

Do Colors Have a Psychological Effect on Us?



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INTRODUCTION

Have you ever asked yourself why politicians wear suits that are colored blue or black, why not red or purple? Why do some websites have black banners instead of pink or purple?

Color has long been thought by artists and interior designers to have a significant impact on moods, sentiments, and emotions. "Colors, like features, follow the changes of the emotions," the artist Pablo Picasso once remarked.

Color is an effective communication tool that may be used to convey action, alter emotion, and even affect physiological responses. Certain colors have been linked to physiological changes such as elevated blood pressure, metabolism, and eye strain. In my final project I set some goals to find the answers to these questions.

My **goals** are:

- To introduce the psychological effect of colors
- To explain what color psychology is
- To analyze the uses of specific colors
- To investigate how certain colors impact human behavior.

COLOR PSYCHOLOGY

Color psychology is the study of the psychological and emotional effects of colors on sighted individuals in various aspects of their life. Some aspects of color psychology are highly subjective, while others are well-established and scientifically proven.

We may not think of it consciously, but colors can affect how our food tastes, how we feel, and our impressions on others.

Color psychology is mostly concerned with color theory. Color perception is heavily influenced by how they interact with one another. Colors have different associations, including primary, secondary, tertiary, and complimentary. The viewer's perception and reaction to these colors can be influenced by how they are contrasted.

Colors have been used for millennia to generate specific emotions. Color association has been employed by humans in Greece, Egypt, and China since antiquity. They employed color to associate gods in their pantheons, particularly with natural components like as light and dark, good and evil.

A. Emotions

According to Leslie Harrington, executive director of The Color Association of the United States, a color trend forecaster states, "We react on multiple levels of association with colors -- there are social or culture levels as well as personal relationships with particular colors." There isn't an exact reason why colors affect certain emotions in us, but there are several explanations as to why a color may affect our emotions.

Firstly, all of us had a toy in our childhood that we cherished beyond comprehension. Some of us would even carry it everywhere we went. Now imagine the color of the toy, each time you see that color it would remind you of joy or happiness as it brought joy as a child. This connection is called a personal like. As said before a childhood toy would bring out a positive emotion the same can happen on the other hand, if a child was hit by a blue automobile, they may have a strong negative psychological connection to the color blue.

Secondly, common human experiences, it is easy to predict the reactions of the vast majority of people to a given color. For example, green is often associated with nature and growth since most people have seen plants grow, or blue is virtually always relaxing, due of its associations with the sky and water.

Lastly, culture has a huge impact on a person's percept to a color. For example, purple is still associated with wealth because, in many ancient societies, purple dye was only accessible to royalty and was extremely costly and rare. Although it's not a natural relationship, it has persisted in our mind for a long enough period of time to be embedded in the cultural zeitgeist or a belief of a time period.

Culture is also the reason why a color has many different meanings. The culture in which an individual is raised in can influence how they react to color – suggesting that reactions to colors can be somewhat learned. For example, In China and other East Asian traditions, red represents pleasure and good luck, whereas in the western society the color green is associated with luck as it comes from St. Patrick day.

B. Color tonality

Sir Isaac Newton made the most major stride forward when he understood that the light we see is a composite of multiple wavelengths rather than just white. This hypothesis resulted in the development of the color wheel and how different colors are assigned to certain wavelengths.

In color psychology, colors can be divided into two parts warm and cold colors. Warm hues, such reds and oranges, inspire sensations of warmth. Cool hues, such as blues and greens, generate a sense of coldness. Only a handful of your paint colors will be true primary colors (red, yellow, blue). Most will have a warm or cool ones leaned to 3 primary colors.

Warm colors usually have longer wavelengths are regarded "arousing, or warm," whereas colors with shorter wavelengths are considered "relaxing, or cool."

The wavelength or spatial period of a wave or periodic function refers to the distance over which the wave's structure repeats. In other words, it is the distance between successive equivalent locations of the same phase on the wave, such as two neighboring crests, troughs, or zero crossings.

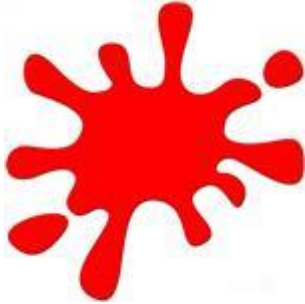
Another difference is that our eyes need to adjust to see color with longer wavelength like yellow, whereas we don't need to strain our eyes to see shorter wavelength like green or blue.

In the visible color spectrum black and white are missing even though we see them every day. Black and white aren't considered as colors because they are just absence and presence of light respectively. Or the color white is reflection of all colors from surface and the color black is the absorption of all the colors is the visible color spectrum. This also the reason why they are opposite effect on the human body.

Psychological effects of colors

Color psychology research reveals that colors elicit psychological reactions, influencing moods and emotions. These emotions are sometimes tied to the intensity of a hue. In other circumstances, they are the result of personal experience and cultural influences.

A. Red



The current term "red" has a relation to the word "beauty," although it has only lately been used to describe color, and it formerly meant "bright, beautiful." The root rad-/rod- originates in Indo-European.

It is the first color that neonates see, as well as the first color that people who have temporarily lost their vision due to brain injury may see again. Red's supremacy is also evident in the way colors are defined: while different civilizations derived names for hues at different ages and in various ways, they all termed them in the same order. Following black and white, red was the first essential color to be introduced into languages. Red comes from the Sanskrit "rudhira" and the Proto-Germanic "rauthaz".

Red was the first hue humans learnt, developed, manipulated, and separated into various tones. It was also one among the first hues used by artists throughout the prehistoric period. The color red was connected with religion during the Middle Ages. It was the hue of Christ's blood and Hellfire. During the Renaissance period, red hues were supposed to draw the viewer's attention to the most powerful characters in a painting. In the nineteenth century, red became the hue of a new political and social movement, such as socialism. It was also a time when the color red was used in art to convey sentiments rather than just mimic nature.

The color red not only provokes the most emotions but is also considered one of the most contradictory. It has the highest wavelength, 625–740nm (newton meter).

Since red has one of the longest wavelengths it is one of the most noticeable colors which rapidly attract people's attention. This is the reason why red is used to show danger or warnings through stop signs, traffic lights, fire trucks, etc.

Red hues attract attention and have a visual influence on the brain both in the short and long term. Consider the Target logo or Coca-Cola's red script logo.

Science shows that wearing red elevates blood pressure, enhances metabolism, increased heart rate, increased respiration rate, which are signs of excitement.

The exciting, warming, dynamic, and energetic red color promotes all physiological functions. It produces a sense of warmth. Coffee seems hotter in a red cup than a green one.

Red is also associated by anger as when a person is angry, he gets red if the face from increased blood flow to the face and neck.

The color red has the ability to influence more than only mood and emotions. Wearing the color red might also improve your chances of winning in sports by showing dominance. At the 2004 Olympics in Athens, athletes in four sports—boxing, Greco-Roman wrestling, freestyle wrestling, and taekwondo—were randomly allocated red or blue clothes. Red-clad athletes won more battles in all four events. Many believe that this is because of the association between red and perceived dominance. For example, wearing a red uniform may inspire an athlete to feel dominant and perform more aggressively. Athletes in red, on the other hand, may be perceived as more aggressive, dominant, and more likely to win a physical match not just by their opponents but also by the officials.

A similar study was done by a scientist from Plymouth and Durham University examined the winning records of 68 elite English teams between 1946 and 2013. Their 60 years of study proved that football teams wearing red jerseys won more games. They reported that red unconsciously increased the players' confidence, which influenced the other team.

Researchers in 2008, men were shown picture of women wearing red and blue shirts. Some men observed a woman in a red shirt, while others observed the same woman in a blue shirt. Results showed that women wearing red were ranked higher than the same women wearing a blue shirt. As said before wearing a red increases heart rate which creates a blush on the persons face which is more prominent while wearing red. This creates a sense of love, desire, and passion. However, in excessive doses, it depresses people, particularly melancholic people.

