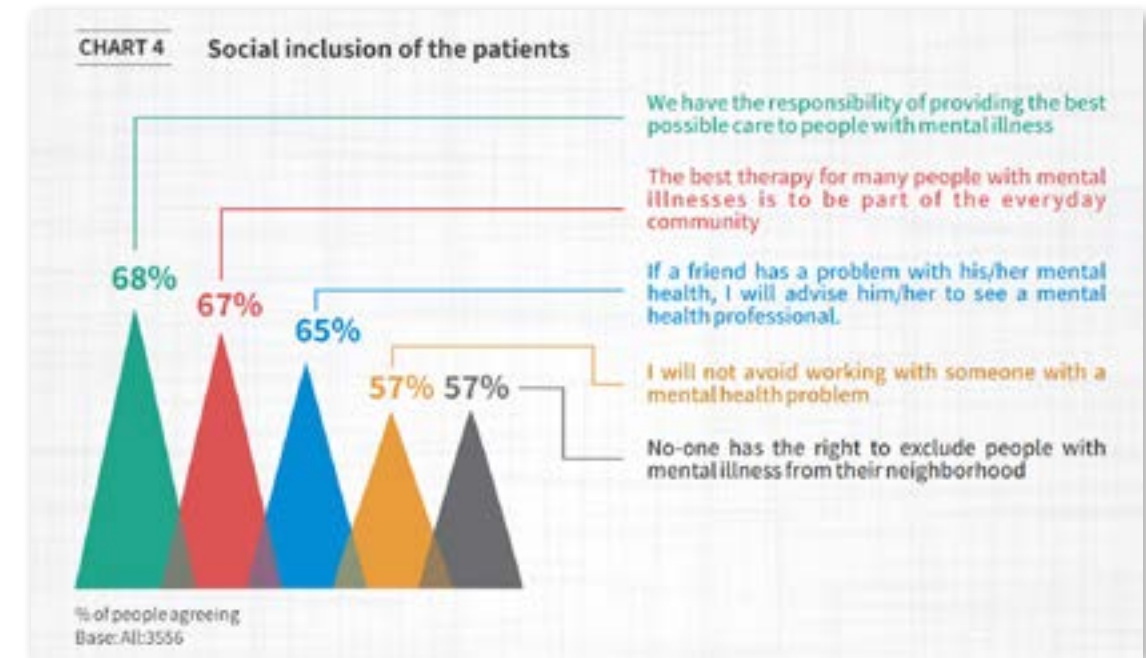


Fig.4. Social Inclusion of the Patients

According to the WHO, India is considered one of the most depressed countries having the largest population suffering from one form of mental illness or the other. It won't be an exaggeration to state that India is staring at a mental health epidemic. Interventions in the form of medicine, psychological and social help, can make a huge difference. Steps should be taken to train and sensitize the community/society to deliver immediate mental healthcare intervention to the patients. There needs to be more open

discussion and dialogue with the general public, and not just experts on this subject, who will in turn help create a more inclusive environment for people with mental illness. Nothing else but timely intervention, awareness about the issue, availability of professional help and adequate policies will bring down the numbers. It is thus imperative to understand that people with mental illness deserve to live their lives with dignity and confidence.

“*The mental illness that causes a destitute person to end up on the roads is not of his or her own making. The wandering mentally ill are shunned, rejected and denied. They brave the chilling winters, the searing summers and the torrential rains for months, years, often decades on end—and continue to be shunned, rejected and denied. But this is what we need to remember: We sail in the same boat. Some are less mentally disturbed, some more than the others, [but] each one of us is searching for his piece of sunshine and each one of us occasionally succumbs to his/her own darkness.*”

Dr. Bharat Vatwani, recipient of the *Ramon Magsaysay Award**, in interview with the TIME News (2018).

*The Asian equivalent of the Nobel Peace Prize.

It has been observed that when a famous person or celebrity starts behaving erratically, it is plastered across headlines and so does, begins the societal speculation of how and why. However, it is also been observed that ‘*coming out*’ of celebrities can be illuminating for the people who follow them. More of these endorsements can certainly help reduce stigma. This can help people with mental health issues avoid isolation and seek out treatment and support. It can help them find hope and inspiration to persist on their journey of recovery. In fact, some celebrities romanticize aspects of mental illness, such as the connection between certain conditions and creativity. These very visible examples of celebrities living with a mental illness also show that we are not alone. Mental illness does not discriminate. It can happen to anyone, anytime.

Deepika Padukone: #NotAshamed of Mental Illness

In the summer of 2014, Indian actress Deepika Padukone was diagnosed with clinical depression. She opened up on national television, one of the first Indian media ever witnessed, about how, while her career was thriving and she was rising to become one of the most sought after actors, she was simultaneously battling mental illness. She explained how she woke up one morning feeling “a strange emptiness” and over the period of time it got worse. It would feel okay at times and suddenly there was a roller coaster of emotions. The most common reaction she received was, ‘How can you be depressed? You have everything going for you. You are the supposed number one actress and have a plush home, car, movies... What else do you want?’ She helped herself by finally accepting her condition and seeking counselling and medications. Thereafter in June 2015, she founded The Live, Love, Laugh Foundation to create awareness about stress, anxiety and depression and reduce the stigma attached to mental illness. She had started a much needed and inspiring conversation in the country on mental illness, by speaking about her own battle with depression. Her interview received an overwhelming support and appreciation from friends and fanatics. Today she is much better. In 2018, on World Mental Health Day (October 10), a first of its kind campaign was launched by her foundation where real life survivors narrated their personal struggles with depression and declared that they are #NotAshamed of their tryst with mental illness on social platform.

“Overcoming it has made me a stronger person and I now value my life much more. Accepting it and speaking about it has liberated me. And I hope my example will help people reach out for help.”

Deepika Padukone
in interview with NDTV INDIA (2016)

Yayoi Kusama: A History of Art and Mental Illness

Raised in a loveless household and currently residing in a mental hospital, Kusama’s art mirrors her mind, with each of her eccentric sculptures and ethereal paintings offering a reading of her psyche; whether they are hallucinations, her obsession with dots or her struggle to understand sexuality. Her hallucinations became her Infinity Net series. Rather than being wholly consumed by her mental illness, Kusama used it as a point of empowerment. She has created some of the world’s most psychological artworks and is named one of ‘most expensive living female artists’. Her use of repetition also lends itself to the freeing of her anxiety, as observed with her obsessive use of dots and nets, the patterns that have become synonymous with her. Her art is not only a tableau of her life experiences, but also a rebellion against Asian stigmas, proving that depression and mental illness are not necessarily obstacles to a productive life, nor do they hinder the creation of works that millions of other people can enjoy and, hopefully, relate to. The 2018 documentary by Heather Lenz showed Kusama’s journey from a conservative upbringing in Japan to her brush with fame in America during the 1960s and her fierce determination to become a world-renowned artist.

“I fight pain, anxiety, and fear every day, and the only method I have found that relieves my illness is to keep creating art. I followed the thread of art and somehow discovered a path that would allow me to live.”

Yayoi Kusama
in movie Kusama: Infinity (2018)

J.K. Rowling: Dealing with Failure

Author of the infamous ‘Harry Potter’ books, J.K. Rowling suffered from severe depression and contemplated suicide when she was a single mother and a struggling writer in her 20s. Due to the early demise of her mother, Rowling got engulfed in deep sadness. It got worsened further given to her short, unhappy marriage and being a lone parent with no real vision of how to carve out a better life for her daughter. Fortunately, her daughter inspired her to seek help, and she found an outlet in writing. She has been constantly speaking about her struggles with depression on social media and extends support to those who seek help. She believes that people should not feel ashamed because of mental illnesses and hence, fighting the stigma associated with it.

“ *[My depression] was characterized by a numbness, a coldness and an inability to believe you will feel happy again. All the color drained out of life.* ”

J.K. Rowling, Quartz (2017)

2.6. Mental Illness Is A Global Crisis

Mental health is an integral part of health and is more than the absence of mental illnesses. It refers to a broad array of activities directly or indirectly related to the mental well-being, prevention of mental disorders, and treatment and rehabilitation of people affected by mental disorders. Even in this age where everyone is vocal about inclusion and equality, the moment anyone encounters the term “mental health” – a cloud of negativity becomes evident in their demeanour. Unfortunately, for a majority, mental illness is something to be hated, disgusted or be afraid of. Depression is a significant contributor to the global burden of disease and affects people in all communities across the world. According to the WHO, major depressive disorders were ranked as the third leading cause of the global burden of disease in 2004 and will move into the first place by 2030. It is now estimated that 350 million people globally are affected by depression, and this alarming figure is a wakeup call for us to address this global non-communicable disease.

A survey conducted by the WHO in 2012 in 17 countries found that on average about 1 in 20 people reported having an episode of depression at some point in their life. Despite the known effectiveness of treatment for depression, the majority of people in need do not receive it. Where data is available, this is globally fewer than 50%, but fewer than 30% for most regions and even less than 10% in some countries. Barriers to effective care include the lack of resources, lack of trained providers, and the social stigma associated with mental disorders. Researchers reported that only 14 percent of people in Belgium seek treatment within a year of onset of depression. The collected data also highlighted that several Latin American countries found a significant treatment gap for depression in the elderly. In Peru, Mexico and Venezuela, most participants with symptoms had never received treatment. In Ethiopia, there are only 26 psychiatrists for approximately 80 million inhabitants (WHO, 2012).

Depression is a mental disorder that is pervasive in the world and affects us all. Unlike many large scale international problems, a solution for depression is at hand. Efficacious and cost-effective treatments are available to improve the health and the lives of millions of people around the world suffering from depression. On an individual, community, and national level, it is time to educate ourselves about depression and support those who are suffering from this mental disorder. This alarming scenario can only be addressed by creating an environment

where open conversations can take place. A constructive conversation about depression can yield wonderful positive results for the sufferers. Interventions, focusing on raising awareness of mental health issues and mobilizing efforts in support of mental health, are necessary for addressing the situation. Mental health awareness is crucial in eliminating stigma for people suffering from it. If people know the strengths and limitations of someone suffering from depression, stigma may disappear. It provides a knowledge base that potentially helps the person control his or her disorder. With this in mind, it may lead to reduced feelings of helplessness and hopelessness, and an increased sense of well-being. Providing education for families is also equally important to help increase the assistance and support they can provide to their loved ones who are suffering from depression.

Given the state of mental health awareness surrounded by taboos globally, it is necessary to create ways for our emotional expression, especially for those suffering through depression. The reports and surveys mentioned previously showed that most of the cases of depression go unnoticed as either people surrounding them are not aware of the symptoms or they do not feel confident enough to talk about their condition openly. This research project intends to portray the inner thoughts of those suffering through depression and how we can as a society offer them support.

Graphic Design is equipped to communicate such complex information and issues in meaningful and memorable ways. It may not have been established but there always been a shared history between graphic design and medicine. Its role to construct and communicate health care messages around the world cannot be ignored. As highlighted in the exhibition (2017), *'Can graphic design save your life?'* the widespread and subliminal nature of graphic design in shaping our environment, our health and our sense of self is beyond negligible; it can be realised that how graphic design and health have always been counterparts. The exhibition conducted by Wellcome Collection in London featured works drawn from public and private collections of influential figures in graphic design from the 20th century. Displaying over 200 posters, signs and digital teaching aids, the exhibition emphasized on the role of graphic design in health and how it can be used to empower and to inform society. From self-monitoring apps to public-information films, from signage to social media campaigns, the objects in this exhibition demonstrated the essential, yet unexpected of graphic design. In recent years, graphic designers have been involved in generating targeted health campaigns that use formats such as graphic novels and animation to disseminate information. Whether in 1960s comics advocating safe sex or in wearable technology that monitors daily activity, graphic design can help people take greater ownership of their own bodies. As stated by the co-founders of exhibition *'Can graphic design save your life?'* Lucienne Roberts and Rebecca Wright, graphic designers have much to bring to the world of mental health where imagination and ingenuity can transform the communication, diagnosis, awareness and support. The same notion has been tried to incorporate in this research, to work and develop an effective interactive medium for the portrayal of emotions and feelings experienced during depression; of mental well being as deserving of sensitivity and sympathy. The work aims to communicate to the audience in an approachable and relatable manner that can help disseminate factual information about depression.

03

WHAT IS
COLOR

R 250 G 171 B 5
Symbolic of Indian festivity.

Color is one of the most important tools of graphic design as it is visually appealing and evokes numerous emotions for sighted people. It is equipped to communicate complex information and issues in meaningful and memorable ways. By using specific colors within a design, our interests are sparked and our feelings and imaginations are inspired. In order to choose the right colors and color combinations, it is important that the graphic designer has a basic understanding of color theory and also, has an understanding of how to create an impact with specific colors on the minds of the target audience.

Color is an experience integral to human behaviour. It is not only a visual perception but also a sensation or feeling that simultaneously activates our thoughts and mechanisms. We see objects and then the data sent from the eyes to the brains, tells us it is a certain color. In order to understand color, we need a brief overview of light. Light is made up of energy waves which are grouped together are known as spectrum. Light that appears white to us, such as light from the sun, is actually composed of many colors. Objects reflect light in different combinations of wavelengths. The brain pick up on those wavelength combinations and translate them into the phenomenon we call color. This range of colors includes red, orange, yellow, green, blue, indigo and violet. The wavelengths our eyes can detect are only a small portion of the energy spectrum referred as the visible light spectrum. At one end of the visible spectrum are the short wavelengths of light we perceive

as blue. At the other end of the visible spectrum are the longer wavelengths of light we perceive as red.

In addition in the visible spectrum, the eye also perceives white and black. In the late 1660s, when Sir Isaac Newton began a series of experiments (Fig.5) with sunlight and prisms, he demonstrated that white light was composed of seven visible colors of the spectrum and hence, described as an achromatic color. White is what we see when all wavelengths of light are reflected off an object. Whereas, black is the color of objects that do not reflect light in any part of the visible spectrum. It is the lack of all colors of light. Alternatively, an exhaustive combination of multiple pigments can reflect so little light that the eye perceives black.

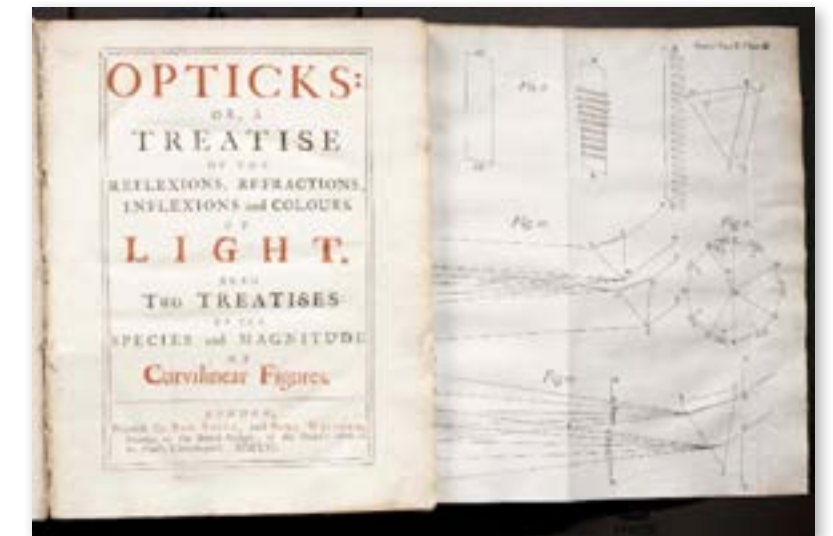


Fig.5. Sir Isaac Newton *Opticks* documents Newton's discoveries from his experiments of passing light through a prism.

3.2. How Do We See Color?

When light hits an object, it absorbs some of that light and reflects the rest of it. That reflected light enters the human eye first through the cornea, the outermost part of the eye. The cornea bends light toward the pupil, which controls the amount of light that hits the lens. The lens then focuses the light on the retina, the layer of nerve cells in the back of the eye. Our retina has two different types of cells that detect and respond to light—rods and cones. These cells that are sensitive to light are called photoreceptors. Rods are activated when we are in low or dim light and cones are stimulated in brighter environments. Cones contain photopigments (iodopsine), or color-detecting molecules. Humans have three types of photoreceptors—red, green and blue (RGB). Each type of cone is sensitive to different wavelengths of visible light, ranging from 400nm* to 700nm. Red has a wavelength ranging from 700nm to 450nm, green from 650nm to 400nm and blue, having wavelength, from 550nm to 400nm. It is to note one wavelength represents only one specific color. In the daytime, an object's reflected light activates both red and green photoreceptors cones. The cones then send a signal along the optic nerve to the visual cortex of the brain. The brain processes the number of cones that were activated and the strength of their signal. After the nerve impulses are processed, we see a color. In a darker environment, the light reflected by the object would stimulate only the eyes' rods. If only the rods are activated, we don't see color, just shades of gray.

“*In nature, light creates the color. In the picture, color creates the light.*”

Hans Hofmann

*In Nanometers.

RGB: the additive color system

The additive color system involves light emitted directly from a source, before an object reflects the light. This color model is based on the theory that all visible colors can be created by using primary additives of red, green and blue. We call them primary additives because all together, these primaries create white. By combining one of the additive primary colors with another, produces the additive secondary colors cyan (red and blue light), magenta (green and blue light) and yellow (red and green light). The more light we add, the brighter the color mix becomes. Mixtures of these primary colors form a large part of human color experiences.

The RGB model is important to graphic design as it is used in the monitors and screens. The screen uses additive colors to display images and text. That is why our monitor allows us to adjust only the red, green, and blue colors and our monitor's color calibrator measures screens of these three colors as well.

CMYK: the subtractive color system

Any color we see on a physical surface uses the subtractive color mixing model. In this case, “subtractive” refers to the fact that we subtract the light from the paper by adding more colors. The subtractive color system involves colorants and reflected light. Subtractive color starts with an object (such as paper) that reflects light and uses colorants (such as pigments) to subtract portions of the white light illuminating an object to produce other colors. If an object reflects all the white light back to the viewer, it appears white. If an object absorbs (subtracts) all the light illuminating it, no light is reflected back to the viewer and it appears black. As color printing emerged, red, yellow and blue were subsequently replaced with cyan, magenta, yellow and key/black (CMYK), as this color combo enables printers to produce a wider variety of colors on paper. However, when we use a dark colored paper for printing the result will not be similar as the white paper. The color printing inks cyan, yellow, magenta and black are actually transparent. If we try to print light-colored ink on dark paper, the possibility is that the ink won't show through. Hence, it is advised to work with CMYK printing on light colored background.



3.4. Color Attributes

In most cultures, one or two words are needed to describe most of the things we see. It gives a way of communicating with others to mirror an experience. In the same manner, the appearance of a color can be described based on its physical properties. These properties are interrelated to each other and it is not possible to express a specific color using just one of these attributes. In colorimetry, it is specified that color properties can be measured by either by subjective or objective system. Of the numerous subjective and objective color systems that exist, one color system noted internationally for its precise identification process is the **Munsell Color System**. According to this system, each color has three basic attributes: hue, value (brightness), and chroma (saturation) and can be varied independently so that all colors can be arranged according to its properties in a three dimensional space (Fig.6).

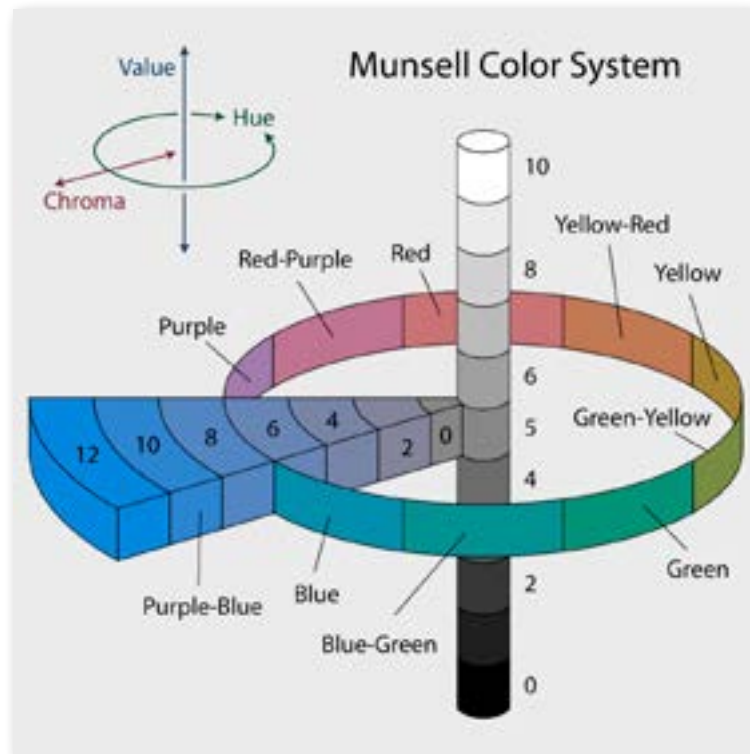


Fig.6. Munsell Color System

Hue

Hue is one of the color appearance parameters that indicate its position in the visible spectrum or on the color wheel and which hue we see is dependent on the wavelength of light being reflected or produced. Hue and color are often used synonymously, but hue refers more specifically to the colors of the visual spectrum – red, yellow, green, blue, and violet. These hues, along with the six intermediate hues of red-orange, yellow-orange, blue-green, blue-violet, and red-violet, are the pure colors that circle the color wheel. These twelve hues can be blended to produce an untold number of colors. Adding black and white to the mix and you produce an even greater variety of colors. Blending black with a pure hue darkens it; conversely adding white lightens it. This changes the amount of light emanating from the color and also changes the color’s value. In the RGB model, a pure hue equivalent to full saturation is determined by the ratio of the dominant wavelength to other wavelengths in the color. Whereas, in CMYK color model, a pure hue means that no white, black or gray is added.

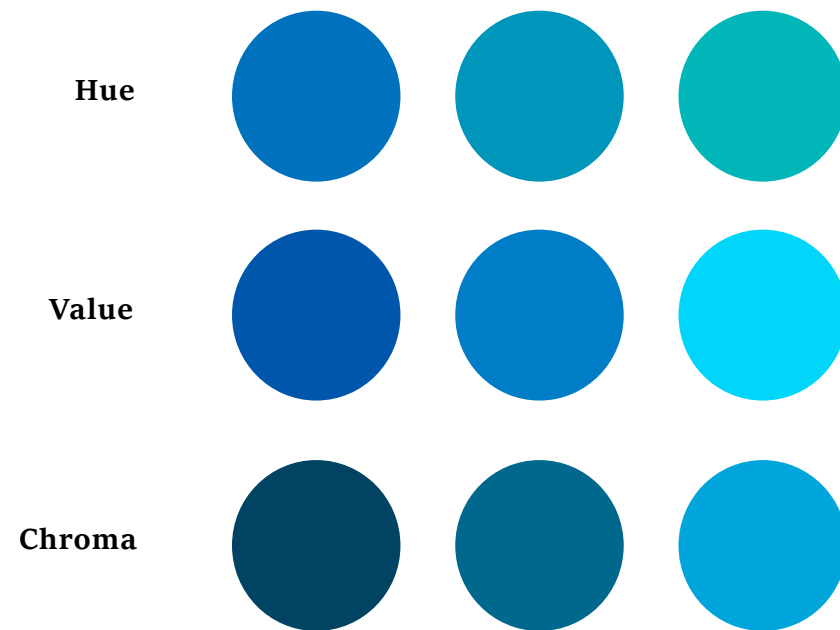
Value

It refers to the lightness or darkness of a color. It measures the relative degree of black or white that has been mixed with a given hue and can substantially alter a color’s appearance. It is the change in value that gives you the ability to see objects as three-dimensional. Adding white makes the color lighter (creates tints) and adding black makes it darker (creates shades) in varying proportions.

Chroma

Chroma (saturation) refers to the purity of a given color. A pure color means 100% saturated no addition of black or white. On the other hand, a hue with 0% saturation can range from white to black, passing through gradients of gray, depending on its value. The closer colors are to their pure hue the higher their chroma. High chroma colors are described as clear, pure, brilliant, bright, rich, bold, or vivid. Colors that are less intense or saturated are described as toned-down, soft, muted, subtle, misty, dull, drab or dusty.

Two colors may be exactly the same hue, and one no lighter or darker than the other, yet still appear different in color strength (Mahnke, 1996). It is also important to note that the perceived degree of saturation of a hue also depends on what color it is next to. A 50% saturated hue placed next to a 25% saturated hue will appear more vivid than were the same hue placed next to a 75% saturated hue. It is appropriate to think of chroma as relative colorfulness just as lightness can be thought of as relative brightness. Colorfulness describes the intensity of the hue in a given color stimulus. Thus, achromatic colors exhibit zero colorfulness and chroma, and as the amount of color content increases (with constant brightness/lightness and hue), colorfulness and chroma increase.



Every color has its own special character. This character can be modified through alterations of saturation and value. Variance in the attributes, contrasting in respect to each other helps to determine how a color is perceived and how a color scheme is developed. Based on the color attributes, three basic contrasts are hue contrast, saturation contrast and lightness contrast. Within these categories alone, countless possibilities exist for achieving a desired result. What is red cannot be green; a strong green is not a weak green; a light blue is not a dark blue (Mahnke, 1996).

3.4.1. Itten's Color Contrast

While considering the application of color contrast, it is impossible to neglect the theories of color contrast developed by Johannes Itten, which describe how to successfully juxtapose colours for a desired effect and have remained in practice till date. Itten developed his own colour wheel, linking the primary, secondary and tertiary colours. Through the use of this wheel, he described four qualities of colour: hue, value, intensity and temperature wherein hue, value and intensity are largely analogous to Munsell's hue, value and chroma; while temperature refers to the emotional context of the colour, for example blue is cold while red is warm.

In studying colour contrast, he made a “systematic and practical [oversight] to the

special effects of colour contrast” (Itten, 1970, p.32). This oversight is commonly referred to as Itten's seven contrasts. To understand the contrasts organized by Itten, one must have knowledge of his 12-hue color circle (Fig.7). The colors that make up the middle triangle are the primary colors, yellow, red and blue. Primaries are absolute and cannot be attained by combining other colors. By mixing two primary colors, it creates secondary colours that make up the hexagon shape around the triangle. The circle of sectors surrounding the hexagon and the triangle within is comprised of a primary and secondary colour at every third sector. The spaces between them are tertiary colors, the result of mixing primary and secondary colors (Itten, 1963).

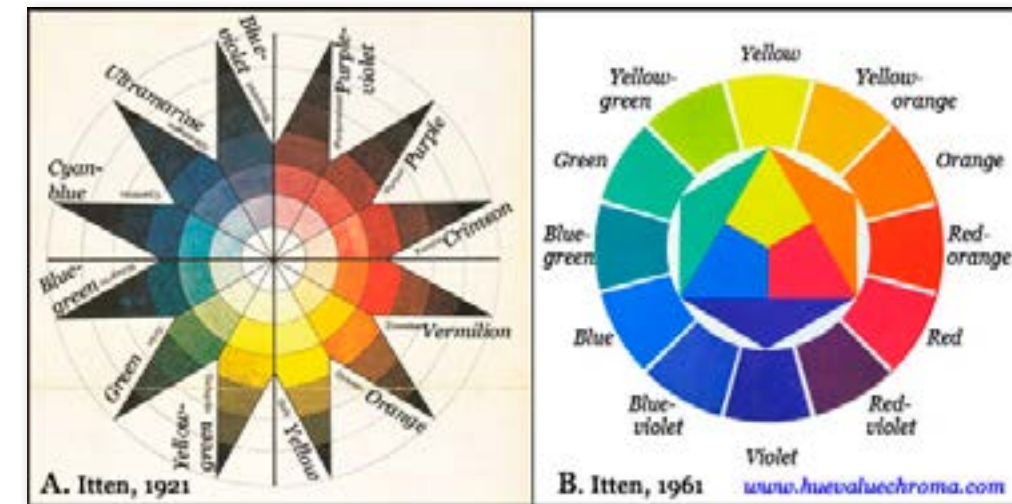


Fig.7.A. Color star used by Itten as the basis of his teaching at the Bauhaus, 1921, showing English translations of the 12 hue divisions he derived from his teacher Adolf Hoelzel. B. Traditional hue divisions adopted in *The Art of Color*.

Contrast of Hue

A contrast of hue is simply compromised by the visual difference of dissimilar hues. For the contrast to work, minimum three colours of clearly distinctive nature must be used. The polar hue contrast is attained by the combination of the primary colours, **yellow/red/blue**. The combination makes for a tonic, vigorous and decided effect (Itten, 1970). The contrast's intensity will however diminish as the colours move outwards in the colour wheel; using the secondary colours green, orange and violet weakens the effect, a drift the tertiary colours promote still.

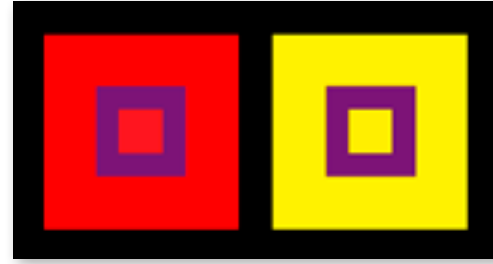


Fig.8. Contrast of hue.

Light - Dark Contrast

The light-dark contrast is amongst the most expressive means of composition, and is an extremely important effect in design. Its importance is prominent both in polarity use and the rendering of light and shade on objects, giving the impression of three-dimensional forms. Neutral gray is a characterless, dependent on the other, nearby colors for character; mellowing their impact by absorbing their strength, it assumes a life of its own (Itten, 1963). Somewhat more complicated is the light-dark contrast between chromatic and achromatic colors. When gray is used in a composition involving chromatics, the chromatic's brilliance must be equal to that of the gray. However, when a range of chromatic colours are measured to a scale of greys between black and white, one can observe that the brilliance of undiluted chromatics complement different tones of gray.

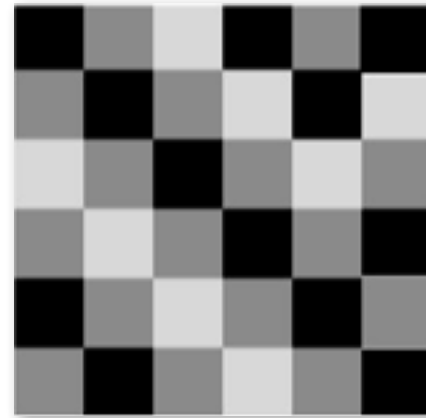


Fig.9. Light-dark contrast.

Itten discovered that saturated, pure **yellow** is very light, as it matches one of the lightest greys, and discovered violet to be the darkest using the same method. For **yellow** to match the gray value complementary of violet, it must be darkened and thereby loses its radiant quality. Dark, pure **yellow** is no actual instance. **Yellow** and violet at full saturation are the chromatic colours with the strongest light-dark contrast (Itten, 1970).

Contrast of Saturation

A contrast of saturation refers to the difference in quality of purity in colors; those with an intense impact and the dull, diluted. True contrast of saturation is found between intense and dull instances of the same hue. Itten says pure colors can be diluted in four ways, each leaving them in a different state. Brightening the color with white renders it rather colder. To darken colour with black deprives them, to different degrees, of their brilliance. Adding gray, or intermittently black and white, to a color, will lessen its intensity. Finally, mixing complementary colors will eventually produce a gray hue. The same applies to mixing the primary, secondary or all colors of the spectrum.

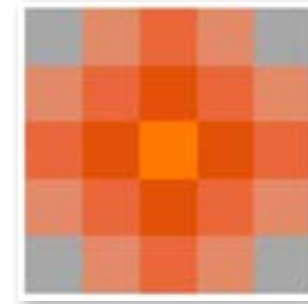


Fig.10. Contrast of saturation

Simultaneous Contrast

In pretext of complementary contrast, the eye requires complementary colors to balance its impressions. This is the premise of simultaneous contrast, whose name derives from the generation of a color's complementary by the eye simultaneously as it views that color.

An achromatic hue is the most apt medium for one colour's complementary colors to produce itself in using simultaneous contrast. If a background of strong color had a square of neutral gray with the exact brilliance as the background centred on it, the contrast would be in effect. The grey area would be coloured by the eye to have a suggestion of the background's complementary color. The effect is demonstrated in a figure under the subject of light-dark contrast. "**Simultaneous contrast determines the aesthetic utility of color,**" stated Goethe (Itten, 1970, p. 54).



Fig.11. Simultaneous contrast

Cold-Warm Contrast

The contrast of warm and cool is created when colors that are considered warm or cool are used together. Itten was the first to discuss color temperature in color theory. Generally the colours through yellow to red-violet on the tertiary level of the colour wheel are considered warm, while the cold are the colours including and between violet and yellow-green. Experiments have shown subjective feelings of heat or cold differ in environments of different colours: A room was painted blue-green, and another red-orange; “in the blue-green room occupants felt that [15° C] was cold, whereas in the red-orange room they did not feel cold until the temperature fell to [11-12° C]. Blue-green slows down circulation and red-orange stimulates it” (Itten, 1970, p. 45). Warm colors evoke a feeling of warmth and comfort, and are attractive to the viewer. As a result, objects painted this color appear to move forward. Cool colors recede into the background. The contrast of warm and cool can be used to create nearness and distance.

Cold-warm contrast has high potential as an element in pictorial design. The designer can control the feelings induced to spectators of a design, in addition to how colors will be perceived through their relation with other colors. A situation might occur where the design has more weighing in light-dark contrast than the cold-warm effect the designer sought for. To interweave more than one contrast should be avoided. Therefore it may be an advantage in a cold-warm composition to use colors only of equal light or dark (Itten, 1970). Although it is not a permanent perception, as the difference of temperature between cold and warm colors vanishes after a certain period of time.

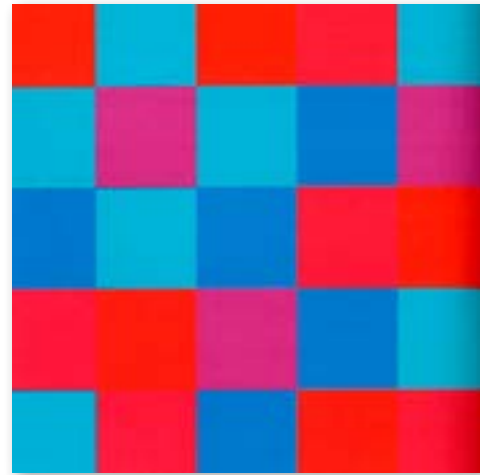


Fig.12. Cold -warm contrast

Complementary Contrast

A color is complementary to its own opposite. A physical method for confirming colors to be complementary is through adding them together; if their mixed pigments produce a neutral gray, they are complementary. Every pure color has a complementary color, and only one. Examples of complementary color pairings are: orange, blue; yellow, violet; green, red; and also tertiary such as red-orange, blue-green. Complementary pairs frequently represent more than one contrast. Yellow and violet are not only complementary; they are also the polar light-dark contrast. Likewise red-orange and blue-green is the pair of extreme cold-warm contrast (Itten, 1970).

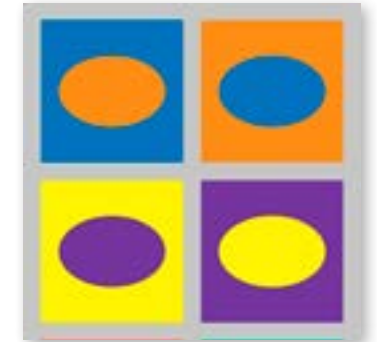


Fig.13. Complementary contrast

“ This principle [of balance in complementary contrast] is of great importance in all practical work with colour. In the section on concord of colours, we stated that the rule of complementaries is the basis of harmonious design because its observance establishes a precise equilibrium in the eye. ”

Johannes Itten, The Art of Color (1970)

Contrast of Extension

A contrast of extension is a contrast of colors in their relative sizes to each other. “Attention to the colour areas in composition is at least as important as the actual choice of colours. Any colour composition should be evolved from the relationships of elements of area to each other” (Itten, 1970, p. 62). In his research, Itten inquired as to how one could know the size of colour areas to make them balanced with regard to the force of the colours’ brilliance.



