

OCTOBER - DECEMBER 2017

ChildArt



the
COLOR
issue

THE MAGAZINE OF THE INTERNATIONAL CHILD ART FOUNDATION

ART

Guest Editor's Corner

Color surrounds you. It is everywhere and you see millions of colors everyday. But what exactly do you see? When children are young, we teach them red, yellow, and blue as if colors are absolutes, but the more we learn about color, the less rigid our conception of color becomes. Perhaps the green you see isn't exactly the same as the green I see.

Scientists long believed we all saw the same colors. More recent studies show that color occurs in our minds as a response to our experiences of the outside world. We each develop similar yet not necessarily the same "color vision." Our understanding of color is shaped by our individual experiences. But even if we agree that a specific leaf is green or the ocean blue, colors can still fool our eyes.

Color can be like a chameleon that changes based on its surroundings. It can trick us because context changes not the color itself, but our perception of it. We rarely experience a single color all by itself, rather we find colors juxtaposed with other colors, influenced by different hues. A red square on a green background will seem brighter than the same red square placed on a bright, pure orange background. The logical part of your brain may know the red is the same, but the way we perceive it certainly changes.

The way we see color is constantly being influenced by lighting, the material or surface or an object, neighboring colors, and even how we feel. You could say that seeing color is not as much about what we actually see and more about what we think we see.

The renowned artist and color teacher Josef Albers said, "Color class prepares us to be fooled." Though Albers acknowledged the slippery nature of color, he also wanted his students to be delighted by the ability color has to deceive us. His goal in teaching color was "to open eyes," and that is the same goal I had as I selected the articles included in the "The Color issue" of Child Art magazine.

Each contributor has shared ideas about color that I know can open your eyes to seeing color more actively and your mind to thinking about colors differently. Throughout this issue you will find activities that give you a chance to experiment with color concepts and learn for yourself just how dynamic and powerful color can be.

When you approach color with a sense of wonder, its secrets will be revealed right before your eyes. You will discover the mystery and magic that has sparked the imagination and fascinated us for thousands of years. Color is so much more than simply an element of design. Color touches your heart, mind, and soul.



Kate Smith
President and Chief Color Maven
Sensational Color

ChildArt

OCTOBER-DECEMBER 2017
Volume 17, Issue 3, Number 52

Editor and Publisher:

Ashfaq Ishaq, PhD

Guest Editor:

Kate Smith

Creative Director and Graphic Designer:

Karen Deans
karendeans.com

Contributors:

Sophia Ahmad, Eric H. Chudler, PhD, Alicia Mendez Cruz, Heidi Gustafson, Karen Haller, Goran Paunovich, Sara Kapadia, PhD, Kate Smith

Photo Credits:

Page 5: Pexels.com; Pages 9-10: Sophia Ahmad; Pages 12-13: Heidi Gustafson; Page 17: Unsplash, Nils Nedel (Ireland), Andre Ridley (Provence), David Cantelli (Iceland), all other images Wikimedia Commons; Page 21: Alicia Mendez Cruz; Page 31: Sara Kapadia, PhD



**INTERNATIONAL
CHILD ART
FOUNDATION**

Published since 1998, *ChildArt* is a commercial-free arts learning, self-discovery, and global education periodical

expressly written for 10 to 14 year-olds, but useful as a teaching tool for educators and inspirational for creative individuals of all ages. Subscribe to *ChildArt* online at www.icafe.org.

When a child's creativity is ignored, it could be lost forever. Tax-deductible donations support children's creative and empathic development. You can donate online at www.icafe.org or make your check to ICAF and mail it to: ICAF, P. O. Box 58133, Washington, DC 20037.

All rights reserved. Reproduction of the whole or any part of the contents without written permission is prohibited. *ChildArt* (ISSN 1096-9020).

Copyright 2017 International Child Art Foundation (ICAF), a 501(c)(3) nonprofit.

The Color Issue



**The Power of
Color Hidden in
Plain Sight**

Kate Smith



**Capturing Color
Inspiration**

Sophia Ahmad



**Making Color
From Stones**

Heidi Gustafson



**Packaging Design
for
Tweens + Teens**

Goran Paunovich



**Does That
Color Yellow Exist**

Alicia Mendez Cruz



**Exploring Color
With the
Stroop Effect**

Eric H. Chudler, PhD
+ Kate Smith



**What's Your
Happy Color?**

Karen Haller



**How Language
Helps You
See Color**

Kate Smith



**A Bolt
From the Blue**

Sara Kapadia, PhD

the power of COLOR hidden in plain sight

Kate Smith

There are millions of colors in the world, from the vibrant colors on a movie screen, to the subtle glow of a fading sunset, and the bright neon signs of a fast food restaurant. All you have to do is look around. You'll discover unique color is everywhere, and with the world as your palette, there are an infinite number of colors and never-ending color combinations.

COLOR MULTIPLICATION

Now imagine if you took all of these colors and combinations and multiply that number by 7.5 billion people in the world. The huge number you would get as a result represents how many different ways people respond to colors. It is each person's unique experiences that makes the way they see, feel, or think about color different from the way you do.

To have a true understanding of how color influences all of us every day, you first need to expand your idea of what color is all about. There is more to color than what the eyes see.

THE EFFECTS OF COLOR

Color finds its way into your eyes but also affects your heart, mind, and body, and you may not even realize

that this is happening. In fact, studies show that most of the time you aren't even aware of the influence color has on you, despite the fact that it is woven into your everyday moods and feelings.

Even when you are tuned in to the color around you, like on a sunny day when a room looks brighter than usual, or on a cloudy day when colors seem drab and lifeless, it can still be difficult to pin down exactly why you are feeling a particular way. That's because your responses to a color or color scheme is something that often occurs beneath the surface.

Many people have studied the effects of color. The research falls into three categories, which are color symbolism, color psychology, and personal color bias.

COLOR SYMBOLISM: LEARNED RESPONSE

Color symbolism describes what you have learned about color in your childhood, the ideas and concepts shared by your family members and sometimes by your classmate and neighbors as well. In China, for example, red is a lucky color. It symbolizes good fortune and joy.

Red is found everywhere during the Chinese New Year and other holidays and family gatherings. However, in the United States red has many different color meanings, including getting attention and taking action. This is why the color red is used on sales signs.

Color finds its way into your eyes but also affects your heart, mind and body.

Ask a person from a western culture what color a wedding dress is, and the answer will be white. Years of seeing images of smiling brides dressed in white have put the idea that white equals bride.

Ask about the traditional color for a wedding dress in another part of the world, however, and you'll get a different answer. For example, in India, red is associated with bridal gowns. Our association of color and how it relates to a wedding dress is a learned response based on experiences in our own culture.

Now think of the many symbolic colors you incorporate into your own life. How many can you come up with?

1 *Start by thinking about the colors you associate with your favorite holiday.*

2 *What colors do you wear when your favorite sports team is playing?*

COLOR PSYCHOLOGY: HUMAN BEHAVIOR

Color psychology is the study of color as it affects behavior. These are the responses to color that are automatic, and shared regardless of your age, gender, geographical area or cultural background. You share these reactions because you are human.

While the effects of color on the human body and brain are not yet fully understood, studies have shown that the light wavelengths of colors can stimulate the areas of the brain that regulate the body and affect moods and emotions.

For instance, being surrounded by blue can calm you down, while seeing red can increase your heart rate and speed up your breathing. These colors can tap into your emotions, too. Red can evoke feelings of aggression, while blue may make you feel at peace. This combination of physical and emotional responses adds to the effects of color.

Think about the color red. What comes to mind? This color has more associations than any other color,

but there are two that are most common. Red calls to mind love and romance: like the hearts on Valentine's Day. Red is also associated with fast cars, anger and road rage. When someone is furious we say, they are "seeing red." So how is it that the same color has come to represent two powerful emotions that seem so very different?

It's because red is inherently exciting. It stimulates energy and increases your blood pressure, respiration, heartbeat, and pulse rate. Think about love and rage. Both of these emotions produce similar physical reactions. Love, anger, and the color red all produce changes in our body that are very similar. Using the color red in symbols or phrases that describe love or anger reinforces the message because it's a double dose of the same physical and emotional reactions.

COLOR MEANING: PERSONAL BIAS

As much as red may get your heart beating, not all of your emotional responses to color are instinctive. Through your life, you have developed your own, unique associations with colors. Your color memories, along with the feeling a color evokes – both positive and negative – are strongly linked to your childhood experiences and can have long lasting effects on how you respond to color.

Personal color associations can influence how you feel about a color

and also your decisions about it now and in the future. If your bedroom has green walls that you strongly dislike but your parents won't allow you to change, chances are you may never think of green as a perfect color for your home as an adult.