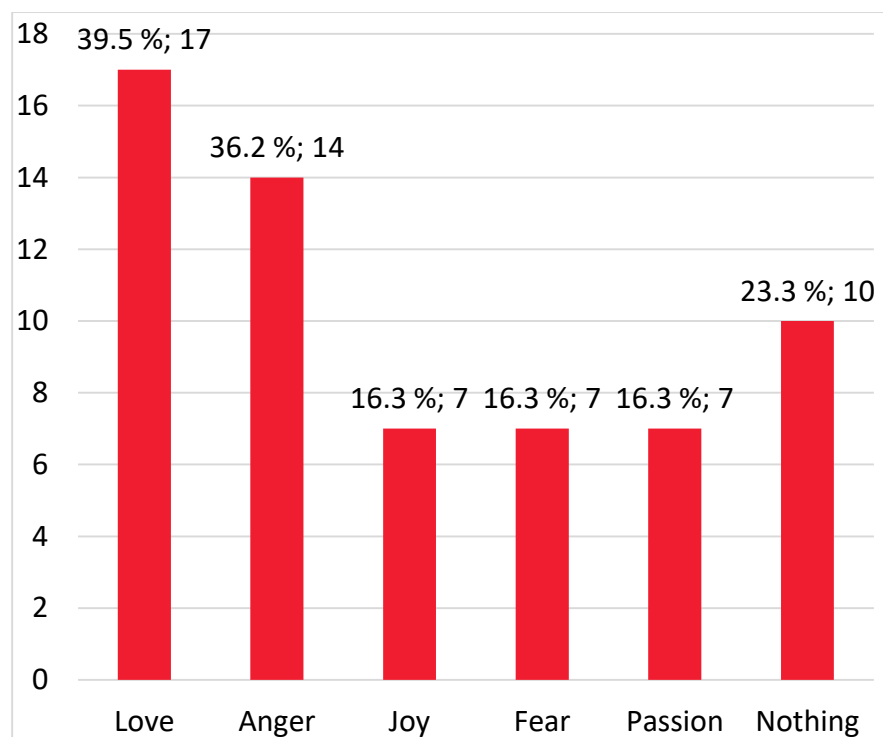
The color is associated with royal power because, the most ancient thoughts about the closeness of white and red as the colors of the sun and light remained in the human psychology. Sun and light were the symbols of gods and of high power. So red is a striking hue that represents power and strength.

For example, red carpets are used by celebrities and leaders only. One possible explanation for the color red being connected with power is that it is frequently used to attract attention. This greater focus indicates that something is essential, because power and value frequently go hand in hand.

Red is also connected with boldness and bravery, which makes it a popular choice for military uniforms and firefighting gear.

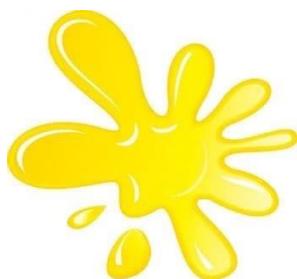
Aside from its connections with strength, red is also connected with daring and bravery. This is why it is commonly seen in military uniforms and fireman gear. The color red is said to give its user a sense of power and courage, making it a popular option for these vocations.

Red motivates individuals to make hasty, not necessarily deliberate judgments. The casino operators discovered that the color red influences the quantity of wagers placed, making visitors enthusiastic. As a result, it is employed in industries where high stakes are involved. This hue also stimulates the salivary glands, causing a sense of hunger. When a person eats a lot, yet quickly, red ignites the "beast's hunger."



We made an experiment in our school and ask people to look at each color for 5 seconds and then describe which emotions do they feel. According to the graph we can see that after looking at red color 39.5% of people said that they feel love and 32.6 % - anger. Both of these emotions are very strong.

B. Yellow



Yellow is derived from the Old English "geolu, geolwe" (oblique case), which means "yellow and yellowish" and is derived from the Proto-Germanic word "gelwaz", which means "yellow."

Golden yellow was another popular and revered hue in ancient times; gold was treasured not just as a rich metal, but also as a symbol of the sun gods and their power over the globe, and it was widely employed to embellish luxury

items and religious cults. Given the Ancient World's degree of technological advancement, using gold as a dye was both expensive and complex. That is why humanity devised a solution by discovering natural dyes that might mimic gold or at least give objects a yellow hue. Orpiment was first employed in Eastern nations in the fourth century BC, as stated by the ancient Roman historian Pliny (1st century AD). However, the paint became extremely popular throughout the Middle Ages. It was known as "royal yellow" because to its golden brilliance. There were other cheaper dyes that created colors of yellow, but not as pure. For example, yellow ocher, known since primitive times.

Since yellow ochre pigment was widely available, it was one of the first colors utilized in painting. The ancient Egyptians painted their gods in yellow to make them look like gold. Other colors had dual significance, and at various points in the Middle Ages, either good or bad connotations emerged. Thus, in early Christianity, the color yellow was connected with the Holy Spirit, enlightenment, leprosy, and other concepts. However, throughout the Renaissance, it became associated with treachery, lying, and so on. Yellow has been associated with jealousy, treachery, and untrustworthiness since the 14th century. Yellow, formerly associated with the sun and gold, has fallen out of favor as one of the least popular colors. Its shady reputation has persisted to this day; when contrasted to other colors, yellow is frequently associated with negative personality qualities. This also the reason why the emotions felt from yellow depends on a person.

It has the highest frequencies than any other color of 570–580 nanometers.

Yellow may be bright and vivid, which may explain why it elicits such strong emotions. Yellow may draw attention fast, but it can also be harsh if applied excessively. Although it appears warm and bright, it may also cause optical tiredness.

Yellow stimulates the mind and improves cognitive skills such as memory, analysis, and problem solving. It boosts cognitive function and encourages a curious, knowledge-seeking mentality. Yellow increases both intellectual and emotional participation. Placing a yellow item or light near you while studying or working on a project may help you become more analytical, find solutions through innovative techniques, or build your own problem-solving methodology. Color psychology study shows that yellow stimulates activity in the left brain, which is responsible for rational thinking and analytical skills.

Because yellow is the most visible color, it is also the most noticeable. Yellow can be used discreetly to capture attention, such as on traffic signs or ads. Yellow, according to researchers,

shines out more, making it a safety hue for drawing attention to essential information or threats in a person's environment.

During times of mental strain or stress, yellow gives psychological clarity. It cuts through jumbled thinking, bringing more focus and reasonable order. Yellow eliminates psychological confusion. Because of this reason dash of yellow on something dreary or gloomy may make you feel happy and joyful or a yellow element in a room have been discovered to trigger our brain processes and inspire new thoughts at times.

Since yellow is a vivid and brilliant color. Some researchers feel yellow can even promote metabolism. Yellow stimulates our thoughts, making us feel alert and concentrated.

Yellow can evoke sentiments of resentment and rage. While yellow is considered a bright hue, it causes individuals to lose their tempers and causes newborns to scream more in yellow environments.

Yellow, while not as warm as orange or red, is nonetheless considered a warming hue. It's the sun's tone, after all. However, because of its warm undertones, this color may have a less relaxing effect than other options.

The hue yellow promotes the release of Serotonin in the brain, which functions as a mood stabilizer and is also known as a happy neurotransmitter. It is also considered a very warm hue. After all, it is the hue of the sun. However, because of its warm features, this hue may be less calming than certain options.

Yellow clothing is a fantastic choice for informal summer wear; nevertheless, yellow is considered an unstable hue, so it might be overly energetic in the office and make the wearer appear weak.