Fig.14. Contrast of extension

Itten’s color contrasts demonstrates the dynamic nature of our perception of color, which has both objective and subjective dimensions and are important qualities of color theory that allow us to create perceptually differentiated color scales.

3.4.2. The Magic of Colors

In 1963, Josef Albers (student of Johannes Itten at Bauhaus in 1920) launched an experiment seeking to cultivate a new way of studying and understanding color through experience and trial-and-error method rather than through the didactic, theoretical dogma used earlier. Half a century later, *Interaction of Color*, with its illuminating visual exercises and mind-bending optical illusions, remains an indispensable blueprint to the art of seeing. Albers argued that color is seen relationally and it is impossible to see a color by itself and not interacting with its surroundings (Albers, 1975). His classic experiment, *the Relativity of Color*, involved making one color appear as two by placing it next to different background colors.

In an unpublished note found in his papers, Albers explains,

The physio-psychological phenomenon of the so-called after-image is the reason why we don’t see neighbouring colors as what they actually are, that is, physically. In our perception, juxtaposed colors change each other in two ways, on the one hand in regard to light, on the other in relation to hue. As there is nothing large or small in itself but only in relationship, so any color appears lighter or darker and brighter or duller in connection with other colors.... This interaction permits the knowing colorist to make opaque color look transparent, heavy ones turn light, colorless neutrals become colorful, warm ones seem cool, and vice versa. It makes [it] possible to make equal colors look different, and different ones look alike, that even defined shapes as well as color areas vanish from our sight .

Some of the key principle Albers presented in his book include:

- In visual perception a color is almost never seen as it really is — as it physically is. This fact makes color the most relative medium in art. In order to use color effectively it is necessary to recognize that color deceives continually. To this end, the beginning is not a study of color systems (Albers, 1975).
- How people see color is highly subjective and varies dramatically between individuals.

- Practical exercises demonstrate through color deception (illusion) the relativity and instability of color. And experience teaches that in visual perception there is a discrepancy between physical fact and psychic effect. What counts here – first and last – is not so-called knowledge of so-called facts, but vision – seeing. Seeing here implies *Schauen*¹ (as in *Weltanschauung*²) and is coupled with fantasy, with imagination (Albers, 1975).
- All colors have two key elements – brightness (which can be understood as the color intensity) and lightness (a light’s intensity).
- Experience is the greatest teacher of color (i.e. an artist or designer exploring color in their practice is much more important than studying color theory by itself). The one word that to Josef Albers was absolute anathema was “self-expression.” He said you do not express yourself – you have to learn, you have to have these skills, and then you create something (Albers, 1975).

Alber’s book includes detailed lessons, experiments and graphics explaining how certain colors neutralize or alter other colors, how light affects hue, and how what he called the “normal human eye” was not able to grasp certain color phenomena due to the limitations of its perceptual capabilities. If we consider this book on a conceptual level, as with his paintings, the lessons are not so much about color as they are about the fact that humans are limited in what they can perceive, and if artists can understand those limitations they can potentially expand the perceptual range of those who encounter their work.

1. To look.
2. A particular philosophy or view of life.

3.4.3. Color Appearance

Color perception is subjective. The perceived performance of color is influenced by various color appearance phenomena caused by varying viewing conditions. *Color Appearance* is a model that seeks to describe the perceptual aspects of human color vision, i.e. viewing conditions under which the appearance of a color does not tally with the corresponding physical measurement of the stimulus source. Even under the same viewing conditions, the color appearance perceived is different.

In general, the color appearance of an object is not related in a simple way to the properties of the object alone. Perceived color can depend on the source of light illuminating the object, the spectrally selective reflectance of that light by the object, other objects in view, and the current state of the neural pathways of eye and brain that mediate visual experience (Shevell, 2003, p.151).

It is important to note that for any color appearance model, the human color perception works on at least the parameters of hue, lightness, and chroma. Some of the models that try to discuss the phenomenon of color appearance are as follows:

Crispening

Crispening is an effect whereby human perception of luminance is biased away from the background luminance level. In other words, the color difference between two colors of similar value under the same background is greater when the object color value is similar to that of the background.



Fig.15. Crispening

Bezold-Brücke Effect

It is a change in the perception of colours under the effects of increased light intensity, or, the apparent brightness of hues changes as illumination changes. With increasing intensity, wavelengths below 500 nm shift more toward blue, and above 500 nm shift more toward yellow (reds become yellower with increasing brightness).



Fig.16. Edvard Munch's Scream based on Bezold-Brücke.

Spreading

The spreading effect is the mix of the color stimulus and its surround viewing condition apparently. When the spatial distribution frequency of color samples increase or the size of color samples diminish, the simultaneous contrast disappears and the spreading will emerge.



Fig.17. Simultaneous contrast (left) disappears as spreading effect (right) emerges



Fig.18. Abney effect

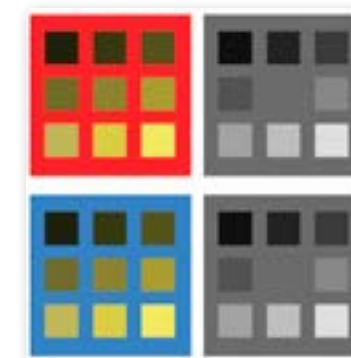


Fig.19. Helmholtz-Kohlrausch effect



Hunt effect - colorfulness not compensated



Hunt effect - colorfulness compensated

Fig.20. Hunt effect

Abney Effect

The Abney effect describes the perceived hue shift that occurs when white light is added to a monochromatic light source. The addition of white light will cause a desaturation of the monochromatic source, as perceived by the human eye.

Helmholtz-Kohlrausch Effect

It is a perceptual phenomenon wherein the intense saturation of spectral hue is perceived as part of the color's luminance. The brightness increase by saturation, which grows stronger as saturation increases.

Hunt Effect

It is an effect which changes the perception of colorfulness by a human observer. According to this colorfulness increases with luminance. It underlines the effect of absolute lightness on the color appearance.

According to Palmer and Schloss, colors are not perceived in isolation, but contingent on their surrounding proximal colors. Existing studies have identified that color combinations satisfying certain rules produce small bias. When appearing simultaneously, complementary colors, pairs of colors opposite on a typical Newton's color circle (e.g., red–green or blue–yellow), would be perceived more saturated than they actually are (2010). Colors vary in their sensitivity to the influences of surrounding colors. The exploration into the perception bias caused by the attributes of a color and the attributes of its surroundings can provide an insightful understanding of color selection and interface design (Yang, Li and Zhang, 2019).

The knowledge about an object's typical color gained through our personal experiences also influences the way we perceive the actual color of that object. This phenomenon is known as **color constancy**. Color constancy ensures that the perceived color of an object stays about the same when seen in different conditions (Nassau, 1999). For example, if you looked at a lemon under a red light, you likely would still perceive the lemon to be yellow. It is still something of a mystery as to how our visual system achieves color constancy, but scientists do agree that there is more than one mechanism involved (Hulbert, 2007). All mechanisms in some way require comparisons of the reflected light from different

locations across the scene; color constancy is a fundamentally perceptual phenomenon. Hulbert stated that the simplest mechanism is adaptation of the photoreceptors in the eye – these adjust their sensitivity according to how much they are stimulated. If the amount of long-wavelength light in the overall illumination increases, the 'red' receptors will reduce their sensitivity, and so maintain a stable output (2007). Another phenomenon to be considered is **metamerism**, wherein two colors that are not same will appear to be of the same shade under one light source but will appear to be different shades under a second source. Such colors are also called metamers. Human color vision is based on three factors: reflectivity of a substance (which wavelengths bounce back), light source (which wavelengths are output by the source to begin with), and which colors can be perceived by our eyes. For example a light source inside a house or store emits only blue and red wavelengths, and natural light outside emits red, blue, and green wavelengths. Hence, inside, a green shirt absorbs blue and red wavelengths, and no light is reflected so the shirt appears black. When we take the shirt outside, it is exposed to all three wavelengths. Red and blue are absorbed under the natural light, but the additional green wavelength is reflected and picked up by our sight; so outside, the shirt is green.

3.5. Color Preferences Are Not Universal

Color preference is an important aspect of human behaviour. It influences a wide spectrum of decisions people make on a regular basis, including the products they buy, the clothes they wear, the way they decorate their homes and offices, how they design their personal and professional websites, to name a few examples. One reason why color preference plays such a prominent role in decision making is that color is among the most customizable features of man-made objects. There isn't really a rational influence on our decisions other than the color evokes an emotional and physiological response in us. Ultimately we decide what colors we like because of what we associate them with and the meaning that accompanies them.

More recent studies demonstrate both universality and individuality of color preference, as well as mutability across culture and age. These variations in preference, and other evidence, argue that the ability to form emotional associations to colour, whether on an ontogenetic or evolutionary time scale, is deeply embedded in human nature (Hulbert and Ling, 2017).

According to the study by Taylor and Franklin, colors influence object preferences in many situations in modern life. Our individual preference for a particular color associated with the objects (such as a room or an automobile) will be produced and reinforced by the positive feedback associated with the object and the color it has (2012). The research paper by Strauss stated that everyone has a somewhat different life experience, and so as people increasingly experience pleasure in something they bought in a particular color, they will tend to choose similar objects in the future with the same color. This leads to a self-perpetuating situation. Evidence suggests that changes in which entities are active in people's minds can lead to variations in color preferences. In a controlled laboratory study, priming observers to think about positive or negative entities associated with particular colors resulted in changes in preferences for those colors (2013).

A question of considerable interest is that why do people have color preferences at all? Although color in the natural world sometimes carries significant information (e.g., about ripe versus unripe fruit), it is relatively inconsequential in most modern artefacts. Several theoretical explanations of color preference have been proposed and tested, including ones grounded in physiology, psychophysics, emotion, and ecological objects.

According to the most physiologically oriented theory coined by Young-Helmholtz, known as the *trichromatic theory of color vision*, there are three receptors (short, medium and long wavelength) in the retina that are responsible for the perception of color. The likelihood of response of a given color by the brain requires input from at least two different types of cones. The brain must interpret information about both the wavelength and the intensity of the incoming stimulation. A related but purely psychophysical hypothesis is that color preferences are based on conscious color appearances. It suggested that conscious representation of color provides a better basis for color preference than an early, non-conscious, one based on retinal cone contrasts. A third explanation can be constructed in terms of the emotional associations of colors. The basic hypothesis is that people may like colors to the extent that they like the emotions that are evoked by or associated with those colors. In the research paper *A Study of Colour Emotion and Colour Preference*, the authors measured color emotions through subjective judgments of many emotion-related terms and related those ratings to color

preferences. Their results showed three factor-analytic dimensions under laying color emotions, i.e.; active-passive, light-heavy, and cool-warm (Ou, Luo, Woodcock and Wright, 2002).

Humans like some colors and dislike others, but which particular colors and why remains to be understood. Empirical studies on color preferences generally targeted most preferred colors, but rarely least preferred (disliked) colors. In addition, findings are often based on general color preferences leaving open the question whether results generalise to specific objects. Here, 88 participants selected the colours they preferred most and least three context conditions (general, interior walls, t-shirt) using a high-precision colour picker. Participants also indicated whether they associated their colour choice to a *valenced** object or concept. The chosen colours varied widely between individuals and contexts and so did the reasons for their choices. Consistent patterns also emerged, as most preferred colours in general were more chromatic, while for walls they were lighter and for t-shirts they were darker and less chromatic compared to least preferred colours. This meant that general colour preferences could not explain object specific colour preferences. (Jonaskaite, Mohr, Antonietti, Spiers, Althaus, Anil and Dael, 2016).

In an essay in 1973, Biologist Theodosius Dobzhansky, famously observed that *“nothing in biology makes sense except in the light of*

Valenced, as used in psychology, especially in discussing emotions, means the intrinsic attractiveness.

evolution.” Stephen E. Palmer & Karen B. Schloss (2010) tried to explain this viewpoint to the question of human color preferences by an Ecological Valence Theory in their article *An Ecological Valence Theory of Color Preferences* testing the hypothesis that people like colors to the degree that they like the environmental objects that are characteristically those colors. Their paper showed that people’s emotional responses to objects associating with particular colors are highly and positively correlated with their aesthetic preferences for those colors. This suggests that, due to evolutionary and/or individual learning, people like colors that are associated with objects and situations that are effectively positive for them and dislike colors that are associated with objects and situations that are effectively negative.

“The more enjoyment and positive affect an individual receives from experiences with objects of a given color, the more the person will tend to like that color”(Palmer & Schloss, 2010, p.361 - 376).

Another noteworthy point highlighted in the research paper *Aesthetic Response to Color Combinations: Preference, Harmony, and Similarity*, is to consider the perpetual responses to color combinations: individual’s aesthetic preference for a given combination, their perception of harmony for that combination, and their preference for its figural color when viewed against a colored background. An individual preference for a given pair of colors can be understood based on the *Gestalt Principles**

Gestalt Principles states that every stimulus is perceived in its most simple form.

describing how people typically see objects by grouping similar elements, recognizing patterns and simplifying complex images. The pair harmony can be defined as how strongly an individual experiences the colors in the combination belonging together, regardless of whether the observer likes the combination or not. These judgments will be quite similar for an observer who likes harmonious color combinations (e.g., dark blue and light blue), but they can be arbitrarily different for an observer who likes contrastive color combinations (e.g., dark blue and saturated *yellow*). And lastly, figural preference can be defined as an indirect measure of perception of the color combination because the observer is specifically asked to respond only to the figural color. It is nevertheless relevant to aesthetic response to color combinations because the same color can look quite different when viewed against different background colors (Palmer & Schloss, 2010).

So far, there has not been one model of color preferences that are able to account for a universal color preferences. Based on the research done, it has been suggested that not only do the patterns of color preference vary across individuals and groups but the underlying mechanisms and dimensions of color preference vary as well.

Color is a powerful communication tool and can be used to signal action, influence mood, and even influence physiological reactions. While perceptions of color are somewhat subjective, there are some color effects that have universal meaning. Colors in the red area of the color spectrum are known as warm colors and include red, orange, and yellow. These warm colors evoke emotions ranging from feelings of warmth and comfort to feelings of anger and hostility. Colors on the blue side of the spectrum are known as cool colors and include blue, purple, and green. These colors are often described as calm, but can also call to mind feelings of sadness or indifference.

Psychology is the science that deals with the mind, with mental and emotional processes. These experiences have their own roots in conscious, subconscious and unconscious processes. Conscious experience implies that we are of what we are thinking and feeling. Subconscious refers to the mental processes occurring without conscious perception. The unconscious is the sum of all thoughts, memories, impulses and feelings of which we are not conscious but which influences our emotions and behaviour. The human reaction to a color, a color combination and to the environment is always initially a psychological one but can also result in a physiological reaction (Mahnke, 1996, p.6). The physiological reality is that the eye requires any given color to be balanced but its complementary will generate it if it is not present. Complementary colors also provide the psychological balance of warmth and coolness of color. There is a strong tendency for people to unconsciously seek warm and cool hues in the same space (Mahnke, 1996, p.86).

Studies have shown that colors can greatly influence the mood and emotions of people. Most people have visual recognition memory than auditory; hence, we use sight as the primary receptor of information around us (Cohen, Horowitz and Wolfe, 2009). According to Mahnke, certain colors have been associated with increased blood pressure, increased metabolism, and eyestrain. We get affected at the sight of blood because it connotes loss of life, among other things. Inversely, colors also trigger wonderful memories by associating colors to the colors present in a particular happy memory (1996).

The psychologist Ulrich Beer defined color from the viewpoint of psychology:

Seldom, surely, is the psychological part of an appearance in nature so great as it is in the case of color. No one can encounter it and stay blessed and stay neutral. We are immediately instinctively and emotionally moved. We have sympathy or antipathy, pleasure or disapproval within us as soon as we perceive colors. (Beer, 1992, p.11)

Colors have meanings or relate to certain things. There's a reason why blue and gray are often used by banks, or warm colors like orange and yellow in restaurants. These colors trigger an emotion in us; they can lift our moods, whet the appetite or impresses trust and a solid reputation as is with the use of blue and gray by banks. Colors influence our moods and emotions way more than we give them credit for. Our subconscious does a lot of talking within us for all this. We decide on mundane things every single day based on colors; from food, fashion, to the color of the office mug we drink our coffee from. We know when a fruit can be eaten, made into jam, or be thrown away based on the color of its skin. We know winter is coming not because it is winter, but because the leaves have turned red and brown. We blush in embarrassment, turn green when we feel like barfing, or turn a gray pallor when dealt with terrible news.

“Only those who love color are admitted to its beauty and immanent presence. It affords utility to all, but unveils its deeper mysteries only to its devotees.”

Johannes Itten

Color psychology and associations are an interesting part of the complex working system of our brain, yet with so many scientific questions about it still left unanswered. “Given the prevalence of color, one would expect color psychology to be a well-developed area. Surprisingly, little theoretical or empirical work has been conducted to date on color's influence on psychological functioning, and the work that has been done has been driven mostly by practical concerns, not scientific rigor.” researchers Andrew Elliot and Markus Maier have noted in their paper *Color and psychological functioning: the effect of red on performance ailment* (2007). Despite the general lack of research in this area, the concept of color psychology has become a hot topic in marketing, art, design, and other areas. Much of the evidence in this emerging area is anecdotal at best, but researchers and experts have made a few important discoveries and observations about the psychology of color and the effect it has on moods, feelings, and behaviors.

3.7. The Colors of India

India has always been exalted and remembered fondly as the country of symbolic colors. To an outsider, its colorful culture, streets, and stories seem like a page out of an ancient folk tale. But color, in essence, has been a large part of the Indian consciousness. The symbolism of color stands out and controls every aspect of life in India, be it religion, politics, festivals, or celebrations, color and culture go hand in hand. Steeped in religious beliefs, the origin of most colors lies in the powers and mythical lives of its gods. Red incites fear and is the color associated with one of the most revered goddesses in Hindu mythology – Durga. Her fiery image is enhanced by her red tongue and almost red eyes. Red also stands for purity and is the preferred color during marriage. Yellow symbolizes sanctity and is an essential herbal ingredient applied on the body and face by women in the sub continent. The pink of mystical Rajasthan, the pastel hues of southern India, the joyous, bright hues of the northern frontier, and the balmy bright colors of the east offer a kaleidoscopic insight into an almost perfect blend of history and modernism.

“*India is a place where color is doubly bright.
Pinks that scald your eyes, blues you could drown in.*”

Kiran Millwood Hargrave

Being diverse and culturally vibrant in its population, the country is home to myriad interpretations and representations of symbols and colors. Colors represent different emotions to people living in different regional, geographical, and religious divides. And perhaps certain colors that have a special place in a particular area may not necessarily enjoy a similar status elsewhere. The glaring differences between the perception of color in the West and the East are due to the simplest elements in history. Royalty, in the West and in the Christian culture, is represented by a deep, mystical shade of purple, while in India; it is the deep hues of red and ochre that symbolize wealth and grandeur. Some of the universally celebrated colors find their origins in the spices that are used widely across geographic and religious divides. Turmeric, for instance, while being used for cooking in both the north and the south, is also used in ceremonies offering prayers and marriages.

The saffron or ‘kesariya’ color of Indian flag disinterestedness. Our leaders must be indifferent to material gains and dedicate themselves to their work. It also represents the strength and courage of martyrs who fought for the freedom of India.

The navy blue wheel signifies the ‘wheel of law’. It shows that there is life in movement and death in stagnation.



The white colour represents honesty, purity and peace of the nation. It reminds the Indian political leaders to lead the country to get the ultimate national goal by maintaining the state of peace.

The green color represents faith, fertility and prosperity of the nation. It reminds the Indian political leaders to lead the country by protecting the Indian soil from destruction by both external and internal enemies.

Fig.21. National Flag of India

RED

It is the most dynamic color, commonly associated with energy, passion and action. The color is warm and makes our minds think of our physical needs and our will to survive. Red has an effect on our physiological state, since it increases heart rate and makes us breathe faster. It is very noticeable, so an overuse can be irritating or provokes aggression.



Fig.22. The Red Fort

The Red Fort

A world heritage site built of red sandstone (ranging from light to dark red); the Red Fort became the symbol of India's freedom when the national flag was unfurled by the then Prime Minister to mark the end of the British rule.



Fig.23. Rakshabandhan

Knot of Protection

Rakshabandhan is a Hindu festival celebrating the unique bond of compassion and love between brother and sister. Sisters pray for the good health of their brother and tie the red thread on brother's wrist who takes an oath to protect their sisters until death.



Fig.24. Indian red chilli

Hot and Spicy

Red chillies rule the roots of Indian cuisine. It is also believed that red chillies attract distressing energy and can be helpful in relieving tension caused due to anxiety disorder.



The Mother Goddess

Goddess Durga embodies the positive divine forces that fight and destroy the evil forces. She is traditionally associated with creative energy, awakening and unfolding of consciousness.

Fig.25. Goddess Durga



Fig.26. Lord Hanuman

An Ardent Devotee

Lord *Hanuman** is one of the most revered figures in the Hindu Mythology and is considered to be an exemplification of strength, devotion, perseverance.

*Hanuman actually means 'disfigured jaw' in Sanskrit. He smeared red vermillion on his entire body to prove his unconditional love and respect for Lord Rama.



Fig.27. Indian bride

Bride's Companion

Red color adorns an Indian bride's attire and accessories symbolizing the significant change in a woman's life by embarking on a new phase. Also, it is believed that planets in charge of marriage, Mars, is **red** in color and stands for prosperity and fertility.



The Lord of Beginnings

Ganesha, the elephant headed deity is the lord of success, wealth and knowledge and often invoked at the beginning of new endeavours.

Fig.28. Lord Ganesha

“ His Form is having a Beautiful Reddish Glow,
With a Large Belly and with Large Ears like Fans;
He is wearing Red Garments
His Form is anointed with Red Fragrant Paste,
And He is worshiped with Red Flowers.

”

Ganapati Atharvashirsa Upanishad*
Verse 11 Translation

*The Upanishads, a part of the Vedas, are ancient Sanskrit texts that contain some of the central philosophical concepts and ideas of Hindus.

SAFFRON

It is the most dynamic color, commonly associated with energy, passion and action. The color is warm and makes our minds think of our physical needs and our will to survive. Red has an effect on our physiological state, since it increases heart rate and makes us breathe faster. It is very noticeable, so an overuse can be irritating or provokes aggression.



Fig.29. A Hindu Priest



Fig.30. Party flag of ruling government

*Saffronisation is an Indian political *neologism* to refer to the policies of right-wing Hindu nationalists that seek to glorify ancient Hindu cultural history.

**Neologism: It describes a relatively recent or isolated term, word or phrase that may be in the process of entering in common use but has not been accepted yet by mainstream language.

The Sacred Color

In Indian Religion, Hindu priests wear **saffron** colored robes to express their vision to purify and eradicate the evils and impurities in the world. In nature, sunset and sunrise signify the eternity of **saffron** in the form of re-birth.



Fig.31. Maharana Pratap Singh, a Rajput Warrior.

Warrior Love

The folk song of Rajasthan, Kesariya (**saffron** in color) Balam (lover) is based on bravery and sacrifices of Rajput warriors. The song was used as calling by the wives of the Rajput kings to come back home from the battlefield with victory and pride.



Fig.32. Marigold flower

Marigold

The presence of vibrant and energetic marigold at an occasion of celebration is very prominent. In Hinduism, the flower symbolizes auspiciousness. The saffron colour signifies renunciation and hence is offered to God as a symbol of surrender.

YELLOW

Yellow is the brightest color of the visible spectrum. It means happiness and optimism; it is the color of sun shining, or bright light and creativity. It is believed to have an influence on the left side of our brain, where deep thinking and perception dwells. It can also induce states of anxiety because it is considered to be such a rapid moving color as it influences analytical thinking.



Fig.33. Lord Vishnu

Vishnu: The Preserver

Lord Vishnu is considered the epitome of limitless knowledge and it is believed that his yellow attire represents his vast ocean of awareness and spreads the hope of happiness. A yellow flower garland, often witnessed around the Lord's neck is a symbol of the devotee's adoration for the Lord.

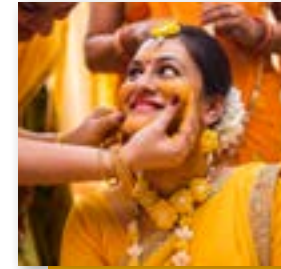


Fig.34. Haldi ceremony

Haldi Ceremony

Haldi (Turmeric) is considered auspicious in Indian traditions. Hence, a day before marriage, haldi is applied to the bride and groom to ward off negative energy and ushers in a life of happiness and togetherness. It is also known as an exfoliating agent used to purify and cleanse the body.



Fig.35. Turmeric

The Golden Spice

Turmeric is an integral part of Indian cultural, religious and culinary practices. In Hinduism, it linked to fertility, prosperity and the sun. Its yellow color also represents the space between chastity and sensuality.



Fig.36. Indian sandalwood

The Ancient Divinity

Indian sandalwood is one of the most sacred herbs of Ayurveda. Its sedative property clears stress from the nervous system. Essential oil applied on the third eye awakens intelligence and lifts depression. Burning incense helps to quiet the mind.

GREEN

Green is a lively color, and it symbolizes renewal and growth. It depicts the period when everything is alive and unrolling its natural processes. It also means balance, calm and harmony. The color can also give people a more negative and extreme characteristics. It can represent people who are too materialists and in need to own a lot.



Fig.37. Agricultural land of North India



Fig.38. Tulsi plant

Green Revolution

Spreading over the period from 1967-68 to 1977- 78, the **Green Revolution** introduced the high yielding varieties of seeds, it changed India's status from a food-deficient country to one of the world's leading agricultural nations.

Holy Basil

Most commonly known as Tulsi in India, it is a sacred plant symbolizing purity. It is believed to promote longevity and lifelong happiness. According to the ancient texts Tulsi is glorified as the one who helps in bringing people closer to the divine.



Fig.39. Glass bangles

Gratitude to Nature

During Sharavan, the fifth month of Hindu calendar, women wear **green**-coloured bangles as well as **green** clothes considered to bring good luck in one's married life and to show a connection with nature.



Fig.40. Color of Islam

Sacred Color to Islam

The Islamic prophet is said to have worn a **green** cloak and turban, and his writings are full of references to the colour. A passage from the Quran describes paradise as a place where people "will wear **green** garments of fine silk."

BLUE

Blue is the most universally favoured color out of them all. Blue is unique and versatile, plus each shade of blue can mean a different thing. Blue is known to be linked with creativity, sky blue is linked to calming and helping a person relax, and dark blue is associated with intelligence and lack of emotion. The negative aspect of blue is the fact that it causes food to be unappetizing and it is linked with snobbish behaviour and it can suggest aloofness and lack of emotion.



Fig.41.Indigo plantation

When Gandhi Became Mahatma

Under the British rule, farmers of *Champaran* (province in eastern India) were exploited to grow **indigo** as it happened to be a profitable cash crop used for making dye. Gandhi's arrival in 1917 to challenge the draconian land laws of British rule and gave birth to a new trajectory for the freedom struggle of India.



Fig.42.Jodhpur City

Jodhpur: The Blue City

The paradise in the heart of heat and sandstorms of Rajasthan, the **blue** colored houses of Jodhpur tells the history of India. One of the main reasons behind this is believed to be the abundance of copper sulphate and limestone which is used to make **blue** paint mixture. Also, being one of the cities receiving highest sunny days, **blue** color keeps the houses cool.



Fig.43.Flag Given by Dr B R Ambedkar

The Blue People

Movements for *Dalit* (a word used for lower caste or untouchables) uplift used **blue**- colored flags as representation of non- discrimination, symbolizing that under the sky everyone is believed to be equal.



Fig.44.Nike Campaign for Team India

Bleed Blue

In international cricket, the Indian cricket team has chosen **blue** as their primary colour and always worn one or the other shade of **blue** and thus gained the name-“men in blue”. **Bleed blue** phrase is used in India enabling all cricket fanatic Indians to show solidarity and passion for the game and team.

Indian Peacock

Peacock is the national bird of India. Its feathers have great significance in Hinduism. They stand for beauty, richness in life, felicity and joy. The dark colours in it stand for sorrow, sadness and the bright colours for happiness. The eyes in the feathers represent the divine wisdom. Many Hindu sculptures use peacocks as a symbol of the cycle of time.



Fig.45.Indian Peacock

The Blue Throated God

According to the Hindu scriptures, Lord Shiva drank the deadly poison (symbolic of negative thoughts and vices of life) which could have perished the beings that came in contact with it. Hence, the **Neelkantha** (the one with blue throat) signifies that we need to control our negative thoughts and keep working towards achieving our goal eventually making them ineffective over time.

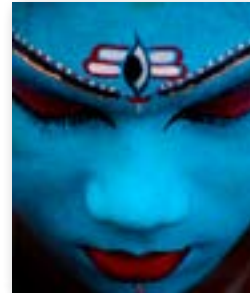


Fig.46.Lord Shiva

Krishna: All attractive

In Hindu religion, blue color is a symbol of the infinite and immeasurable. Lord Krishna is a possessor of unlimited beauty, knowledge, strength, fame, riches or renunciation. It is believed that the bluish tinge of Lord Krishna is the eternal spiritual body and this blissful form is visible only to pure devotees.



Fig.47.Lord Krishna

PINK

Pink is a very contradictory color. Its meaning can depend greatly on the culture and context in which it is presented. It is a calming, non-threatening color. It is linked to innocence, hope and optimism. It represents aspects of traditional femininity like nurture and kindness. Its negative sides are that it can seem weak, vulnerable and silly. It is also associated to shallowness and not seeing reality.



Fig.48. Jaipur City

Jaipur: The Pink City

The Maharaja (King) of Jaipur, ordered to beautify the city to welcome Prince Albert in hopes of strengthening ties with British aristocracy. The color chosen was terracotta pink as this color historically represents welcoming and hospitality.



Fig.49. National flower, lotus

Sacred Lotus

The lotus, national flower of India, is the foremost symbol of beauty, prosperity and fertility. According to Hindu scriptures, within each human is the spirit of the sacred lotus. It represents eternity, purity, divinity, and is widely used as a symbol of life, fertility and ever-renewing youth. The lotus is used to describe feminine beauty, especially female eyes.



Fig.50. Man adoring pink turban

Pink is Mainstream

Contrary to the western culture, pink color is not restricted only to feminine connotations. Men wear pink in India in so many ways and they are not looked upon as effeminate. It is also a big part of Indian weddings. The prime male players (father of the groom, brother of the groom, etc), and the groom are seen adorning pink turbans without anybody thinking less of their machismo.



Fig.51. 'PINK' movie poster

No Means No

In 2016, the social thriller movie 'PINK' triggered a movement in India – a mutiny of sorts against societal hypocrisy and censure of independent urban women and portrayed 'Pink' as the color of strength. The movie dealt with crime against women and underlined the decree that when a woman says 'No', it means no.

WHITE

White is the lightest color, meaning purity, innocence, and integrity. It is considered to represent perfection, as it is the purest and most complete color. It is the color that represents new beginnings and erases any trace of past actions. It leaves the mind open and free to whatever it might create in the way. The color also has a negative part, giving traits like ignorance, sterility, distant, boring, cold, empty, or critical.



Fig.52. Goddess Saraswati

Goddess of Knowledge

As per the Hindu scriptures, Goddess Saraswati is the goddess of knowledge. The Goddesses is portrayed sitting on a white lotus signifying she is herself originating from the supreme purity and offers divine knowledge. She is seen flaunted in White Sari – the symbol of pure knowledge and sits on a White Swan – symbolizing purity and discrimination.

* Saraswati literally means “one who gives the essence (sara) of our own Self (swa).



Fig.53. The Taj Mahal, Agra

Symbol of Love

One of the Seven Wonders of the World, The Taj Mahal is an outstanding example of Mughal architecture, which combined Indian, Persian and Islamic influences. The pristine beauty of this monument symbolises the depth of love, devotion and commitment that Emperor Shah Jahan bore to his wife Mumtaz Mahal.



Color of Mourning

White is the signature color scheme for mourning in India as it signifies purity. Wearing bright colors or black is seen as disrespectful to the deceased.

Fig.54. Widowed women wearing white saree

BLACK

Black can have a different symbolic meaning for everyone and every individual can have a different reaction to the color. The color black has some powerful effects and can be associated with a sophisticated lifestyle. Black is also associated with depression because it can close in on use and takes the positive aspects out of life, pushing us towards disappointment and negative aspects of our life.

Kali: the Dark Mother Goddess

Goddess Kali is the ultimate mother figure, protector, and liberator in Hindu scriptures. Her black complexion symbolizes her all-embracing and transcendental nature. Her nudity is primeval, and transparent like the nature. Kali is free from the illusory covering, for she is beyond all false consciousness. Her garland of fifty human heads stands for the infinite knowledge.



Fig.55. Goddess Kali

Extremists of Orthodox Hinduism

Aghoris are the extremists of Orthodox Hinduism who try to seek knowledge amidst all opposing environments. They are worshipper of *Bhairava* (ferocious to the most fearful), a protecting deity who inhabits cremation ground with all sorts of malevolent entities like demons, ghouls, ghosts. The practitioner of aghora clans live in cremation grounds, meditate by sitting on corpses, smears on ashes of burnt corpses and do anything that will shatter any man's ego.



Fig.56. Aghora in smeared in ash

Color of Shame

In India, there is an idiom, *munh kaala karna* means blackening of the face implying intense disgrace, shame or loss of honour resulting in metaphorical defacing.

In conclusive remarks for this chapter it can be said that the appeal of colour is universal. The use of right colors in a design helps convey our message while creating a connection with our audience and gather the right people around us. Color holds power. The power of color is both emotional and practical. On emotional level, colors can affect how people feel when they look at a design while on a practical level it can help design to stand out in the crowd. They have the ability to affect our emotions and moods in a way that other things can't (Holtzschue, 1994).

As a potent form of communication, color is irreplaceable. Evidently, colour is emotional and it is an immediate way in which we experience the world. Despite the minimal proven theories and principles, the correlation between colors and emotions and how colors can create an impact on the psychology of people are undeniable. It can be used to indicate an action and cause reactions in people's minds (Holtzschue, 1994).

Colors hold significance for people around the world. Not only do colors influence emotion, but they also hold meaning in religion and various cultures. The interpretation of color specific to a particular culture or society is called color symbolism. Context, culture and time are certainly important factors to consider when thinking about color symbolism. The symbolism of colors is one of the most exciting aspects of visual communication. Not everybody will react the same way to the same color, because colors influence us on a few different levels. Our own feelings about colors can be very personal depending on our past experiences; our culture or what we have learned. On one hand, we have the social or cultural aspect on ethnic level, and on the other hand, our reaction is individual, influenced by how this color is presented in our personal lives. Exploring this thought, this research work focuses on the potential of color as a design strategy to address the seriousness of depression and to have a better understanding of the emotions experienced during different types of depression.

04

COLOR AND
MENTAL HEALTH

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Symbolic of blend of deep sorrow and festivity.

4.1. Impact of Color on Health

The physiological mechanisms that underpin human colour vision have been understood for the best part of a century, but it is only in the last couple of decades that we have discovered and begun to understand a separate pathway for the non-visual effects of colour. This discovery of the non-image-forming visual pathway has given a new impetus to research that explores how we respond, both physiologically and psychologically, to colour around us. It is clear that light, and colour specifically, can affect us in ways that go far beyond regular colour vision (Westland, Pan, Lee, 2012).

The hypothalamus is a key part of the brain responsible for the secretion of a number of hormones which control many aspects of the body's self-regulation, including temperature, sleep, hunger and circadian rhythms. The retinal cells that form the non-image-forming visual pathway between eye and hypothalamus are selectively sensitive to the short wavelengths (blue and green) of the visible spectrum. Hence, there is clearly an established physiological mechanism through which colour and light can affect mood, heart rate, alertness, and impulsivity, to name a few (Westland, Pan, Lee, 2012).