Color symbolism and psychology easily become intertwined since our learned color associations often closely correspond to our natural reactions to the same color.

When I was growing up, some of my best memories are from the time I spent in my grandmother's kitchen. The walls were painted a soft buttery yellow. Even now, all these many years later, when I see a yellow kitchen it also makes me smile and feel happy.

Color symbolism and psychology easily become intertwined since our learned color associations often closely correspond to our natural reactions to the same color. Sprinkle in your own color memories and you'll begin to realize how many layers there are to the effects of color. You can also begin to understand how powerful color associations are and why they stay in our minds.



What is your favorite color?



I'm often asked what my favorite color is, and my response is always, "Favorite color for what?" My favorite color for my car is different than my favorite color for my cell phone, which is different than my favorite color for my desk chair.



My overall favorite color is blue-green but for my cell phone my favorite color is red, for my car dark blue and for a sweater orange. Do you have only one favorite color or different favorite colors for different things the way I do? What are your favorite colors?


 Love it!

 Like it

 It's okay

 Dislike it

 Love it!

 Like it

 It's okay

 Dislike it

 Love it!

 Like it

 It's okay

 Dislike it

 Love it!

 Like it

 It's okay

 Dislike it

 Love it!

 Like it

 It's okay

 Dislike it

 Love it!

 Like it

 It's okay

 Dislike it

Discover how you react to colors.

1 Look at the six colors above and check the description that most closely matches your first reaction to it. It can help you to focus on each color if you cover the other colors with your hand or a blank paper.

2 Put a check next to the phrase that best describes your immediate reaction to each color.

The more aware you are of how you feel about colors, the more you can use colors to express emotions when painting, designing, writing, making a film or doing anything creative.

Next, look at each color and ask yourself:

3 What words come to mind when you look at each color? Jot them down on a piece of paper. Here are some words to get you started:

appealing	clean	gross	neutral	sad
beautiful	comforting	happy	powerful	serious
bold	dingy	harsh	pretty	smart
boring	dynamic	innocent	old	sweet
bright	energizing	loud	quiet	trendy
calming	fresh	luxurious	refreshing	ugly
cheerful	friendly	natural	romantic	weak

4 Can you think back to anything in the past that has influenced your fondness for a particular color?

5 Do you think your thoughts might change in the future?



RED draws attention. Using even a little bit of pure red on top of a background that is neutral like gray or of a contrasting color like green will draw the eye to that spot.



ORANGE is fun, lively and flamboyant. It radiates warmth and excitement. Orange is a mix of the radiance of yellow and the power of red. It is a vivid color that invigorates and energizes your work.



YELLOW shines with optimism, enlightenment and happiness. Shades of this golden hue carry the promise of a positive future and stand out from surrounding colors filling your art with hope, and vitality.



GREEN is the dominant color in the natural environment. It can feel comforting, renewing and refreshing. The combination of green and blue represents nature and the earth.



BLUE, the color of the ocean and sky, is seen as trustworthy and dependable. It makes your art feel tranquil and calming, but not all blues are serene. Bright or vibrant blues are dynamic and exhilarating.



PURPLE is associated with royalty, extravagance, creativity, mystery, and magic. Try using dark purple in place of black to add any of these qualities to your artwork.



PINK can be youthful, fun, and sweet. Bright pinks have the same high energy as red. Light pinks are lighthearted, nurturing, happy and can calm feelings of anger. Combine with dark colors to give pink more strength.



BROWN says stable, reliable, approachable and friendly. It is the color of our earth and is associated with all things natural, organic and wholesome. The color of solid ground and earthiness.

Tips for Adding Color and Meaning to Your Art

Now that you have a basic understanding of how color derives its meaning from symbolism and psychology, let's take a look at some general responses to colors based on research and word association studies.

These examples are based on traditional western views of color, and as the cultures of the world continue to cross-pollinate, so do our associations with colors. It's important to remember, though, that some responses to color are culturally conditioned and don't hold true universally.



GRAY is the color of intellect, knowledge, and wisdom. It is classic, refined, dignified, and conservative. Gray is controlled, inconspicuous and is a perfect neutral, which is why designers often use it as a background color.



BLACK is authoritative and powerful. It is a mysterious color that is associated with strength, power, authority and the unknown. It can keep things hidden in the cover of darkness or confidently stand out against a light background.



WHITE projects a sense of purity, hope, peace, neutrality, and cleanliness. Just like a blank canvas or sheet of paper, white brings to mind fresh beginnings and clear thinking. It opens a place to express creativity.

capturing **COLOR** inspiration

By Sophia Ahmad

A young woman and her mother stand on a street corner in New York City's Herald Square. They are side by side, their arms wrapped around each other's shoulders. Both are dressed in black and wearing knit caps, the mother in tan and the daughter in yellow. The daughter is holding up a single sunflower. To me, they look like a painting. I am in awe of the way they are in calm conversation, as if they are reclining in their living room and not standing in one of the busiest spots in the city. It's rare to see people in New York who aren't in a hurry. If it weren't for the sight of that sunflower and cap, I might have missed that quiet moment. Those yellows drew me in from across the block.

When I walk down the street, colors make themselves known to me. When I see an unexpected combination like lavender and chartreuse, it's almost as if the colors want to be seen. When we give color our attention, we gain a deeper awareness of the moment we are in – the time, place, and mood. As artists, we want to capture the world as we see it. Color can help us do that.

I look at color all day long. As a color trend forecaster, it's my job to keep an eye out for the latest fashion colors. I pay attention to what people wear, the color contrasts and combinations. This practice gives my eyes a heightened sensitivity of color. Some evenings, when I leave my office

and step out into the city streets, my vision is in overdrive. It's color, color everywhere!

I remember the moment I realized I have a natural eye for color. When I worked as an intern for a fashion designer, I had the task of matching fabric swatches to a floral design that was printed out on paper. The goal was to send all of this to a textile factory, where the design would be printed on fabric. If the colors weren't right, the end product would stray too far from the designer's original vision. One by one, I found a match that was just right for each color in the design. When she saw the colors I matched, the designer recognized my talent. I

was excited by the idea of having this special skill; more so when I realized it would improve with time. The more we look at color, the better we become at seeing it.

When we see colors we love (or hate), they demand our attention. Whether we are shopping for a new sweater, watching a movie, or picking paint for our bedroom walls, color draws us in. Despite our personal preferences, scientists say that the human brain can't remember an exact color. If we see a blueish green like aqua, our memory files it away as either "blue" or "green". All the more reason to capture color when we see it!

When we give color our attention, we gain a deeper awareness of the moment we are in – the time, place, and mood. As artists, we want to capture the world as we see it. Color can help us do that.

Sophia uses her camera to capture color on the go. She is most inspired by the city she lives in, New York, where there is always something new to see.



how to capture COLOR with collage

ACTIVITY:

You will need:

old magazines
or catalogs



cardboard box



scissors



glue
or glue stick



- 1 Flip through an old magazine or catalog to find colors that you like. Think less about the objects you see and focus on the colors themselves. Tear out the pages you like and keep them in a "color file". My color file is a cardboard box filled with paper scraps, fabric swatches, paint chips and construction paper that I've collected over time.



- 2 Spread the contents of your color file out on a flat surface, and arrange them in different ways.



- 3 Based on the colors you like seeing together, create a picture or collage.



Pigments = Color!

DID YOU KNOW?

Pigments are used to color make-up, lipstick, cement, houses, roads, medicine, sunscreen, jewelry and confetti, among many other things?

making **COLOR** from stones

Heidi Gustafson

Before paint ever arrives at the art store, someone has to find the materials that make the color. Where does color inside paint come from? Most paint color comes from dirt, clay and stones! In particular metal-based clays and stones (iron, copper, lead, aluminum) mined from the earth. Did you know that many types of paint colors you see in the store are still made from natural materials that anyone can find outside today?

Humans have been using natural earth pigments for over 30,000 years. Traditional paint comes from stones we could find on the surface of the earth. Our earliest colors come from a group of stones, dirt and clay called ochres. These colors are from minerals mostly made out of iron. Iron often comes

from the stone called, hematite or “the stone that bleeds” because it makes a beautiful red color. Iron is one of the most commonly found minerals on Earth (and on Mars!). Iron also makes other mineral colors like yellow, green, brown, black, purple and even blue.

How do you get your own colors from the earth? (See Image #1, below)

Anyone can make paint from materials around them. All you have to do is train your eyes to look for color on the ground. This is the hardest part. Most of the time we are not looking around us. When you are playing, walking or even looking out a window, look closer to see if you see any dirt or stones that have color. (See #'s 2, 3)

Pay special attention for red, browns, greys, yellows and blacks.