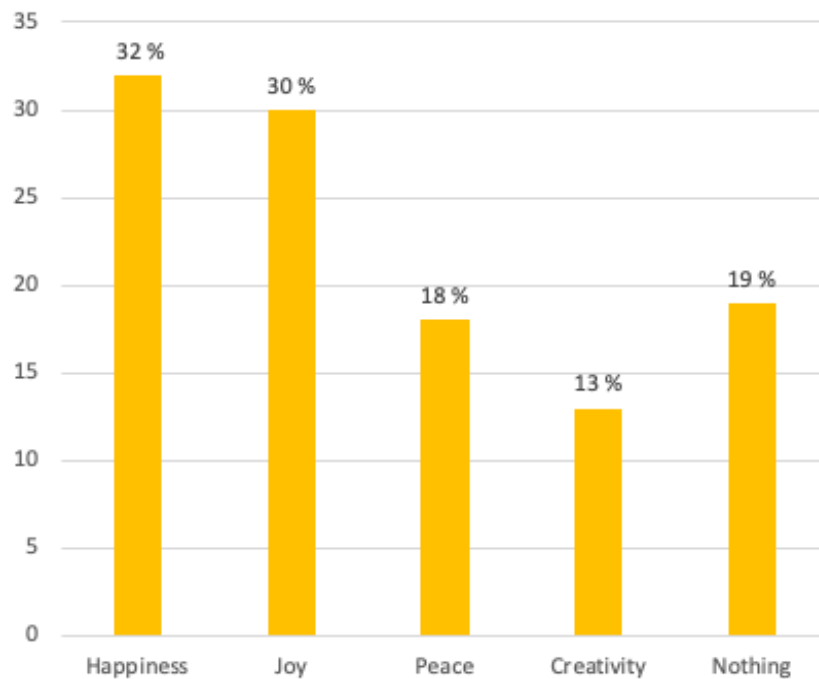
To many of us yellow is associated with the sun, and like the sun the color yellow emits enormous amount of reflected light thus yellow is linked to most tiring to the eye. In severe circumstances, using yellow as a background on paper or computer monitors can cause eyestrain or vision loss.

Yellow represents jealousy and envy in Germany, and treachery in France. During the 10th century in France, people would designate the homes of criminals and traitors with yellow paint on the doors.

Yellow is mentioned as a bad hue in Christian scriptures. The Bible mentions yellow many times in regard to leprosy. Yellow was also used to represent bodily or spiritual death. Judas was also reported to be wearing yellow robes when he betrayed Jesus in the New Testament, therefore yellow became connected with cowardice and treachery.

Many people despise the hue, so if you have a lot of yellow rooms or a yellow front door, you should consider repainting to receive the greatest price for your property if you decide to sell. One exception: many individuals use yellow in their kitchens, with no detrimental sales impact. Yellow may be acceptable in kitchens since warm hues enhance our appetites.

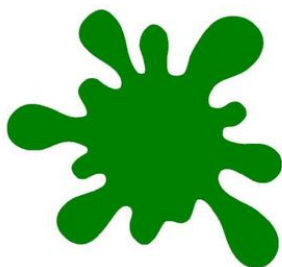
I asked about 100 people what emotion they felt when they enter our school cafeteria. As seen from the graph all the points mentioned above have been confirmed (multiple choice question).



These were the five most answered ones, which also states that my points are right. As you can see 32 % of students and teachers choose happiness and 30 % choose joy as the most common emotion experiences by looking at the color yellow

C. Green

Green was the color of rebirth and restoration in Ancient Egypt. This is due to the papyrus that grew every year after the Nile flooded and formed fertile fields. Ancient Egyptian painters



would grind malachite, a copper mineral, to make color to convey their gratitude for this procedure. It was often employed in tomb ornamentation but gradually went out of favor. This is due to the fact that it rusted black over time.

In the Middle Ages, garment color reflected a person's social status and vocation. The elite wore red, and peasants wore brown and gray. Merchants, bankers, and

the aristocratic all wore green. In Jan van Eyck's *The Arnolfini Portrait* (1434), the bride wears a beautiful green garment that represents her family's rank and fortune.

During this period, new green pigments were made from natural sources such as plants, although the hues usually faded with time. Early Renaissance painters, including Duccio di Buoninsegna, realized that painting faces with a green underlay and then adding pink gave them a more realistic appearance. However, over decades, the pink has faded, making some features seem like a sickly green.

In the 18th century, synthetic green pigments and dyes were produced, swiftly replacing older mineral and vegetable colors. Green was ultimately employed in art to evoke certain feelings rather than just replicate nature. Green became a political symbol in several European countries during the twentieth century. Today, it mostly refers to global environmental movements.

The wavelength of green is 500 - 570 nm. Because of its shorter wavelength it is considered relaxing or cool.

Green hues might help individuals feel at comfortable in unfamiliar surroundings. As a result, designers frequently incorporate green into public places such as restaurants and hotels.

One research discovered a "green exercise effect" on individuals who exercised indoors while seeing a green-overlay film of outside area. They felt less effort and had less mood disruption when they watched the identical film with a red or gray overlay.

Green, in general, connotes health and vitality. Many studies have linked green to positive results, lending credence to this notion. People who spent time in nature, for example, surrounded by green vegetation—a practice known in Japan as "forest bathing"—had lower blood pressure than those who did not.

Green's soothing qualities might be attributed to its relationship with nature, which most people find pleasant and refreshing. According to some studies, the positive association with green is programmed in our brains as a result of adaptation: Green in nature represented food, water, and shelter to early people.

Green was widely associated with fertility in ancient mythology. For example, the last month of winter was known as "Esfand" by ancient Iranians since it was the period when spring and greenery returned to the soil. They specifically dedicated the fifth day to the planet and women. Similarly, the Greeks depicted Osiris, their deity of the underworld, birth, rebirth, agriculture, and fertility, as having a green face.

As green is associated with nature, we may see anything green as healthy and natural even when it isn't. According to one study, even when the nutrition of the two bars was comparable, consumers were more likely to regard a candy bar with a green label as a healthier alternative than a candy bar with a red label.

Green is a hue that some people find calming, while others find it motivating. According to one study, persons with a "high need for achievement" preferred the color green over red, which was preferred by those with a "low need for achievement." Participants in the study also connected terms associated with failure with the color red and words associated with success with the color green. As, green implies safety and authorization to go, but red signals "stop." In turn, the phrase "to give the green light" indicates approbation.

According to research, people's creativity is likely to enhance when they are surrounded by green plants and have access to green vistas of nature.

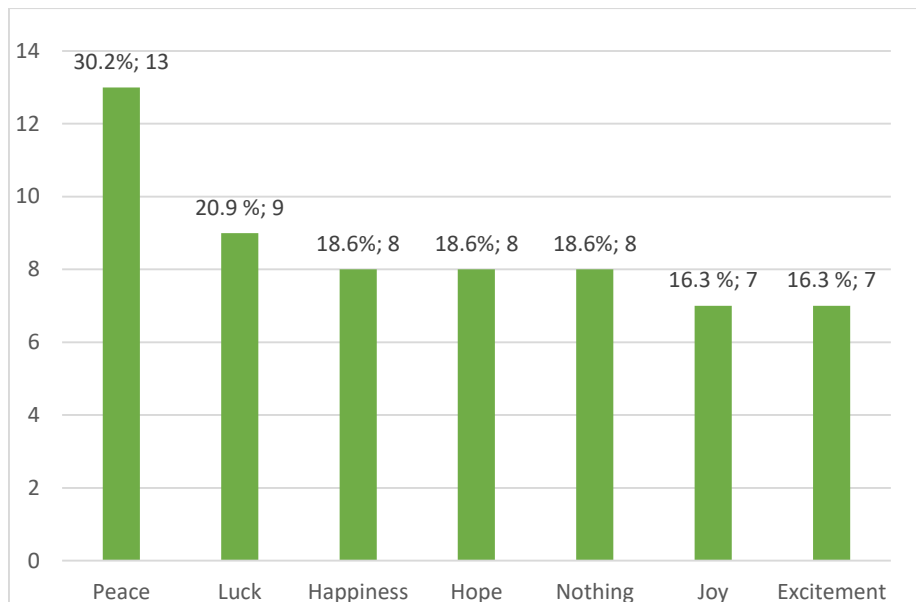
Color has an impact on our emotions as well as our memories. In one research, participants were given a list of emotionally charged terms printed in different colors. Following that, they were asked to recollect specific terms. They were more likely to remember pleasant phrases printed in green, prompting researchers to hypothesize that green had more positive emotional overtones. As a result, when it comes to recalling information, the color green may evoke an optimistic bias.

The psychological effects of the hue green are frequently associated with balance and stability. Green is a soothing hue that may make people feel more grounded and focused, and it is commonly used in places where relaxation and serenity are sought, such as hospitals and spas.