In an interview by *Healthcare Design Magazine*, Director of Color Marketing at Sherwin-Williams, Jackie Jordan said, “Cool colors tend to be more calming, so in a hospital, the walls are generally painted in the blues and blue-greens, as these colors really put people at ease because they do

bring a sense of tranquillity” (2012). Avoiding overly-bright colors such as red and yellow, particularly in adult rooms, is also important, as those colors tend to raise anxiety levels. In a children's hospital, however, utilizing more vibrant colors such as yellows and oranges may help the younger patients to feel a little more relaxed and happy, reducing their stress and anxiety. Hence, it is highly likely that color has an indirect impact on health.

Most psychologists view color therapy with scepticism, citing the supposed effects of color as temporary. The existing research, however, shows that color can have surprising effects. One study found that warm-colored placebo pills were reported as more effective than cool-colored placebo pills (Craen, Roos, Vries, Kleijnen, 1996). An article *Blue streetlights believed to prevent suicides, street crime* published in Seattle Times suggests that installing blue-colored streetlights may lead to a reduction of crime in those areas. In 2009 blue lights were installed at the end of platforms on Tokyo's Yamanote railway line to reduce the incidence of suicide. As a result of the success of these lights (suicides fell by 74 percent at stations where the blue lights were installed), similar colored lighting has been installed at Gatwick Airport (London) train platforms. These steps were taken based on the claim that blue light could make people less impulsive and calmer (Shimbun, 2008).

The article *Color in Architecture – More Than Just Decoration* published in Archinect (2012) said that the impact of colour on how we feel has been explored by architects and designers in all sorts of contexts, from increasing office productivity to improving wellbeing. The colour red is generally said to be associated with an increase in appetite, reduced depression and increased angry feelings, purple with boosting creativity and developing problem-solving skills, orange with optimism, blue with a sense of security and productivity, and green with a sense of harmony and effective decision-making. The potential effects extend beyond single colours: a monotonous colorscape may be associated with irritability and negative ruminations, while highly saturated, intense colour patterns may increase stress.

There is an indication of people attempting to use color for healing and therapy from as far back as 2000 years. It is often used as a complementary therapy alongside other treatments, and is a popular go-to practice for people suffering depression, stress, and seasonal affective disorder. Several ancient cultures, including the Egyptians and Chinese, practiced Chromo-therapy or the use of colors to heal and is still used today as a holistic or alternative treatment. It is believed that the colors a person is surrounded with can have an effect on the person's health – physical and mental. In this treatment (Mahnke, 1996):

- Red was used to stimulate the body and mind and to increase circulation.
- Yellow was thought to stimulate the nerves and purify the body.
- Orange was used to heal the lungs and to increase energy levels.
- Blue was believed to soothe illnesses and treat pain.
- Indigo shades were thought to alleviate skin problems.

Chromo-therapy is a type of holistic healing that uses the visible spectrum of light and color to affect a person's mood and physical or mental health. Each color falls into a specific frequency and vibration, which many believe contribute to specific properties that can be used to affect the energy and frequencies within our bodies. According to the study by Azeemi and Raza, it is believed certain colors entering the body can activate hormones causing chemical reactions within the body, then influencing emotion and enabling the body to heal. It affects the brain activity through the hypothalamus, the organ that regulates and controls the endocrine gland, consequently it also affects the energetic points on the human body that are associated to the autonomic nervous system and to the hormones regulation. The connotation of colours is strictly determined by the natural frequency intrinsic in every entity of the Universe and it is in relation with the light that goes through this entity as well as the senses that perceive it. A chromo-therapist applies specific colors or lights to specific points on the body called 'chakras.' Different colors have different effects. For example, red is thought to increase pulse rate, blood pressure, and breathing rate. Therefore, it is often used for circulatory conditions. Blue is believed to cause relaxation and calm. Therefore, blue is used for headaches, pain, cramping, stress, and other conditions (2005).

Though this approach can be neither endorsed nor discounted due to a lack of viable research, it is an interesting concept that builds upon the known psychological and physiological effects of color, offering one use of integrating the psychology of color in healthcare design.

4.2.1. Color Significance in Ayurveda

In Ayurveda, the oldest holistic healing system developed in India, the specific colors correspond with each of the seven chakras that represent organs, emotions and aspects of the spirit. It is widely believed that we have seven main energy centres. These are referred to as *Chakras* meaning 'wheel' or 'disk' and are thought of as a set of cogs like the workings of a clock. The chakras surround major nerve bundles and organs. The energy which relates to the seven spectrum colours, resonates with the seven main chakras. If we are going through a hardship or suffering an ailment, our chakras will not be working in harmony. The balance of energy in the body's chakras is vital for wellbeing, so when there is a spanner in the works for whatever reason, it negatively affects us.

The study *Ayurveda and the Mind: a New Perspective in the Management of Mental Illness Insanity: Ayurvedic vs. Western Medicine Perspectives* (2010) states that the main focus of Western medicine in the treatment of mental illness is the suppression of the negative thought pattern produced by the illness, while maintaining the individual's cognitive abilities and —functional quality of life. On the contrary, the Ayurvedic approach to mental disease rests on the premise that most mental illness is caused by imbalances leading to clouding of the perception and loss of understanding (Compson, 2010). The Ayurvedic therapy is based on the concept of the 5 natural elements (ether, wind, water, fire and earth) turn into biological elements and they combine in 3 "qualities" called *Dosha**- *Vata, Pitta and Kapha*. Vata,

*The doshas are biological energies found throughout the human body and mind. They govern all physical and mental processes and provide every living being with an individual blueprint for health and fulfilment.

composed of air and ether, is the lightest and it is represented by the light blue. Pitta, composed of fire and a small part of water, is the middle one, represented by the yellow. Kapha, composed of earth and water, is the heaviest, represented by the white. For each of the three constitutional types that are described in Ayurvedic Medicine, there are different therapeutic colours that bring benefits and provoke different emotions. According to Ayurveda, colours when properly used, can balance the three Doshas, thus having therapeutic results, because they can compensate our imbalances. Dosha Vata prefers warm and energetic colours like red, orange, yellow or even white.

The colours should be soft and pale in order to avoid the mind stimulation, because Vata has a cold and hyperactive nature and is not predisposed to bright and vibrant colours. Dosha Pitta, having a natural inclination to warmth and aggression, prefers cold, pale and mild colours. Intense and bright colours of any tonality must be completely excluded, especially red in order not to overload the Pitta “fire”. Dosha Kapha is characterized by damp and heaviness; it should use arid, warm, stimulating and energizing colours while avoiding black and pale colours like white, gray, blue.

- Red color symbolizes fire. This color will then stimulate blood circulation, bone marrow and aims at harmony of the body.
- Yellow color stimulates our intellectual energy. The predominance of this color can bring power and influence.
- Orange color is more preventive. It can stimulate the intimacy of each one and allows the mastery of the emotions.
- **Green** color is soothing. It has the faculty to drive away sadness. It can also help a better oxygenation of our body.
- Indigo represents pure consciousness. This color soothes anger and helps in the realization of projects since it gives the will.
- Blue represents communication, brings intuitive understanding.
- Violet symbolizes spirituality. This color generally leads to the gift of self and aspires to meditation.

Color is an inseparable part of our everyday lives and its presence is evident in everything that we perceive. It is widely recognized that colors have also a strong impact on our emotions and feelings. Seeing red, feeling blue, **green** with envy are some examples of the popular idioms showing that people have long associated colors with the emotions they evoke. People associate red with anger (or lust), blue with depression and **green** with jealousy. Color has the single greatest effect on how people perceive things and can be utilized to great effect in order to influence people’s actual behaviour along with their emotions. Whereas emotion is the complex psycho-physiological experience of an individual’s state of mind as interacting with environmental influences. The relationship between color and emotion is closely tied to color preferences. In particular, color preferences are associated with whether a color elicits positive or negative feelings (Mahnke, 1996). Most often, warm colors are considered to be positive, while cool colors are considered to be negative. Still, those associations aren’t hard and fast rules. For example, red (a warm color), can evoke feelings of rage or danger, while **green** (a cool color) can evoke feelings of growth and new beginnings. This is one reason why color psychology and color theory is so complex. There are seemingly endless factors that can influence how a

color is perceived and how it affects human behaviour and thought.

It is important to know that a color, and our emotional response to them, has also to do with colors’ saturation and brightness (Valdez and Mehrabian, 1994). Less saturated colors are more greyish, so dark olive **green** (R 112 G 130 B 56) is less saturated than bright lush **green** (R 76 G 187 B 23). Similarly, colors that are less saturated but bright, such as a bright **greenish** - grey (R 119 G 129 B 92), are relaxing, and those that are more saturated and less bright, such as bright dark blues (R 15 G 82 B 186), are more energizing to look at. On the other hand, neutral colors (brown, tan, gray, white, and black) tend to take on the characteristics of the colors they are combined with, though they can also subdue or enhance those effects. For example, combining warm colors with white can create a design that appears lighter (in terms of weight, not just in terms of overall vibrancy) and carefree. Combining those same warm colors with black can make them appear more intense and dramatic. Combining cool colors with black can make them more mysterious, while combining them with white can make them more calming and relaxed.

The impact of colour on emotion has long been of particular interest to artists, poets and philosophers. And it has gained popularity throughout the years, with numerous books being written about it, including poet Johann Wolfgang Goethe who studied the physiological effects of color and wrote *Theory of Color* (1810), a treatise on the nature and function of color on moods. His work is poetic rather than scientific and based on his own subjective experience, but is considered a spellbinding account of the emotive experience of colour.

While studies have shown that color-mood association exists, there is no evidence to suggest a one-to-one relationship between a given color and a given emotion (Schwarz and Tofle, 2005). These divide into two main

views as to what the relationship between colour and emotions is. One holds that this relationship is culturally determined, and therefore varies across people and cultures. The other suggests a more psycho-physiological basis for this relationship between colour and mood, implying that it is universal. Studies seem to conclude that colour can affect mood, but they do not agree on which moods are brought out by which colours. Additionally, research has found that different shades of the same colour (for example pale blue and dark blue) can have completely different connotations when people are asked to specifically relate their mood to a colour (Carruthers, Morris, Tarrier and Whorwell, 2010).

“Colors, like features, follow the changes of the emotion.”

Pablo Picasso

Robert Plutchik, was a thought leader in the study of emotions. He devised the psycho-evolutionary theory of emotion which helps categorize emotions into primary emotions and responses to them. He argued that the primary emotions are an evolutionary development and that the response to each such emotion is the one that is likely to deliver the highest level of survival possibility. Plutchik developed the *Wheel of Emotions*. It was designed to help the user understand the nuances of emotion and how emotions contrast with each other (Fig.57).

The eight emotions are arranged by colors, and establish a set of similar emotions. The primary emotions are located in the second circle. The emotions that have no colors are a mix of the two primary emotions. Moving to the centre of the circle intensifies the emotion, so the colors intensify as well. For instance, at the centre of the wheel, the primary emotions change from: anger to rage; anticipation to vigilance; joy to ecstasy; trust to admiration; fear to terror; surprise to amazement; sadness to grief; disgust to loathing. Moving to the outer layers, the colors become less saturated, and the intensity of the emotions lowers. The polar opposite emotions can be found across from each other. The spaces in between the emotions demonstrate the combinations we get when the primary emotions are mixed. So we see the emergence of emotions like love, submission, optimism,

aggressiveness, contempt, remorse, disapproval, awe, and submission.

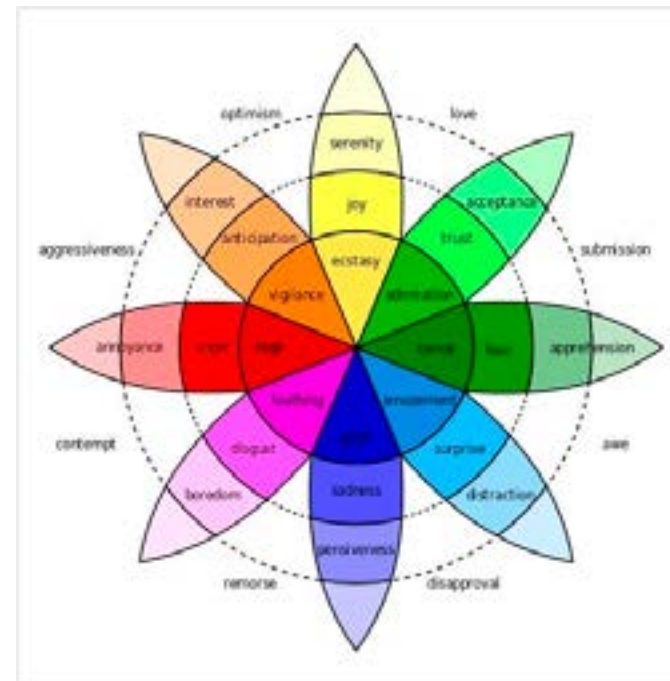


Fig.57. Wheel of Emotions

According to research paper *The Application of Color in Healthcare Settings* by Centre for Health Care Design (2012), the effects color can have on how we feel and act are subject to personal, cultural, and situational factors. Colors can affect how we feeling subconsciously. This means that one may not even know they are being affected by the color of an environment or artwork. The reactions to color offer insights into how they might be shaping your life experience. Hence, it becomes essential to consider an individual's personal feelings and their cultural experience while talking about their perception of color. While not all colors have the same meanings and impact to all people across all cultures, there are

some overall common experiences with the color frequencies. For example, the color white is used in many European countries to represent purity and innocence, whereas it is seen as a symbol of mourning in many South- Asian countries. This part brings a further dimension to the research work, where the cultural influence of Indian subcontinent on colors will be studied in the next heading. Ultimately we prefer certain colors because of what emotions it stirs in us. Those are the colors demanding our attention and we have the power to decide how to use them to our advantage. Furthermore, colors are an integral part of who we are and how we view the world.

The term 'feeling blue' is frequently interchangeable with depression and has been in common use in English language for a quite a long time. It is to note that the noun blues, meaning "low spirits", was first recorded in 1741 and may come from blue devil, a 17th century term for a baleful demon, or from the adjective blue meaning "sad" a usage first recorded in *Chaucer's Complaint of Mars* (1385). Washington Irving is credited with having first used the term "the blues" in 1807, as a synonym for sadness: "He conducted his harangue with a sigh, and I saw he was still under the influence of a whole legion of the blues." Irving was shortening the phrase "blue devils" which was a synonym dating back to Elizabethan time to describe a menacing presence. Some also claims about the origin of this color association lies within the Greek mythology. According to the mythology, blue is associated with rain. It is believed that whenever Zeus, the Greek god of sky and thunder, was angry he would create a storm but whenever he was sad or crying, he would make it rain and thus, the symbolism to blue color. Another origin of "the blues," is derived from mysticism involving blue indigo, which was used by many West African cultures in death and bereavement ceremonies where all the mourners' garments would have been dyed indigo blue to indicate suffering. Regardless

of culture, language, era, or individual artist, the arts consistently depict depression using darkness.

In the history of research about mentally ill people's favourite colors, the study *Colour Preference in the Insane* (1931) stands out. For the study, Siegfried E Katz of the New York state psychiatric institute and hospital tested 134 hospitalised patients with mental health problems. For sake of simplicity, he limited the testing to six colours: red, orange, yellow, green, blue and violet. No black. No white. No shades of grey. "These colours," he wrote, "rectangular in shape, one and one-half inches square, cut from Bradley coloured papers were pasted in two rows on a grey cardboard. The colours were numbered haphazardly and the number of each colour placed above it. The cardboard was presented to the patient and he was asked to place his finger on the number of the colour he liked best. After he had made the choice he was asked in a similar manner for the next best colour, and so on." Blue was the most popular colour. Men, in the aggregate, then favoured green, but women patients were divided on green, red or violet as a second choice. Patients who had resided in the hospital for three or more years were slightly less emphatic about blue. Katz said these long-term guests were "those with most marked mental deterioration". Their

4.5. Interaction of Color with Mental Health

preference, as a group, shifted towards green and yellow. Those of longest tenure, though few in number, had a slightly elevated liking for orange (1931).

A research Connotative meaning in English and Italian Colour-Word Metaphors states that blue represents the air, the sky, heaven, and the divine because of its direct metonymic link with the sky. Until the Renaissance, it was this blue that was considered prototypical: the darker shades were more frequently grouped together with black (darkness) or with purple (Aristotle, 350 BC). As a consequence of this, it becomes apparent that some of the connotative values attributed to these other colours have rubbed off onto blue, particularly the darker shades. The proximity of dark blue to black on the colour scale, and its historical

grouping with dark colours, may have contributed to blue's links to depression and to fear – to have the blues, or to feel blue (Philip, 2006).

Another research highlights that the associations we make between emotion and color go beyond mere metaphor. The results of the study indicate that feeling sadness may actually change how we perceive color. Specifically, the researchers found that participants who were induced to feel sad were less accurate in identifying colors on the blue-yellow axis than those who were led to feel amused or emotionally neutral (Thorstenson, Pazda and Elliot, 2015).

It is evident that color has been used since ages for description and treatment of medicinal and health conditions. Colors are known to have an effect on people with brain disorders or people with emotional troubles. For example, the color blue can have a calming effect which can then result in lower blood pressure, whereas the color red might have the opposite effect. Green is another color that may be used to relax people who are emotionally unbalanced. Yellow, on the other hand, may be used to help invigorate people who might be suffering from depression. In fact, healing by means of color and light was the first type of 'therapy' used by man (Schwarz and Tofle, 2005). The study by Workman found that exposure to green light helped people with seasonal affective disorder (2019). Another study by Azeemi and Raza found that treatment with white light helped patients suffering with bulimia (2005). Colors produce innate reactions and our responses to certain hues could impact our mental health. With a long history in the annals of complementary and alternative medicine, the 'colour cure' was a popular treatment for mental illness at the turn of the 20th century (Azeemi and Raza, 2005).

“*Your attitude is like a box of crayons that color your world. Constantly color your picture gray, and your picture will always be bleak. Try adding some bright colors to the picture by including humour, and your picture begins to lighten up.*”

Allen Klein,
The Healing Power of Humour, 1989

“*Patients with acute mania were put in black rooms, patients with melancholia in red rooms; blue and green rooms for the boisterous, and a white room for the person who is practically well.*”

Use Colors to Cure Insane, New York Times, October 26, 1902

While there is little scientific evidence that the various colour-based therapies can cure any particular diseases, the psychology of colour has long been recognised as an important factor in architecture and interior design: colours can evoke spontaneous emotional reactions that can affect mood and stress (Schwarz and Tofle, 2005). This may in turn exert influence on mental wellbeing, an effect that is particularly relevant to designers of the interior and exterior built environment. An interesting blog by *Parkin Architects* (2013) discusses the opportunities for colour to exert mental health impact in healthcare facility design, again pointing to certain colours that, in addition to helping eliminate the ‘institutional look’ of facilities, might exert specific impacts on mental health. The research journal *The Manchester Color Wheel: development of a novel way of identifying color choice and its validation in healthy, anxious and depressed individuals* by researchers from the University of Manchester and University Hospital South Manchester in England suggests that they’ve developed a color chart (Fig.58) that can be used to study the type of color that relates to a person’s state of mind. The studies have found that people with depression or anxiety were more likely to associate their mood with the color gray, while happier people preferred yellow. According to this new research, the colors we use to describe emotions may be more useful than we think. Expressions such as ‘are you in a gray mood today’, ‘how about a

blue funk’, ‘maybe you’re seeing red’, ‘because you’re green with jealousy’, have long been a part of our everyday life. The study co-author Peter Whorwell of University Hospital South Manchester said that this is a way of measuring anxiety and depression which gets away from the use of language and what is very interesting is that this might actually be a better way of capturing the patient’s mood than questions. He quoted that colors are often used as metaphors for moods, but no one had systematically researched color and mood associations. To investigate, he and his colleagues picked eight colors – red, orange, green, purple, blue, yellow, pink and brown – and split each into four shades. They then added white, black and four shades of gray for a total of 38 options. The researchers, then, created a wheel of colors of various intensities, including shades of gray. They then asked a control group of non-anxious, non-depressed people to describe which color they felt most “drawn to,” which was their favourite and whether any of the colors represented their current mood. When the test was repeated with anxious and depressed people, most chose the same drawn to color as the healthy participants, yellow, and the same favourite color, blue. When asked which color represented their mood, however, most chose gray, unlike the healthy subjects who typically chose a shade of yellow (Carruthers, Morris, Tarrier, Whorwell, 2010). Whorwell further added that when they used these results to separate colors into positive, negative and

neutral groups, they found that depressed individuals showed a striking preference for negative colors compared to healthy controls. Anxious individuals gave results intermediate to those observed in depression, with negative colors being chosen more frequently as well as

positive colors being chosen less frequently than in the control test. The researchers also found that when assigning a mood to colors, saturation matters. A light blue is not associated with a poor mood, but a dark blue is. The shade of color is more important than the color itself.



Fig.58. The Manchester Color Wheel

A research *Retraction of “Sadness Impairs Color Perception”* published in the journal Psychological Science finds that sadness can affect our vision, making the world appear greyer, by impairing the neural processes involved in color perception. As it turns out, there’s a reason we use colors as a metaphor for emotion, with expressions like “feeling blue” or having a “gray day.” It shows a direct connection between a person’s ability to perceive color and their emotions. There’s a reason that common descriptive phrases of the world include colorless, gray and feeling blue by sad people, and bright and colorful by happier folks (Thorstenson, Pazda and Elliot, 2015). In an email to the *The Huffington Post*, the lead author of study Christopher Thorstenson (psychology researcher at the University of Rochester) stated, “Color is such an important part of our experience. It is interesting that we have so many metaphors that link emotion and color perception.” In order to test that whether there really was a link between sadness and how people see color, the researchers asked 127 undergraduates to watch either a sad or funny video. Then, the students viewed 48 color swatches which were desaturated to the point of being almost gray and tried to identify them as red, yellow, green or blue. Those who had watched the sad clip were less accurate in identifying colors than the students who watched the funny clip, suggesting that they perceived less of the color. The findings gave a boost to investigate the link between mood and perception (Thorstenson, Pazda and Elliot, 2015).

Another study *Emotion and Perception: The Role of Affective Information* by Zadra and Chloe found that when people have a goal to reach or an object to attain such as the finish line of a race, they may perceive that object to be larger than it really is. People experiencing fear, on the other hand, may perceive certain things in their environment such as faces with negative expressions, as more threatening than they actually are. This is because our emotions carry information about the value of objects, and that information is incorporated into the visual perception of our environment. The brain’s emotional and perceptual systems don’t seem to be completely distinct from one another, as was previously believed, but instead engage in a dynamic interplay (2011).

When someone is depressed, the world may seem flat or monochrome, even tinged with blue and gray. For a long time, researchers assumed this was a purely psychological phenomenon. But the study *Seeing Gray When Feeling Blue? Depression Can Be Measured in the Eye of the Diseased* suggests that changes in visual perception in people who are depressed may have a biological basis. Researchers at the Albert Ludwig University of Freiburg in Germany recruited 80 people to participate in their study of visual processing. Forty participants were diagnosed with major depression; 20 were taking antidepressants at the time of the study, while the others were not. The other 40 participants, who scored in the normal range on two common depression screening tests, served as controls. Previous studies of the impact of depression

on vision have asked participants to report subjective perception of colors and contrasts. To obtain a more objective measure, the German researchers attached electrodes near participants’ eyes to record electrical responses in the retina as study participants viewed a series of checkerboard patterns with varying degrees of black-and-white contrast. When compared with healthy controls, participants with major depression whether they were on medication or not were significantly less able to detect differences in black and white contrasts on the checkerboards. The researchers also found a significant association between severity of depression and perception of contrasts. The lowest electrical recordings of retinal activity occurred in those participants who were the most depressed. The study thus suggests that one reason the world may seem gray when people are depressed is impaired contrast perception (Bulb, Kern, Ebert, Bach and Elst, 2010).

According to one recent study, it has been suggested that eye color may play a significant role to determine why some people suffer from Seasonal Affective Disorder while others don’t. The research *Blue Eyes Keep Away the Winter Blues: Is Blue Eye Pigmentation an Evolved Feature to Provide Resilience to Seasonal Affective Disorder?*, published in the Open Access Journal of Behavioural Science & Psychology (2018), found that people with light or blue eyes tended to score lower on a questionnaire designed to screen for seasonal variability in mood, weight, appetite, sleep, and social activity. The study involved 175

undergraduate and graduate students with an average age of 24. The lead author of the study and a visiting professor of psychology at the University of South Wales, Lance Workman, PhD explained that the reason that eye colour may make some people more susceptible to depression or mood changes might be because of the amount of light an individual’s eyes can process. Eyes with less pigment, blue or gray peepers, for example, are more sensitive to light which means they don’t need to absorb as much for their retinal cells to receive and process images. That also means, however, that people with lighter eyes release less melatonin during the fall and winter. Therefore, Workman wrote, light-eyed people who produce less melatonin may have some resilience to seasonal affective disorder. Although he points out that it’s no guarantee against wintertime depression. Previous research has also suggested that people with brown or dark eyes are more likely to be depressed than those with baby blues (2018).

The study *The Connection Between Art, Healing, and Public Health: A Review of Current Literature* which reviews current literature on the relationship between the creative arts and health outcomes show that the introduction of music or engagement in visual arts have an effect on the recovery of patients and the reduction of anxiety. The extent of its effect is still inconclusive. Thus, psychologists determine that although there is a positive effect towards recovery, it is considered as therapeutic and not treatment (Stuckey and Nobel, 2010). The blog *Medical research points to coloring*

helping with depression by ColorIt (2018) talks about the contribution of the colors, repetitive patterns and motions of a creative art in the reduction of anxiety by therapeutic effect. This is why painting, needlework, and pottery are popular; the soothing motions and colors relax the mind and lift the spirits. The same principle applies to coloring adult coloring books, which has become immensely popular in recent years because of its therapeutic effect. Whether they are suffering from depression or not, people derive immense pleasure and satisfaction in the process and the result when they've completed coloring a drawing. Coloring books lets to free our creativity without overthinking the process. In a personal experience shared on the blog by Diane Cole, a school teacher talks about how coloring helped her overcome depression, *"I do color to help ease my depression and anxiety. I found that art helps in many situations and was a great way to build trust and help students to become surer of them and therefore better students. Even when reading books to the class it was helpful to often have them draw or color while relaxing and listening. So it's no wonder that coloring has become big for adults who live and work in a stressful world."*

The research *Instagram photos reveal predictive markers of depression* by University of Vermont finds that people suffering from anxiety or low self esteem commonly express their mood through darker social media filters. The pictures tend to be darker, greyer and comparatively *"bluer"*. For the research,

Artificially Intelligent computer software was used to identify depressed people from the colour content of their social media photos with an accuracy of 70%. In comparison, general practitioners have an average success rate of 42% for correctly diagnosing depression. Study co-leader Professor Chris Danforth, from the University of Vermont, US, said that the study is not a diagnostic test but it is a proof of concept of a new way to help people. It points toward a new method for early screening of depression and other emerging mental illness. This could help to get to a doctor sooner. The scientists asked volunteers recruited to share both their social media feeds and mental health history. A total of 43,950 photos were collected from 166 participants, around half of whom reported suffering from clinical depression in the last three years. The images were analysed using software programmed with the results of well-established psychological research into people's preferences for brightness, colour and shading. Prof Danforth and his colleague Andrew Reece from Harvard University wrote in a blog post accompanying the study that pixel analysis of the photos in the dataset revealed that depressed individuals in our sample tended to post picture that were, on average, bluer, darker, and greyer than those posted by healthy individuals. Another discovery from the research was that healthy individuals tended to choose filters that give photos a warmer, brighter tone. Among depressed people the most popular filter was the one which turns images black and white. In other words, people suffering from depression were more likely to

favour a filter that literally drained the entire colour out the images they wanted to share. A key finding was that the computer was able to detect signs of a person's depression in photos posted before the problem was diagnosed (2017).

Psychologists have long known that emotions have a direct influence on what is called *"low-level visual processes,"* or simple perceptions of space and form. That's because our visual processes require some chemical input from our brain that might affect how we process what we see. Sadness decreases arousal, for example, which in turn limits the amount of light entering the retina and reduces our visual acumen. A gloomy mood lowers dopamine, which may impair neurotransmitters in the retina. And depression has been linked to a deficit in the ability to differentiate colors, meaning the world might be viewed as a fuzzier, less vivid place for some people feeling sad (Thorstenson, Pazda and Elliot, 2015). In the experiment, the researchers randomly assigned people to one of two groups. Those who were assigned *"sadness"* watched a sad film clip. Everyone was then asked to look at red, yellow, green and blue patches that had been desaturated of color and muted to gray. People were scored on how accurate their color perception was, and they then completed an emotional evaluation. Another part of the study had people watch a neutral desktop screensaver and perform the same tasks. The researchers admitted that some of the patches were pretty difficult to discern and it took a bit of intent staring to figure out their shade. The result showed that sad people had a hard time

differentiating between shades along the blue-yellow color axis. However, people who were sad did not have problems seeing colors in the red-green spectrum which was speculated by the researchers possibly because of an evolutionary need to see red as an anger response. Had sadness simply reduced chemical arousal or engagement, the results would probably have indicated that color perceptions across all spectrums were affected, but that wasn't the case. It also highlights the possible importance of dopamine in sight, something researchers are hoping to focus on more in the future. The researchers concluded that how we feel can really influence how we see the world around us (Thorstenson, Pazda and Elliot, 2015).

Graphic design is a visual field that involves not only graphically communicated ideas by also social, economic, cultural, technological and aesthetic values. The nature of graphic design in shaping our environment, our health and our sense of self has always been both widespread and subliminal. In order to highlight this nature, various design strategies has been used starting from the early 16th century to till date, in preserving and enhancing our health. Some of those strategies were used to persuade, while others were meant to educate or inform and orientate people.

The research works, studies and articles mentioned in the chapter earlier emphasizes the link between color and emotion and the possibility of one affecting the other in both positive and negative ways. In order to contribute to the same notion, this research tries

to explore how major emotions are related to the additive color model. It also works on the idea that how the color changes in terms of its attributes when we work with the combination of major emotions.

The color attributes play an important role in this research work while developing color codes. If we describe ecstasy with a bright yellow (*let's say*), it is noteworthy that we cannot use the same bright yellow to describe delight, both being the emotions of happiness. It becomes important to define the differences between the two emotions of happiness and bring the possible changes in color attributes of yellow to color code the other emotion.

Another important factor to consider, while bringing changes in the color attributes, is the severity of depression. The intensity of 'lows' or sadness experienced during bipolar depression cannot be similar to the sadness experienced during grief. It is essential to keep in mind that the color codes developed in the research work are not defining the kind of depression but the emotions experienced during that depression. This suggests that there might be changes in color codes if we account for different emotion or more than one emotion for a particular type of depression.

05

HEALTH AND
GRAPHIC DESIGN

R 230 G 237 B 207
Symbolic of divine knowledge.

5.1. Is Graphic Design Healthy?

Graphic design is ubiquitous. Using words, images, signs, symbols, colour, scale and format, graphic design shapes and mediates our experience of the world. It influences our health everyday yet often overlooked. From the packaging that instructs us to take the correct pill to awareness campaigns that stop the spread of infectious disease, the pervasive power of graphic design and its underlying methods of communication are needed to be explored. Designers have been working with health for a long time, whether to improve healthcare products, technologies, and facilities, or to increase patient awareness and engagement. At the core of this interaction is the recognition that design and health share many of the same human-centered principles such as focus upon the people, problem definition and testing the design decisions.

In recent years graphic designers have risen to the challenge of effectively communicating the healthcare messages to a wider audience. Designers are creating work to provoke, empowering people to act and contributing to society's health and wellbeing. With skillful use of graphic hierarchy and visual elements, graphic design can play a critical role in health in communicating technical information clearly and by ensuring that health information is engaging and compelling for the audience. The book edition of exhibition '*Can Graphic Design Save Your Life?*' (CGDSYL) examines the varied and vital relationship between graphic design and health. It is a book that demonstrates how graphic design impacts on what we notice, what we understand, the actions we take and the essential role graphic design plays in matters of life and death.

Graphic design plays an important role in helping both the medical profession and the public understand the body. Anatomical and physiology colouring books are part of the educational tools primarily used by medical and nursing students. They employ colour coding to help build understanding of the detailed structures and functions of the human body. Such books created a kinaesthetic experience, where physical participation is said to help improve understanding and recall. The covers of *n+m*, a medical journal, designed by Erwin Poell were consistently eye-catching, used strong colour, punchy graphics and different degrees of abstraction to catch the reader's attention. The journal's aim was to provide doctors with the latest scientific research (Fig.61).

From 17th-century Italian announcements about the plague to the recent outbreak of Zika in Brazil, bold typography and visual motifs have given authority to notices that inform and warn. Florence Nightingale's visual presentation of mortality statistics in the British Army changed nursing practice and led to hospital reform (CGDSYL, 2017). In nutshell, visualising data has changed how we understand disease. The corporate identity in pharmaceutical industry also owes a lot to graphic design.

One of the major campaigns regarding awareness was about the health risks of smoking. This included formats as small as postage stamps and explicit picture warnings on cigarette packets. Graphic design, once a key player in the promotion of tobacco, now played

a pivotal role in the anti-smoking campaign (Fig.63). Designers have been involved in generating targeted health campaigns that use formats such as graphic novels and animation to disseminate information. Whether in 1960s comics advocating safe sex or in wearable technology that monitors daily activity, graphic design can help people take greater ownership of their own bodies. Provocation has often been used as a communication strategy for health campaigns, primarily to raise funds and awareness. Its purpose is not only to grab attention, but also to inspire behavioural change.

Health Graphic Magazine, published three times a year by a Japanese pharmacy chain Aisei, is given away free in its stores. Each issue is themed around one common health concern – from obesity to headaches, sinus problems to eye strain. Strikingly original and humorous, the magazine's designers employ information graphically and the visual language of graphic novels to inform and educate (Fig.72). Another such notable campaign was by Colors magazine issue in year 1995 which tackled AIDS with clarity and frankness (Fig.66). Combining candid imagery, humour and hard facts it aimed to discredit common prejudices about the disease, presenting information on prevention in striking ways. Founded in 1991, Colors set out to be 'a magazine about the rest of the world'. Contributing to improve people's lives has been solo motto of many organizations. The Helen Hamlyn Centre for Design is the

longest-running design research centre at London's Royal College of Art works with different industries on projects associated with this cause. Patients, the pharmaceutical industry and NHS staff all contributed in their healthcare research works. The findings were then sent out to designers and purchasers with an interest in package legibility, with the aim of helping them understand how and why good design can contribute to patient safety.

The CGDSYL exhibition by Wellcome Collection featured objects ranging items from the archive of Burroughs Wellcome & Co., which was the first company to employ strategies such as direct marketing to doctors and rigorous enforcement of trademarks and brand, the iconic Bayer identity and the influence of the pioneering and modernist design studio at Geigy, to carefully designed color coding systems, written instructions and drug packaging delivering clear instructions to consumers. It also featured front-line response in battling epidemics, from Renaissance plague notices and Victorian quarantine bills to public health campaigns sparked by the emergence of HIV/AIDS, Ebola and Zika. From controversial advertising campaigns such as Kill Jill, aimed at increasing organ donor rates in Scotland, to the Kickstarter funded publication Mind-Journal (Fig.76), aimed at reducing suicide rates in men, graphic design can elicit empathy as well as galvanise participation. Thus, this section of the research recognizes the efforts of designers and documents the impact of graphic design made in field of health so far.

This section put forward a concise record of how graphic design and health have always been counterparts when it was needed to persuade, inform, spread awareness and at last inspire behavioural changes in society.



Fig.59. Geigy Advertising, 1950s-60s

Geigy's influential design studio helped pioneer the 'International Style', associated with visual simplicity, sans-serif type, abstract imagery, strong colour and asymmetric layouts determined by a grid. These examples employ monotone images, diagrams and degrees of abstraction to promote drugs as varied as antidepressants, appetite inhibitors and rheumatism relief.