These colors are the easiest to make and the most plentiful. And they are beautiful! Don't try to look for bright neon colors – most of these colors are made from toxic material and will be hard to find in nature.

Go to a nearby creek, mountain, cliff or places where you know there might be clay or stones. Check the soil around where you live. Pay special attention if you see a construction worker digging piles of colored dirt! Often times people will be walking on red-colored earth and never know they could make it into paint.

Once you've learned to look around you, try to gather stones, dirt, clay. Try to break the material into smaller pieces! See which ones break easily. These ones will most likely be the ones you will want to turn into your own colored paint.

Crushing Stone into Pigment

If you are having a hard time breaking the stones into small pieces using your hands, there is a special tool paint-makers use, called a mortar and pestle. A mortar is a carved bowl shape made out of stone, and a pestle is the grinding tool that crushes whatever is in the bowl. You could also just use a flat stone and a bigger stone to pound with. (See #4)

When you break a stone and crush it into a powder, this is called pigment. Pigment is the raw color material that then gets mixed with other materials to become paint.





4

Most importantly, when you make pigment from what you find around you, it is a unique color that was made only by you! Many artists used to make their own paint, and many paints today are still named after the artist, name of stone, or place where the color was found.

What are some of these other materials that turn color into paint? We call them binders.

A binder is anything that makes the pigment become liquid and stick to the surface you are painting on. Binder literally 'binds' the paint to the surface (paper, wood, canvas, etc.). There are many different kinds of paint, each kind is made using a different binder.

If you want to paint on paper, for example, many people use watercolors. Watercolor is pigment mixed with water. For it to last longer, artists also mix in some tree sap called gum arabic. Gum arabic and water are the binders that make "watercolor"!

If you want to paint on canvas, we often use oil paints. Oil paint is pigment mixed with plant and seed oils. Most often, the oil of flax seed, which creates oil called linseed oil.

Many other type of paints that can be made. Artists use a number of things, and love to experiment with what is around. Milk, honey, spit, juice, water, olive oil, butter are all possible binders to try. The best idea is to mix just a little bit of pigment with a little bit of binder each time you want to paint something. This keeps the paint fresh, and it allows you to use your dry pigment over and over again for different projects. (See #5)



5

PACKAGING DESIGN

for tweens + teens

Goran Paunovich

Color is perhaps the single most significant element in packaging, regardless of the age group, and it's a topic you could spend your entire career exploring if you were a package designer.

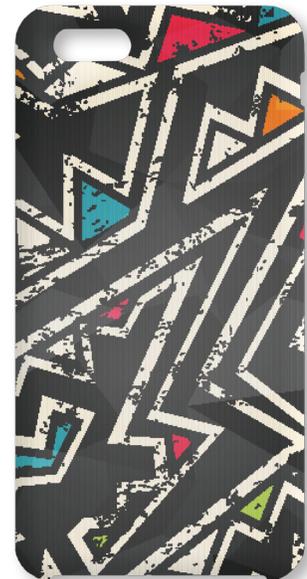
Selling stuff to kids is big business. Companies spend billions each year just on the marketing. And while there may be controversy about marketing to kids, particularly the youngest ones, the fact is that companies who sell products – whether they're toys, shampoo, or school supply items – can't afford to ignore you, the young shoppers.

Grabbing your attention takes more than the right product. The packaging is just as important when you are making a decision about whether or not to buy the stuff. Creating packaging that appeals to young children can be pretty simple – a smiling Disney character or colors that mimic a popular kid's show on the package can make a product leap off the shelves. Creating packaging that appeals to tweens and teens, isn't as simple.

Do you think you could come up with a package design that would catch the attention of your friends? Great, because I'm going to give you some tips based on what I think about as a designer and then give you a chance to design packaging for a cell phone case.



Everyone wants a cell phone case that shows off their style and is unique. But there are so many choices available. How would you make your company's cell phone covers stand out and get noticed?



PRO DESIGNER TIPS FOR CREATING GREAT PACKAGING

The first rule of marketing is to know your audience. Okay, that's the second and third rule as well. You know what you and your friends want better than anyone. You understand your friends' hopes, dreams and fears because they are a lot like your own. With all of this real-time, insider knowledge, what type of packaging would you design if you were in charge?



Color, Color, Color!

Color is perhaps the single most significant element in packaging, regardless of the age group, and it's a topic you could spend your entire career exploring if you were a package designer.

Color influences. Research shows that 60-90% of people of all ages make snap judgments about products within 90 seconds based on color alone. Sometimes referred to as the 'silent salesperson,' color plays a major role both for the product and its packaging.

Bold and bright. In general, bold, bright colors rule, particularly if those colors are used in combination with hip, fun lettering and fonts.

Sparkle sells. Textures and special effects like holograms, glitter, and 3-D can help packages catch your attention.

Eye-catching. Using an off-beat or unexpected color helps to get you to notice a product even when the rest of the packaging is plain.

Mood matters. Colors that create positive, upbeat feelings make packaging more appealing and reassure you that you are making a good buying decision.

Speak To Me

As a shopper, you are bombarded with input from peers, parents, and advertisers, and the most effective packaging manages to convey a message that resonates, even with all the competing noise you encounter.

Independence. While you rely on your parents for so many things, one freedom you crave is independence. You want to feel empowered to make your own decisions. Thus packaging that talks down to you or babies you will likely fail.

Hip-ness. While you want to embrace your unique-ness, you also want to feel accepted. Trendy colors, hip fonts, and in-group messages all connect you to your friends and those you admire.

Honesty. You are drawn to packages with transparent cutouts. Why? Because you want to see what you are getting. Packaging that's misleading will disappoint you, and as you get older, you're wari-er of being tricked. You want to know exactly what's inside.

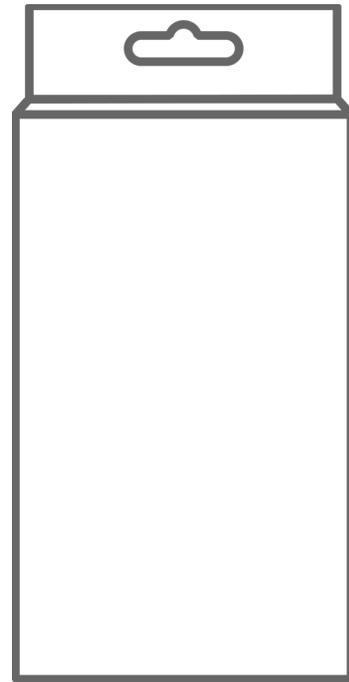
Personalization. You want packaging and products that assert the power of your own identity. Personal care products – deodorant, for example – may be identical in formula to one for an adult, but if it's packaged specifically for tweens and teens, it is more likely to succeed.

Now it's your turn to show how you can harness the power of color and create the right message to appeal to buyers just like you and your friends.

Use this blank package to create your design.

- ① Add an image of the product or window in the package to show the product.
- ② Come up with a name for your company.
- ③ What other words would you put on the packaging?
- ④ Add colors to call attention to what you want someone to notice most.
- ⑤ Or create your own packaging idea for a product that you love.

TRY THIS! Design the Packaging



Himanshu Singh Gurjar/Unsplash

A Celebration of Color!

Did you know?

In northern India, during the annual spring Hindu celebration called Holi (known as the festival of colors), people toss brightly colored powder into the air, covering everything in sight.



Did you know?

From land to sea, the pureness of nature has produced a wonderful display of deep and vivid colors. Become inspired by a journey to some of the most colorful spots in the world.

Nature's Colors!

The picturesque port of Valdez, **Alaska** earns the crown for snowiest city in the United States. Against the backdrop of **white** mountain peaks, boats bring bundled up tourists to watch orca whales playing in the Gulf of Alaska.