In addition to its relaxing effects, the color green is connected with wealth and abundance. This is why it is frequently used in branding and marketing, as it conveys a sense of progress and achievement. Darker colors of green may evoke ideas of intrigue and refinement, whilst lighter shades of green may elicit sentiments of refreshment and rejuvenation.

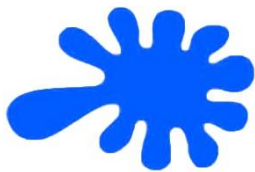
In the United States, green paper money is connected with Irish-American culture, St. Patrick's Day, and good luck. Green, according to one research, may serve as a type of good luck charm. Participants who were exposed to the color green felt more hopeful and had less fear of failing.

Green, while connected with happy emotions, may also imply jealousy. Green can also be used to suggest physical disease, such as when someone's skin turns green. The linkage between green and disease may have resulted in the association between green and envy—as if envy were a disease in and of itself.



Many choose peace which is 30 % could be because it is associated nature, which might lead them to choose green as peace too.

C. Blue



Blue, a color adored and appreciated throughout history, holds tremendous value due to its scarcity and the high cost of producing. The ancients appreciated the blue tint of the pure sky and lake depths.

Indigo, with its beautiful blue-violet hue, has long been revered. Indigo was the most often used dye for silk. Accounting uncovered a process for dyeing indigo wool in cuneiform clay tablets. In every society, indigo was a costly commodity, and wearing it was a statement of royalty and riches. The color indigo is named after the *Indigofera* plant that produced the dye. It belongs to the legume family and grows in India, Egypt, Japan, and southern Europe.

Indigo was employed not just in its native area, but also in Mesopotamia, Ancient Greece, and Rome, as well as in Southeast Asian countries. The love of blue, combined with the prohibitive expense of indigo, drove people to seek for new cheap dyes that produced a deep, pure blue shade. Woad became a dye. This paint was made from the same plant and was widely used in ancient Egypt. Woad was used to color festive garments and mummy wraps. and Other ancient peoples utilized this dye, including the Pictish tribes with whom Julius Caesar battled. Warriors painted their faces and bodies with woad.

Woad grew everywhere; hence the cost of this dye was several times lower. However, the color was less vibrant and saturated than indigo. We used lapis lazuli or aquamarine, a costly dye, to get a tint similar to indigo. It is fashioned of lapis lazuli, a semi-precious yet somewhat uncommon stone. It's worth noting that the manufacture of blue dyes from the valuable stone Lapis Lazuli was a costly procedure throughout the Middle Ages. As a result, among the aristocratic, wearing blue attire became a sign of money, power, and status.

However, it wasn't until the 1850s, with the introduction of synthetic indigo dye, that blue became widely available and inexpensive to the general public. This change signaled a shift in socio-cultural dynamics, democratizing the hue blue and elevating it to the level of the common and every day.

According to a poll conducted by Jordan W. Why is the blue world's favorite color? in ten nations, blue is the most popular "favorite color" for individuals worldwide, with males liking the color blue more than women (40% vs 24%, respectively, among participants from the United States). The wavelength of the color blue ranges from 450 and 495 nanometers.

Since blue is so ubiquitous, it is widely seen as a non-threatening color that seems conservative and traditional. Since blue is regarded a non-threatening color, making it an excellent choice for organizations looking to represent reliability, loyalty, security, and serenity. Using blue in branding, advertising, and product design can help to capture the color's good aspects.

Blue has also been demonstrated to reduce body temperature and heart rate.

Blue is a relaxing color it lowers muscular tension, lowering blood pressure, normalizing pulse, slowing breathing rate, lowering body temperature, refreshing, and improving patience. This color is one of the so-called passive colors, since it encourages softness and dreaminess, weakens and slows down life processes, and generates a sense of coldness.

When we think of the color blue, two adjectives come to mind: serenity and tranquility. It's a non-aggressive color that encourages peace, order, and tranquility. This might be why we associate blue with water, hence blue can be a mentally relaxing color for certain people.

This color is associated with trust and trustworthiness, and it has been chosen as the color of choice for law enforcement authorities all around the world. Blue uniforms, like the color itself, are designed to convey an authoritative but calm and confident demeanor.

Blue may have a relaxing influence on humans. It could even make our streets safer. Crime decreased dramatically when blue lamps were installed in Glasgow, Scotland in 2000 and Nara, Japan in 2005 (Shimbun, 2008). More study is needed to properly explain these effects, as the

color blue may have conditioned connotations, reminding individuals of police officers in blue uniforms and, in the United Kingdom, blue lights on police cruisers.

Blue can also elicit sentiments of loss or separation. Consider how a painting with a lot of blue, such as those done by Picasso during his "blue period," may make you feel lonely, gloomy, or depressed.

Blue hues stimulate the mind, which is why the majority of social networking programs feature blue backgrounds. It keeps the mind alert and active, which is why a blue-grey hue is appropriate for a business setting. They are a vibrant, clean, and professional hue.

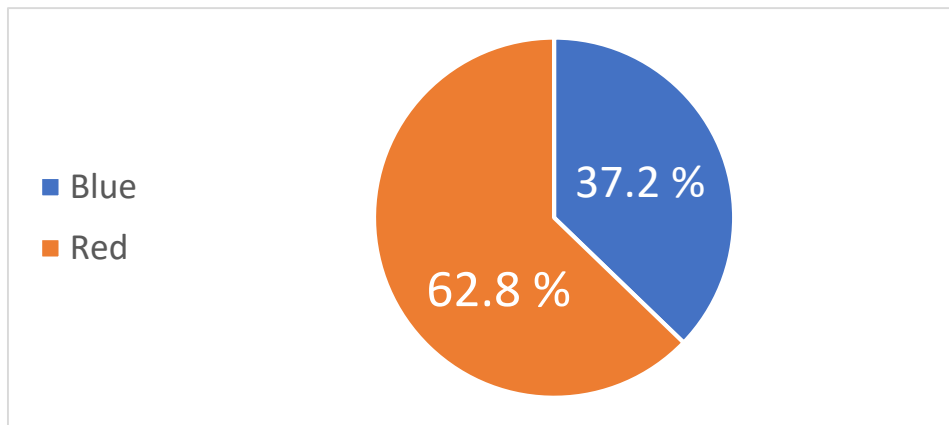
The color is one of the motivational colors, inspiring and motivating your ideas to produce excellent results. This is reason blue is commonly utilized to design offices, since studies have proven that working in blue settings increases worker productivity and creativity.

Blue is a ubiquitous hue, yet one of the least appealing. Some diets even suggest eating meals on a blue plate. Blue is seldom seen naturally in food. Furthermore, individuals are hardwired to avoid dangerous meals, and blue hue in food is often a sign of decomposition or poisoning.

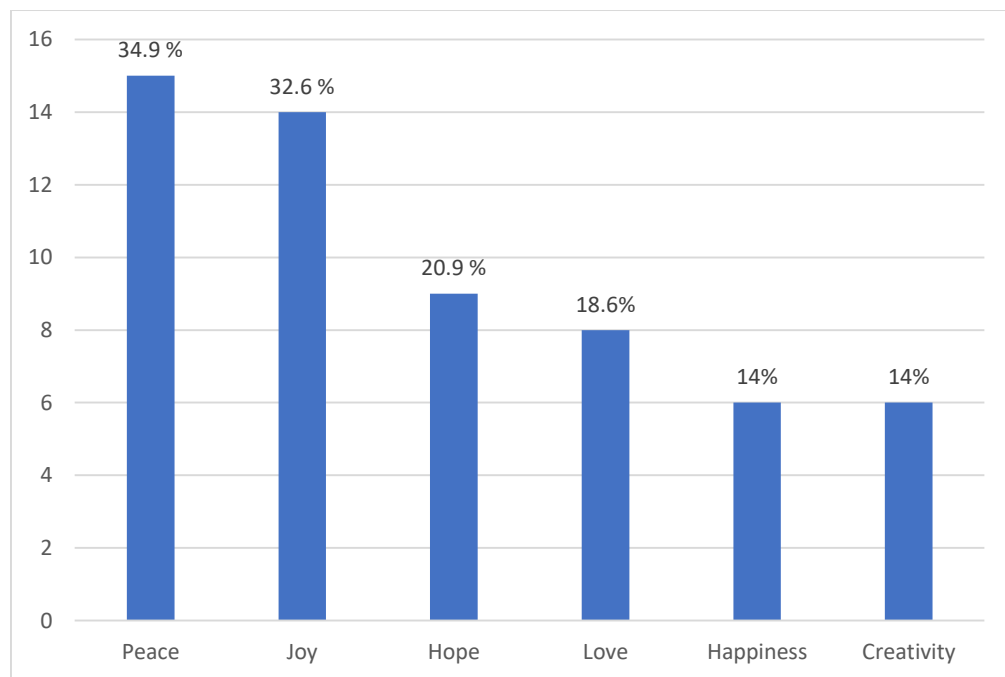
The color blue has an effect on us both cognitively and emotionally, helping us feel more at ease. According to research published in *The Journal of Business Research*, customers prefer stores with blue interiors. They were more inclined to shop and purchase items there than at another store with an orange interior (Babin, Hardesty, & Suter, 2003).