Published by Planned Parenthood, USA, this recognised how dialogue-driven comics and their clear visual structure were an engaging and accessible way to communicate socially complex healthcare messages.

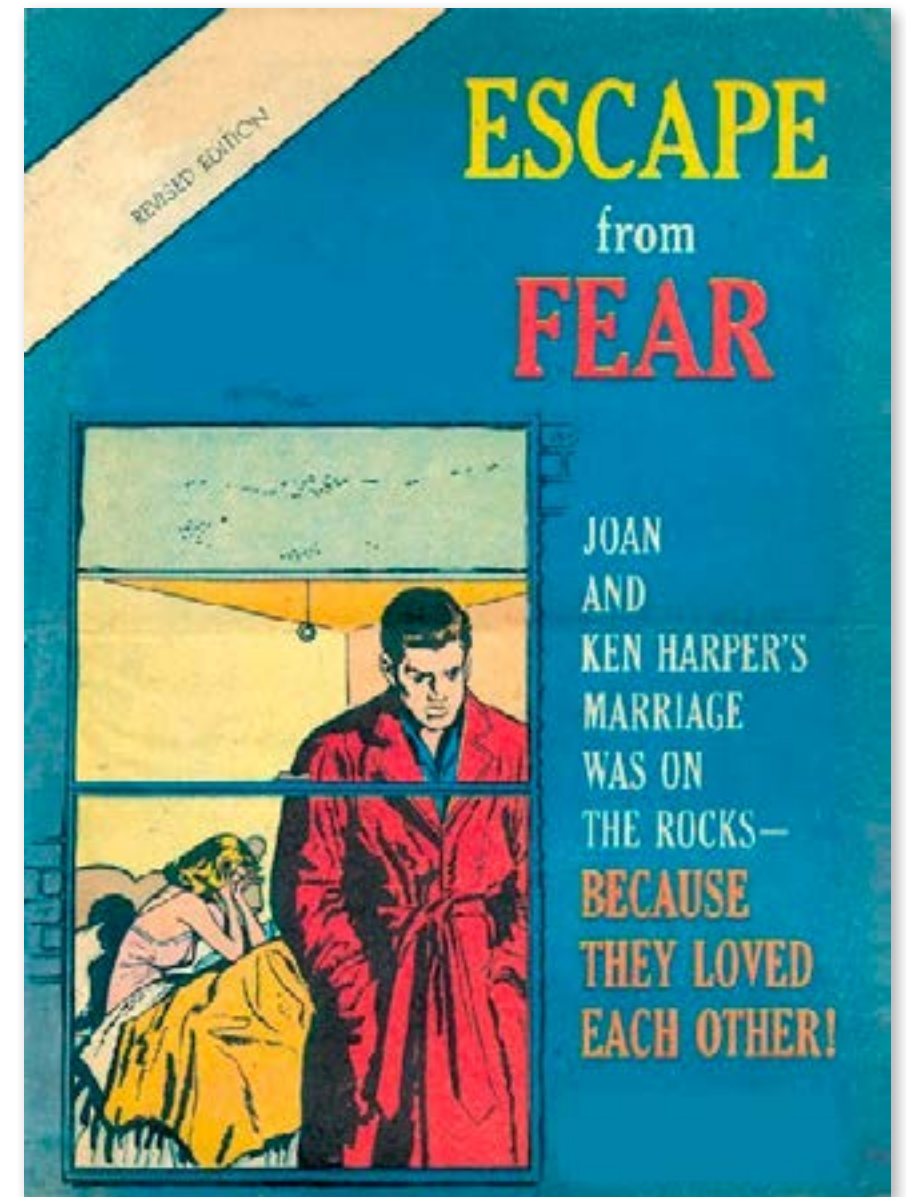


Fig.60. Escape from Fear comic book, 1962.

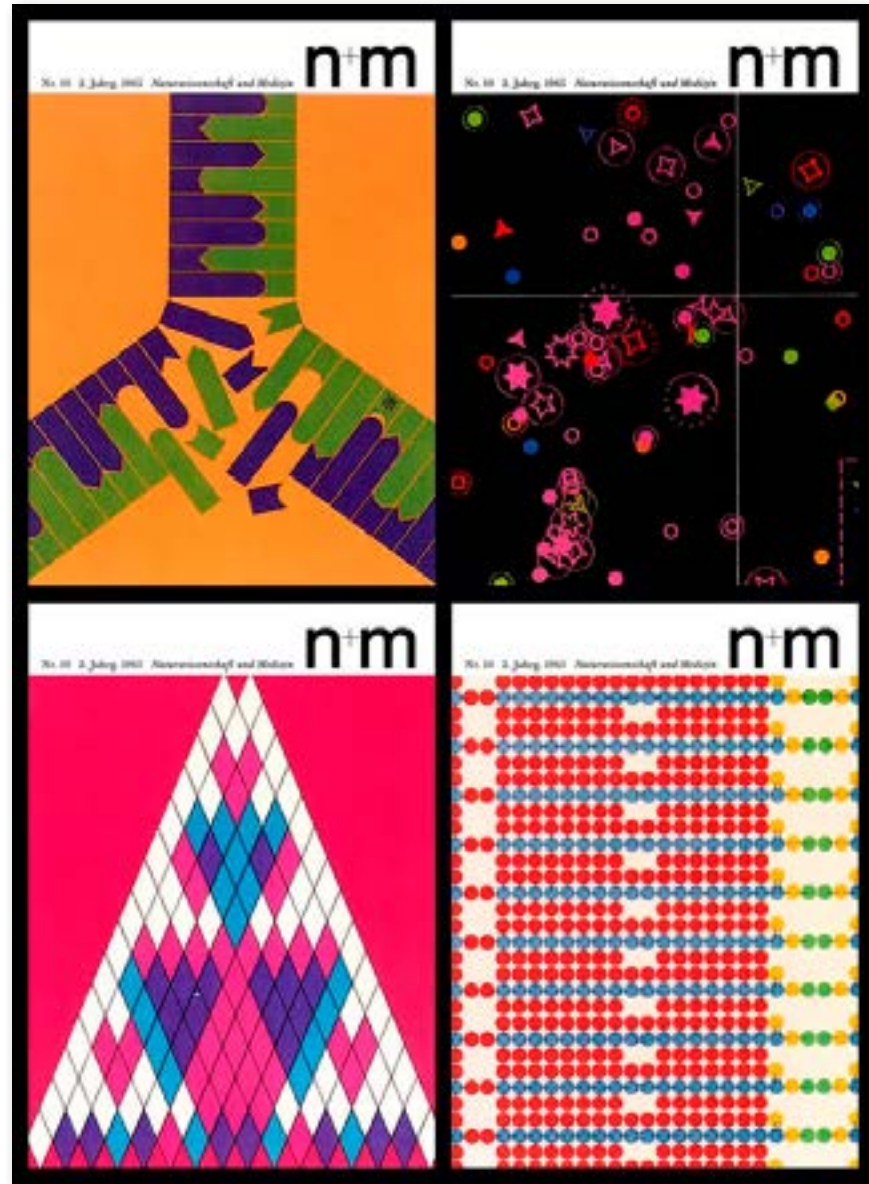
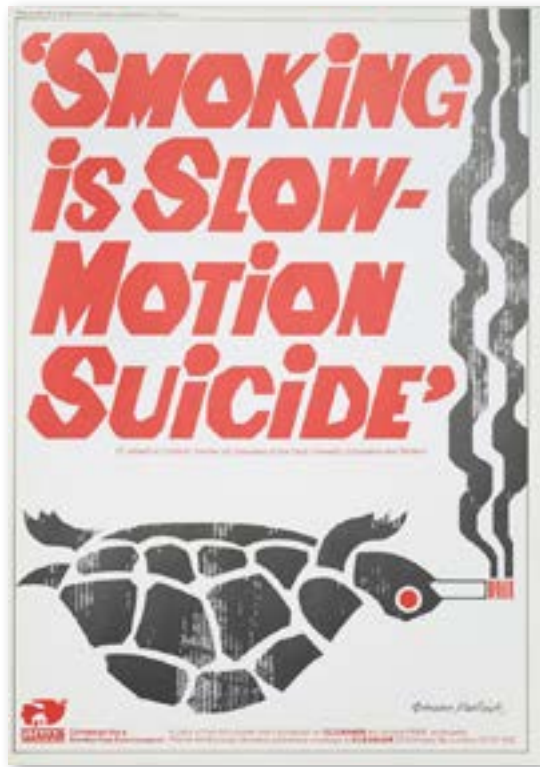


Fig.61. Cover of n+m magazine, issues of 1965.



Fig.62. Poster entitled 'Mental illness is class conscious'.

Published by the East London Health project, designed by Peter Dunn and Loraine Leeson, 1970s, this poster was used to highlight the dangers of mental illness among poorer members of society.



Biman Mullick was awarded a World Health Organisation Medal for making posters that 'politely, strongly and humorously' argue that 'non-smoking is the norm'.

Fig.63. An anti-smoking poster by Indian designer, Biman Mullick, 1972.

Designed by Poulin + Morris, this tool enabled rapid, effective communication across language barriers between hospital patients and staff. Users point at easy-to-understand pictograms to identify types of pain, its location and severity. It is currently used in more than 150 US and Canadian hospitals.



Fig.64. Communi-Card 1 & 2, 1985.

Bruna's colouring book, written by a mothers group at the New Castle Haemophilia Reference Centre uses simple drawing to comfort readers, and to educate children about haemophilia (a genetic condition affecting the blood's ability to clot).



Fig.65. HET Nederlandse Rode Kruis by Dick Bruna, 1986.

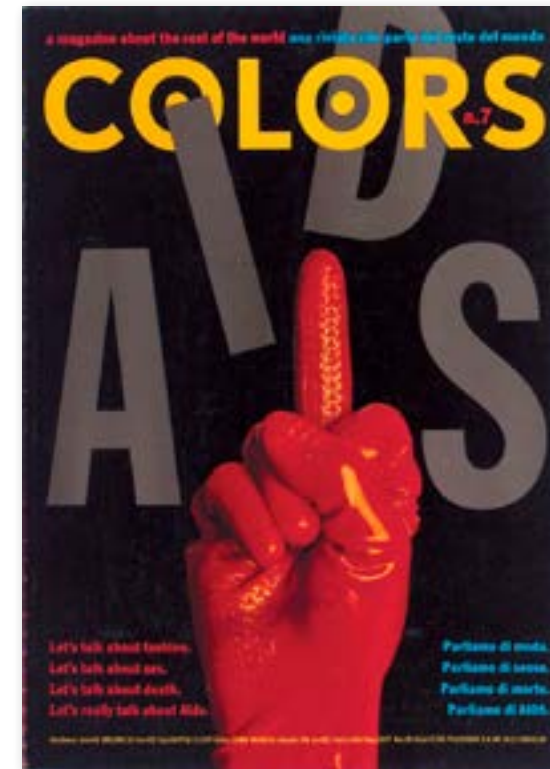


Fig.66. Colors magazine, issue n.7 on AIDS awareness, 1995

Design agency Pearlfisher refreshed the packaging for Help's 'Take Less' campaign which implies less confusion, fewer drugs and fewer synthetic coatings on tablets. The redesign included larger lettering and colour-coded graphics that illustrated the size and shape of the pill, tablet or plaster contained within each packet.

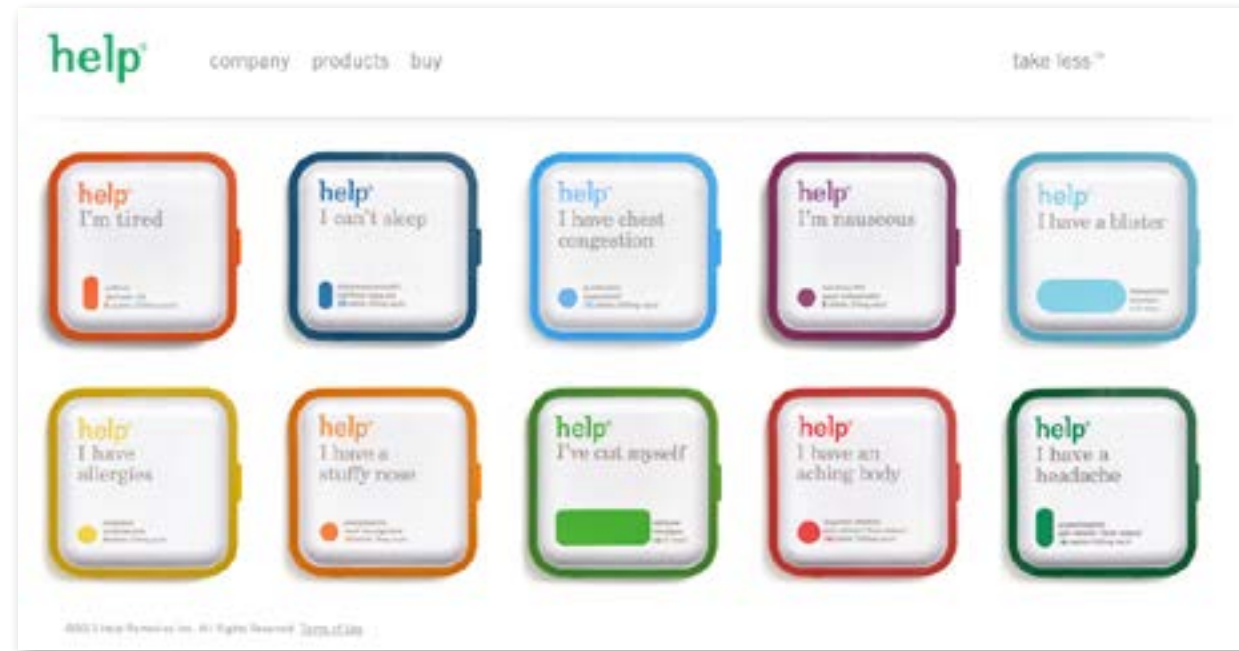


Fig.67. Help Remedies, 2011.

Alzheimer Nederland raises funds to support vital research for people with dementia, a condition shrouded in fear and misconceptions that prevent people from getting help. Its new identity created by Studio Dumbar reflects the vanishing world of people with dementia, but also suggests light and hope.



Fig.68. Alzheimer Nederland branding, 2012.

Yin Yao's graduation project, at the London College of Communication explored ways of visualising pain. Using a combination of historical image-based research and his own graphic experimentation, Yao surveyed 100 people to find out whether differences of age, gender or nationality had any bearing on how people might visually represent pain, and its intensity.

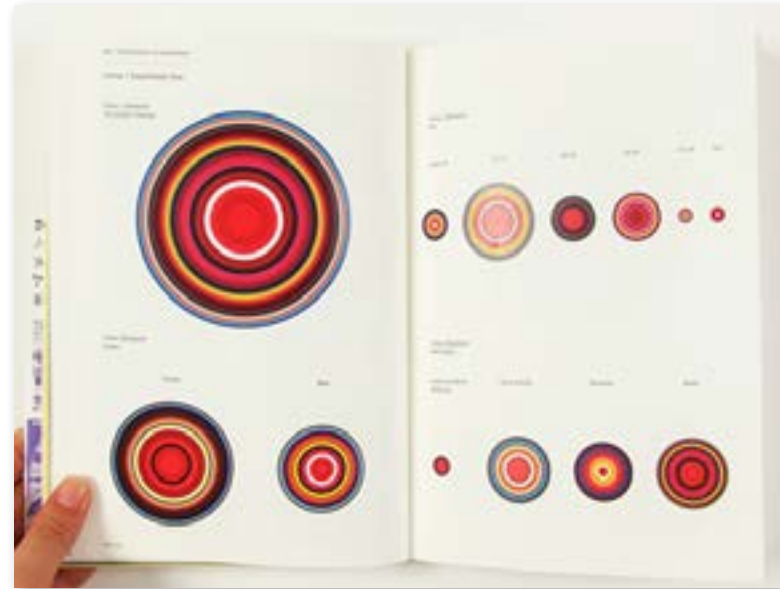


Fig.69. *The Feeling of Pain*, 2012.



Fig.71. *Lighter Than My Shadow*, 2013.

An autobiographical account of a young life affected by eating disorders and sexual abuse, Katie Green's illustration degree project took five years to complete. Employing delicate line drawing, handwritten text, and a subtle use of black, white and differing hues of grey, this graphic memoir has met with critical acclaim.



As part of the development for the cigarette packaging, market researchers GfK Blue Moon found Pantone 448 as least appealing, with its connotations to tar and pollution. As part of efforts to “deglamorise” the image of smoking, the greenish-brown colour has been described by some experts as “the ugliest colour in the world.”

Fig.70. Colour palette used in Australian unbranded cigarette packet, 2012.

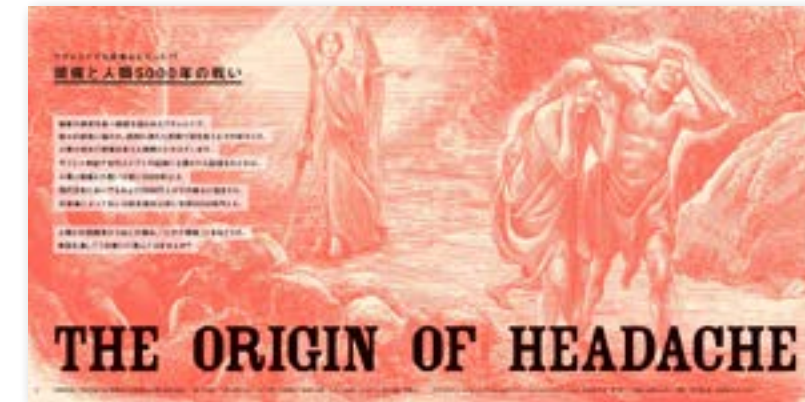


Fig.72. *Health Graphic Magazine*, Page 2-3 of Headache Issue, 2013



Fig.73. Illustrations by Gemma Correll.

There's nothing funny about depression or anxiety, but some sufferers find humour to be a good way of dealing with the daily struggles of living with such mood disorders. British artist Gemma Correll is one of those people, and her illustrations are as funny as they are thought-provoking.

Ellen Foley self-described graphic memoir is darkly funny, intensely personal, and visually dynamic, Forney's graphic memoir provides a visceral glimpse into the effects of a mood disorder on the artist's work. Her story seeks the answer to this question: if there's a correlation between creativity and mood disorders, is an artist's bipolar disorder a curse, or a gift?

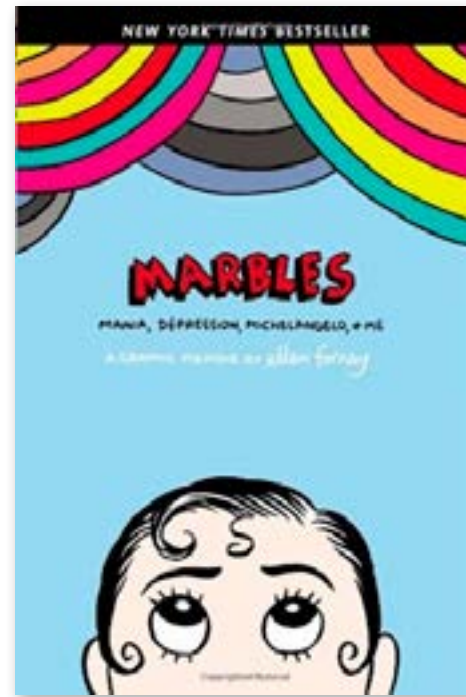


Fig.74. Marbles: Mania, Depression, Michelangelo, and Me, 2012.

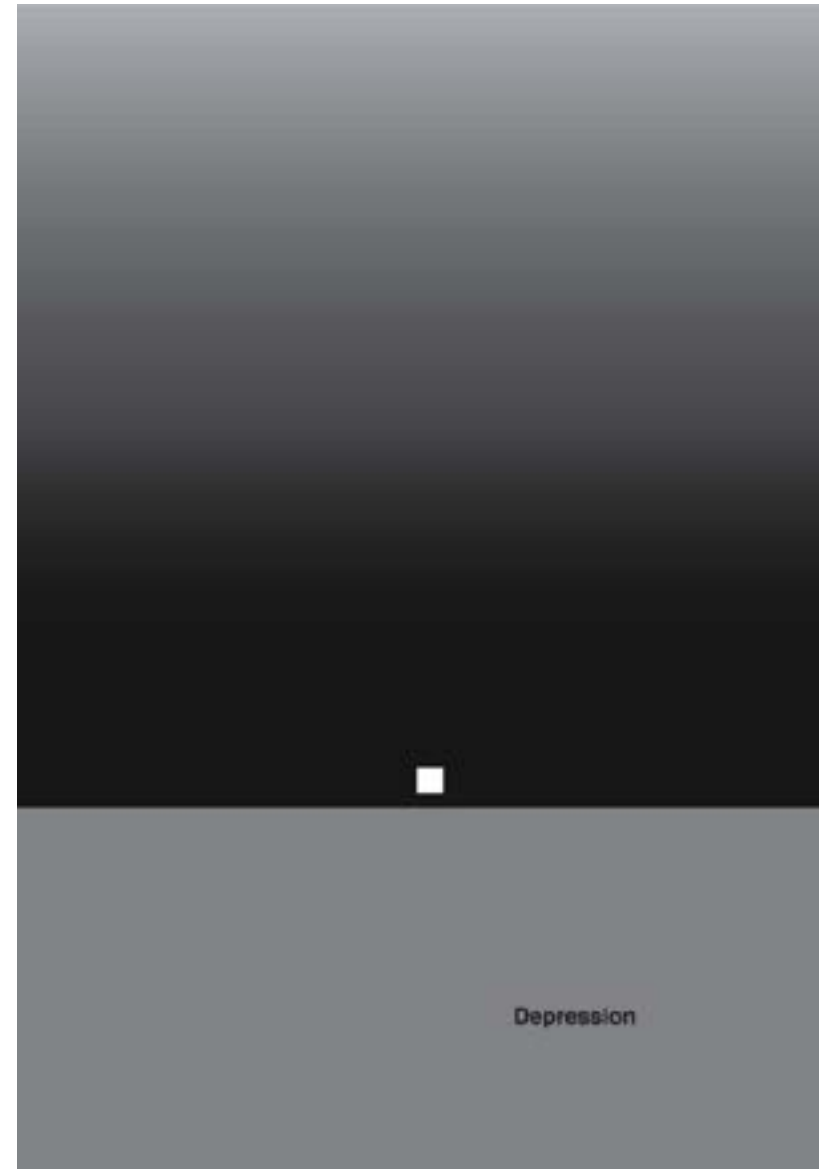


Fig.75. Mental Disorder Poster, 2011.

Graphic designer Patrick Smith took on the challenge to capture the seriousness of conditions such as obsessive compulsive disorder (OCD) or depression in a simple way. He designed a series of striking minimalist posters that depict various mental health conditions without using a single word, translating the perceived darkness of disorder into something concrete and potentially manageable, particularly for the untrained viewer.



Designer Ollin Aplin was inspired to create MindJournal by his own mental breakdown. Aimed at men, who are known to be less likely to talk about their problems, the discrete journal provides a structured framework for daily entries.

Fig.76. MindJournal, 2016.



This award-winning and distinctive campaign was for the Samaritans, a charity that supports people suffering from anxiety, depression and suicidal thoughts. The use of colour in the text reveals hidden messages behind the claims that all is well, encouraging people to get in touch before they're unable to cope.

Fig.77. We Listen campaign, 2016.



Ibanez who after her own negative experiences with mental health services, developed a self-assessment kit for her graduation project that lets users figure out the kind of help they need, and where they can get it from.

Fig.78. Mindnosis by Sara Ibanez, 2016.



With a rhyming cast of animals, graphic designer Veronica Padilla's Gentle Mental's, is an engaging parody of a children's board book for people of all ages, aimed at shining a playful light on mental illness to help soften its stigma.

Fig.79. Gentle Mental's, 2017.

Inspired by Josef Albers' 'Homage of the Squares', Muskeen created a poster for her final project exploring how the stigmas regarding anxiety can be reduced featuring celebrities who have spoken about their anxiety struggle. The concentric squares mirror how celebrities have various layers and also suffer from anxiety behind the scenes. Different combinations of colors represent that each experience is different from one another.



Fig.80. Living with Anxiety, 2018.

Graphic design has emerged as making way for a new realm of expression, reproduction and representation. It illuminates and guides which links the importance of design as a tool for educating society. Creative campaigns have been successful in helping to challenge stigma and portrayal of mental illness as deserving of sympathy and sensitivity—as important any other illness or disease. And the use of symbolic elements such as colour and typography to communicate meaning has been most successful within these campaigns. When someone goes through depression, they need to be assured that it is acceptable to be not okay all the time, and the vulnerability they are going through will be listened to and will receive a caring, appropriate response. And at times, it becomes difficult to express their inner feelings they are going through in words. Colour can therefore provide a communication tool which offers a different way of talking about how we feel. This project points to ways in which we can use colour to develop a visual tool to assess and express our emotions.

06

RESEARCH APPROACH

R 244 G 72 B 41
Symbolic of dedication to the work.

The major aspect of this research work is to create a visual interactive medium that will focus on spreading awareness so that we as a society are there to extend our support to those who are going through depression. Hence, to gauge the extent of awareness about mental health concerns, as well as to discern the societal perceptions and attitudes towards people suffering from mental illness, an online survey was conducted. In order to develop a visual medium, color has been used as a design tool in the investigation; hence, the survey was also aimed at identifying the importance of colors in everyday life of an individual. The survey was divided into two sections: section one tried to explore an individual's color preference, color – emotion association and belief in the interaction of color and health, whereas section two tried to reflect on an individual's understanding of depression, myths and facts related to it and their willingness to gain knowledge about depression.

The main objectives of this survey were to:

- Understand the factors contributing to color preference.
- Define emotions through colors.
- Identify the practicality of describing depression through colors.
- Understand the level of knowledge and awareness about depression.
- Explore the attitudes towards depressed people.
- Identify various stigmas associated with it.
- Recognize the motivation to learn or talk about depression.

6.1.1. Survey Analysis

The survey was conducted over a period of two weeks, gathered 148 responses. The responses were received from individuals from different nationalities, prominently from India, Portugal, the Netherlands and Romania (Fig.81).

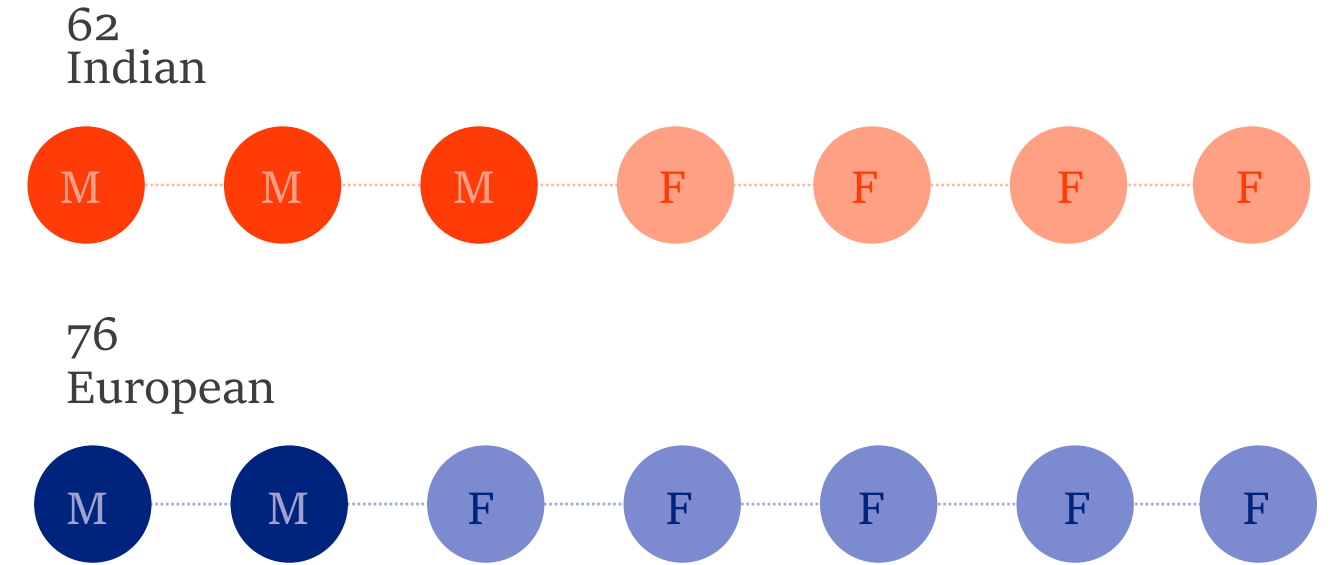


Fig.81. Gender Count Nationality Wise

Out of 148 responses, 98 were received from female gender in comparison to 50 responses from male gender. The responses were categorized further based on age groups. This categorisation is one of a major factor in understanding the color preferences by individuals (Fig.82).

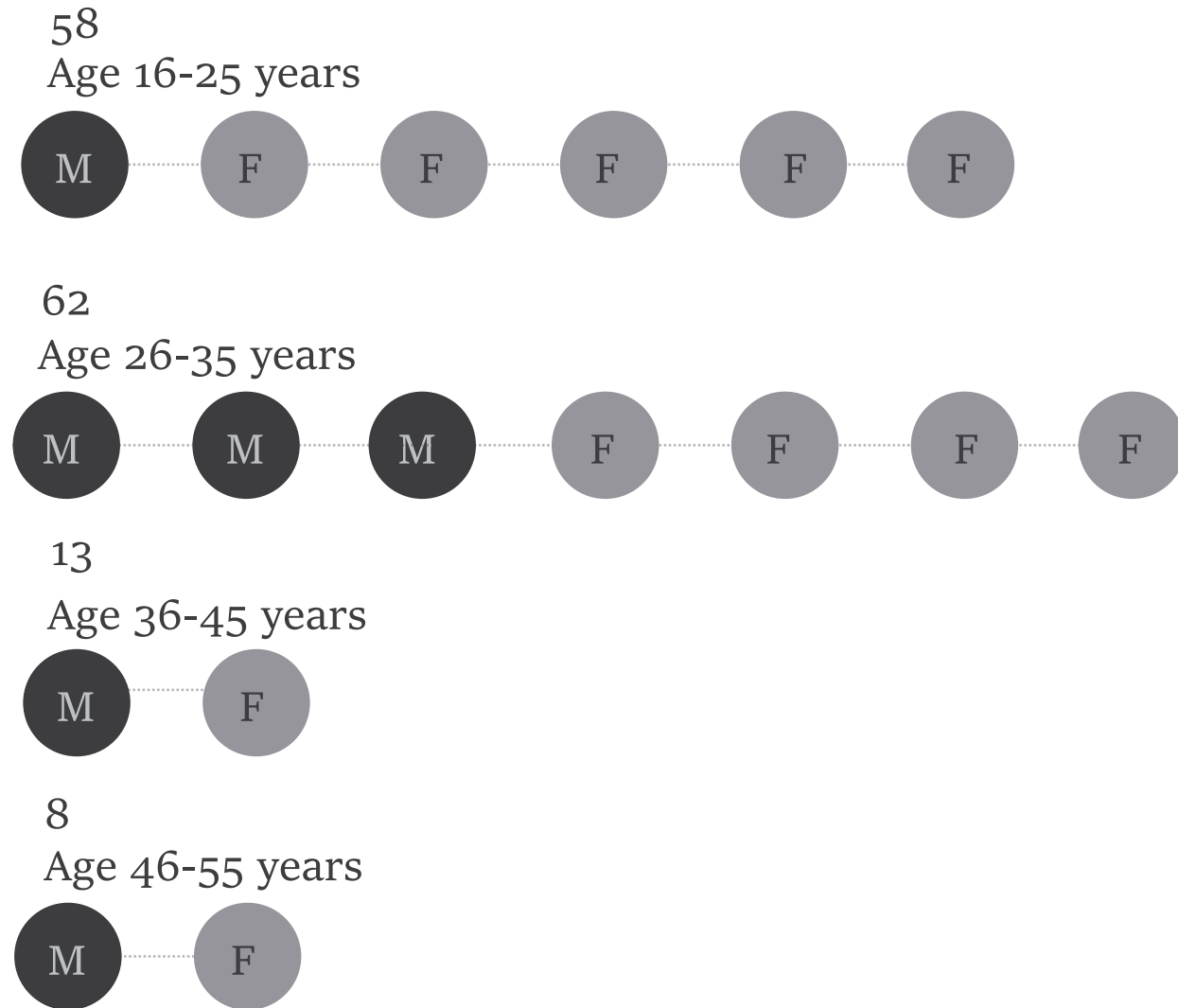


Fig.82. Gender Count Per Age-Group.

The data collected reflect how color preferences are changed in terms of color attributes based on gender, age and nationality. The responses to the first question show the color preferences by individuals for each color. The data shows the percentage value for most preferred and least preferred color shades (Fig. 83).

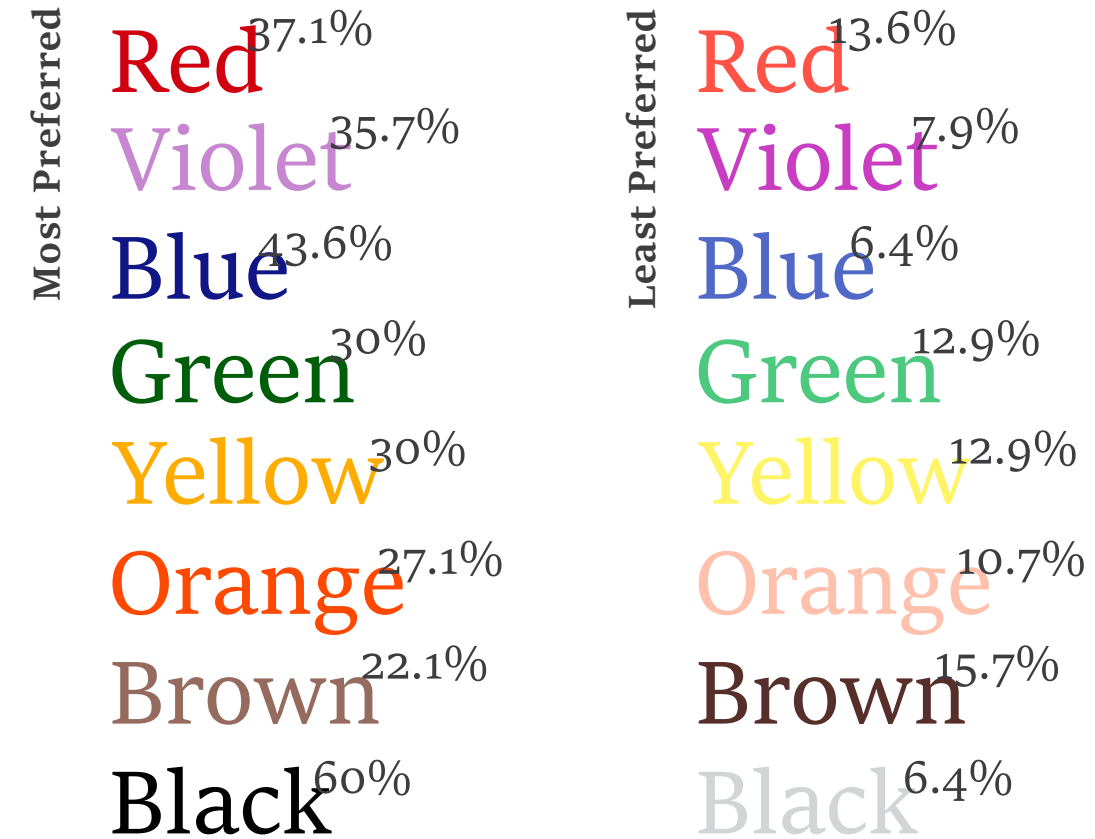


Fig.83. Shade Preference.