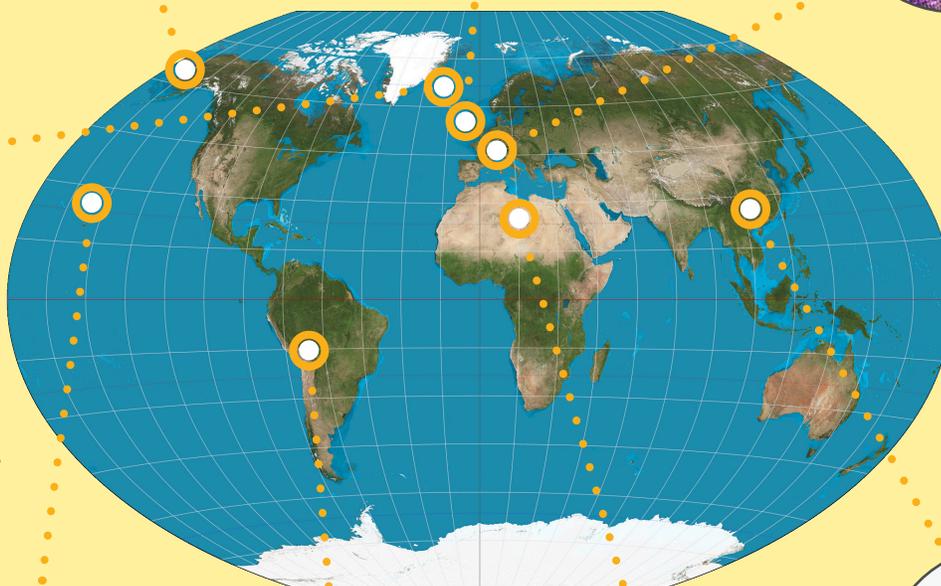
Ireland's enchanting **green** countryside comes to an abrupt end at the infamous Cliffs of Moher, surging 120 meters out of the Atlantic Ocean. Peeking over the edge, you can see the white spray of waves crashing far below.



Between the Alps and the Pyrenees is nestled the poetic region of **Provence, France**. In summer months, Provence becomes awash with fragrant **purple** lavender fields that stretch across the valley like a dream.



A surreal maze of ice caves are hidden deep within **Iceland's** massive Vatnajökull glacier. The extreme density of the ice absorbs every color on the spectrum— except for **blue**—leaving blue the only visible color.



Each year in early spring, a "golden sea" spreads across Luoping County in **Southern China**. Fields of sunny **yellow** canola flowers wash around the bases of little green mountain tops, known as the Jinji Peaks.



Punalu'u beach, on the mainland of **Hawaii**, is known for its blazing hot **black** sand. Composed of basalt fragments, the black sand was created when a flow of hot lava exploded as it came into contact with the cool ocean water.



Laguna Colorada is a shallow but expansive salt lake on the plains of **Bolivia**. Algae and pigments in the sediment turn the water into a breathtaking shade of bright **red**, which stands in stark contrast with the deep blue sky.



An unbearably bright sky frames the seemingly endless stretch of **orange** sand. Dust storms as big as hurricanes constantly rip through the hot air— making the **Sahara** one of the most extreme climates in the world.

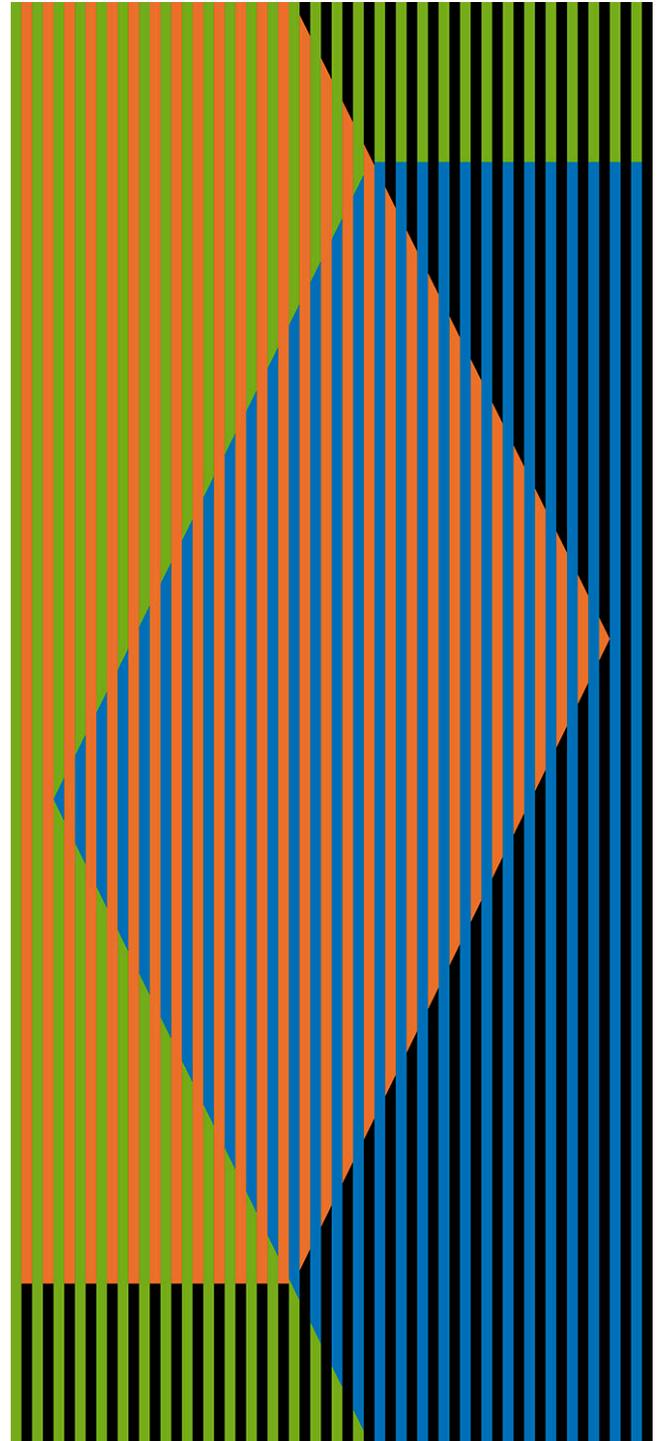
does that color **YELLOW** exist?

How color perception works and is used by kinetic artist Carlos Cruz-Diez.

Alicia Mendez Cruz

Have you wondered if the color green you see is the same as what everyone else sees? This question has intrigued artists for a long time and today's neuroscientists have some answers. They say color is not only dependent on the eye but a property of the mind, meaning that when you see something green, you are not really seeing green but you are experiencing "greenness". Pigments, light, or even an illusion can make you experience greenness. Carlos Cruz-Diez, a Venezuelan artist passionate since childhood about colors, has dedicated his life to revealing the changing, unstable, and ephemeral nature of color.

The color of an object is determined by the wavelengths of light that its surface absorbs or reflects. The reflected wavelengths are captured by the eye and interpreted by the brain as different colors. The eye has three types of little "photoreceptors" (receptors of light called cones) that perceive red, green or blue. All colors are a combination of these three but perceived in different proportions. Eyes can only perceive color when there is sufficient light, that is why when there is not much light it is like seeing in "black and white". Humans have three cone types; dogs, have only two (yellow and blue); some birds, insects, reptiles or fishes, like the mantis shrimps, can have up to 16 different color receptive cones. Neuroscientists have found that color perception changes from person to person. So your experience



Color Aditivo
Permutable 1
2011

Cruz-Diez Art
Foundation
Collection

of greenness is not the same as your friend's experience of greenness. Color perception is affected by feelings too, so the gap between your color perception and your friend's can be even wider.

When Carlos Cruz-Diez was in the School of Fine Arts in Caracas he contemplated how past artists used color in their artworks. He noticed that color was always attached to a "form", becoming only an adjective to an object, for example: the red apple, the yellow truck, etc. In the 19th century, Impressionist artists like Monet used color to paint the same landscape at different times of the day, and make obvious the changing nature of light. Other artists used color for symbolism, to convey meaning. Van Gogh's painted Sunflowers almost entirely in yellow, not only to illustrate the radiance of the flowers but also to associate them with the brightness of the sun. The painting was also intended to welcome the arrival of his friend Paul Gauguin at the Yellow House in Arles where Van Gogh lived for a time.