One unexpected consequence of blue lights might be suicide prevention. In recent years, Japan has seen an increase in suicides at train stations as people jump in front of approaching trains. Between 2000 and 2010, blue lights were put at 71 Japanese rail stations, and a data study found an 84% drop in the frequency of suicides.

It is already established that red is an appetizing hue, whereas blue is the reverse. To demonstrate this, I included a question in my survey a question stating ' Which color cupcake would be appetizing; a blue one or a red one ?'



Furthermore, all of the emotions felt by look at the color blue can be proven by my survey. Before I asked them to answer the question, I asked them to look at the color for 30 seconds.



But the surprising result was that people felt joy looking at color blue. Which haven't been mentioned in any studies anywhere. But perhaps since the color blue is associated with the sky it brings happiness which relates to joy. Sky blue is also associated with heavenly or spiritual concepts in certain cultures, making it a fantastic hue for rhinestone wearers who wish to express their inner calm and pleasure

D. White

The first use of the color white is seen in the caves of our ancestors. After this, it was seen in the Great Pyramid. It is less well-known is that it was formerly covered in around 5.5 million tons of white limestone. Furthermore, the rough steplike constructions we now identify with

pyramids were not there during the period. The limestone was fitted to the steps of the pyramid to produce a flat surface that shined dazzling white in the hot Egyptian heat. White was connected with purity, omnipotence, and the holy. In their rites, Egyptian priests frequently utilized white instruments. Even the embalming table used to preserve bulls considered to be Osiris' avatar was built of white alabaster.

The Chinese connotation of white with death possibly be related to oracle bones. In their methods, ancient Chinese fortune-tellers would utilize specially prepared bones. The earliest known example of oracle bones dates from around 1,600 B.C. In reality, these bones are the first illustration of a complete writing system in China. White was typically employed in casual contact with high spirits since it was largely connected to purity, according to Bevet. Shamans' faces were painted with white pigment, and priests later wore white clothing to symbolize their real devotion to the greater good. White was a crucial hue in sacrificial ceremonies. Typically, white animals were offered as sacrifices to gods and spirits as a sign of their purity. White was a common color in burial rites. Not because it is connected to death, but rather because it was necessary to purify the deceased's soul. Moreover, he was connected to time-bleached bones. Shamans and priests connected to the religion of death painted their bodies white and wore masks shaped like white skulls since the skulls eventually turned nearly white.

One of the earliest terms in the Russian language is "white." Numerous European languages contain the root *bel-/bl-*, demonstrating its Indo-European ancestry. For individuals today, white is not so much a color as it is its absence. This is untrue from the perspective of physics. White is light because it is the result of all the visible spectrum's color rays combined. The ancient people felt, rather than fully understood, this. For a very long time, the word "white" in Russian denoted quality rather than color.

White represented the strength of the light gods. That is why this color of stone was used to make sculptures of deities and amulets, as well as to decorate temples and cemeteries. White is perhaps one of the oddest colors in terms of human perception. We learned in school that white is a blend of all the colors in the visible spectrum and may be decomposed into them. However, subjectively, it appears to be colorless.

At the same time, white conveys feelings of innocence or purity. While a bride wearing white was generally supposed to represent the bride's virginity, brides used to wear blue to symbolize purity.

White is the emblem of truth, free of dishonesty. White might be dazzling to people who are used to the dark, but it can also reveal the actual and symbolic problems of society. It is the ultimate foil, providing a contrast that makes all other colors appear more brilliant.

White represents cleanliness, simplicity, and purity. It stands in strong contrast to black, and its implications are clear. Because white light encompasses all the hues of the spectrum, it is an inclusive, neutral color that favors no particular hue and refuses to take sides.

White is a bright color that may enhance highlights or give a feeling of spaciousness, emptiness, purity, and freshness. The use of white in design and interiors allows you to visually enlarge the space while highlighting certain features and aspects. A room with this hue appears bigger, and more expansive, and colder. That is why a prolonged stay in such a place creates pain, known as "color starvation."

Excessive quantities of white in hospital rooms generate a sense of sterility but do not provide comfort.

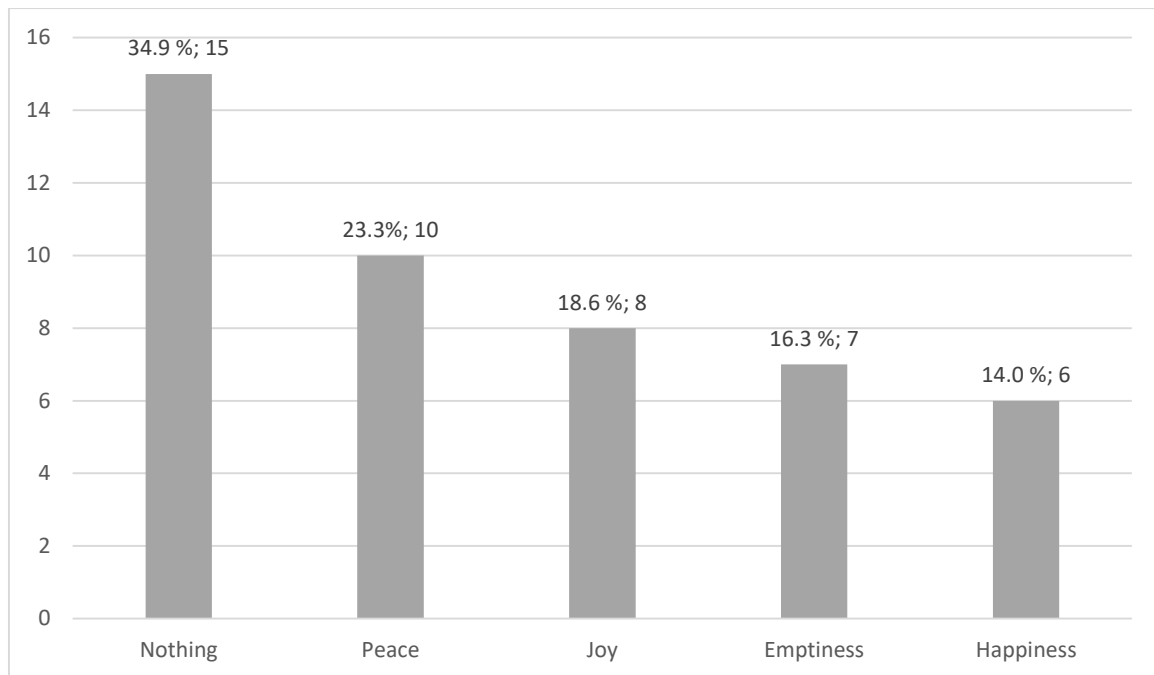
White garments are ideal for warmer weather. First and foremost, the tint reflects the sun's rays more effectively. Second, it creates a sensation of coolness.

White may also be used to symbolize austerity and simplicity. Some people may find it peaceful or refreshing, while others may find it harsh or tasteless.

The hue may also indicate neutrality or space. In reality, white provides "breathing room" between two or more parts. In recent years, we've seen tech, creative, and fashion firms use white logos to keep their designs clean and straightforward.