It can be observed from the data that most people prefer bright and dark colors in their day to day except for purple and brown. Hence, it can be said that people, in general, like to be surrounded by bright saturated colors in their day to day irrespective of their age, gender or geographical location.

In response to the reasons for choosing color preferences, most individuals selected their mood to be a prominent one (Fig.84). The survey was conducted in January, so, it becomes an important point to consider that most people may have preferred brighter color due to the visible absence of it in winter months contributing to gloomy moods.

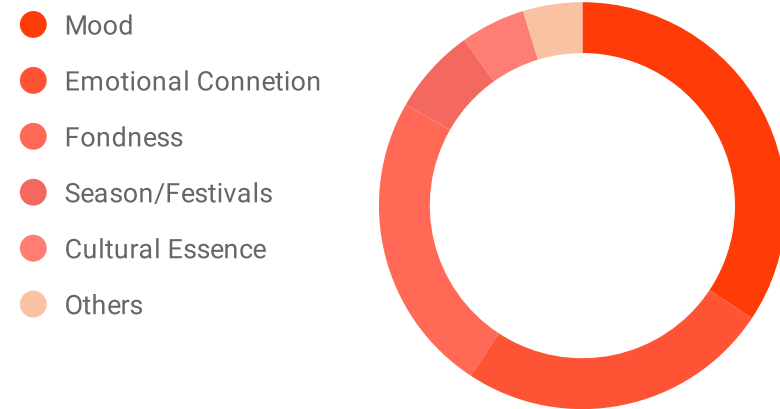


Fig.84. Reason for Color Preference.

This generic preference of shades for each color was further studied based on gender and age-group. The table shows the variation in shade preferences by both genders in different age- group when compared to previous data (Fig.85). In all age- groups, males have given most preference for a darker shade, except in the age - group of 26-35 years, where we can observe, the preference is for lighter shades. However, when we go through the female row for each age- group, we can find a lot of variations in shade preference compared to males.



Fig.85. Shade Preference Gender and Age Group wise

The further analysis of color chart on the basis of nationality gives another dimension to consider regarding the preferences made. When we look at the color chart, it can be easily observed that there is huge difference in color preferences in Indian and European individuals (Fig.86). The overall shade preferences of Indian male and female is quite interesting to note because it is evident that bright, vibrant colors are one of the defining parameters of Indian culture whereas the chart indicates that for most of the colors the preferences has been given to lighter shades. On the other hand, Europeans have preferred the darker vibrant shades more which was again an interesting finding as, in my opinion, people are seen adorning pale, lighter shades more in comparison to the vibrant colors.

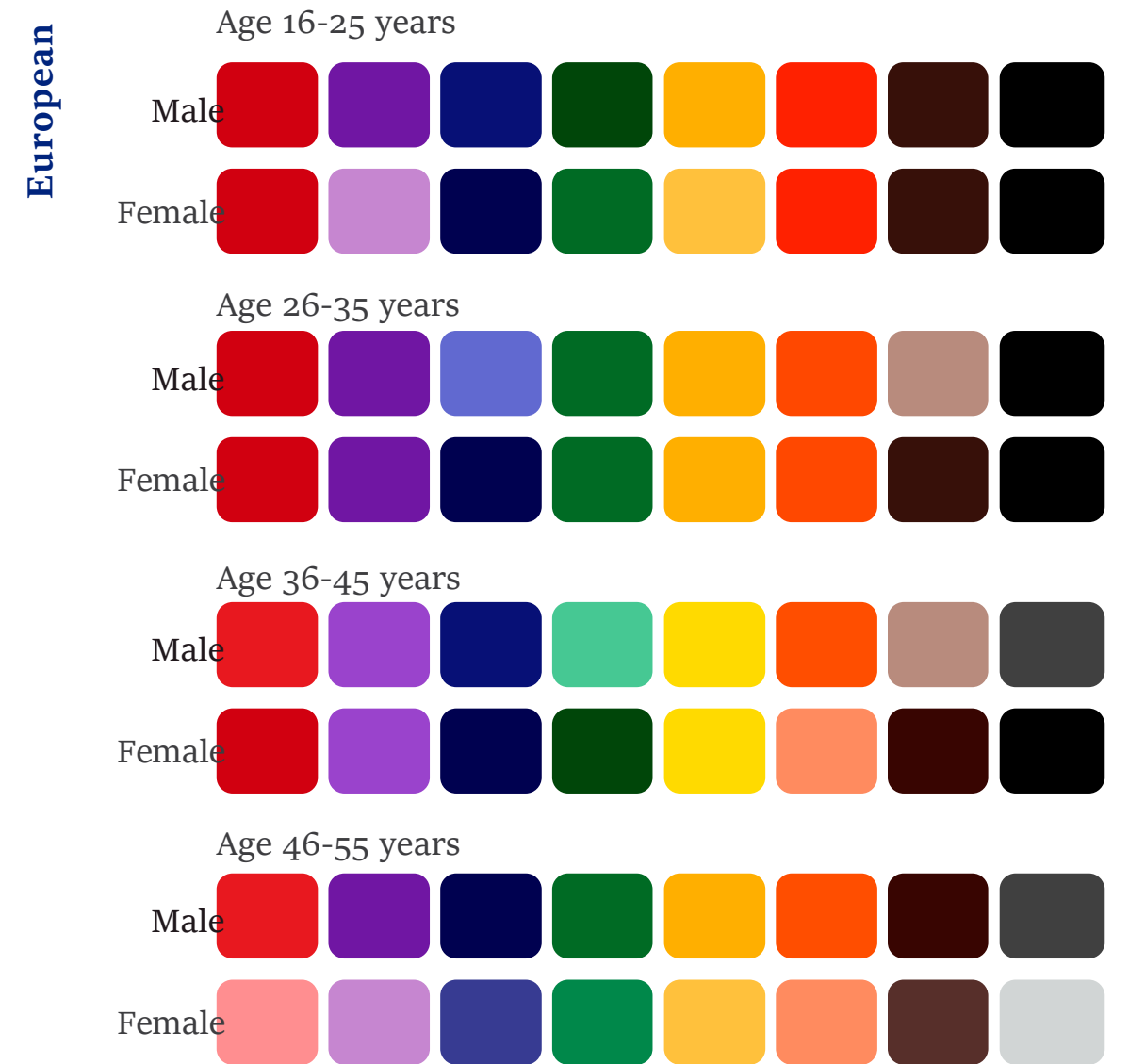
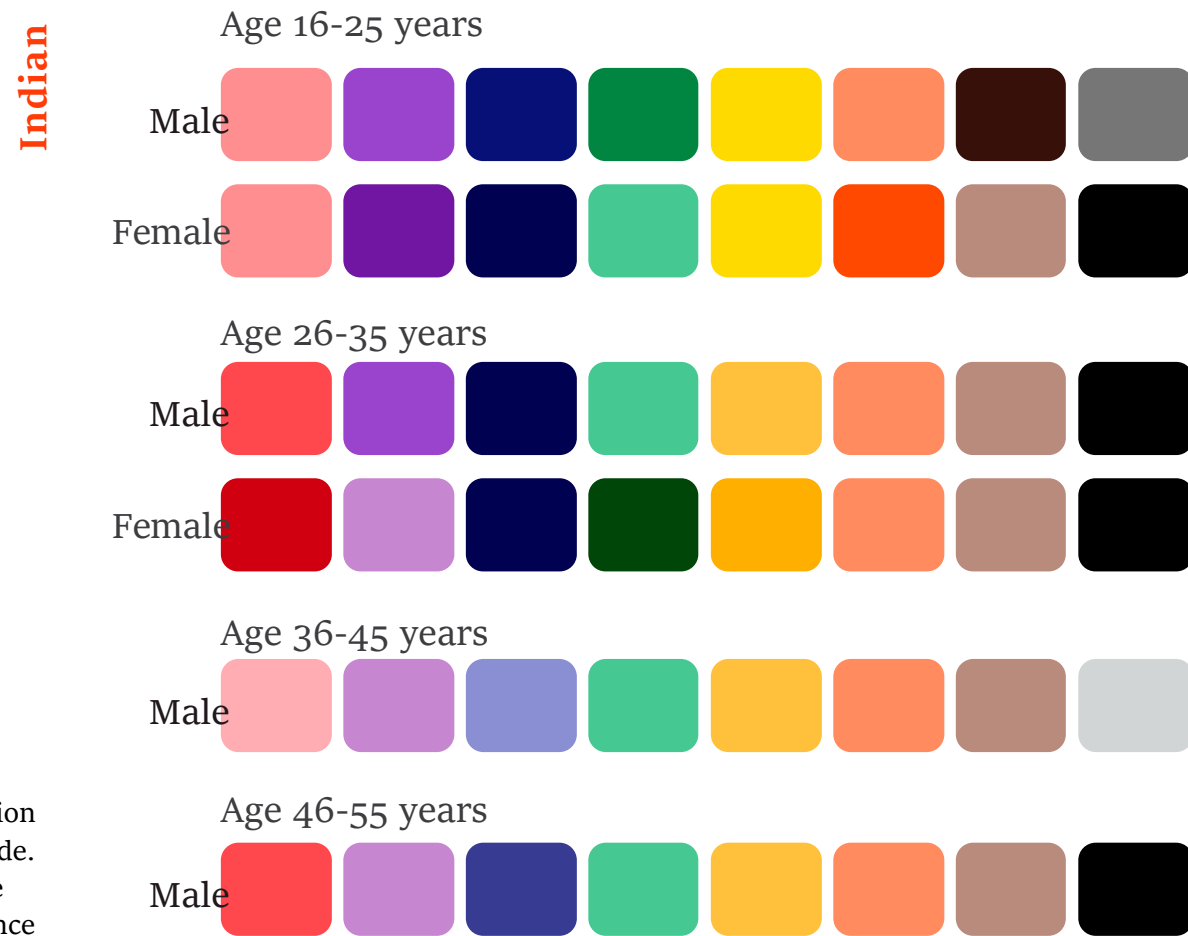


Fig.86. Shade Preferences by Indian and European.

These findings clearly support the fact that color preferences are not universal and can reflect variation depending on many factors. In the survey, the broader parameters are age, gender and cultural differences which is supplemented by mood, emotional connect and fondness.

The main focus of this research work is to describe the emotions experienced during depression through colors. Hence, another major aspect of this survey was to understand how individuals relate colors to different emotions. The chart below shows the color related the most to that particular emotion.

Happiness

Trust

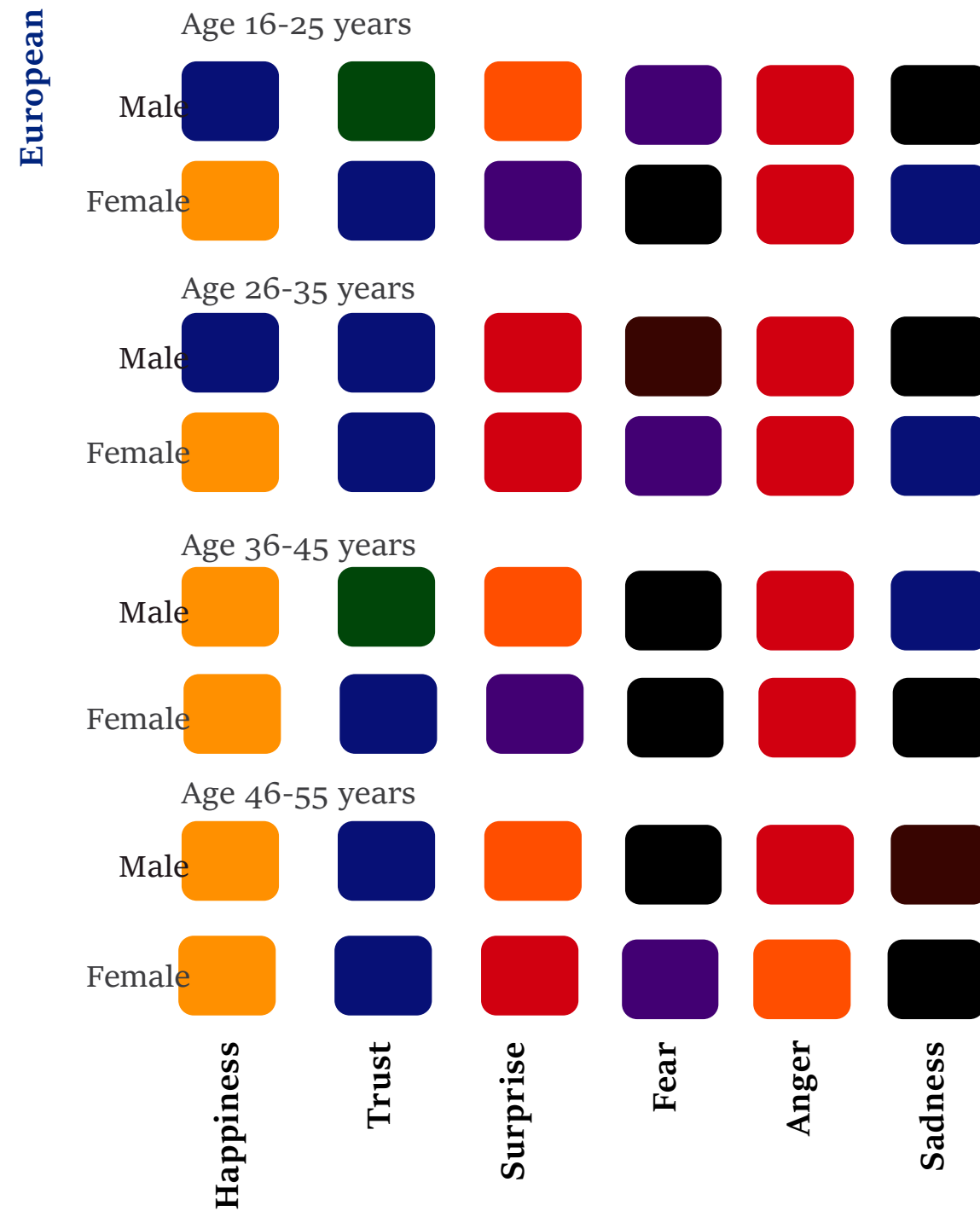
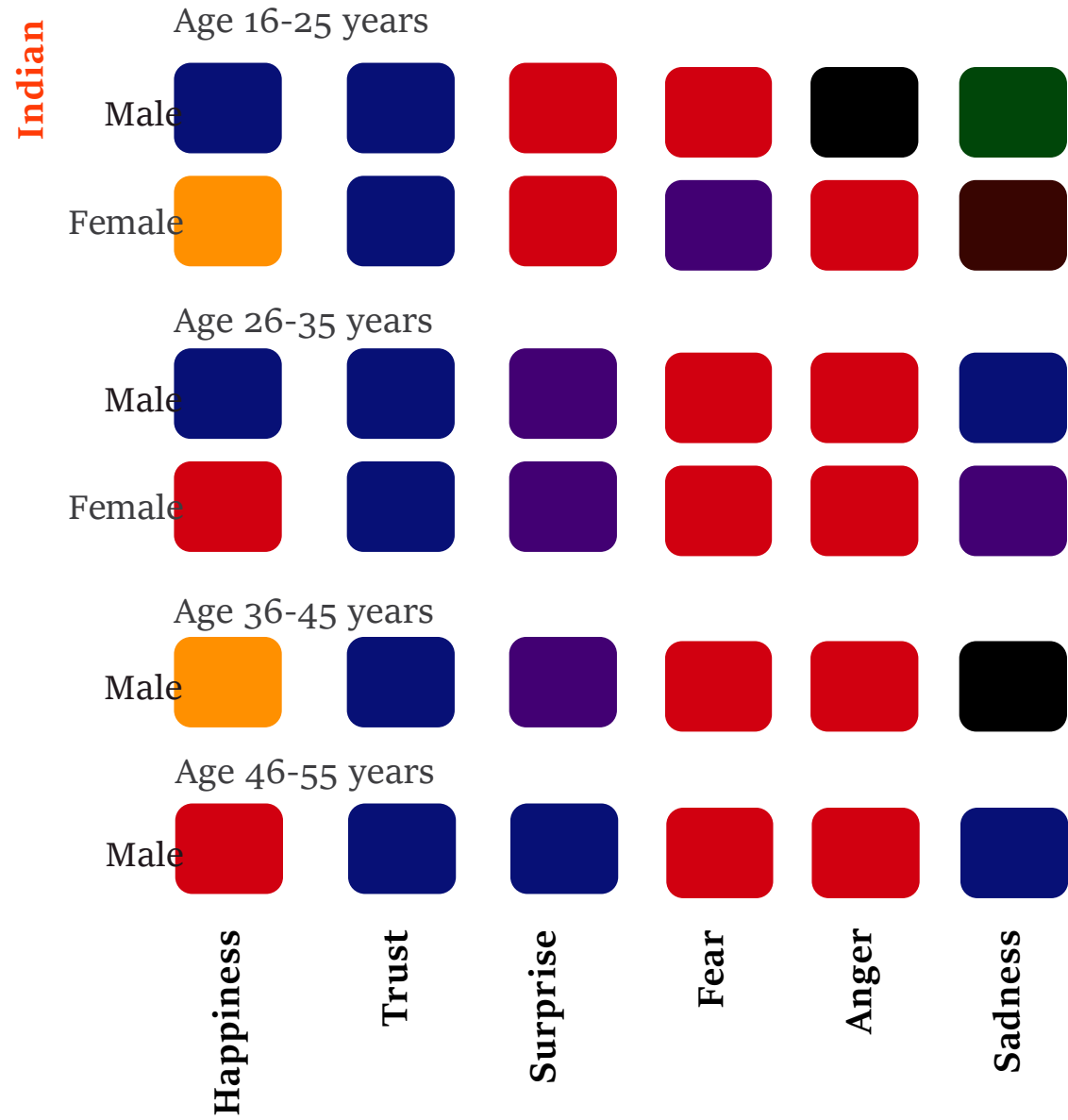
Surprise

Fear

Anger

Sadness

When we further explore the data collected and categorize it on the basis of age, gender and nationality (Fig.87), we can observe that the majority have chosen yellow as the color of happiness and red as a color of anger. However, the colors of other emotions are different from the previous chart. For trust emotion, most individuals over different cultures, age - group and gender, associated it to color blue instead of green. For surprise emotion, it has been equally associated to orange and purple. For fear emotion, the responses vary between red, black and purple. And for sadness emotion, individuals associated it to black instead of blue.



The significance of a particular color holds different meanings in different cultures. This color-emotion chart analysis supports the fact that emotional connect to a color changes based on the geographical location and then of its cultural essence.

Fig.87. Color-Emotion Chart for Indian and European

The next objective of the survey was to identify the practicality of describing depression through colors. In response to questions asking about the possibility of conveying health state through colors (Fig.88) and color healing (Fig.89), most individuals responded with a positive attitude towards it.

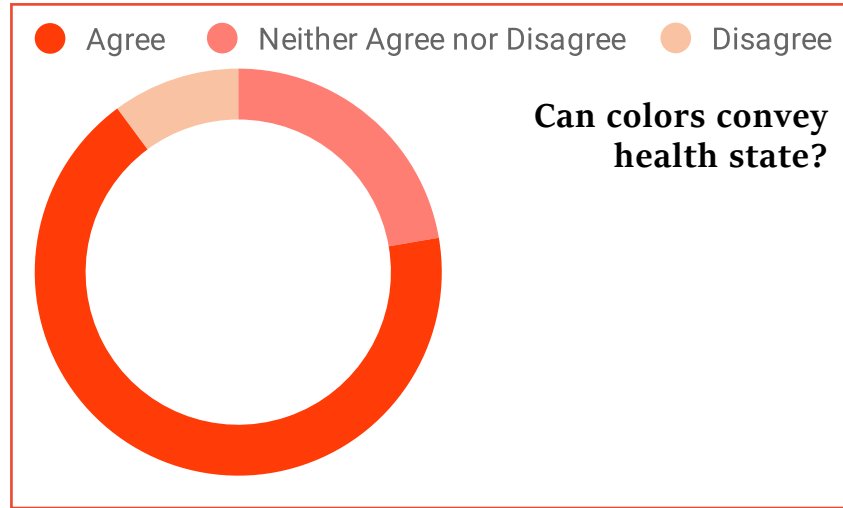


Fig.88. Possibility to convey health with colors.

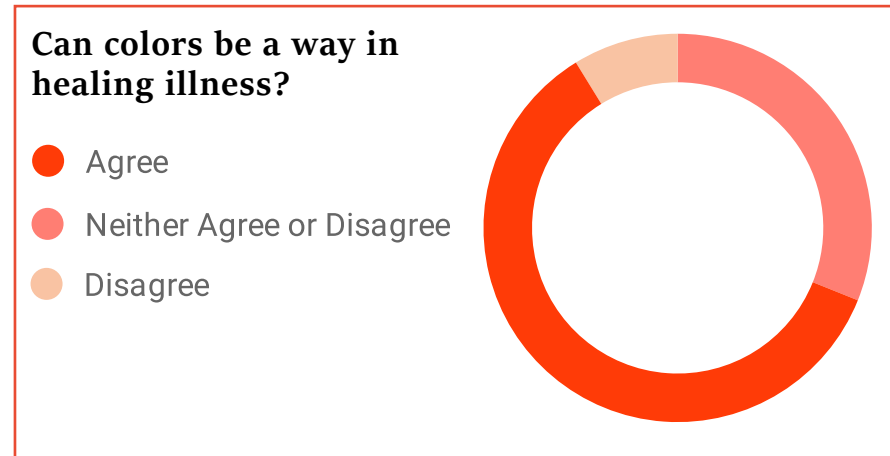


Fig.89. Possibility of color healing in illness.

The survey was also aimed at understanding the willingness of people to talk about depression. When individuals were asked to define depression, the majority identified depression as sadness or grief (Fig.90). It is one of the main stigmas of depression because of which people do not recognize it as a serious mental illness.



Fig.90. Graph for perception of depression.

Next question, people were asked to show the level of their agreement regarding statements related to depression (Fig.91). These statements involved a mix of facts and myths related to depression. This was focused to determine whether individuals can distinguish between facts and myths or not. The responses showed the amount of stigma surrounding depression. These responses highlight why there is a need to address and spread awareness about depression.

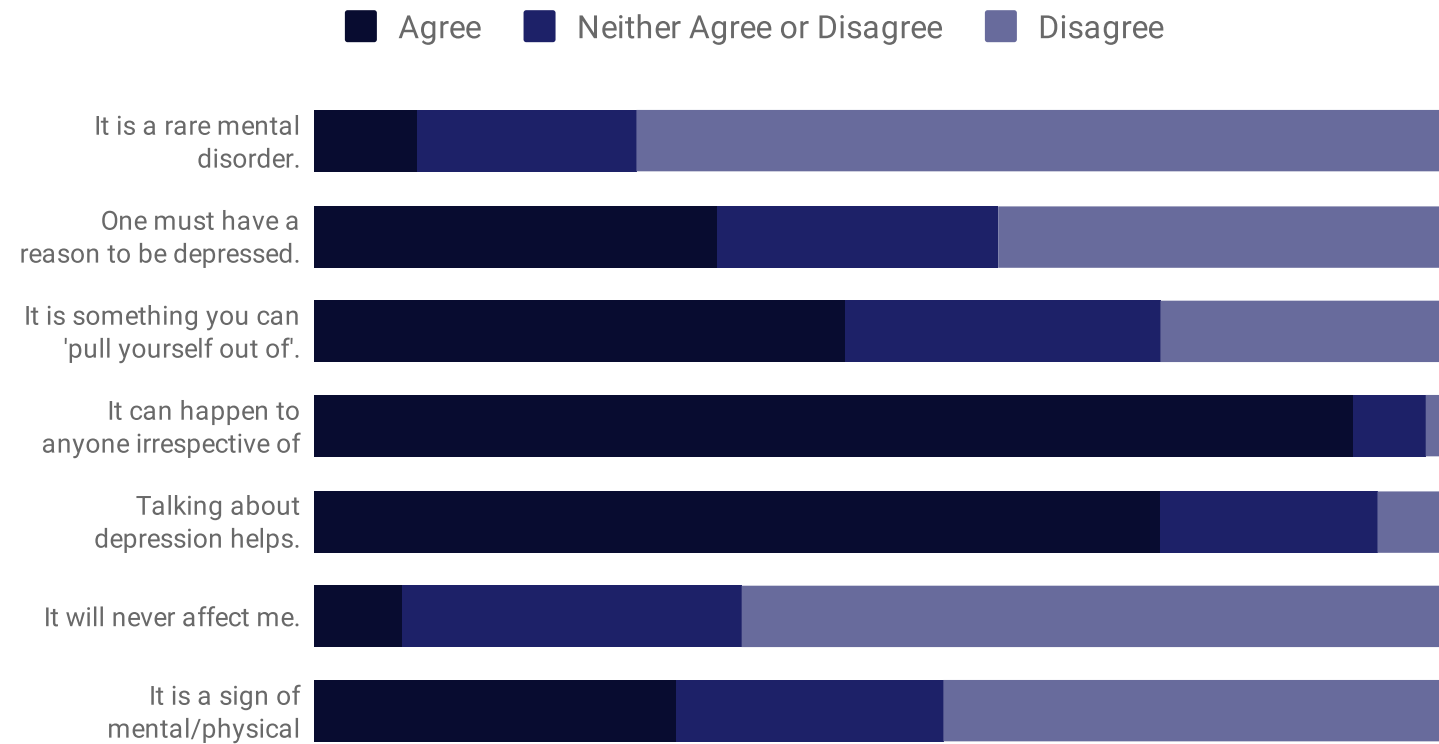


Fig.91. Attitude towards depression.

Next, when asked about the level of comfort talking about depression (Fig.92), 61.5% agreed that they feel comfortable talking about depression. This shows a positive sign when the project aims to spread awareness about the topic.

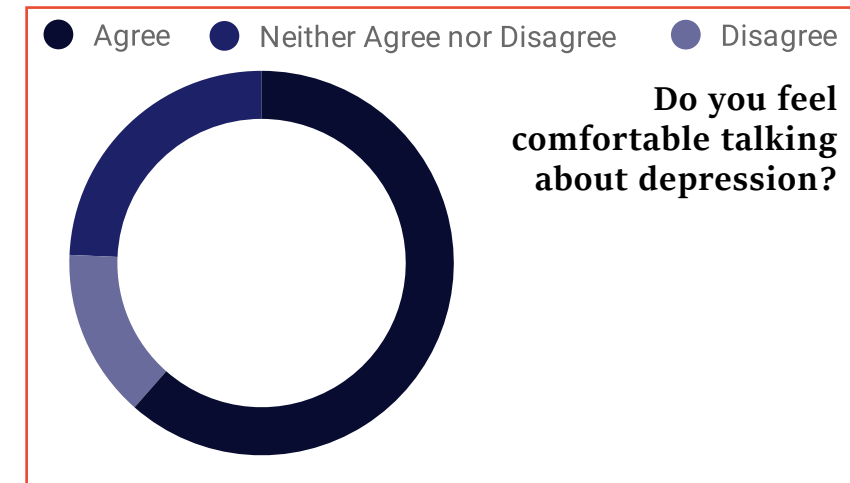


Fig.92. Comfort level to talk about depression.

Individuals were further asked about personal encounter with depression (Fig.93). It highlighted how common depression is and it is a crisis situation that needs to be addressed immediately.

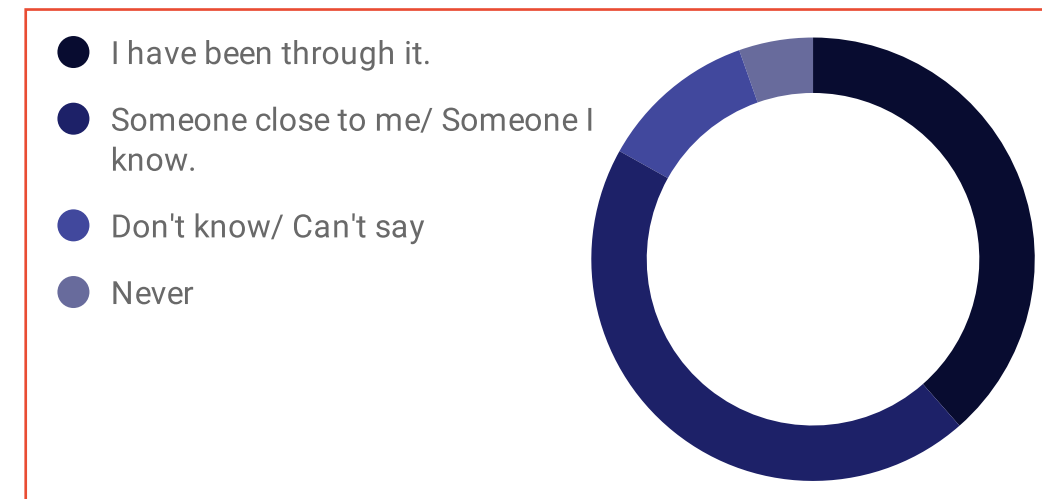


Fig.93. Personal encounter with depression.

In next response individuals expressed their feeling towards depressed people (Fig.94). This shows that individuals as a part of society can understand the depressed people better when they have accurate knowledge about their emotions and respective actions and then can express their feelings towards them appropriately.

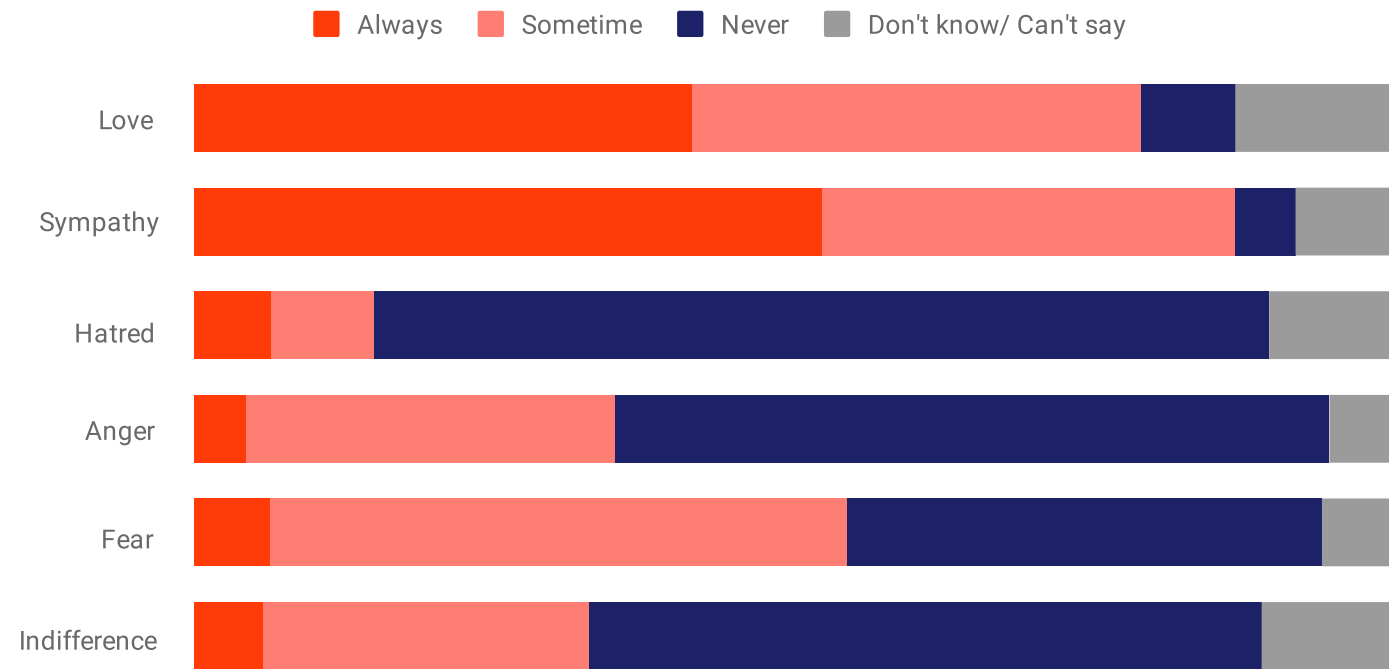


Fig.94. Feeling towards depressed people.

When individuals were asked what their reaction would be if they across someone going through depression, the majority responded that they would talk to the person (Fig.95). This shows positive attitudes that people are willing to extend their support to the depressed people.



Fig.95. Social inclusion towards depression.

The detailed analysis of data provided the main framework for the research to carry forward. It effectively answered the questions which were raised via the objectives of this survey. The study of individual responses pointed towards the fact that color preferences are not universal and are, indeed, affected by numerous factors, in this scenario, age, gender and cultural differences being the main contributors supplemented by individual's mood and personal connect to the color. One of the main objectives of this research work was to define the complex emotions of depression through colors. In order to work on that, it was necessary to identify whether individuals relate colors to emotions or not. The survey helped to answer the query and described the six basic emotions through color (section 6.3). Another important aspect to conduct this research work was to recognize that do individuals believe in the possibility of expressing any illness through colors and are they willing to accept color as a mode to communication to express complex emotions experienced during any major illness. The optimistic opinion by majority of individuals strengthened the objective behind the research work.

The next step was to answer that why there is such an immediate need to address depression. The facts and figures in *Chapter 2*, pointed out how depression is becoming a global crisis. One of the major drawbacks of depression is that people themselves don't know that they are going through depression unlike other major illness and thus, do not seek help. Moreover, it is termed as a 'going through a phase' which only deteriorates the situation. Hence, it was necessary to evaluate the facts stated by [World Health Organization](#) and [National Institute of Mental Health](#) to understand the level of awareness about depression. The data collected through survey highlighted that majority of people are open to talk about depression, gain knowledge about it yet they are surrounded by the common misconceptions that are continuously feeding to stigmatize the condition. The most common stigma related to depression is that it is considered as an emotion and related to sadness. The same view has been observed in this survey as well. Through the initial research it can be said that depression is a condition which takes you through turmoil of emotions. The positive emotions are no longer experienced in a positive way and the negative emotions are so low that they can make you suicidal. Talking about personal encounter with depression, majority responded that they have been through depression or someone close to them has experienced it. These two points support the notion that a proper portrayal of depression is needed so that people can understand what exactly depression is in order to empathize with those going through it.

A color has many faces. Experimenting with color is a way of challenging one's imagination and often results in a variety of unexpected new solutions. Whether through changing contrast, intensity, stretching conventional notions of color harmony; or altering color temperature; new dynamics of color interaction are always possible.

Right color sends the right message. It has the ability to evoke a response, create a mood, symbolize an idea and express an emotion. Differences in particular aspect of color, such as change in value or saturation, can further refine a color's meaning. The shade or tone of a color heavily impacts the overall impression, decide what feeling has to be conveyed – bright and cheery or perhaps dull and sad. On the one hand, a fully saturated color create a lively impression whereas varying the shades of hues to create contrast of light and dark and brings out dramatic effects.

When choosing colors to enhance the message being communicated, it is essential to anticipate audience perceptions. All color is relative, and people can have strong often subconscious, prejudices against certain colors and color schemes. Hence, it becomes necessary to investigate a particular color's meaning and associations before using it in the project.

For this research work, the color symbolism has been referenced with Indian culture. India has always been wrapped in myriad of colors. It is difficult to imagine any aspect of an individual's lives without colors when we talk about India. As highlighted in the [Chapter 3](#), that associations people put together with colors are at some level consciously and subconsciously based on their ethnic identity. In context to that, being born and brought up in India, the instance colors are being discussed, the natural instinct drives to Indian culture. Each color holds its own significance in India. The use of colors is not limited only to fondness. The Indian mythologies and scriptures define the sanctity of colors in our culture. It is also notable that the ancient Vedic sciences tried to explain the scientific reason behind the effects these colors have on human mind. Ayurveda further explored the healing properties of color and how to balance the colors in order to remove our impurities (section 4.2). Hence, the research focussed on exploring the expressive potential of color with the help of color theories and appearance effects discussed in [Chapter 3](#) cross- referenced with connotations to Indian culture.