While artists have been using color perception for centuries, Carlos Cruz-Diez had the concern that color was not at the center of anyone's artistic research. He studied all the phenomena around color perception and developed a participative artistic

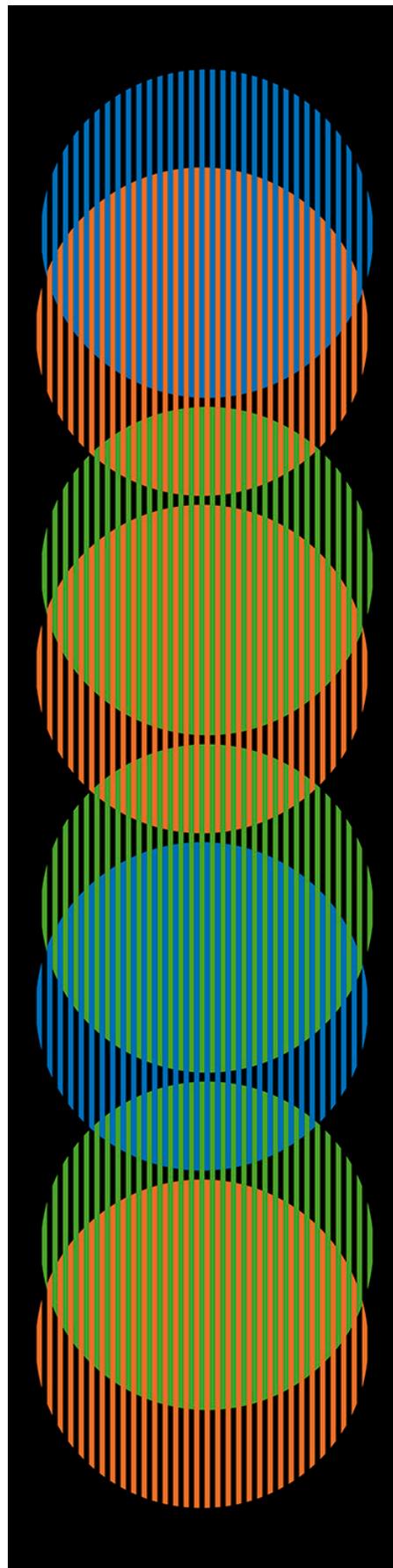
proposal that would include the public, making each viewer an integral part of each artwork. He decided to isolate color from its symbolism and shape as not to have any added interpretation and remain with the experience of color alone. When he first started experimenting with his research on color in art, Cruz-Diez isolated the point where two colors border each other-- where they touch-- as the critical perceptive zone. Taking red and green as an example, it is at the critical point that a "virtual" yellow color is created. This color is not painted on the surface, it is only visible to the eye. The focus of his first major piece of research was the mixing of two or more colors and their transformation into different ranges, depending on lighting and the viewer's position. He uses color in amazing ways to express his philosophy on color: that color is something that is actually happening in the present at this instant, with the active participation of the spectator.

Carlos Cruz-Diez uses pigments (paint on a surface) to create illusive colors. His art engages with the different cones in the human brain to create unique paintings or atmospheres that are completed by the spectator's unstable perception of color. He creates an environment that is unusual for the brain to interpret.

When you see one of his paintings you perceive a number of colors and shapes but as you approach the painting, you discover that certain colors are not actually present on the surface but are virtual. **Shapes, colors and compositions** appear or disappear in the moment you look at them. And he began doing all this before computers had been invented!

Couleur Additive
Cercles Permutables,
2011

Cruz-Diez Art
Foundation
Collection



TRY THIS!

Observe the artworks shown on the previous page.

How many colors do you see?

Look at it from a yard away. The great majority will perceive five: green, orangy-yellow, black, blue, cyan, pink. If you get closer, do you still see all those colors?

Is the pink really printed there? Is the orangy-yellow really there? Is the cyan really on the surface?

The pink is created by the blurring of the color lines in our brain. We experience pinkness when there is no pink on the surface. We experience yellowness, when there is no yellow on the surface. We experience cyanness, when there is no cyan on the surface.



To explore more about Cruz-Diez's artwork visit one of his exhibitions or take a look at his art collection:
www.cruzdiezartfoundation.org/our-collection

In many **Carlos Cruz-Diez's** paintings you will notice this peculiar characteristic where the mystery and beauty of color is alive and interacts with you. He uses your eyes and color perception to finish each painting, your perception and active participation (looking at the artwork) is the paintbrush of this artworks. In his artworks everything is to be seen and discovered. Whilst viewing his artworks, do not try to discover the "magician's secrets" of how it works. Just enjoy and participate and remember what the painter Theo van Doesburg said, "There is nothing to read in painting. There is only to see."

Do you want to create and paint with illusive colors? It's Simple.

You will need:



A Fidget Spinner



Paint: Gouache or tempera, preferably in red, green and blue



A Paint Brush



A small glass of water to clean the paint brushes

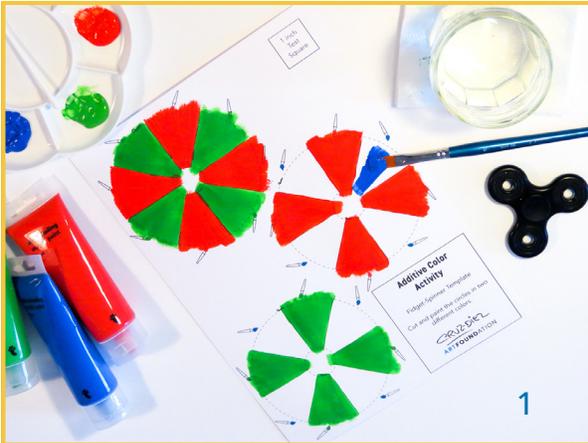


3 circle templates, printed on heavy paper or cardboard



Scotch tape

Here's How: 



1. Paint the cut circles following the chart. Do not water the colors down, so they stay bright and intense, that is, highly saturated. Each circle must be painted with two colors and no more in order to achieve the desired effect. You must alternate the colors on each eighth of the circle: one blue, one red, one blue and one red, for example.

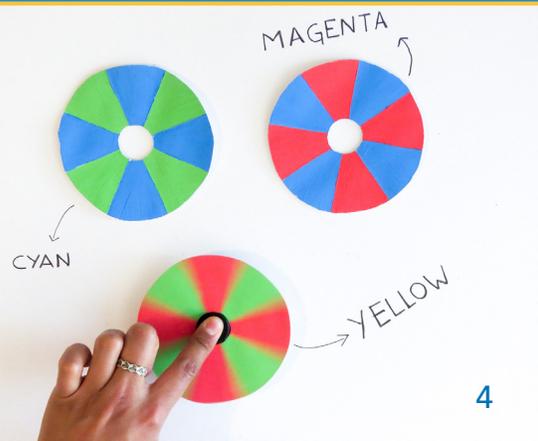
2. Carefully cut the color circles on the dashed line. You will end up with a big circle that has a small circle hole in the middle. Let it dry completely.



3. Once dry, using a little of scotch tape, insert them and attach the circle on the fidget spinner.

4. Spin and discover the illusive colors (scientifically called Additive colors).

The red and green circle will produce yellow. The blue and green circle will produce cyan. The blue and red circle will produce magenta. The illusive color on the fidget spinner will just last while the toy is in motion at fast speed. The "new" illusive color will seem to be floating and unstable. If you try to capture it with a camera, it will not be easy because the camera will not be fooled like our eyes.



exploring color perception with the **STROOP EFFECT**

Eric H. Chudler, PhD + Kate Smith

The Stroop effect is one of the best-known phenomena in cognitive psychology and one of the most famous and widely used psychological tests ever developed. It is elegant in its simplicity, highly effective and employs the power of color. Give the Stroop Test a try now!

The Stroop test has only two rules:

1. Look at each WORD and say the COLOR of the word, but do not read the word! For example, for the word "RED" you should say "red" because the word is printed in a red color.

2. Move to the next word as quickly as possible and repeat.

Time yourself to determine how long it takes you to say the color of each word in this first set of words. Are you ready?

RED GREEN BLUE

ORANGE PURPLE YELLOW GREEN

YELLOW RED PURPLE

GREEN BLUE ORANGE RED

ORANGE PURPLE YELLOW

RED GREEN BLUE

Now do exactly the same with the next set of words following the same rules:

1. Look at each WORD and say the COLOR of the word, but do not read the word! For example, for the word "RED" you should say "green" because the word is printed in a green color.

2. Move to the next word as quickly as possible and repeat.

Again, time yourself to determine how long it takes you to say the color of each word in the second set.

BLUE **YELLOW** **ORANGE**

BLACK **RED** **GREEN** **RED**

ORANGE **GREEN** **BLACK**

BLUE **RED** **PURPLE** **ORANGE**

GREEN **YELLOW** **RED**

How'd you do? Did the second set take you longer than the first? It does for most people. It seems like such an easy task until you actually try to do it.

Try this out on your friends. It can be very fun because people are often convinced they can do this test quite easily. What they don't know is that their mind will be playing some tricks on them.

Why Does The Stroop Test Work?

Seeing the words has a strong influence on your ability to say the color of each. For example, when you see letters spelling out orange, your brain recognizes this as a

familiar word. In fact, your brain can't help but read the word.

In the second set of words you saw a color that was not orange. These two conflicting pieces of information momentarily cause confusion in your mind. It is naturally easier to say the word, "orange," and it takes a moment for your mind to follow a different path than the one it wants to take.

It requires more effort to say the name of the color you see. Simply put, you have to take your mind off of auto-pilot for a split second and think about it...or at least that is how it feels. Resolving the conflicting information slows down your response time and the test takes longer.



what's your happy color?