American architect Richard Meier, best known for his trademark love affair with white: "White is the most wonderful color because within you can see all the colors of the rainbow. For me, in fact, it is the color which in natural light, reflects and intensifies the perception of all of the shades of the rainbow, the colors which are constantly changing in nature, for the whiteness of white is never just white; it is almost always transformed by light and that which is changing; the sky, the clouds, the sun and the moon."

Some of these points can be proven with my survey, yet others are not mentioned by researchers.



The reason why about 23 % choose white was peace is because in Hinduism white represents truth and peace. This can also correlate to happiness

E. Black

The origin of the term "black" is obscured by darkness. This is largely applicable to Russian and Old Russian languages, as there are no similar terms in European (Romano-Germanic), Turkic, or Finn-Ugric languages. According to one interpretation, "black" derives from the old Slavic term "crхпъ", which originates from the ancient Indian krsnás, meaning "black." Linguists suggest that the difference between "crхпъ" and "black" is due to a phonetic variation. Ancient people revered the manifestation of celestial powers in nature rather than the colors themselves.

The root bla also roots the English word black. Indeed, precisely "black." Its roots can be found in the old German phrase "burned by fire," blakkaz.

One of the first colors utilized in painting was black. The Lascaux Cave in France has paleolithic painters' depictions of bulls and other animals. They started with charcoal and progressed to more vibrant black colors by burning bones or grinding manganese oxide powder.

For the ancient Egyptians, black was associated with fertility, and the rich black soil was flooded by the Nile. It was the hue of Anubis, the deity of the underworld, who assumed the appearance of a black jackal and promised the dead protection from evil.

For the ancient Greeks, black was also the hue of the underworld, which was divided from the realm of the living by the black-watered river Acheron. Those who had committed the most heinous misdeeds were sent to Tartarus, the lowest and darkest realm. The palace of Hades, the ruler of the underworld, was in the middle, where he sat on a black ebony throne.

One of the most prominent hues employed by ancient Greek painters was black. They began manufacturing black-figure pottery and then red-figure pottery in the sixth century BC, utilizing a very innovative technique. The artist would paint figures with a glossy clay slip on a red clay pot in black-figure pottery. When the pot was burned, the slip-painted figurines became black on a red backdrop. Later, they reversed the procedure, using a slip to paint the gaps between the figures. This resulted in stunning red figures set on a shiny black backdrop.

There is no primary, secondary, or tertiary colors. Because black isn't considered a color, it doesn't appear on the color wheel. It's a rainbow of hues. Or, more precisely, the absorption of all hues. All light in the color range is absorbed by black.

Black represents authority and control in color psychology, holding on to knowledge and things rather than offering them to others. The color black was linked with Mother Earth, demonic creatures, and evil monsters. According to one ancient Chinese tale, the "underground kingdom of Yudu" was home to birds, snakes, leopards, tigers, and foxes. And they were all black. There was also a gigantic black mountain on which black people resided. This color has long been connected with darkness and the evil that lurks in the night. Black, a hue linked with gloom and the ground, has become a real emblem of all that is hidden, secret, and unknown. However, in certain societies, it came to represent something concealed and much sought. Thus, among Arabs, the term "blackness of the eyes" denotes a lover, but "blackness of the heart" signifies love. Furthermore, the association with darkness secured the employment of this color in magical rituals linked with the desire to hide, hidden information, and things.

It is linked to strength, authority, and power. Whoever wears black exudes power and knowledge. It represents prestige, formality, and significance. With so many connotations, it's no wonder that the color black has a powerful influence on the mind. Because of the power it radiates, black is menacing, unpleasant, and unapproachable. A recent study by Sara Douedari found that 64 percent of people associate the color black with authority, social clout, and power.

Because of its intimidating nature, it might prohibit two-way conversation. The salesperson dressed entirely in black will make a lot of sales, but no friends! It exudes power while also instilling dread. The color black has a profound effect on our emotions. It might elicit terror or

respect. Wearing black, particularly formal black, may instill a sense of confidence and significance. The hue is frequently regarded as bold and elegant. The hue exudes refinement. That is why many individuals dress in black to attend formal functions. It's also why luxury firms such as Tiffany & Co. and Chanel use black in their logos.

On the other side, it can cause despair, depression, anxiety, and even dread. It hides secrets, keeps information close to the vest, and instills fear in those who are under its control. For those who wear it with integrity and leadership, black represents self-control, discipline, and even protection. Indeed, the color black may elicit sentiments of safety and protection.

In Feng Shui, black represents water, fostering serenity, generating mystery, and indicating power. From a psychological perspective, black represents denial, rejection of reality, and escape from it. It is not for nothing that monks who have given up the world wear black. It arouses opposing emotions in people; it is both unpleasant and somber, dark and meaningful.

Black instills terror, conjures thoughts of death, and produces a sense of mystery, or the unfathomable. When surrounded by black, a person's pulse rate drops and respiration slows. However, there is no sense of calm; there are only unpleasant, gloomy sensations and a sad mood. Compared to white, black visibly shrinks things and spaces. That is why I was clothed. Black makes people look leaner, fitter, and more elegant.

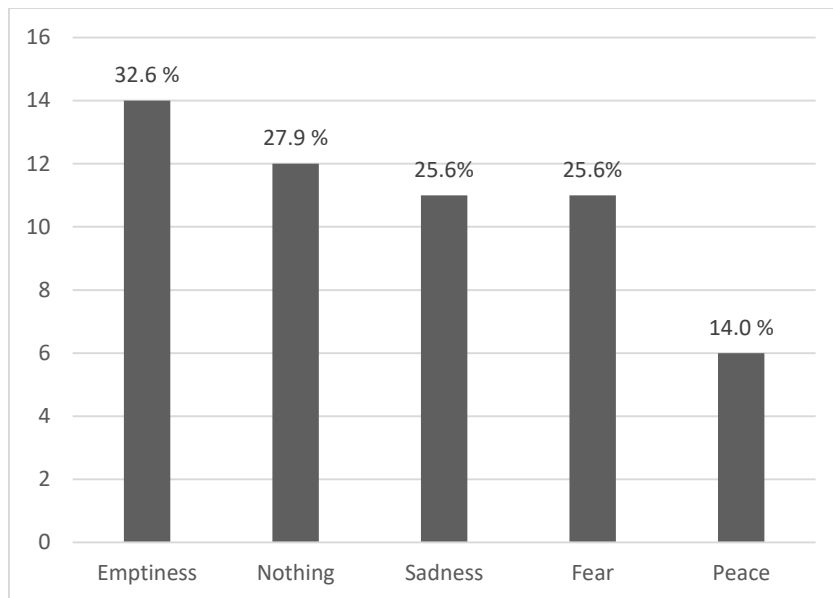
It simply implies that our thoughts are predisposed to link darkness (night) with danger. People who favor the color black may be traditional, conservative, and serious, or they may consider themselves smart or dignified.

In the West, the color black denotes loss and mourning, two of the most difficult feelings for Westerners to bear. It also symbolizes defiance. Teenagers wear black to distinguish themselves from their parents and assert their individuality. Civil rights groups use it to voice their strong opposition to official policies that demean minority populations.

The color black may also absorb bad energy. In reality, it absorbs both negative and good energy, resulting in a pleasant neutrality during stressful situations.

It may not seem so at first but Black boosts adrenaline levels, alters mood, and draws noticeable attention.

Like for the rest of the colors a similar question was asked. The results below say that black is the color that absorbs emptiness but from the information provided in the internet it should be white instead of black as shown in the graph.