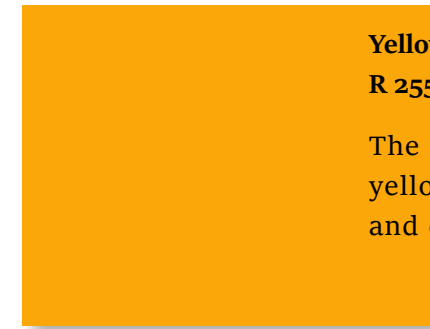
6.2. Color Logic

6.3. Derivation of Color Code

Before the derivation of color code, it was important to decide on the color mode to be used. It is evident that color we see physically is result of how we process light waves. As described previously in Chapter 3, RGB (Red, Green and Blue) is an additive color system which means that the primary colors are added together in various combinations to produce a much wider spectrum of colors. Working on RGB color mode provided more options and better control to produce unique colors by interaction between hue, value and saturation.

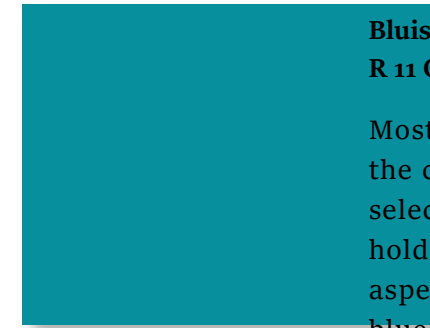
The main motivation behind this research work is to spread awareness about depression. Nowadays, depression has been witnessed among all age-groups, however, the individuals between 18years to 55years has been regarded as the major affected age group (WHO, 2012). Thus, the research is further developed focussing on this target age group. Another reason to work with the RGB color mode was considering the fact that the target age group is more approachable through digital media. The omnipresence of social media these days has the power to disseminate information at a much broader scale. Working with RGB color mode also provide platform for future exploration of the research.

Once the color mode was defined, the next stage leads to determine the colors for the six basic emotions included in online survey. Following the color derivation methodology and referencing with color- emotion association graphs and charts helped to get the first derivatives of the six emotions.



Yellow for happiness
R 255 G 168 B 4

The most preferred color of happiness in the survey was yellow which symbolizes spreading the hope of happiness and clearing stress out of nervous system in India.



Bluish Green for trust
R 11 G 144 B 158

Most individuals preferred green as the color of trust; however, the cultural association analysis related it to blue. Hence, blue is selected with tinge of green to represent trust. Both these colors hold different connotations in Indian culture. The optimistic aspect of both colors were extracted from Indian culture, sky blue being color of non- discriminating sky and the green of holy basil symbolizing purity.



Pink for surprise
R 212 G 30 B 68

Red and purple has been equally preferred colors for expressing surprise by the individuals in the survey. Hence, combination of both these colors is used to derive the color of surprise, that is, pink. Like the emotion, pink is an unexpected color in India. More than feminine associations, it represents ever renewing youth, prosperity and strength.

Dark red for fear
R 86 G 14 B 21

Red color was associated the most with emotion fear. In cultural association analysis, red and black colors are equally associated with the emotion. In Indian mythology, red and black denotes the incarnations of goddess Durga, red being symbolic of positive energy against evil whilst black being color of fearful goddess Kali symbolizing doomsday.

Red for anger
R 237 G 29 B 39

The most preferred color for anger in the survey was red. It holds a lot of connotations in India. One of main is the symbolic color of warrior Goddess Durga, willing to unleash her anger against wrong, violence for liberation.

Dark blue for sadness
R 55 G 54 B 122

Blue color was associated the most with emotion sadness. In cultural association analysis, blue and black colors are equally associated with the emotion. Dark blue of Indian peacock is symbolic of sorrow and black is color of extremists of Orthodox Hinduism who do anything that will shatter any human's ego.

The next step was to list down each depression type based on the emotions. Mind-mapping the symptoms helped to understand the basic emotion behind each depression. With reference to Robert Plutchik's Wheel of emotions (section 4.3) and *The Atlas of Emotions* developed by Dr Paul Ekman (Fig.96), the emotions were classified into the six basic emotions mentioned above. Inspired by the Dalai Lama, the Ekman's Atlas of Emotions represents each emotion as a continent. The movement of the continents reflects how emotions vary in strength and frequency in people's lives.

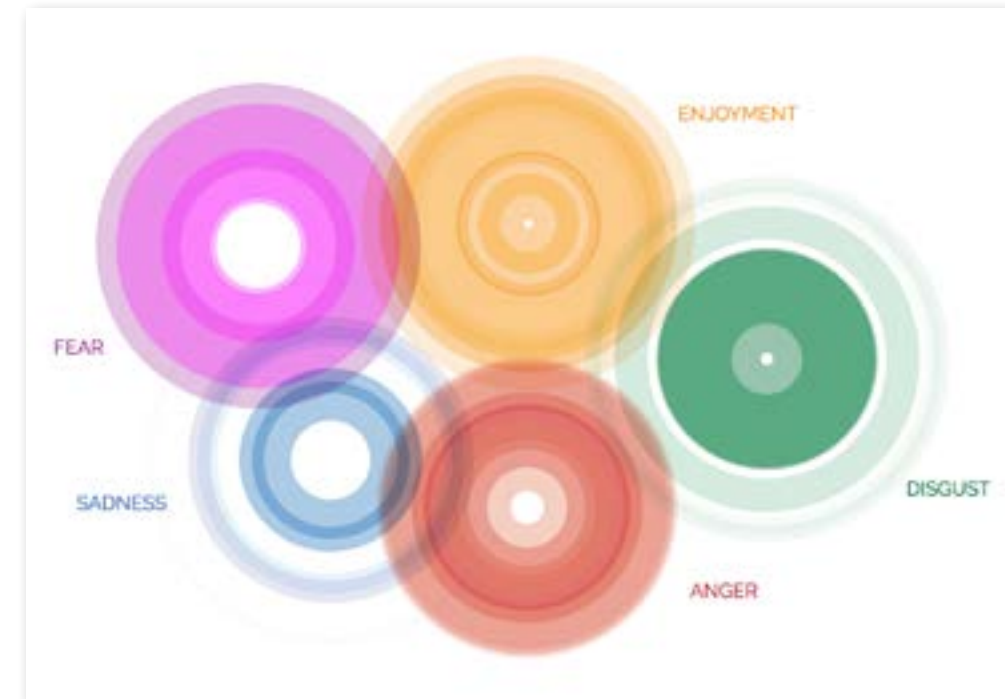


Fig.96. *The Atlas of Emotions* by Dr Paul Ekman

Breaking down of the complex emotions of depression helped to understand the basic emotion behind it and derive the first hue to work on. The derived hue is further explored by working on other two color parameters, value and saturation to define the intensity of emotion and severity of depression respectively.

The emotions studied for this research work has been categorized into six basic emotions and is mentioned below in ascending order, from mild to intense emotion.

Happiness: Joy, Pleasure, Amusement, Pride, Ecstasy.

Anger: Bitter, Annoyance, Aggressive, Frustrated, Numb, Withdrawn, Violence, Hostile.

Fear: Anxious, Nervousness, Overwhelmed, Worried, Inadequate, Panic, Horror

Sadness: Lonely, Despair, Grief, Guilty, Isolated, Helplessness, Hopelessness, Empty

Trust: Admiration, Acceptance, Faith, Relief

Surprise: Excitement, Astonished, Energetic, Dismayed, Disillusioned

Differences in hue alone do not change the perception of color (Adams and Stone, p.35, 2006). Difference in value is the factor in the ability to see a distinct edge between colors. Value is associated with the idea of luminosity. A hue that is luminous reflects a great deal of light, appears light, and is high in value. A non luminous hue absorbs light, is dark, and is low in value. The simplest way to dilute pure colors is to change their value by making them lighter or darker. “Added white” is a way of saying “made lighter,” and “added black” is way of saying “made darker.” Here, the intensity of emotion is being represented by the value. High value of hue is considered equivalent to bright, cheery mood whereas low value of hue to sad, gloomy mood. The determination of degree of value scale in this case is also relative to the severity of depression.

The severity of depression is represented by the saturation scale. The beginning of a saturation scale is a color that is hue-intense. The end step is a color so muted that its hue can just be identified. Thus, a high value on saturation scale means closer to its pure hue denotes the least severe form of depression, whereas a low value on saturation scale means a desaturated hue denotes the most severe form of depression. Hence, based on the severity of depression, the hue is toned down, turning it from a vivid color to a dull color. Any hue is muted in steps from full saturation to dull by adding gray of equal value depending on the degree of severity of depression.

The **Value – Saturation Scale** explains the concept applied to get the second derivative (Fig.97). As mentioned the value scale represents the intensity of emotion, with most intense dark emotions at the bottom with no presence of white in it whereas mild light emotions at the top with no presence of black in it. The relative degree of black and white varies depending upon the degree of an emotion in comparison to its basic emotion. On the other hand, saturation scale representing the severity of emotion where hue desaturated with high percentage of gray indicate the most severe form of depression whereas a hue saturated with low percentage of gray indicate the less severe form of depression. The point where no black or white is added is pure hue representing that the equilibrium in balanced on value- saturation scale and is the state where only the basic emotion is experienced by the person. This point describes the normal mental state where basic emotions are felt as part of our daily life.

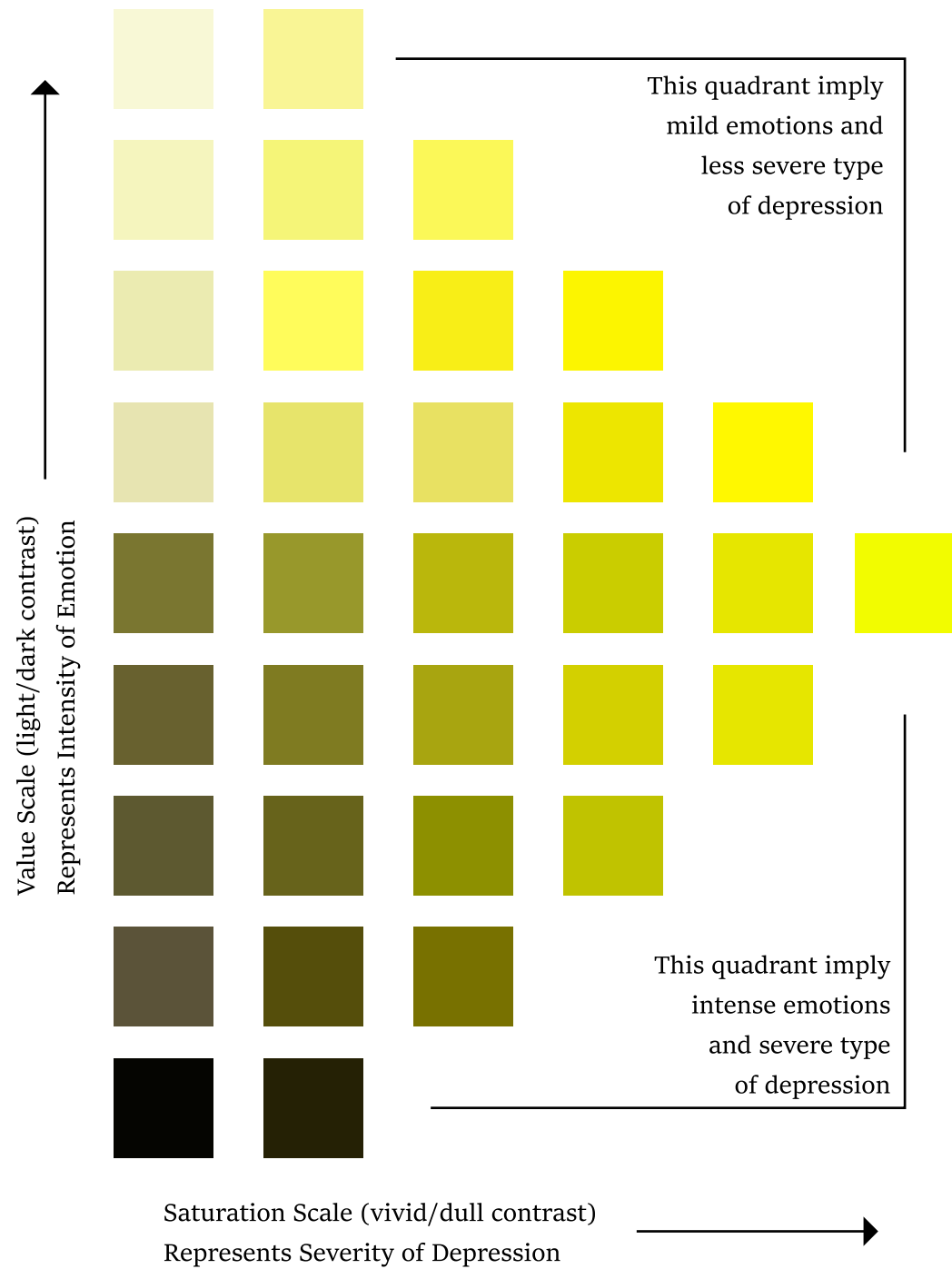


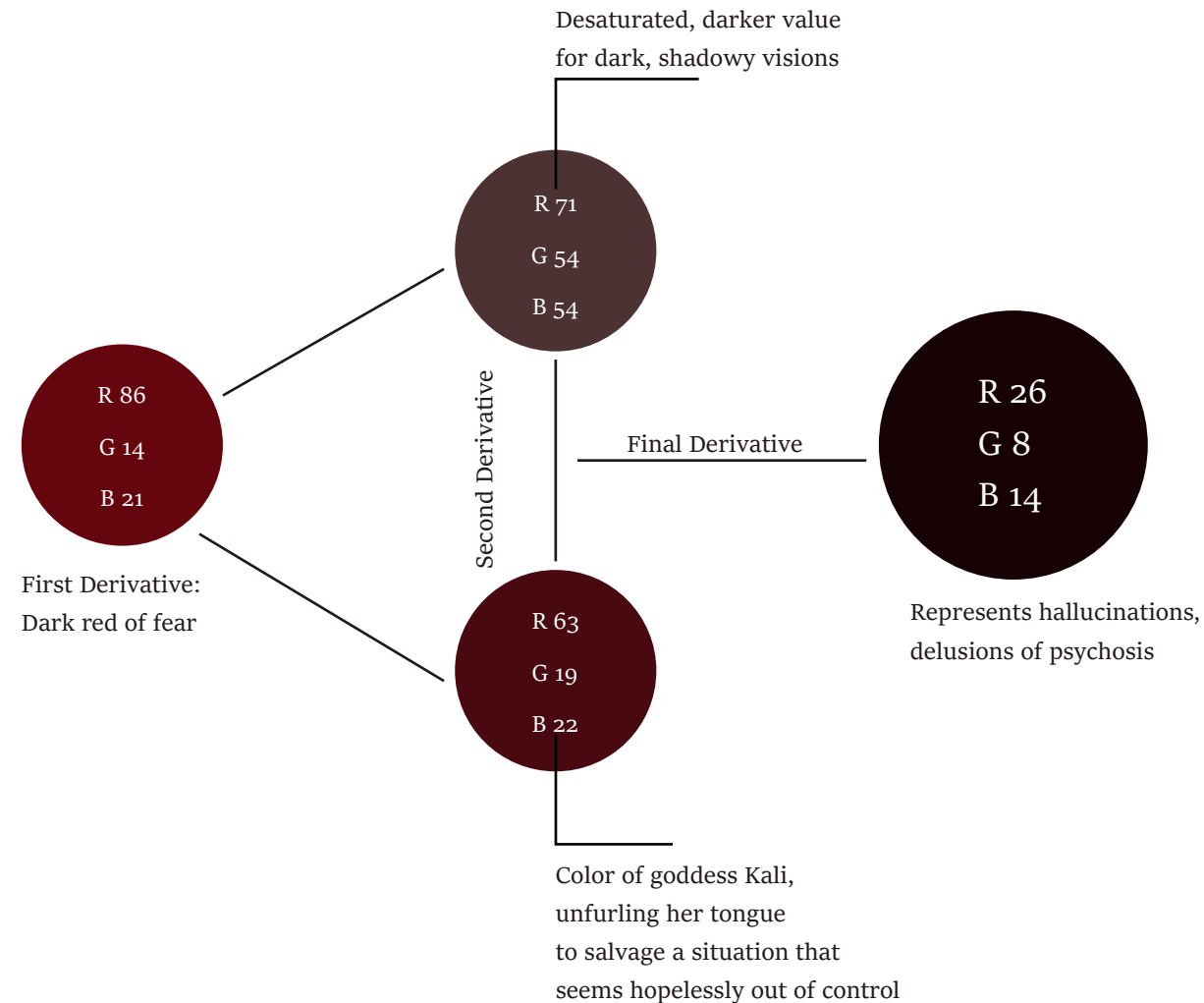
Fig.97. Value -Saturation Scale

6.4. Final Derivatives

The last stage of color derivation involved application of methods mentioned in section 6.2 and derive the final unique hue for each depression types. The major emotions of each depression type were listed down and a mind- mapping chart was drawn (Annexures). This helped to understand the basic emotions and get the first derivative. Then, the hue derived from value- saturation scale and the hue significant or symbolic of that particular emotion in Indian culture is added.

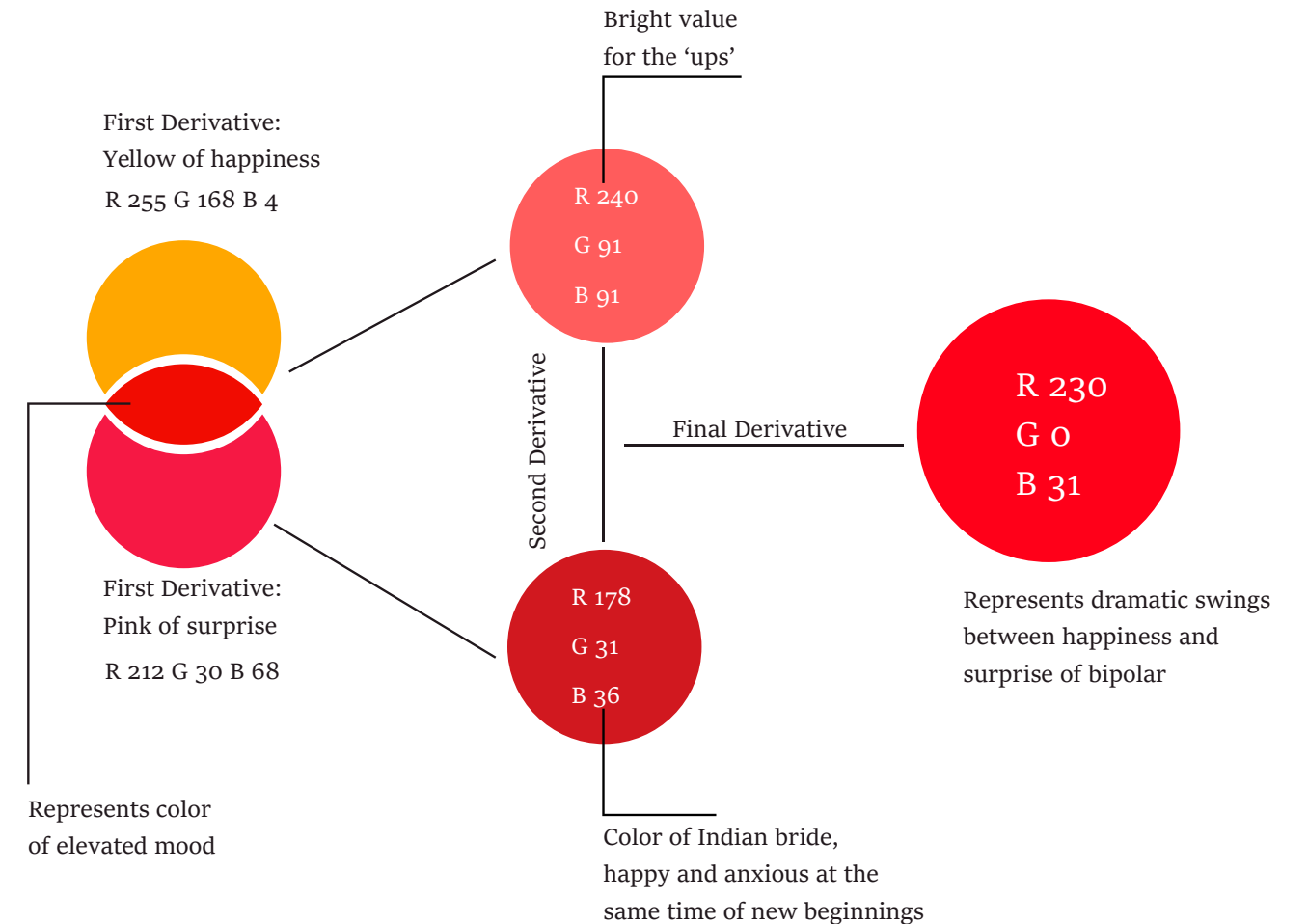
Psychotic

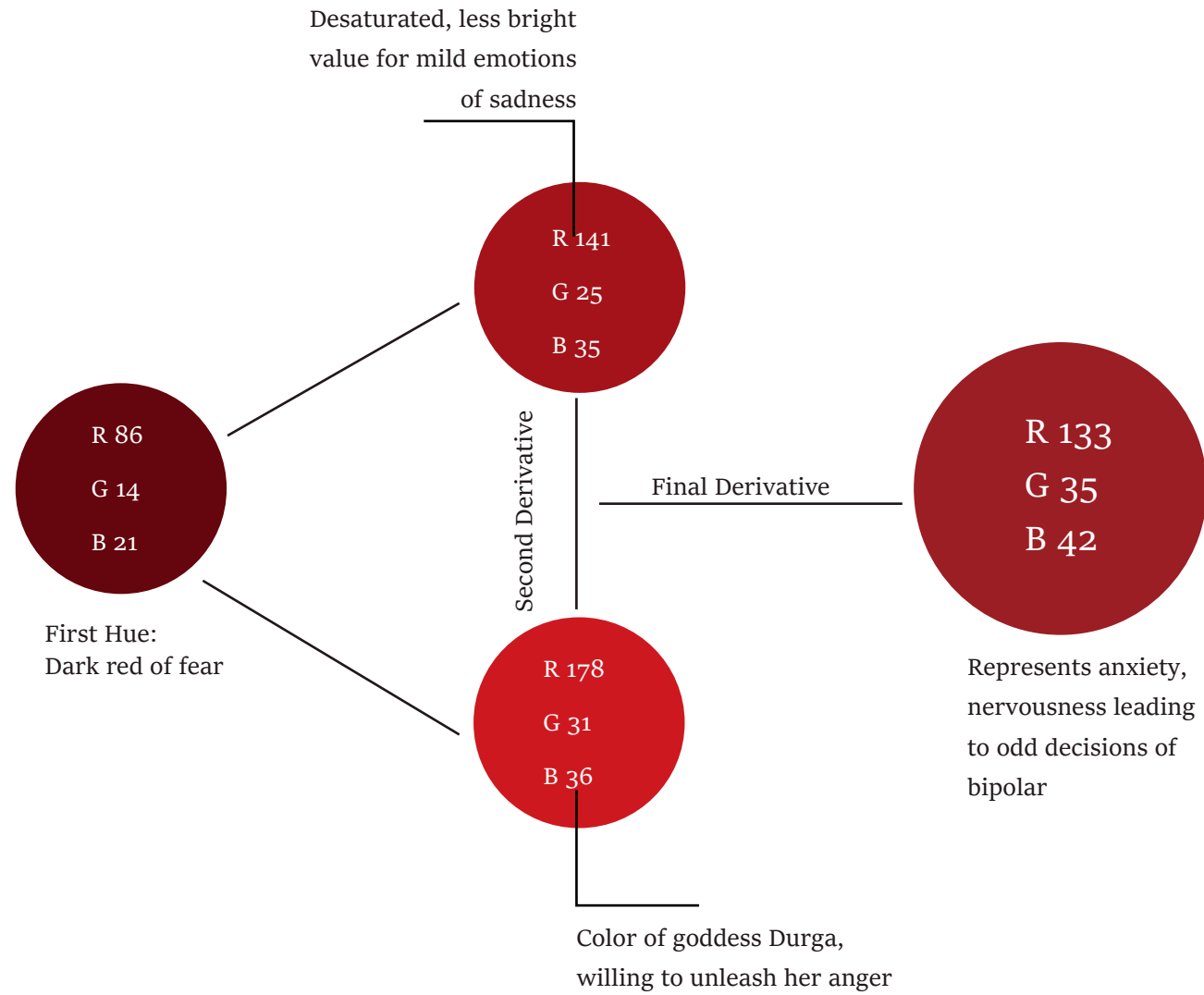
The major symptoms experienced in psychotic depression are hallucinations, delusions, losing touch with reality and hearing voices in head. Breaking down these symptoms further highlights that hallucinations and delusions happen due to intense negative emotion of fear. Psychosis is considered mystical as it is difficult to understand or explain the feelings and experiences. Those who experienced psychotic depression describe it as dark and shadowy vision.



Bipolar

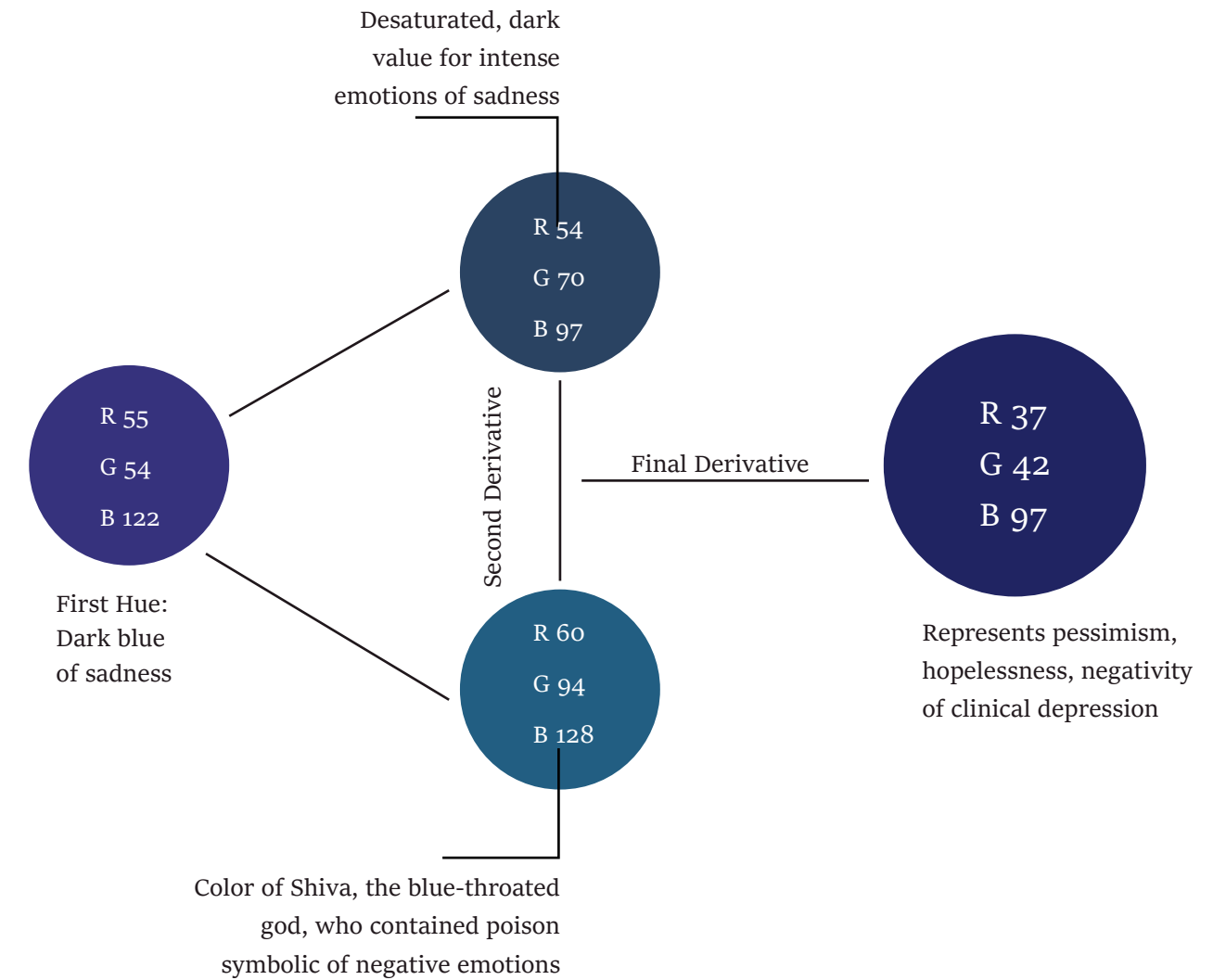
Feeling euphoric and uncontrollably excited, having racing thoughts and being unpredictable & dangerous are observed as the major symptoms of bipolar depression. The mania episodes are described as rollercoaster of emotions. The 'ups' of bipolar seems to full of optimism, having awe-inspiring, magnificent ideas related to intense emotions of happiness and surprise whereas the 'downs' feel as flat, devoid of colors and might lead to suicides happen due to extreme nervousness and anxiety related to intense emotions of fear.





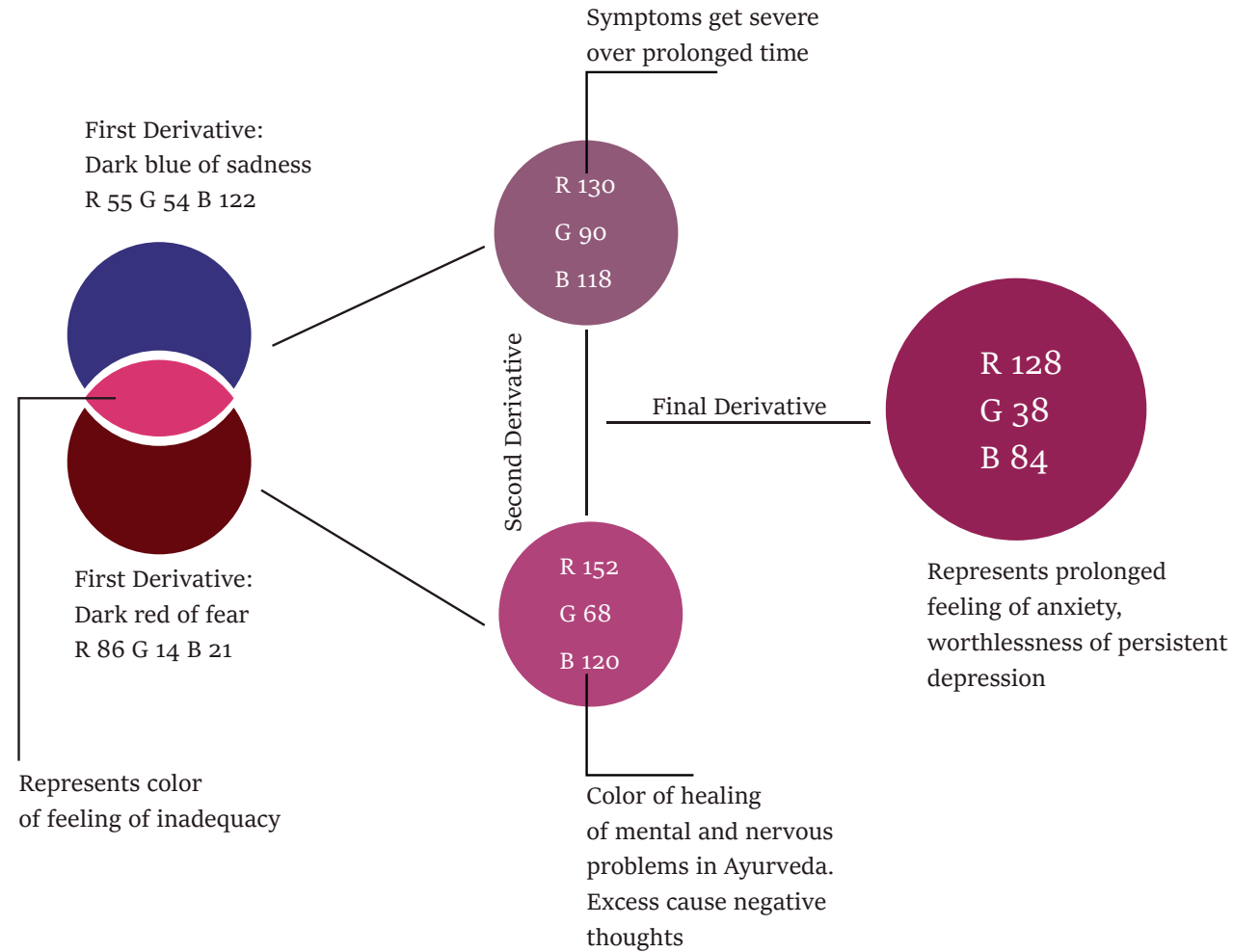
Clinical

One of the most common forms of depression, it is identified as sadness continued for two emotions experienced, which are identified as intense emotions of sadness. People often feel tired, experience insomnia and dark mood in clinical depression.



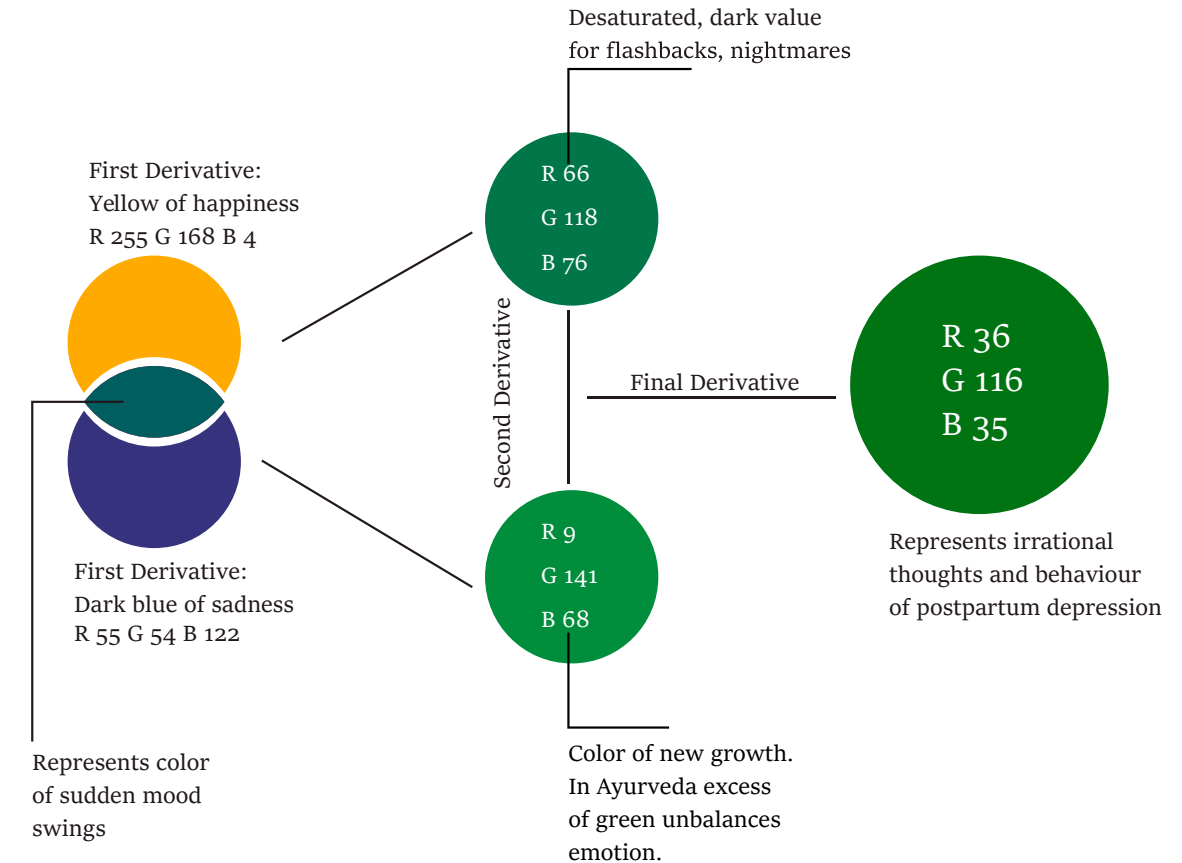
Persistent

Also known as double depression, the symptoms experienced are the same as clinical depression but it is experienced continuously for a period of two years. The major symptoms experienced are anxiety, worthlessness, low self esteem and feeling of inadequacy. The emotions of sadness are aggravated by intense emotions of fear.