Karen Haller

Did you know there is such a thing as a happy color? Well, there sure is. It's the color that makes your heart sing, the one that puts a big smile on your face whenever you see it. It's the one that makes you smile from the inside out.

Everyone has a happy color, and if you're not sure what yours is, keep reading because I'm going to show you a fun way to find out.

Have you ever noticed how when you see a color it can make you feel sad and then you see a different color and you can feel happy? Have a look at the colors around you and see if you can notice how they make you feel great.

This is the amazing thing about color - it has the power to change how you feel, how you think, and even how you act - in an instant. WOW! That's pretty incredible don't you think?

FALLING IN LOVE WITH COLOR

I've always loved color. I can still vividly remember being in Kindergarten and sitting in front of pots of paints and crayons. I was excited because I had all these colors to play with. Have you had that feeling too?

It's probably why I loved finger painting! I could stick my fingers in all the pots and just go for it - I would usually end up with crazy multi-colored pieces of paper that my mum would stick to the fridge. From that first moment in kindergarten I was hooked - and ever since it's felt like I've had color in my veins.

When your eyes see color, the light waves pass through the same part of the brain where your emotions come from.

Now, as an adult, I get to play with color every day - how lucky am I working as an applied color psychology specialist where I get to explore, discover and share the fascinating world of color with my business clients and professional designers, who I teach around the world. I show them how they can use color to make the world a happier, friendlier and more positive place whether that's using

color for the home or office, in schools, or for things like clothing and toys.

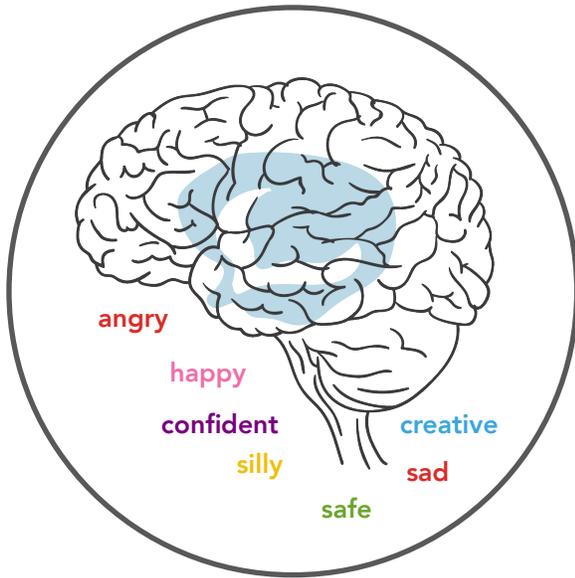
COLOR EQUALS EMOTION, AND EMOTION EQUALS COLOR

Remember earlier when I mentioned color has this incredible power to change how you think, how you feel and even how you act - in an instant? Well, that's because color is emotion. Let me explain.

When your eyes see color, the light waves pass through the same part of the brain where your emotions come from. When this happens, color stops being physical, as in something you just see and you start to have an emotional reaction to it. So for example, when you see a certain color it can make you feel happy, sad, silly, safe, confident, creative or angry or any other of the many emotions. It can make you want to do something fun and exciting or even tempt you to eat by making you feel hungry.

In fact, for every feeling there's a color and for every color there's a feeling. This means that color is affecting you in some way all of the time. You may not even know it is happening - interesting, don't you think?

BRAIN/FEELINGS/COLOR



Now, you can have fun with this and test it for yourself. When you're out shopping with your mum or dad, notice what colored toys and clothes tempt you to buy them. Or what colored candies and snacks make you want to eat.

WHAT'S YOUR HAPPY COLOR?

I'm often asked what my happy color is. If you're like me, you'll have lots of colors you love, but if I had to pick one it would be orange, like the color you see on a marigold flower – that bright, warm orange. It makes me smile inside whenever I see it, it connects me to my playful side of my personality and it's a reminder not to forget to have fun!

Find your happy color.

Annie Spratt/Unsplash

READY
to
PLAY?



Let's go!

LET'S PLAY!

Discover Your Happy Color

Instructions:

OK, first, if you already know your happy color, go and get it. It might be the color you have in a pencil or in a paint. Maybe in a magazine or on a leaf or a feather.

If you're not sure, no problem! We can easily find out. Open your box of crayons or colored pencils or your tin of paints – which is the first color you see that makes you smile? That's it, that's your happy color!

1 Color in or glue your happy color in the square below.



2 Expressing Your Personality in Color

Now that you can see what your happy color looks like, write down your favourite things about your happy color. Here are some prompts:

This is my happy color because...

My happy color makes me feel...?

Where do you love seeing this color?

I'm going to use my favourite color...

How was that? Did you enjoy discovering your happy color and exploring more about it? Did you find out something new that you didn't know before?

There are so many ways you can use your happy color every day. Maybe in a T-shirt for everyone to see or sometimes like a splash of color in a hair clip, a belt or even your socks. Or maybe you'll want to keep your happy color just for yourself, perhaps as the color for your bedding in your bedroom or a picture you have painted.

There are so many ways you can use your happy color to bring more happiness into your day. Imagine just one way you can do so?

If you find you have more than one happy color, that's perfectly OK! There are no rules around having only one - you can have as many as you like! So go ahead and do this exercise again if you want to discover your other happy

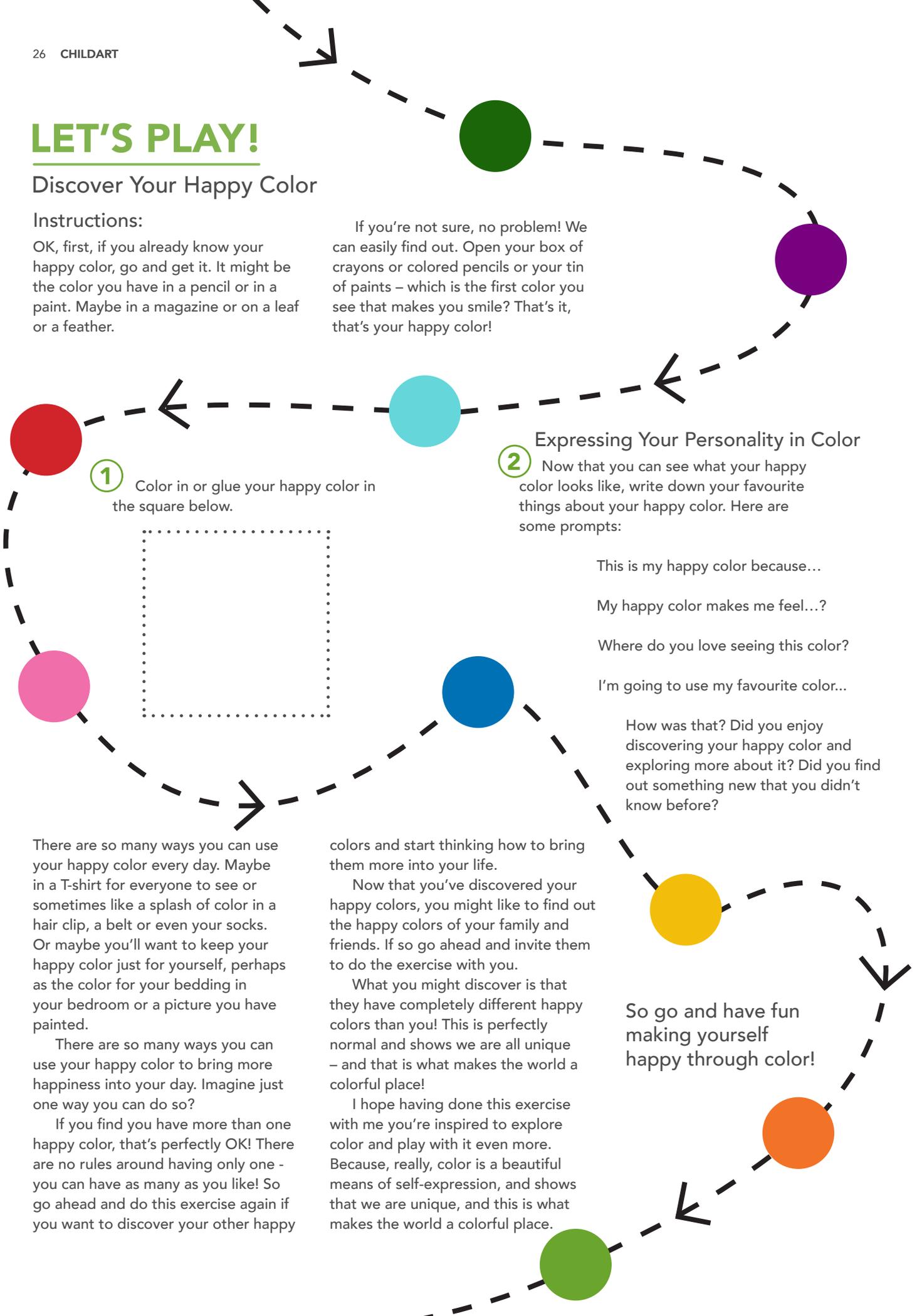
colors and start thinking how to bring them more into your life.