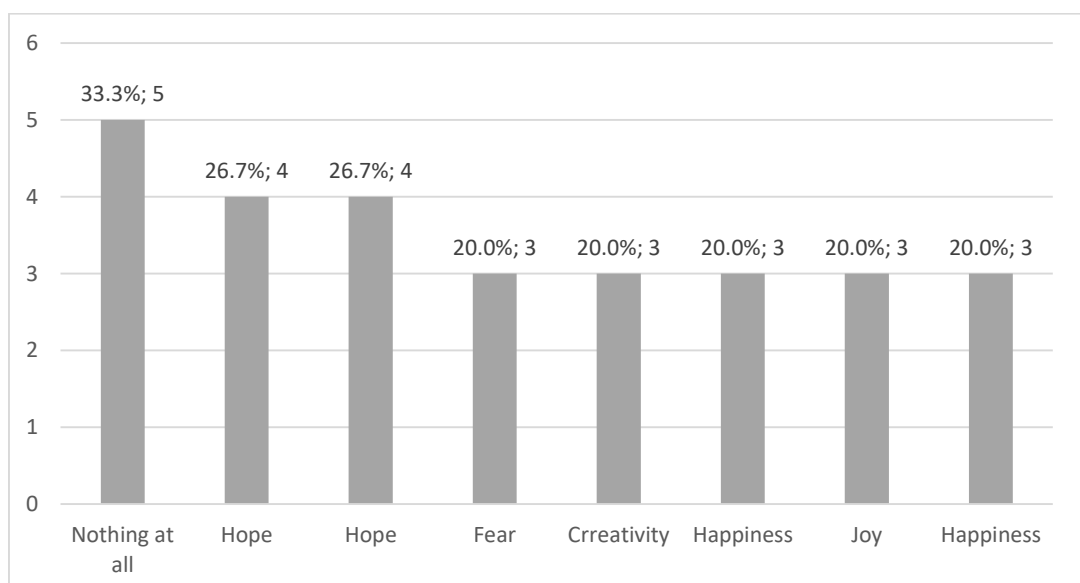


As you can see about 33 % percent choose emptiness which was appositely white's emotions which seen here is false.

Survey

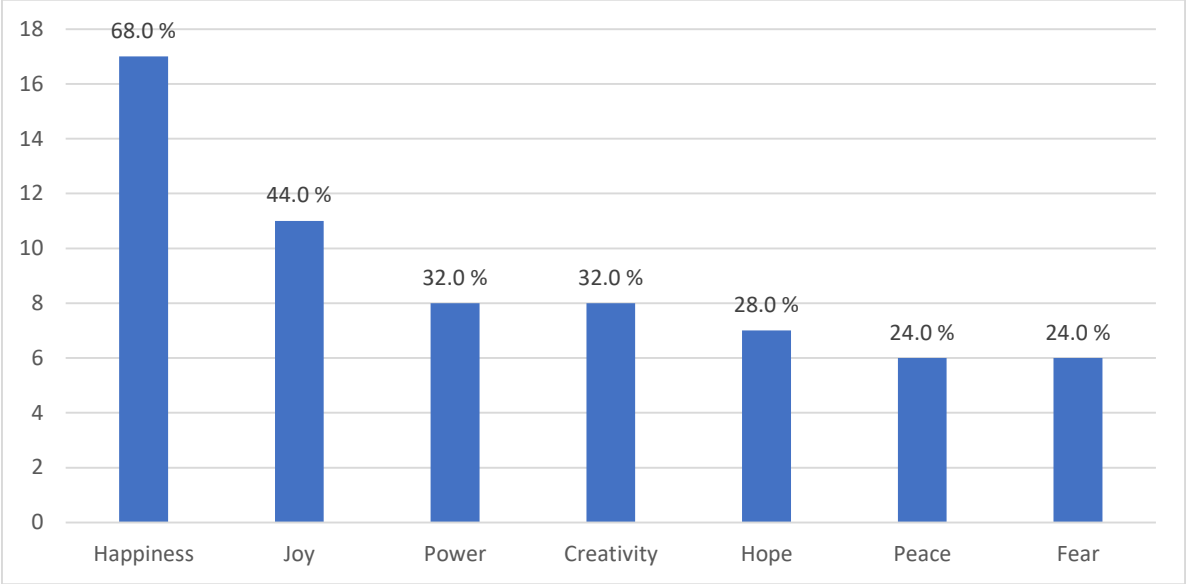
Since we have defined the most frequent hues perceived by humans. We decided to put together a poll based on the color of a certain class. As we have seen, at our school, classes are painted in different colors, and we have asked students and instructors of certain classes to choose the emotions they experience while being in that class.

I would consider the poll as an experiment to proof that you do feel emotions in a colored class if you like it or not. For this to be considered an experiment, I have a control room as a grey room or better known as Junior 4. Since black and white are two opposing colors so the mixture of the two should bring a balance or usually no emotion at all.



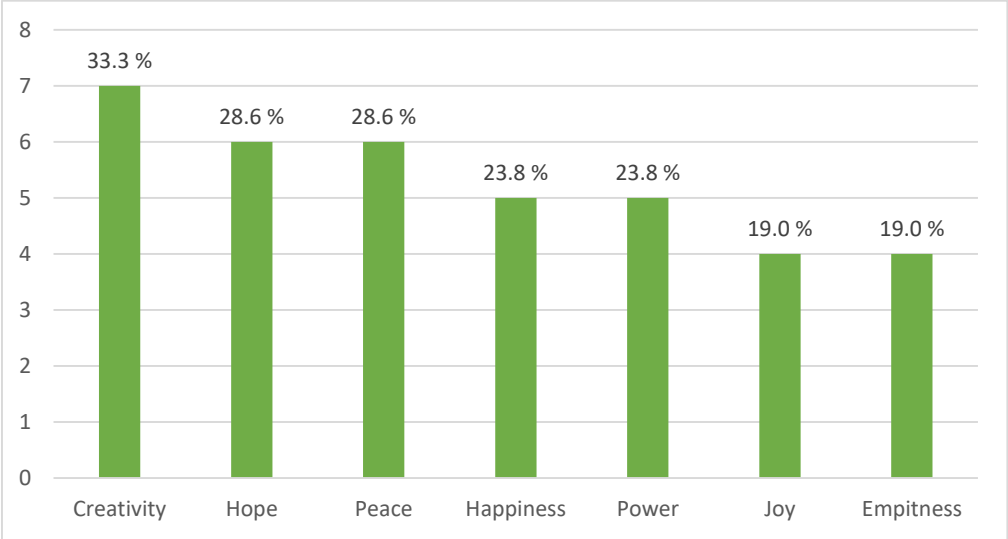
We conclude from this poll that all 15 of the participants felt that specific emotions because of how their day is going and projected in at the room. I can say this as no specific emotion is felt by the majority

Primary 5 has a blue color walls classroom(25 people).



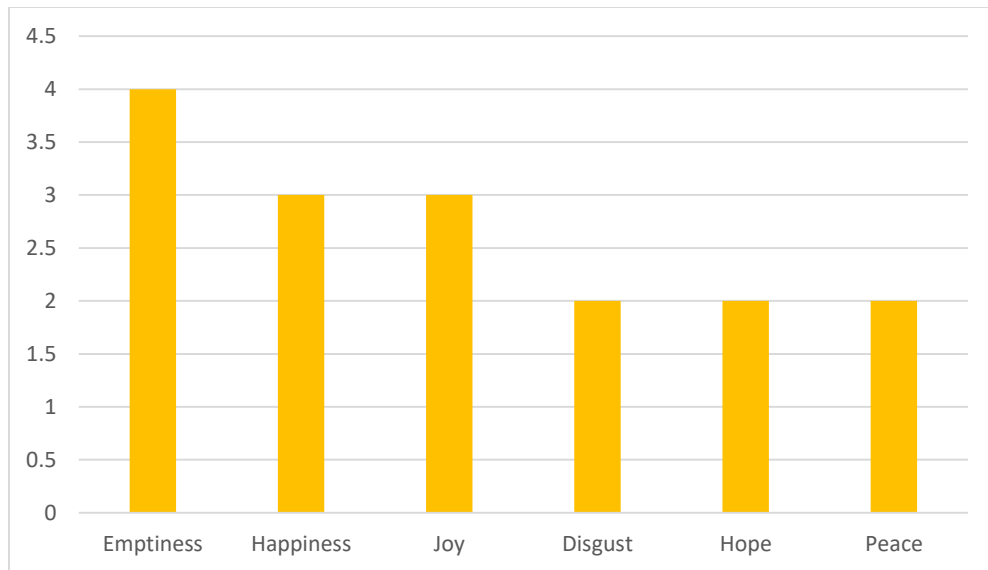
Comparing the graph from the color blue this is shown to be true. According to the graph we can conclude that blue color positively influences on physical and emotional part of the students.