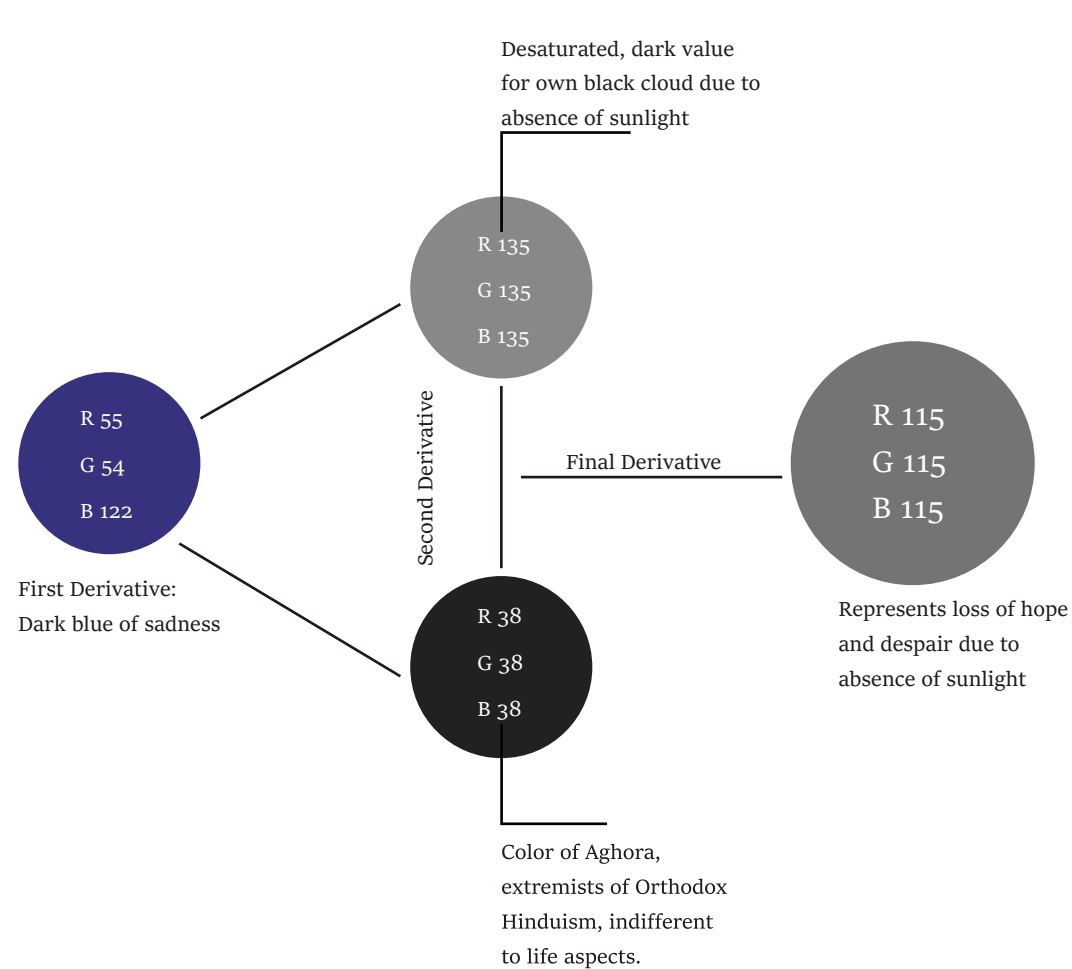
Postpartum

The symptoms of postpartum depression are often described as baby blues, but it is more than that. It is accompanied by loads of intrusive thoughts, flashback of childbirth, nightmares of baby being possessed, and guilt of not being a good mother which causes panic attacks and bizarre behaviour by the new mother. The emotions take a swing between emotions of happiness and sadness.



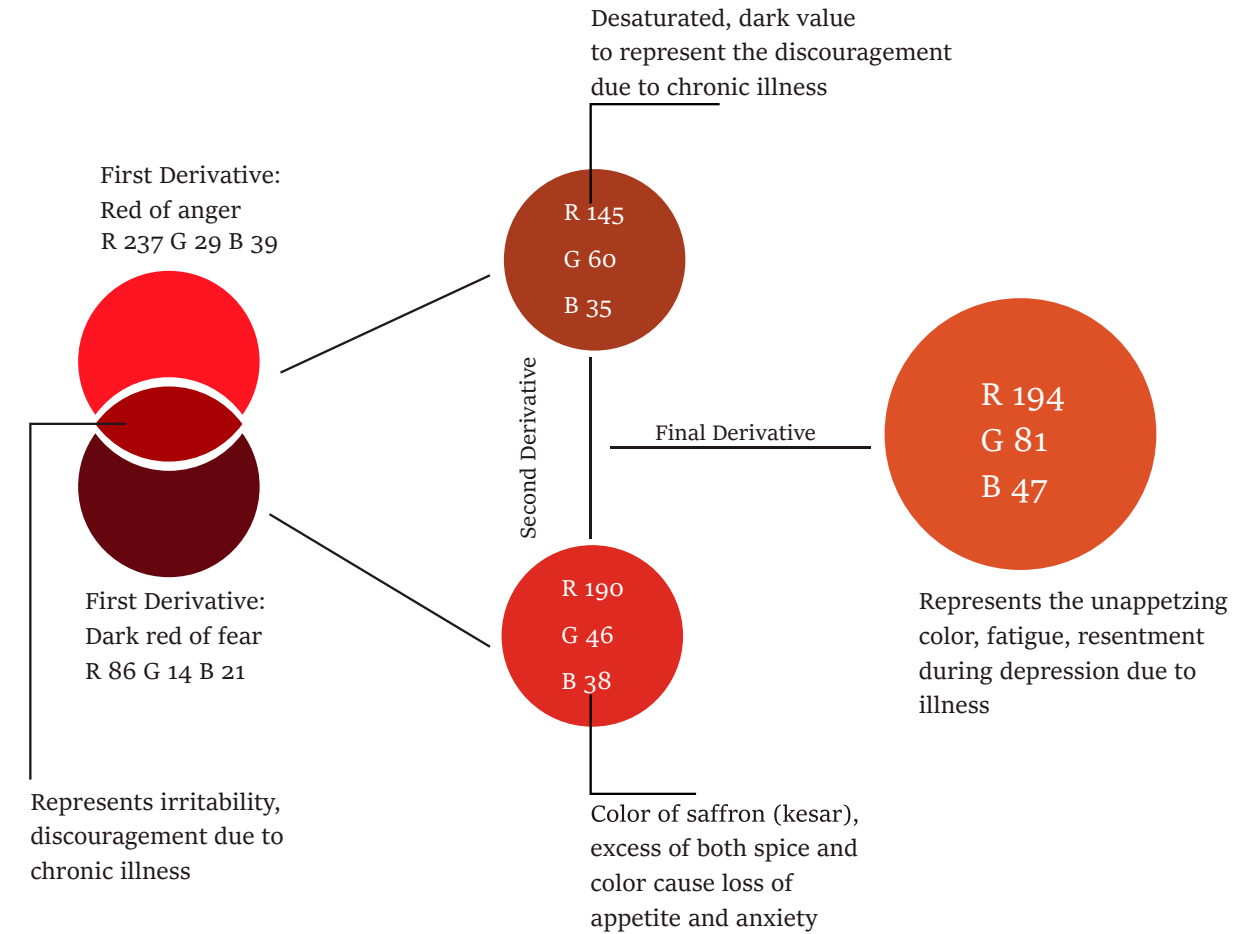
Seasonal Affective

Mostly experienced during winters, seasonal affective depression is characterised by despairing, inability to cope, burst of hyperactivity and cheerfulness and loss of interest in daily activities which points towards emotion of sadness. The less amount of exposure to sunlight causes disrupted body clock and people feel as if they are carrying their own portable black cloud.



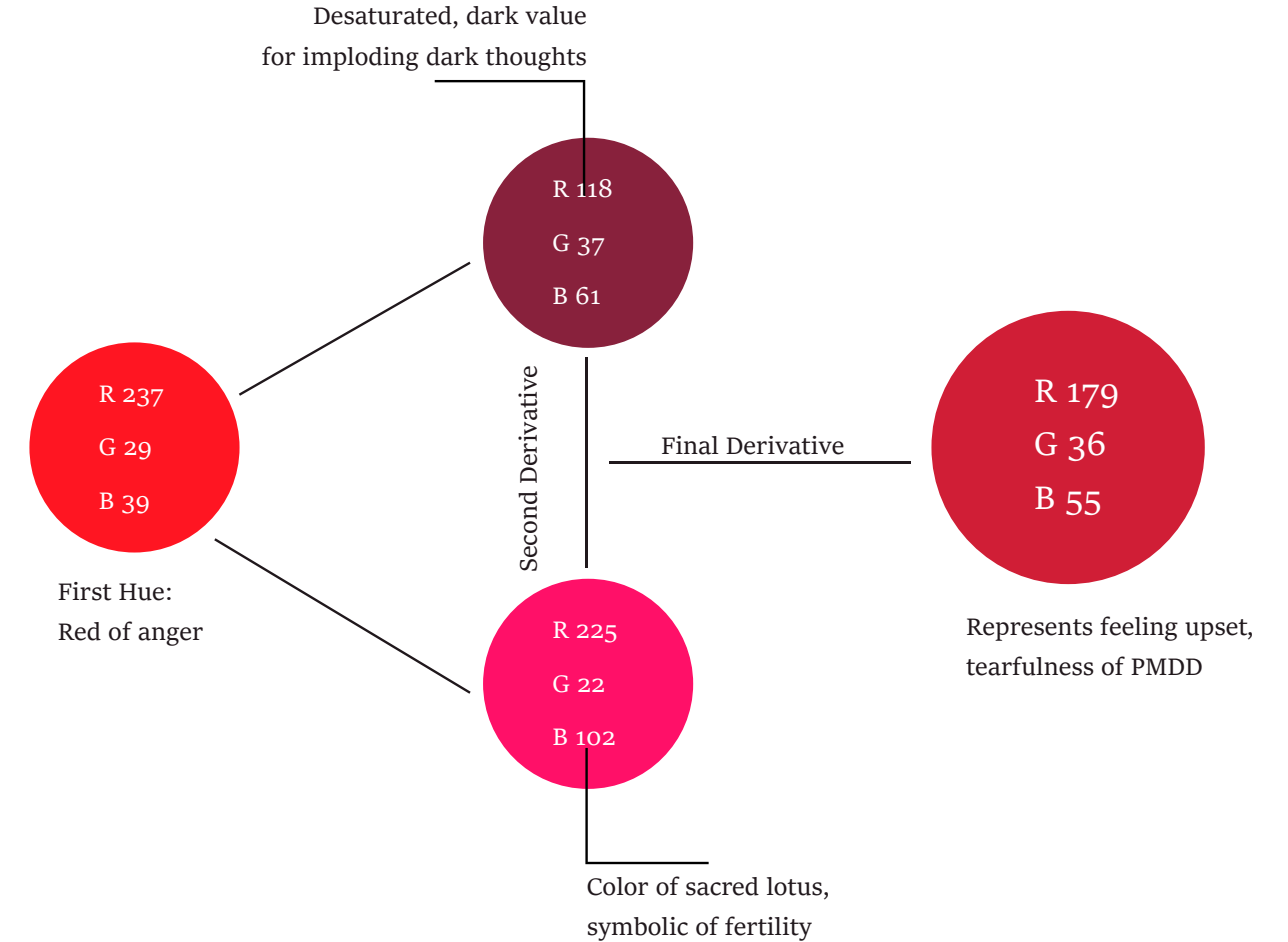
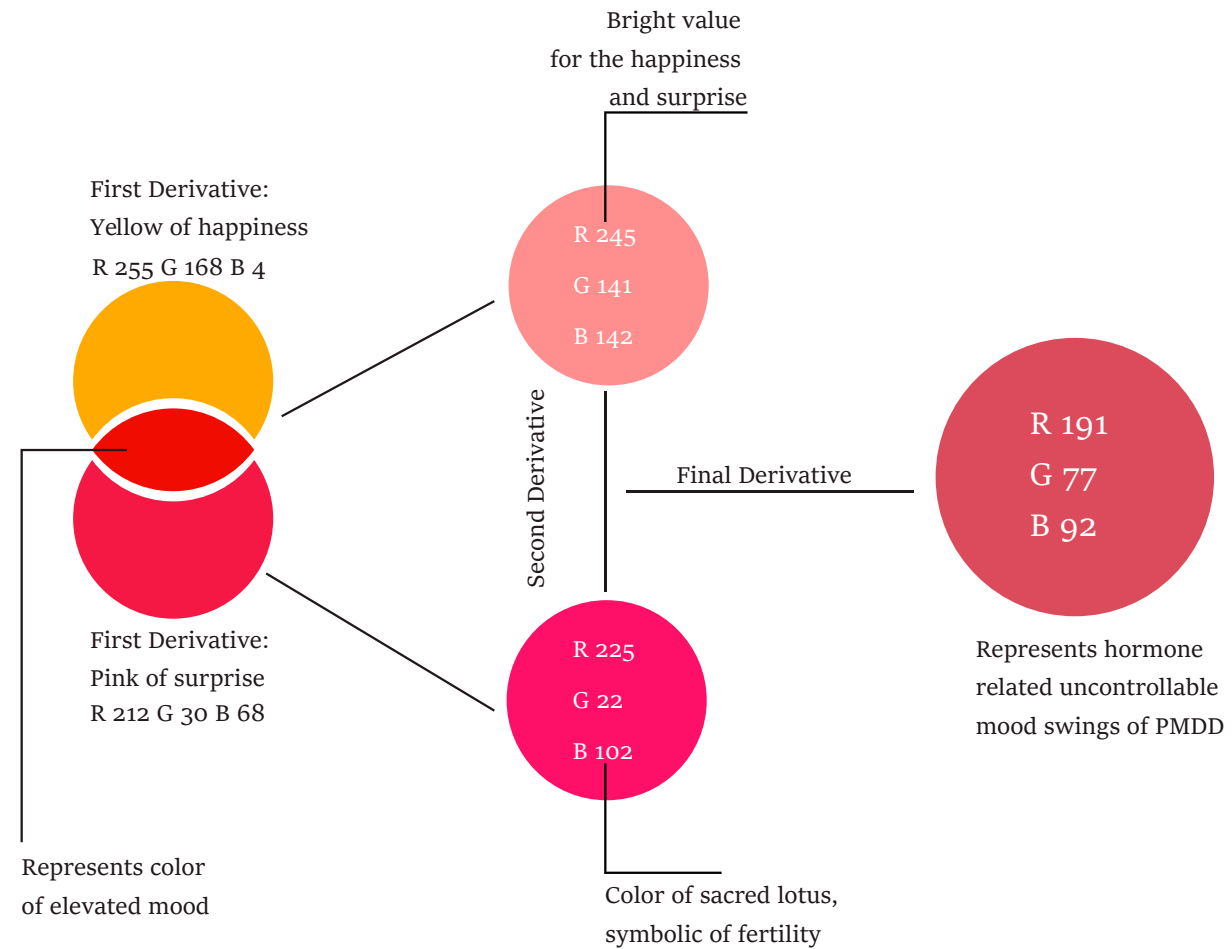
Due to Illness

It usually occurs when a person is going through a chronic illness such as cancer, heart disease, etc. Coping up with the new situation and ongoing treatment leads to lose confidence, fatigue, sluggishness and apathy. Weight fluctuations due to the illness are further aggravated by these depression symptoms. The mixed emotions of anger and fear make it hard to cope with illness and depression symptoms at the same time.



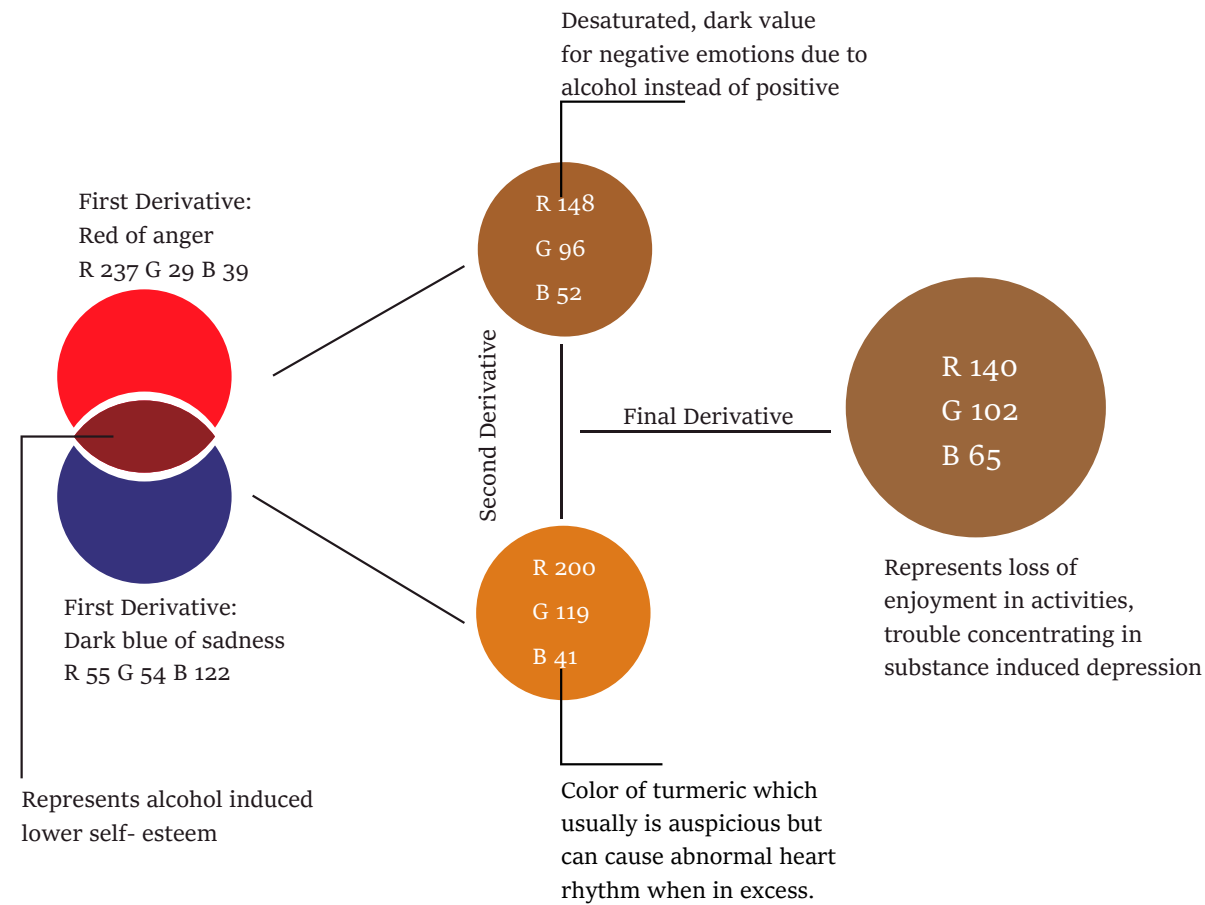
Premenstrual Dysphoric

Experienced by women a week or two before their period starts, it is characterised by mood swings, feeling upset, tearful and overwhelmed and being on edge. The mood swings are observed to be jumping between emotions of happiness and sadness which worsened by irritability and imploding dark thoughts.



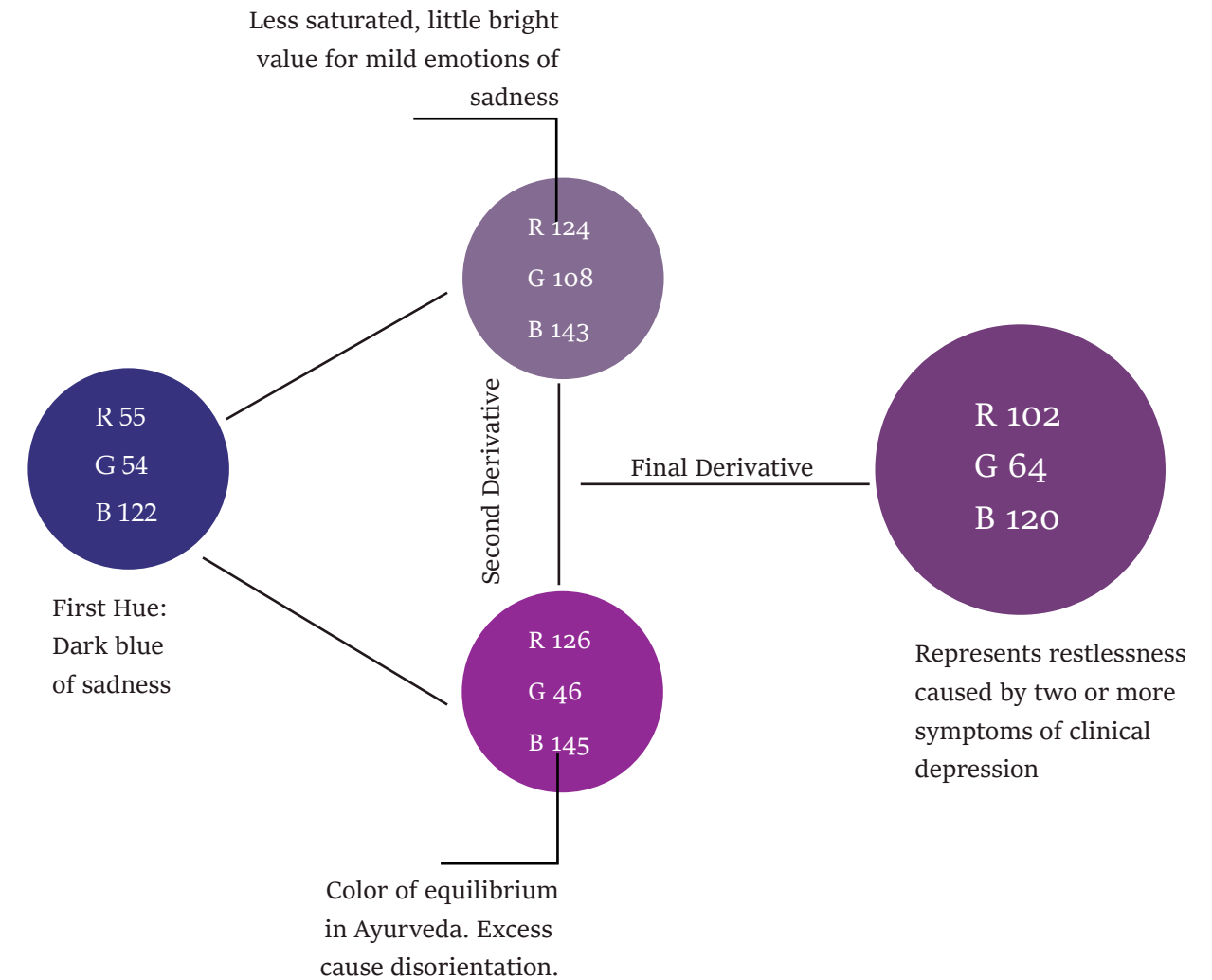
Substance Induced

The alcohol or drugs consumed are considered to bring positive emotions but it makes the person feel worse and unable to realize reality which leads to substance induced depression. It is more than a temporary hangover identified by complete loss of interest or enjoyment and aggressive violent behaviour. Instead of feeling happy, the person ends up being sad and angry with alcohol consumption.



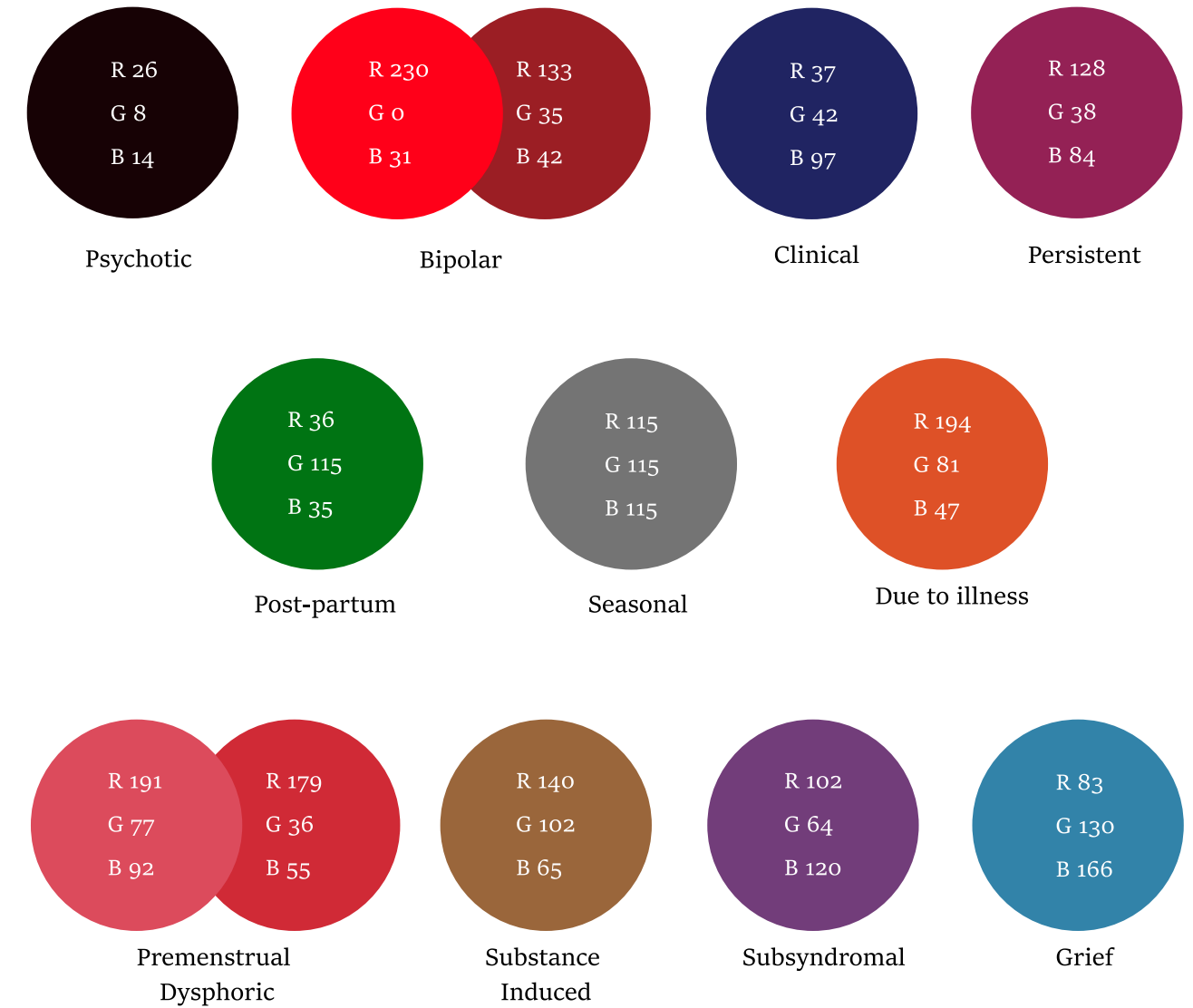
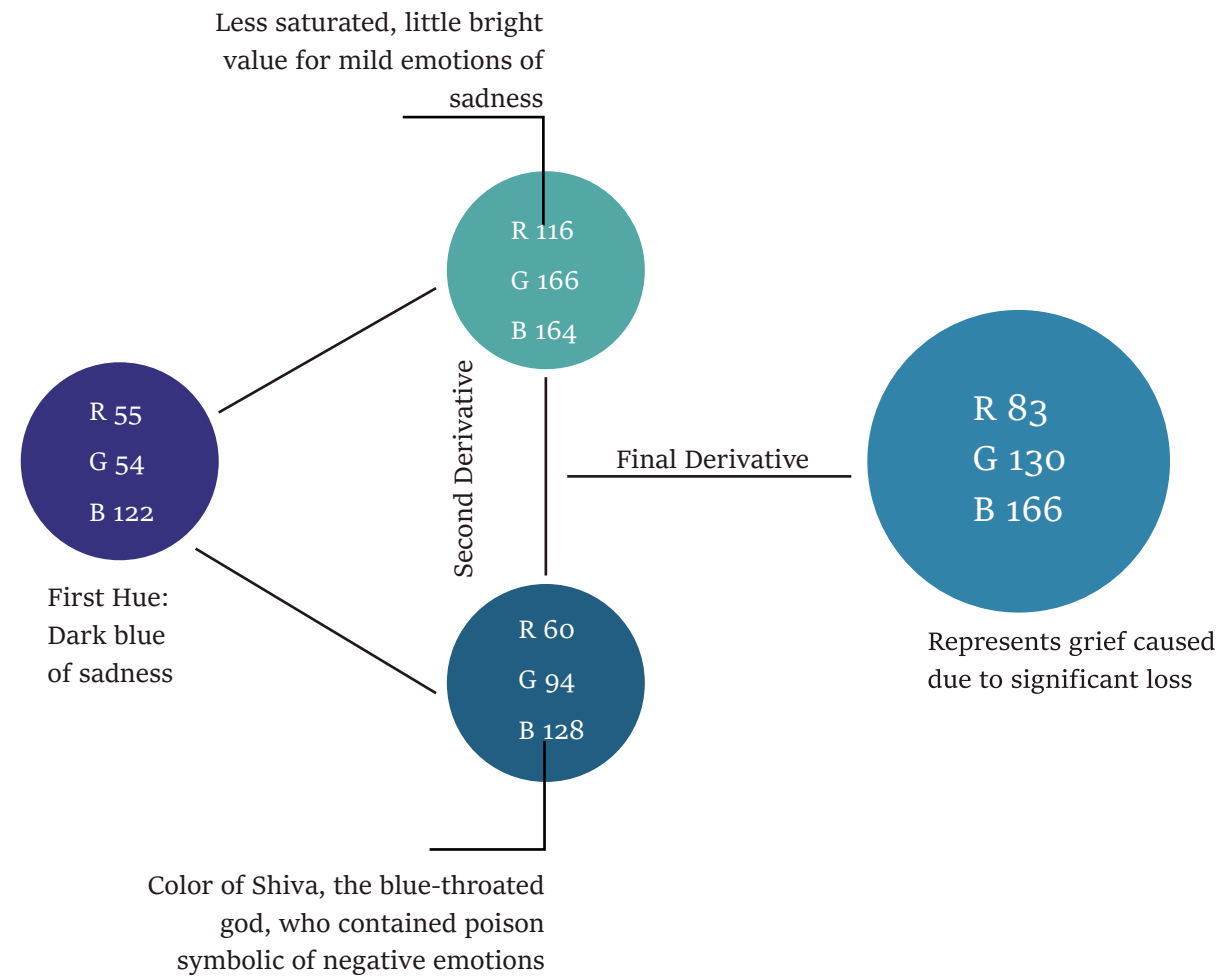
Subsyndromal

The symptoms are similar to clinical depression but it exhibits only two or more symptoms of clinical depression and is less severe than that. The most characterized symptoms are restlessness, isolation and behaviour change.



Grief

The least severe form of depression is observed by the sadness over a significant loss but this grief continues to exist for more than two weeks it leads to clinical depression. The sadness is accompanied by trouble sleeping and tearfulness.



The stages involved in deriving the color codes also conceptualises the idea of methodological approach that can be adopted to determine color palette for a graphic design project based entirely on the emotional dimension of the color. As for this project, the derivation of color codes is based on the parameters of severity of depression and intensity of emotion, similarly, these parameters can be replaced with other contributing factors based on the nature of the project and the message it wants to communicate.

07

PRACTICAL
FRAMEWORK

R 218 G 41 B 74
Symbolic of all human spirit.

The research work aimed to develop a visual interactive medium that can explain the emotions experienced during depression and also help to distinguish between different types of depression. In order to do this, an eBook is developed which is an anthology of visual short stories depicting experiences faced during depression. In the research, eleven types of depression are considered. Each depression is accompanied by symptoms that are common in all types. However, there is one emotion in each of them that distinguishes it from other types. Thus, the practical work focussed on capturing that emotion using the color code derived to create an individual identity for each depression type.

It was also essential to visualise the emotions based on real experiences to maintain the authenticity of the work. A thorough study of the personal stories shared by individuals, which are published by the organization such as *The Live Love Laugh Foundation* and *Beyond Blue* (both working towards spreading awareness about depression and anxiety) helped to formulate a narrative for the eBook. One of the main points observed common in most of these personal stories was that the individuals confessed that their experiences are difficult to be expressed in words and the support from family and friends helped a lot in their recovery. Keeping this in mind, the eBook focussed on illustrating these complex experiences.

In order to create an individual identity of each depression type and highlight the importance to know about depression, a monochromatic color scheme has been adopted for the eBook. The motive of the illustrations is that they are approachable to the audience, so it is also needed to maintain the simplicity of final work which is established by the monochrome scheme. This limited palette is enriched by adding even intervals of attributes which expanded the color palette without disturbing the original color concept. The top consideration in this scheme is given to contrast so that each hue stands out at the same time maintaining the main focus on initial color code. Firstly, the base color derived in Chapter 6, is extended by introducing equidistant intervals of value including both tints and shades, keeping the hue constant. This involved increase/decrease of value scale by 20% for each interval. Inspired by Itten's theories of color contrast (section 3.4.1), the palette has been created by the juxtaposition of light and dark values for the monochromatic variants. Next, fine adjustments are done to the palette on the saturation scale to achieve an overall muted effect of depression. This involved reduction of saturation by 50% in comparison to the saturation of base color to get lighter pale hue for the palette. Hence, the relationship between single hue and even intervals of value scale and saturation scale gave a harmonious monochromatic scheme for the eBook.

For the final illustrations, five - color palette has been made for all the eleven color codes. As depicted (Fig.98), the colors at the extreme ends (R 77 G 23 B 41 and R 128 G 38 B 68) are derived by keeping the hue and saturation percentage of base color constant and introducing even intervals of 20% on value scale. For the colors next to the base color, on the left and right (R 230 G 149 B 176 and R 179 G 116 B 137) both have same saturation percentage, reduced by 50% in relevance to the saturation percentage of base color. Then, even interval of value percentage is introduced to have harmonious light/ dark contrast. The same way palettes for other colors have been formed.