Now that you've discovered your happy colors, you might like to find out the happy colors of your family and friends. If so go ahead and invite them to do the exercise with you.

What you might discover is that they have completely different happy colors than you! This is perfectly normal and shows we are all unique – and that is what makes the world a colorful place!

I hope having done this exercise with me you're inspired to explore color and play with it even more. Because, really, color is a beautiful means of self-expression, and shows that we are unique, and this is what makes the world a colorful place.

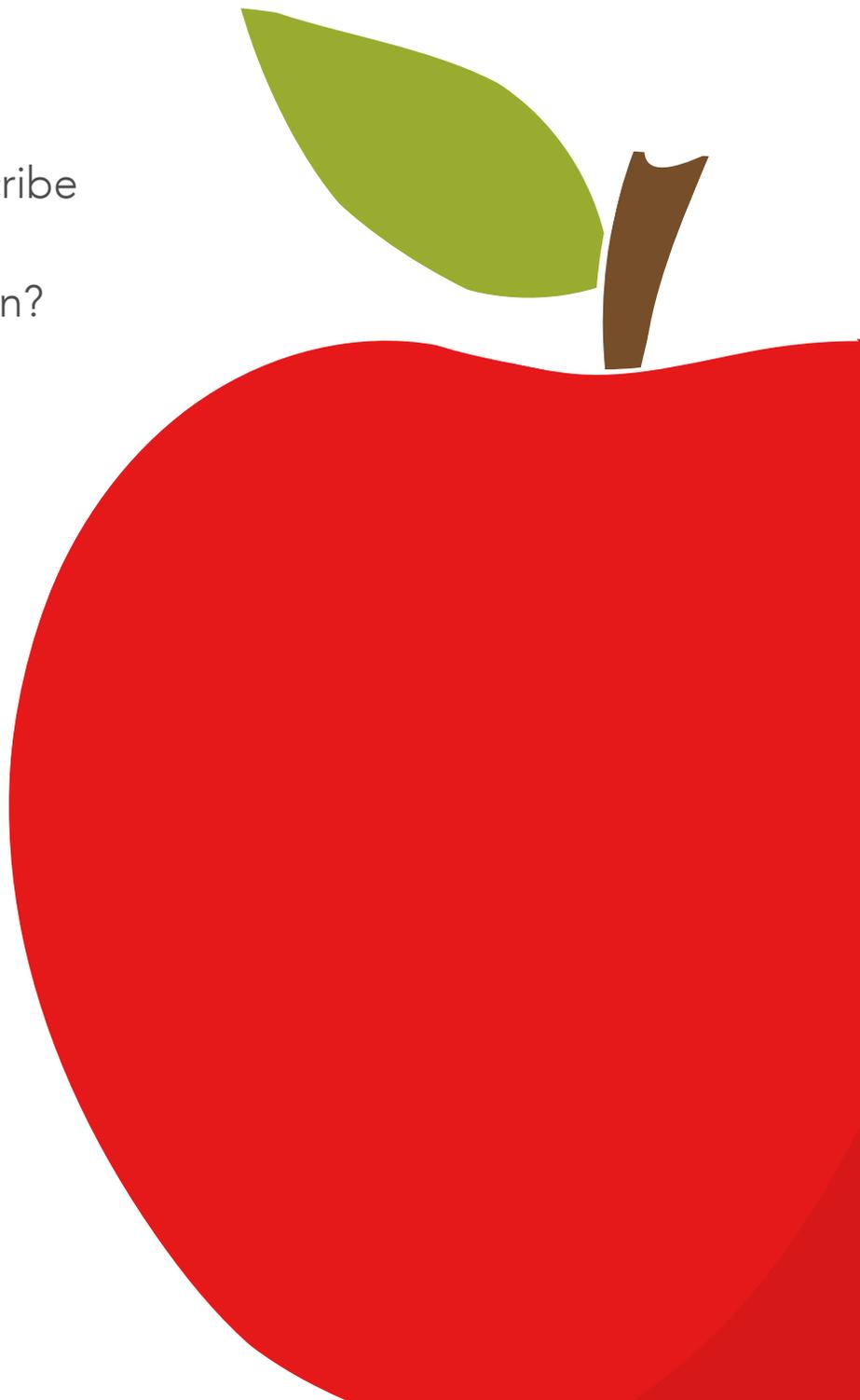
So go and have fun making yourself happy through color!



how language helps you to see **color**

Kate Smith

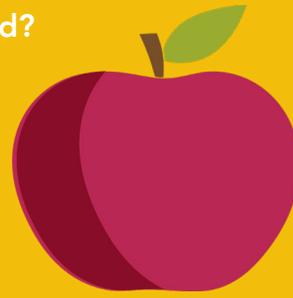
Have you ever tried to describe a color to someone so they know exactly what you mean? You probably discovered it is almost impossible. Your first instinct might be to think about making a comparison, explaining that the color is red like an apple. But not all apples are exactly the same red, and, in fact, not all apples are red at all! The red your friend imagines may be very different from the red you have in mind.





Your apple red

Which apple is the real red?



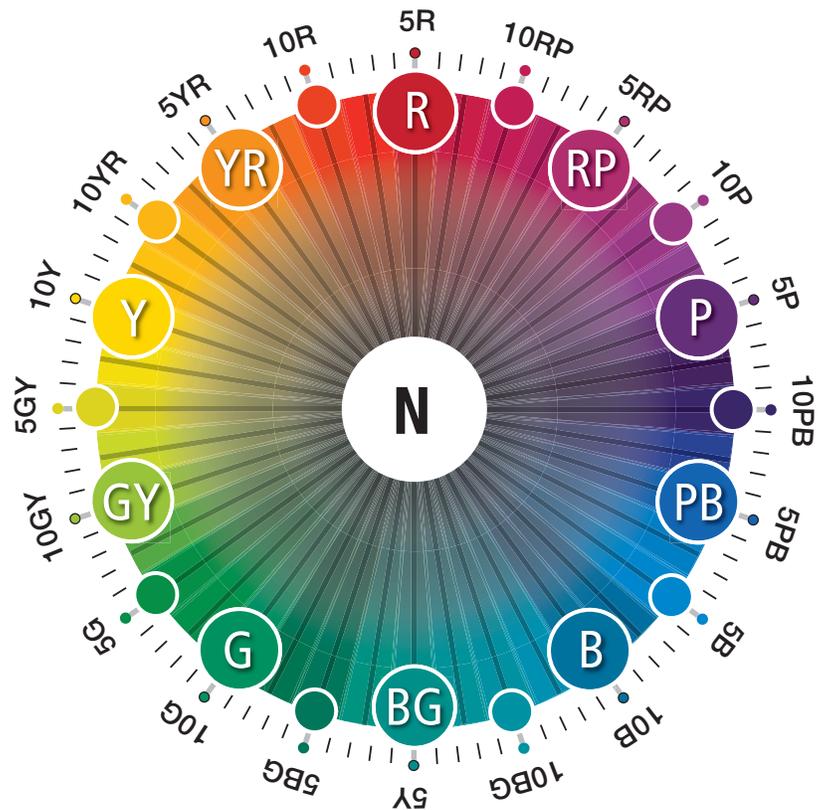
Your friend's idea of apple red

Describing color accurately is a common, fundamental problem. Color is integral to our lives, but it resists our attempts to translate it into language. As it turns out, the only way to make sure that two people are thinking about the same color is to look at the same color. Words alone cannot communicate a color accurately.

American artist Albert Munsell (1858-1918) recognized the problem with using words to describe colors. His experience with mixing paints helped him to understand that in order to accurately describe colors we have to understand and be able to see the three different parts of a color. Only when we can identify and articulate the three components of a color can we accurately convey it.

Part 1: What color is it?

Munsell grouped all colors into ten color families -- yellow, green, blue, purple, red, yellow-red, purple-red, purple-blue, blue-green, and yellow-green. While there are countless words that describe color in the English language, Munsell's goal was color accuracy. He sought clarity and precision, rather than poetic appeal. Using Munsell's ten color families can help you be clearer in describing color. Color names like peach, aqua, and beige – words that are outside Munsell's color vocabulary – simply add to the confusion.