For the color green I chose Junior 3 and some part of Senior 3. (21 people)



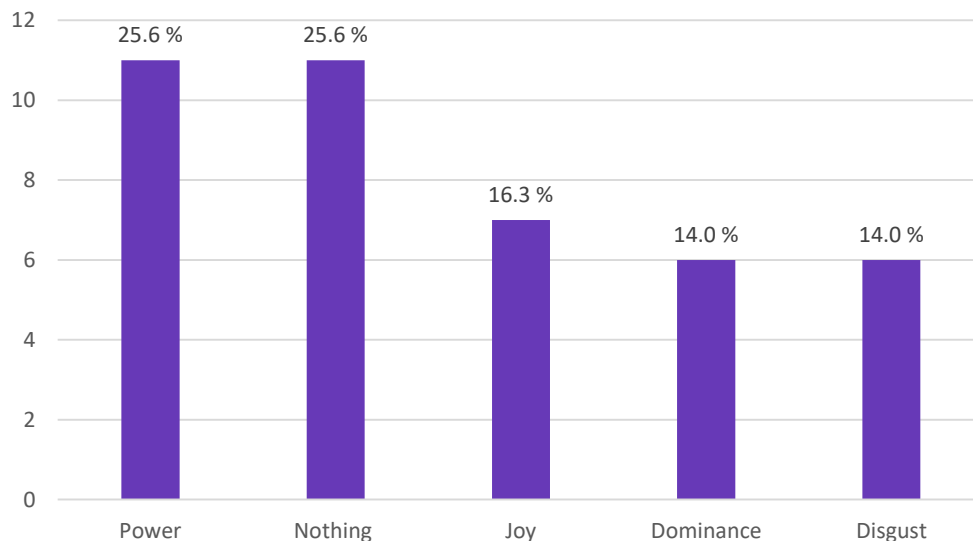
Compared to my graph for the green color that was asked to Junior 3 – Senior 3, there is a significant difference from it. As we see on the graph it proves that green color brings positive and relaxing emotions such as peace, happiness and power. As a result, students of these classes show more creativity.

For the color yellow I choose Senior 1 (11 people).



As established before the color yellow is an opposing color which is why the graph is mostly distributed evenly.

The color purple is connected with many different connotations, including knowledge, creativity, monarchy, power, ambition, and luxury. It may also indicate magic, extravagance, tranquility, pride, independence, or riches. So, see this I asked in my survey 'What emotions do you feel when you are looking at the color purple?'

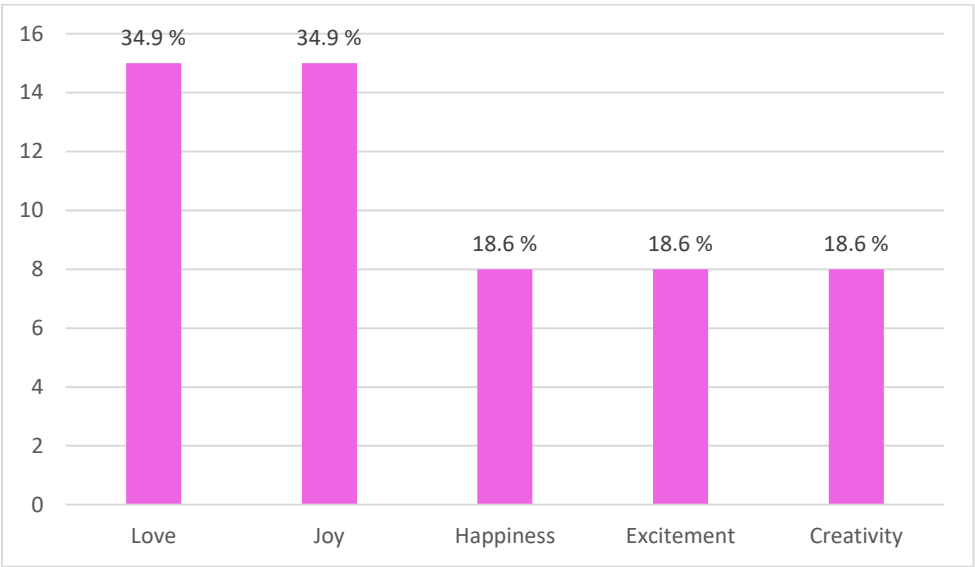


As mentioned above the emotion most felt by the color purple is 25.6 %.

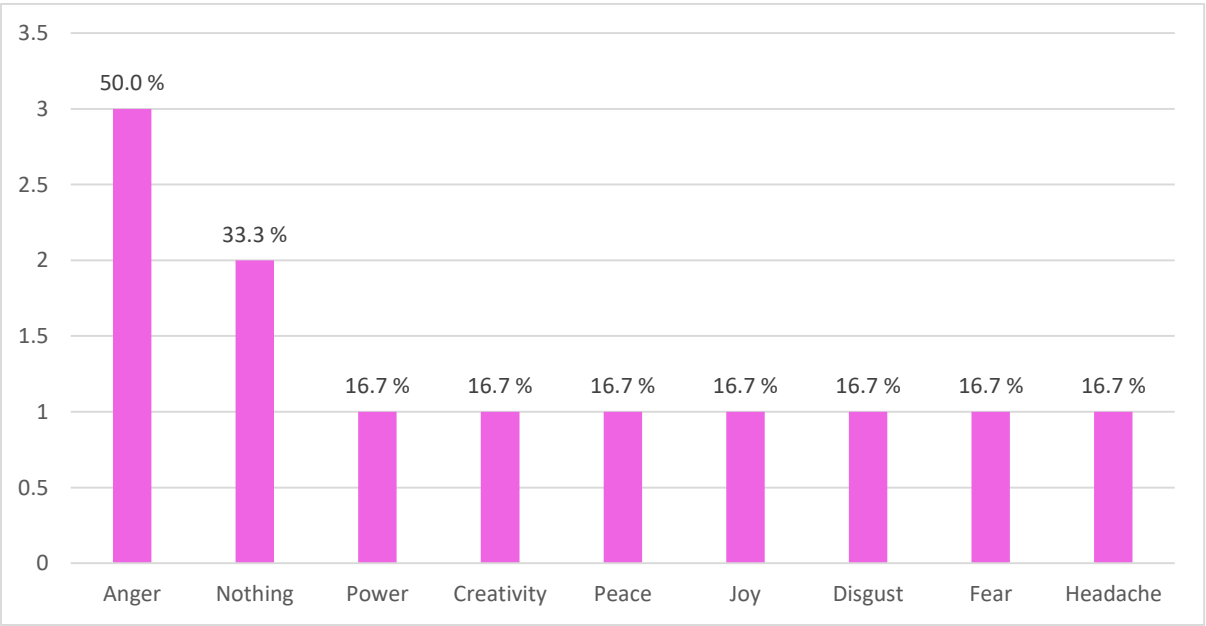
To see the effect of the color pink I asked the class of Russian students from Junior 4 who do math in that class.

Pink denotes compassion, caring, and love. It refers to unconditional love and understanding, as well as the providing and receiving of nurturing.

For the color pink I also did two surveys , one concerning the general population and one the Russian students of Junior 4 (6 people).



Since pink is the combination of the color red and white it is understandable it would show effects of both colors.



Looking at the graph it seems that being in a pink classroom also gives contradictory feelings as yellow.

CONCLUSION

The phrase “A picture’ worth a thousand words” seems true at first but if you take a closer look, it’s the colors that convey about 99 % of meaning rather than just some words or the title of the work. Imagine portraying a character that deceives people and hides her true face. What color would she be painted in? What would be the background? If she was painted wearing a blue dress that would make you of deceit, or if she wore red colored cloth. Probably the red colored clothes would resonate with you rather than blue because the color blue represents loyalty rather than deceit.

Our research paper helped us to understand the meaning of different colors how they influence on psychological and emotional part of the human.

By our survey in classes with various colored walls proved us which exactly emotions each color causes.

Seeing that colors can affect how to view things; we need to take it serious in choosing colors in different aspects of our life.

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