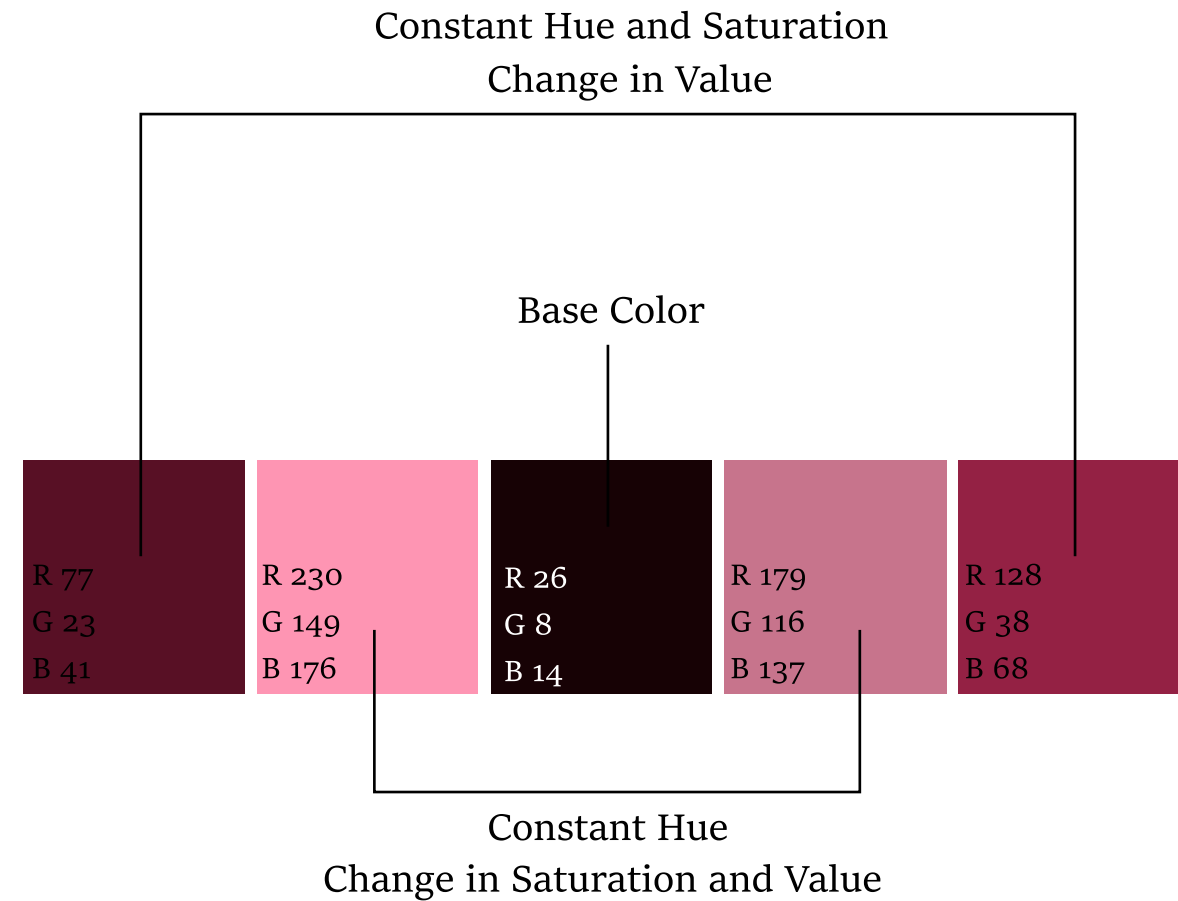


Fig.98. Color Palette Development'

7.1. Illustration Project: The Quirky Brain

The eBook, an anthology of short visual stories, described the eleven emotional stories of depression through illustrations. It does not show the activities or behaviour of people going through depression in their day to day lives instead it focuses on visually describing the turmoil of emotions going inside their minds which is the key reason behind the way people act or behave. It illustrates those emotions which cannot be described in words, the experiences which do not hold any meaning in our 'practical' world.

The name embraced for the eBook is 'The Quirky Brain'. The Oxford Dictionary defines quirky as 'having or characterized by peculiar or unexpected traits or aspects'. Since the eBook portrays the unexpected, unusual experiences of brain that causes depression, this title does an appropriate justification of the concept behind the illustrations. It has been pointed out in Chapter 2 that the experience of depression is not the same for every individual. Each personal story has its own peculiar aspect, be it negative. The same has been tried to maintain in stories illustrated to characterize each depression by its peculiar, unexpected trait. Hence, a light title has been adopted to balance the complexity of message communicated through the book. Further, the chapter

headings are also worked out on the basis of major symptoms/ emotion experienced in that particular type of depression.

Another key point is that the central character in the illustrations is from the target age group of 18 - 55 years. However, the gender of the character is based on the facts extracted from World Health Organization and National Institute of Mental Health that which gender experience a particular type of depression more than the other.

The central character in each illustration is shown in base color denoting that the character is experiencing the emotion associated to that color. It should also be noted that characters are not given any facial expression. Our facial expression has maximum potential to tell others what we are feeling at a particular point of time. However, in depression, individuals never express their true emotions and act blank containing their emotions within themselves which makes it difficult for other to understand that they might be going through a problem. Also, this research work emphasizes on expressing emotions through colors, hence, it is apt to let the colors be the key factor in defining these emotions.

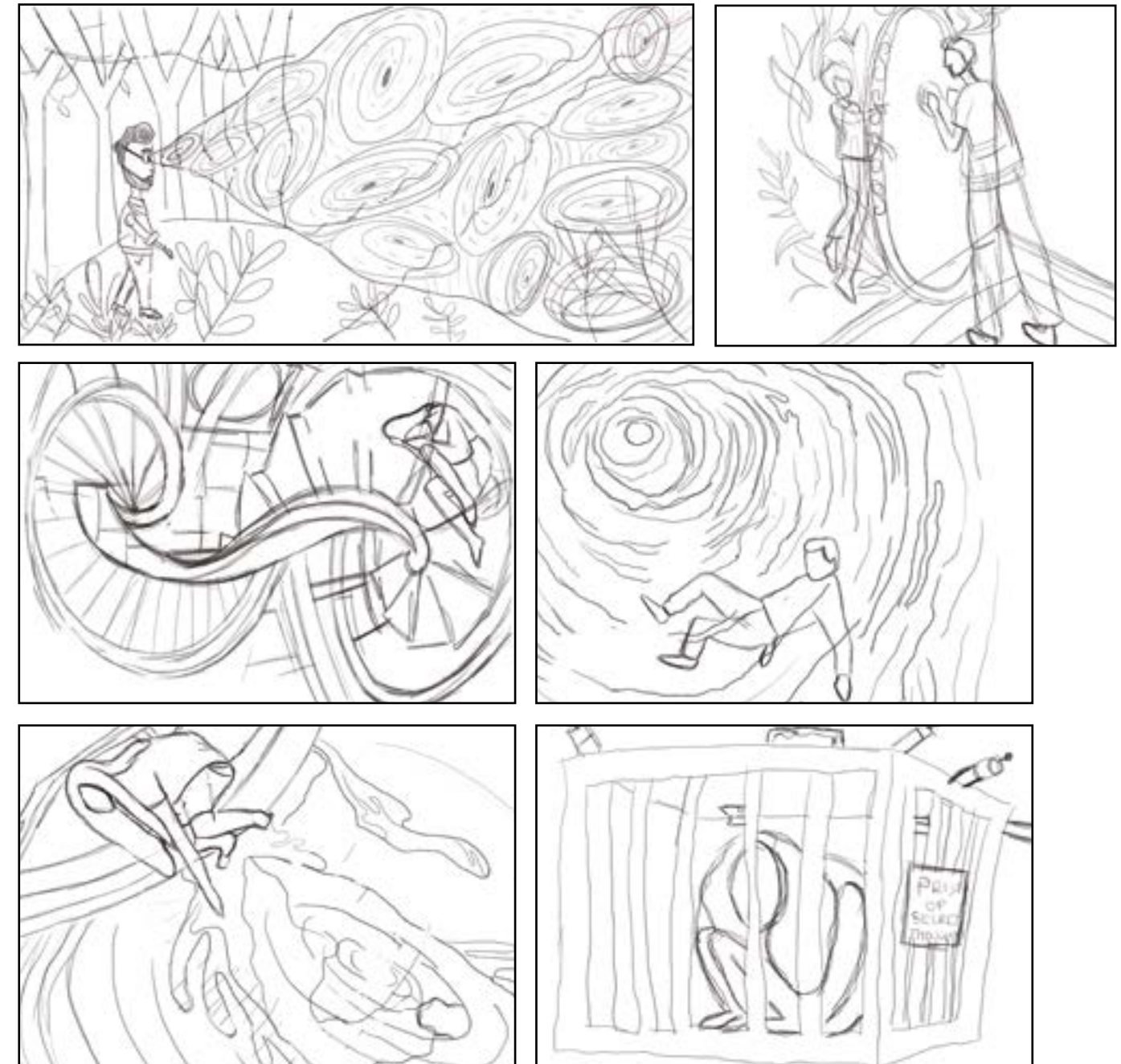


Fig.99. Thumbnail Sketches

Chapter One: The Seeing of Unseen

R 77	R 230	R 26	R 179	R 128
G 23	G 149	G 8	G 116	G 38
B 41	B 176	B 14	B 137	B 68

The first chapter starts with the most severe form of depression, psychotic depression. The major symptom of this depression is the experience of hallucinations and delusions which detaches the person from reality.

Hallucinations/delusions involve perception of something not present. To explain the hallucinations is difficult as it could be anything, thus, the chapter heading. The illustration demonstrates that central character is experiencing hallucinations; hence the world is swirling in his 'hallucinogenic' view point. His swirling of world is portrayed with the use of diverging spirals trying to create an illusion for the eyes. The other background elements (trees, leaves, and road) used in the illustration is exaggerated in form and size which are falling in character's viewpoint to imply the detachment from reality. These hallucinations are supposed to make no sense out of it. The random visuals make the person believe that the universe is conspiring against him.

Another important to note is that the hallucinations are both visual as well audio. Constant hearing of voices in head compels the person to do unwanted things assuming everything is happening in reality. Hence, the second illustration shows the character in an ear maze surrounded by many voices. He is trying to shut down the voices but the voices have taken over.

Chapter Two: The Upside Down

R 128	R 255	R 230	R 204	R 179
G 0	G 64	G 0	G 51	G 0
B 17	B 89	B 31	B 71	B 24
R 230	R 230	R 133	R 179	R 179
G 57	G 103	G 35	G 80	G 45
B 69	B 112	B 30	B 87	B 54

The second chapter describes bipolar depression. Bipolar depression is mostly identified as rollercoaster of emotions. All the emotions are experienced at the same time. It can be said that 'ups and downs' emotions are between two extremes or in short, upside down. There is no predefined time frame which can tell that the person is going to be happy now and then sad later or vice versa. The manic episode can start and end anywhere, anytime. There are numerous emotions involved in this depression which cause the mania. Hence, the same has been illustrated in this chapter.

The illustration shows the two extremes ends of bipolar, the high point where the character feels like a king whereas the low point where the character has will to die. It shows that the character is travelling through different emotion portals in his brain. It feels like that there are four brains controlling the mind. These four portals are portraying four different experiences which are overdriving the person. At one point, the person is flowing freely through waves; then feels that brains is like a pot of boiling water with steams escaping ready to explode; then suddenly becomes unpredictable and starts gambling and at last feel difficult to find words to speak. There is no particular order in this frequent shift of feelings. It can go from happy to sad; sad to happy; happy to ecstasy; sad to fear and so on. Based on the emotion, the base color of the portals also shifts between bright red and dark red.

Chapter Three: The Obscured Nights

R 69	R 104	R 37	R 139	R 18
G 73	G 106	G 42	G 142	G 20
B 153	B 153	B 97	B 204	B 51

Next chapter is about clinical depression, the most common form of depression. The major symptom of this depression is pessimism which leads to hopelessness and feeling empty. This negativity causes fear of night, spending days in bed unwilling to move. The fear of night ultimately causes insomnia and fatigue. The darkness is accompanied by inner voices of self hate, self loathing. The illustration shows the darkness of night pouncing upon the central character. Due to these voices and fear, the character is succumbed to her own bubble of despair. The character tries to break free her beaker of gloominess but stumbles upon as the negative emotions drag her down implying that it is not easy to just snap out of the darkness despite the efforts.

Chapter Four: The Endless Twilight

R 102	R 153	R 128	R 179	R 64
G 31	G 99	G 38	G 116	G 19
B 66	B 127	B 84	B 148	B 42

The fourth chapter is about persistent depression. Most of the symptoms of persistent depression are similar to clinical depression. However, the symptoms are experienced for a prolonged period of time, thus the chapter heading implying the endless hours of half- light experienced by the person. The symptoms are supplemented by feeling of inadequacy. People gone through persistent depression have often described the experience as a never-ending story which keeps starting with a new story whenever it reaches the end point. The illustration demonstrates that the central character is feeling down lying on spiral staircase. This spiral staircase also portrays the endless timeline through which the character is going through again and again without being able to find an endpoint to it. It also portrays that the umbrella of this endless timeline follows her everywhere she goes. In addition to the umbrella are shadows of darkness which prolongs the depression.

Chapter Five: The Nostalgic Wounds

R 23	R 114	R 36	R 85	R 13
G 89	G 204	G 116	G 113	G 51
B 22	B 112	B 35	B 84	B 13

The fifth chapter describes postpartum depression. This depression is experienced by new mothers accompanied with flashbacks, nightmares and thoughts of problem faced during childbirth, thus the chapter heading. The traumatic instances during childbirth make them numb due to which the mother finds herself unable to showcase the love as she had anticipated during pregnancy days. This leads to the feeling of not being a good mother crop up. The illustration focuses on this emotion depicting that the mother is indifferent to her infant child in the crib behind while she is absorbed in traumatic flashbacks. Since the flashbacks are related to childbirth, an entangled uterus is illustrated to imply the complexity of childbirth. The second illustration shows the mother caged in a prison of secret thoughts. These are the thoughts that are if spoken aloud would make her a 'bad' mother and which eventually becomes depression.

Chapter Six: The Winter Duvet

R 38	R 166	R 115	R 217	R 64
G 38	G 166	G 115	G 217	G 64
B 38	B 166	B 115	B 217	B 64

This chapter is about seasonal depression. This depression is experienced during winters when there is absence of sunlight. During fall, when then the snow comes in full force; it starts to appear grey and bleak outside. With no exposure to sunlight, the body and brain becomes sluggish disrupting the body clock, unable to cope up with daily activities. The illustration portrays the central character hiding in the duvet of winter leaves without a single streak of light. The absence of light is making him lethargy, and succumbed to his bed losing his ability to perform the day to day tasks. The world outside the window seems bleak which confines the character inside the house.

Chapter Seven: The Melancholic Misery

R 89	R 242	R 194	R 191	R 140
G 38	G 159	G 81	G 125	G 60
B 22	B 139	B 47	B 102	B 35

Next chapter describes depression due to chronic illness. The diagnosis of a chronic illness, treatment, spending time in hospitals, not able to meet the medical expenses and not enough medical support hits way too hard to a person. Adding to that, the change in appearance due to ongoing treatment and continuous thought of what life was before illness and what it could have been if there was no illness, worsen the condition. The person feels that his/her life is slipping out of hands and loses confidence over inability to get everything back in control. The illustration demonstrates the central character falling down deep into a rabbit hole in the midst of treatment, medicines and prescriptions unable to find a way back to the land. Falling down the rabbit hole also denotes the act of journeying into a bizarre or disorienting environment that is difficult to remove from. The condition is worsened when the person starts having thoughts of life before depression which is then showed in the second illustration.

Chapter Eight: The Sisterhood of Swinging Moods

R 89	R 217	R 191	R 191	R 140
G 36	G 130	G 77	G 115	G 56
B 43	B 142	B 92	B 125	B 67
R 128	R 217	R 179	R 166	R 77
G 25	G 108	G 36	G 83	G 15
B 39	B 123	B 55	B 94	B 23

This chapter is about premenstrual dysphoric depression. Experienced during the menstrual cycle, one of the major symptoms of this depression is mood swings accompanied by imploding dark thoughts. Women shared their personal stories that the pet peeve 'it must be closer to your time of the month' triggered uncontrollable, overwhelming emotion. The illustration demonstrates the central character divided into two entity as two sisters in one body, one being in bright mood and other being in dark mood implying being on the edge. The first illustration shows both entities having random crying spells over a gift box. The second illustration shows the entities with unusual food cravings with their own little surrounding. For the bright one, the flow is in upward direction whereas for the sad one, everything is falling down; she has food cravings but is unable to say the words clearly.

Chapter Nine: The (Un)Fixer Elixir

R 166	R 191	R 140	R 191	R 86
G 124	G 139	G 102	G 143	G 65
B 86	B 86	B 65	B 96	B 40

The ninth chapter describes substance induced depression. Induced by alcohol and drugs, the depressive episode begins when the consumed alcohol and drugs affects thoughts, emotions and actions. This is more than a temporary hangover. People shared that they consumed alcohol and drugs as it felt like an elixir and helped them to reduce the stressful life events. However, in reality the alcohol and drug worsen the situation instead of lifting spirits, thus the chapter heading. The illustration portrays that the character feels he is in paradise but this paradise is an illusion created due to alcohol and drug consumption. The second illustration portrays the central character floating in the alcohol and surrounded by the drug leaves. Both substances are supposed to make the character feel better; however, the multiple layers imply that the character is going deep towards sad emotions.

Chapter Ten: The Dinky Door

R 136	R 164	R 102	R 181	R 77
G 99	G 105	G 64	G 133	G 49
B 153	B 191	B 120	B 204	B 89

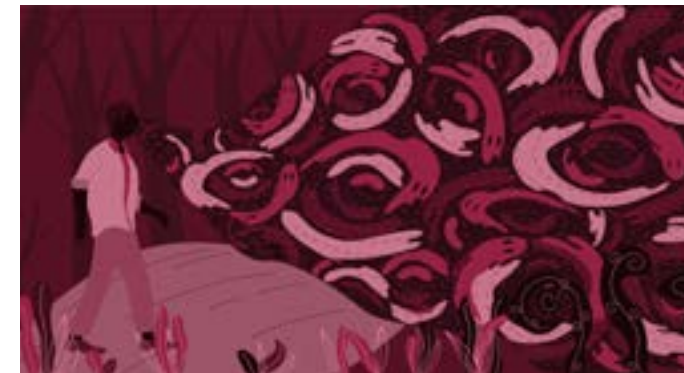
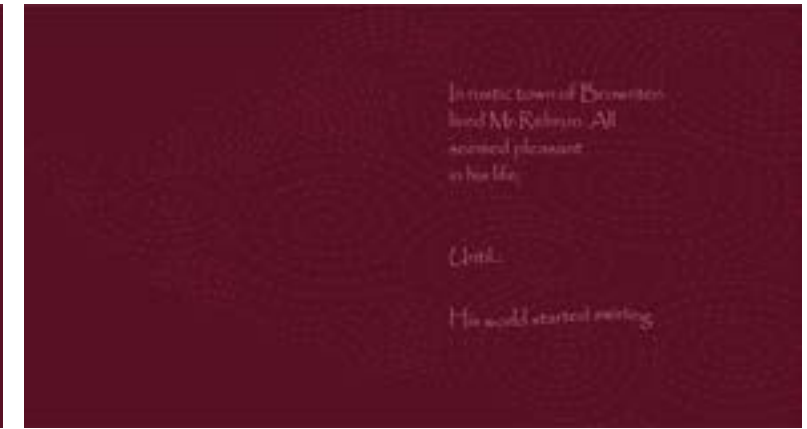
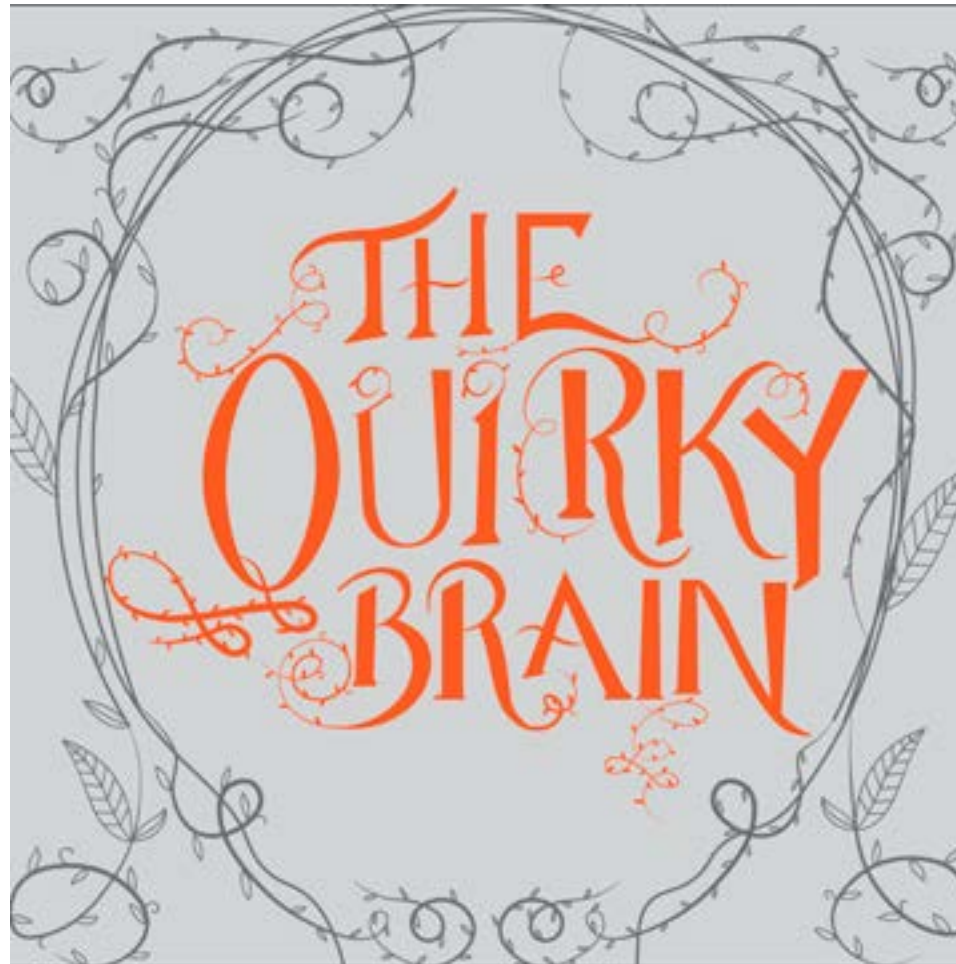
This chapter is about subsyndromal depression. Two or more symptoms of depression are there but are not severe enough for depression diagnosis. The symptoms must be present for two weeks or more for diagnosis. It is also known as minor form of depression as the symptoms acts as the threshold of depression, hence the heading. It involves the risk factor of developing into clinical depression. It occurs often due to major life changes such as retirement, moving out of family, etc. This leads to behaviour changes and feeling of worthlessness. The illustration demonstrates the central character is cutting all ties and going into isolation as the thought that 'no one needs him any more' crop up.

Chapter Eleven: The Agony of Memories

R 96	R 134	R 83	R 152	R 57
G 150	G 166	G 130	G 190	G 90
B 191	B 191	B 166	B 217	B 115

The final chapter is about grief, the least severe form of depression. Grief is caused mainly due to a significant loss such as sudden demise of loved ones. This is marked by persistent thoughts of what could have been done to prevent the loss and unable to enjoy the good memories of loved ones. The illustration demonstrates that the central character is unable to let go of the grief caused due to death of a loved one. Trapped in the memories of the deceased, the character is not able to move forward in life and thus, is tearful and sad.

Illustration Ebook







Orange was diagnosed with a chronic illness.
But the treatment, unaffordable bills
Drove and
Down the rabbit hole.



Pinkie opened up her calendar
as the blood tournament of
the north nears.



Other found the secret door to
contentment or so did
he thought.
The elixir gave him short glimpse
of paradise.



The main concept behind this illustration project is to visualize the inner thoughts and feelings of the person going through depression. These experiences are often difficult to be expressed in words; hence people avoid sharing them with others. They contain their emotions within themselves which deteriorates the condition leading to severe forms of depression. The illustration project acts as the medium to express these thoughts, a narrative voice for experiences that needed to be shared with family and friends so that they can receive proper medical support at the right time.

The project aims to motivate people to widen their perspective for depression. The eBook focuses on challenging the numerous stigmas related to the illness such as depression is sadness; it is a phase from which you can just snap out; only women get depression and many more. The illustration of their inner thoughts might be a way for people as a society to realise the turmoil of emotions the depressed person goes through. It could also promote them to learn about depression, its types and what are the major differences that distinguishes one from the other. Individuals who have suffered from depression have admitted that the support of their family and friends eased out their path to recovery. However, as the phrase says ‘a little knowledge is a dangerous thing’; it becomes essential for us to be fully aware on the subject before extending our empathy and compassion. Hence, the project is an effort to channel appropriate color as a design tool to talk about depression, spread factual information and ultimately enrich humane treatment when it comes to fight against depression.

08

CONCLUSION

R 124 G 120 B 117
Symbolic of life endings.

The motivation behind the research work was to formulate a visual interactive tool to effectively portray depression. The critic contextualization of facts and figures outlined that depression is not a mystical term whose existence need to be debated; it has been scientifically proven. However, the pre-existing stigmas that depression is only sadness; it a made up thing in brain, it is an enactment to grab attention and many more have worsened the path for recovery of depressed people. Ignorance, denial, numbing down emotions or pretending to be okay becomes part of their daily struggle. Depression is a potentially life threatening illness that needs to be taken seriously.

The online survey gained insight of the societal perception of depression. The analytical study of survey data gave a generalised view of awareness level about depression. Individuals identify it as a real illness but that percentage is quite low. Whereas the percentage of individuals whose know-how is influenced by myths and misconception is comparatively high. It pointed out why there is a holistic approach needed to talk about depression. On the other hand, the optimistic response of individuals to support those battling depression also indicated their enthusiasm to know more about depression.

The theoretical contextualization established the potent of graphic design in guiding health care message with the use of bold typography, vivid colors, forms, pictorials, signs, etc over time. It also established that appropriate application of graphic design tools in appropriate context can yield commendable results. Since depression is associated with emotions, usage of color as the design strategy proved effectual given its physical, psychological, biological and emotional dimensions. The expressive potential of color and the notion ‘right color sends right message’ laid the methodological framework of the research work. Next, depression is categorized into eleven types on the basis of different emotions experienced during its occurrence. In descending order of its severity, the classification is as follows: psychotic, bipolar, clinical, persistent, post partum, seasonal, depression due to illness, premenstrual dysphoric, substance-induced, subsyndromal and grief. The research focused on developing an individual color identity for each depression type by identifying the core emotions experienced in each type.

In addition to above mentioned color dimensions, the cultural symbolism of colors on Indian backdrop justified the emotional connect people have with colors due to their ethnic identity. The significance of each color written down in ancient Indian scriptures and mythologies till date holds the same stature in an Indian’s life. It is notable that colors not only mark their presence during traditional rituals but has also been part of treatment and therapy. Ayurveda, one of the world’s oldest holistic healing systems, defined the seven energy wheels or chakras that represent organs, emotions and aspects of the spirit with specific colors. It emphasized that these colors symbolizes vital energies and need to be balanced in order to maintain harmony of the body. This interpretation of a color helped in devising color as an expressional mnemonic tool with definite associations to Indian culture that can aid memory.

The critical analysis of survey leads to derivation of color codes for the six basic emotions: yellow for happiness (R 255 G 168 B 4), bluish green for trust (R 11 G 144 B 158), pink for surprise (R 212 G 30 B 68), red for anger (R 237 G 29 B 39), dark red for fear (R 86 G 14 B 21) and dark blue for sadness (R 37 G 42 B 97). All the emotions experienced in different types of depression are categorized into these six emotions which helped to determine the first derivative hue. It was necessary to create a visible distinct edge between colors to have an individual identity for each depression type. This distinction is brought by changes in color attribute variables, value and saturation. In this work, value scale represented the intensity of emotion and saturation scale represented the severity of depression. On the value scale, the relative degree of black and white varied depending upon the degree of an emotion in comparison to its basic emotion whereas on the saturation scale, the gradation percentage of gray varied relative to the degree of severity of depression. The emotions listed before are, then, placed on the value-saturation scale to extract the second derivative. In addition to that, the other derivative hue is extracted with reference to that particular emotion in Indian culture. The combination of first derivative hue, second derivative from value-saturation scale and second derivative hue with Indian connotation gives the unique resultant color.

The distinctive color identities developed for each depression type are:

Psychotic (R 26 G 8 B 14)

Bipolar (R 226 G 2 B 30/R 133 G 35 B 42)

Clinical (R 35 G 32 B 89)

Persistent (R 128 G 38 B 84)

Postpartum (R 30 G 115 B 29)

Seasonal (R 115 G 115 B 115)

Depression due to illness (R 194 G 81B 47)

Premenstrual dysphoric (R 219 G 86 B 103/ R 179 G 36 B 55)

Substance induced (R 140 G 102 B 65)

Subsyndromal (R 102 G 64 B 120)

Grief (R 83 G 130 B 166)

These color code were, afterwards, applied in the development of practical work. It involved illustrating an eBook of short visual stories describing the inner thoughts of people going through depression. It visualizes those emotions and feeling which are in a way difficult to be expressed in words. A monochromatic color scheme was adopted to maintain the simplicity of message and to highlight the importance of the topic. The distinctness was maintained in the palette by introducing even intervals of value and saturation percentage.

In conclusive remarks, it can be said that the effect of colors on health, in general, has yet

to be proved scientifically but the potential of emotional impact a color can have on an individual has been justified affirmatively with theoretical contextualization and analysis of survey results. The analysis also indicated constructive implications of color in describing mental illnesses.

The results establish color as a strong interactive visual tool to describe emotions and hence, giving each depression types its individuality. This formulated color code can also follow change of emotions in terms of intensity and severity with the help of value-saturation scale.

One of the major setbacks of depression is that people avoid talking about it. This may be due to the stigma associated to the illness or due to the unawareness about the illness. Hence, the color code developed would act as a medium that would help people, firstly, relating the colors to a particular emotion, secondly talking about the ‘tabooed’ topic of depression and ultimately, recognize depression as worthy of deserving empathy. This is a future implication of the research work that emphasizes that developed color code would encourage and initiate conversations about depression, and once people start talking and accepting depression as a serious illness, the stigmas related to it will eventually be addressed and eliminated.

In addition to above, the formulated color code will dispense a visual expressive tool to those going through depression. The color tool will prove to be the solution for the inability of people to put together words for their emotional experiences/ feelings when they are going through depression. The colors chosen by them would give a clearer understanding of the emotions/ feelings they might be going through and would play an indicative role to determine the type of depression.

The further use of color codes in monochromatic palette in the illustration project is focused on drawing societal attention to the topic of depression. As pointed out in [Chapter 2](#), depression is not limited to the emotion of sadness only and it can happen to anyone at anytime. Hence, the illustrations give an insight to the numerous thought processes going through the mind of depressed person. It is focused to make an impact on human psyche as a society to understand that the symptoms or feelings they are neglecting on grounds of ‘being in a phase’, ‘attention seeker’ or so, has a much broader sense related to it and if not given serious attention, it might become fatal. Depression is growing as one of major common illnesses that occur irrespective of any demographics. Hence, everyone should have a brief knowledge about it in order to respond appropriately in the given situation and this is what the project tries to achieve.

It is also notable that the work emphasizes on the methodological approach that can be adopted to derive appropriate color for any design, based on the message the work wants to communicate to its audience. All works of graphic design establishes a visual communication with its audiences by connecting directly or indirectly on an emotional level. Hence, the application of such a tool in a graphic design work which is entirely based on the emotion to be focused for the design, the relative degree of that emotion and the cultural symbolism to derive colors has the capability to capture an individual’s emotional attention and would deliver impeccable results for final design work.

It should be noted that the effectiveness of the color derivatives and the illustrations needs to be evaluated to study the reactions of the people. The developed color codes need to be tested with people going through depression to study the practical application of color and emotion co-relationship. Similarly the implications of illustrations in communicating the message to people in general should be analyzed to study the differences in an individual's viewpoint towards depression before and after reading the eBook.

Thus, the research work achieved effectual interaction of graphic design with mental illness. It establishes that graphic design elements are potent to communicate healthcare message when applied in right context and can, thus, make a lasting impact. The research work defined emotional symptoms of different types of depression by formulating a unique color identity for each one of them. It conveys that given the multi- dimensional aspects of color, it has the aptitude of emotional expression which can evoke human conscious and receive appropriate response.

The uniqueness of color identities is based on the emotional symptoms to an extent. It establishes that color does follow the change of emotions. Any change in the intensity of emotion will eventually lead to change in color and the new hue will convey a new emotion.

Hence, the main motivation behind the research to develop an interactive visual medium to express complex emotion is fulfilled using color as the design strategy.

Based on these conclusions, future studies could address the factors that can affect how the emotions are experienced. To name, personality type, geographical location, could be considered as important factors to explain the way emotions are experienced by an individual. It could be determined whether these factors bring any fluctuations to the intensity of emotions. Talking about severity of depression, personality type could be a key factor to evaluate which personality type is more prone to depression, the extent of severity in different personality types and how a particular personality contributes to the way depression occurs. It lays the ground to further assess the modifications to be done in the value- saturation scale to accommodate these contributing factors. Also, color symbolism of western cultures could be studied to understand the significance of colors and their respective meaning in their culture. A comparative analysis could be done on the basis of differences between color codes developed through both the methodologies.

Color as an interactive medium could find its application in other health care settings as well. Patients with language barriers or those who are not unable to find apt words to describe their condition could describe their feelings through colors. More emotions could be explored to develop a fully fledged color manual. These manuals could be used by doctors, psychologists, counsellors to identify the effectiveness of such color coded manuals. The color guide could help the patients to open up about their condition and would help the doctors to understand their patient's current mood/emotions which could fasten the diagnosis. Color could also be used to address other tabooed themes such as menstrual hygiene which faces cultural stigmas in many countries till date.

Colors are one of the most critical elements of graphic design and the credibility of color could only be achieved when used in the right form in the right context to deliver the right message. Thus, the devised color methodology can also be adopted in graphic design works other than healthcare such as brand identity. It could help to define the color palette in relevance to the emotional connect the design work is aiming to achieve with its audience. Future investigations could also address the derivation of other graphic elements as typography and shapes using the devised methodological approach.

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ANNEXURE

Survey Questionnaire

Nationality *

Your answer _____

Gender *

Male

Female

Age *

Choose ▾

1.1. Select the color you would prefer the most (to look at, to use or to wear.) in your day to day life. *

Each shade is denoted by the number mentioned on the scale. Choose the number which corresponds to your preferred color shade.



A horizontal color scale with five segments of increasing red intensity from left to right. Below each segment is a number (1 to 5) and a radio button.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



A horizontal color scale with five segments of increasing purple intensity from left to right. Below each segment is a number (1 to 5) and a radio button.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



A horizontal color scale with five segments of increasing blue intensity from left to right. Below each segment is a number (1 to 5) and a radio button.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



A horizontal color scale with five segments of increasing green intensity from left to right. Below each segment is a number (1 to 5) and a radio button.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*



1 2 3 4 5

*



1 2 3 4 5

*



1 2 3 4 5



1 2 3 4 5

1.2. State the reasons behind the chosen color preference. *

Choose all the options that apply.

- Mood
- Emotional Connection
- Season / Festivals
- Fondness
- Cultural Essence
- Other: _____

1.3. Choose the color you relate the most to the following emotions. *



Red Purple Blue Green Yellow Orange White Brown Black

Happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trust	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surprise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sadness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1.4. Do you think colors can convey your health state (good or bad) to others? *

- Agree
- Neither Agree or Disagree
- Disagree

1.5. Do you think colors can be a way of healing during illness? *

- Agree
- Neither Agree nor Disagree
- Disagree

2.1. What does depression means to you? *

- Illness
- Sadness or grief
- Attention - seeking
- Irrelevant to you
- Don't know/ Can't say

2.2. How much are you in agreement with the statements given below regarding depression? *

	Agree	Neither agree nor disagree	Disagree
It is a rare mental disorder.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One must have a reason to be depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is something you can 'pull yourself out of'.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It can happen to anyone irrespective of gender or age.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking about depression helps.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It will never affect me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is a sign of mental/physical weakness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.3. Do you feel comfortable talking about depression, in general, with your family, friends, etc.? *

Agree

Neither Agree nor Disagree

Disagree

2.4. What are your feelings towards a person going through depression? *

	Always	Sometime	Never	Don't know/ Can't say
Love	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sympathy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hatred	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indifference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.5. Have you ever personally come across someone who is going through depression? *

- I have been through it.
- Someone close to me/ Someone I know.
- Never
- Don't know/ Can't say

2.6. If you come across someone going through depression, what would be your reaction? *

- Talk to the person
- Consult therapist to gain knowledge
- Avoid the person
- None of your business
- Don't know/ Can't say

Mind Mapping