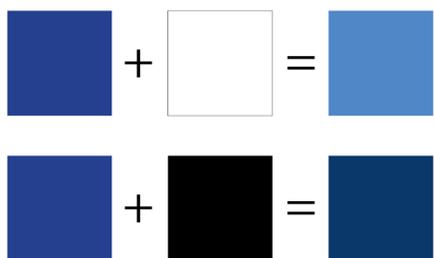
Munsell Color Wheel

From top, then clockwise: R is red; RP is red-purple or purple-red; P is purple; PB is purple-blue; B is blue; BG is blue-green; G is green; GY is green-yellow or yellow-green; Y is yellow; and YR is yellow-red.

Part 2: Is the color light or dark?

When you mix black and white with any color, you change how the color looks. Blending black with a color darkens it; adding white lightens it. Telling someone about how light or dark the color appears helps them to get a better idea about the color you are describing. For example, If you want someone to picture the blue you see in the sky, you would say it is light. If you are telling them about the color of a blueberry you would say it is dark.

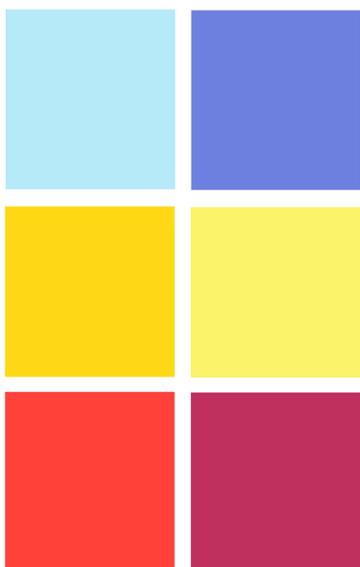
Light and dark are aspects of color that help you give a more nuanced description than simply identifying a color family.



The more white you add, the lighter the blue becomes.
The more black you add to blue, the darker it becomes.

Activity: Describing Colors

Now that you know about the three parts of every color, give it a try by describing the six colors below. Pay careful attention to color family, lightness/darkness, and color purity.



Part 3: How pure is the color?

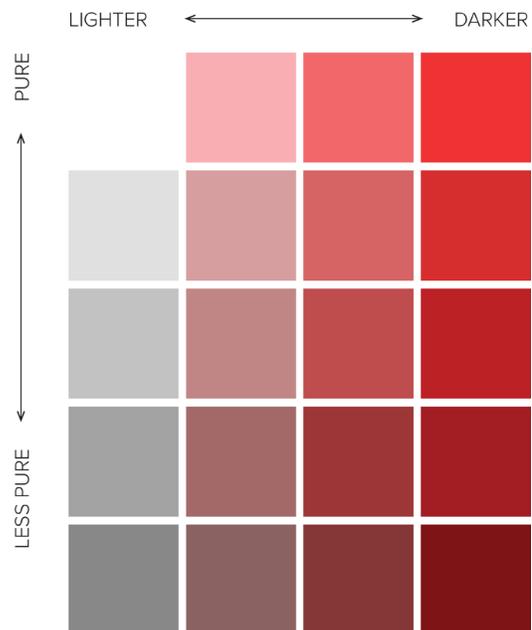
Look at the colors on the wheel above. If you squeeze any of those paint colors out of a tube, it is as pure as that color will ever be. You can mix it with other colors to make it less pure and achieve new shades, but there is no way to make it more pure.

Mixing any pure color with any other color including black, white, or gray reduces the purity of that color. Colors that are pure or close to pure are described as clear, brilliant, bright, rich, bold, or vivid. Colors that are less pure are described as toned-down, soft, muted, subtle, misty, dull, drab or dusty.

Adding purity of color to your vocabulary gives you an additional way to fine tune your color descriptions.



This is a blend from a pure hue to gray and another from pure hue to its complement as shown in the the Munsell color circle.



The more clearly and consistently you can describe each of the three parts of a color, the better you will become at seeing subtle differences between colors. Not only will you be able to describe colors to others more accurately, but you'll also become more adept at finding and mixing the right colors for your artwork.

a bolt from the **BLUE!**

Sara Kapadia, PhD

Why is the ocean blue?

When you look up to an afternoon sky, chances are it looks blue. Why does it look blue?

Light from the Sun appears white but it is actually made up of six basic colors, which we can see in a rainbow: red, orange, yellow, green, blue and violet. Light is a form of energy and travels in waves. Each of these colors of light has a different wavelength. As the light from the Sun reaches the Earth it collides with particles of the atmosphere. The different colors are affected by these collisions. Blue light has a short wavelength and is scattered more than red and yellow light, which have longer wavelengths.

Read about it

*Science of Color:
Investigating Light*
Karen Latchana Kenney

The Secret Lives of Color
Kassia St. Clair

“The ocean is blue because water absorbs colors in the red part of the light spectrum. Like a filter, this leaves behind colors in the blue part of the light spectrum for us to see. The ocean may also take on green, red, or other hues as light bounces off of floating

sediments and particles in the water. Most of the ocean, however, is completely dark. Hardly any light penetrates deeper than 656 feet, and no light penetrates deeper than 3,280 feet.”

National Oceanic and Atmospheric Administration



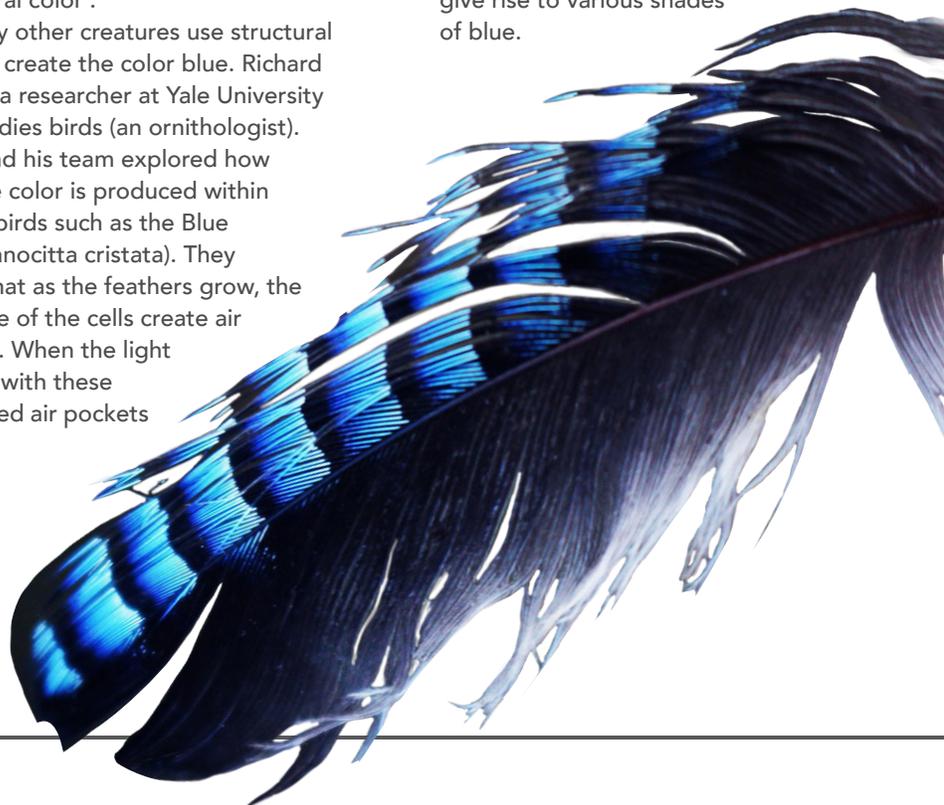
Structural Color

The Blue Morph butterfly (*Morpho menelaus*) is known for being one of the largest butterflies with wingspans ranging from five to eight inches. They are also known for their vibrant blue wings. Imagine you are at the Manoharan Laboratory at Harvard University and you see a blue wing being crushed up into powder. What color do you think that powder would be?

The secret is in the wing structure itself. Tiny scales on the wings are intricately covered with deep microscopic ridges that absorb much of the light and reflect the blue. This phenomenon is known as 'structural color'.

Many other creatures use structural color to create the color blue. Richard Prum is a researcher at Yale University who studies birds (an ornithologist). Prum and his team explored how the blue color is produced within certain birds such as the Blue Jay (*Cyanocitta cristata*). They found that as the feathers grow, the structure of the cells create air pockets. When the light collides with these structured air pockets

, the red and yellow light cancel each other out. The blue light becomes amplified and reflects outwards, giving the viewer the sense of a very bright blue. The size and shape of the air pockets give rise to various shades of blue.



TRY THIS!

You will need →



Tall Glass
(at least 16 ounces)



Water



Milk

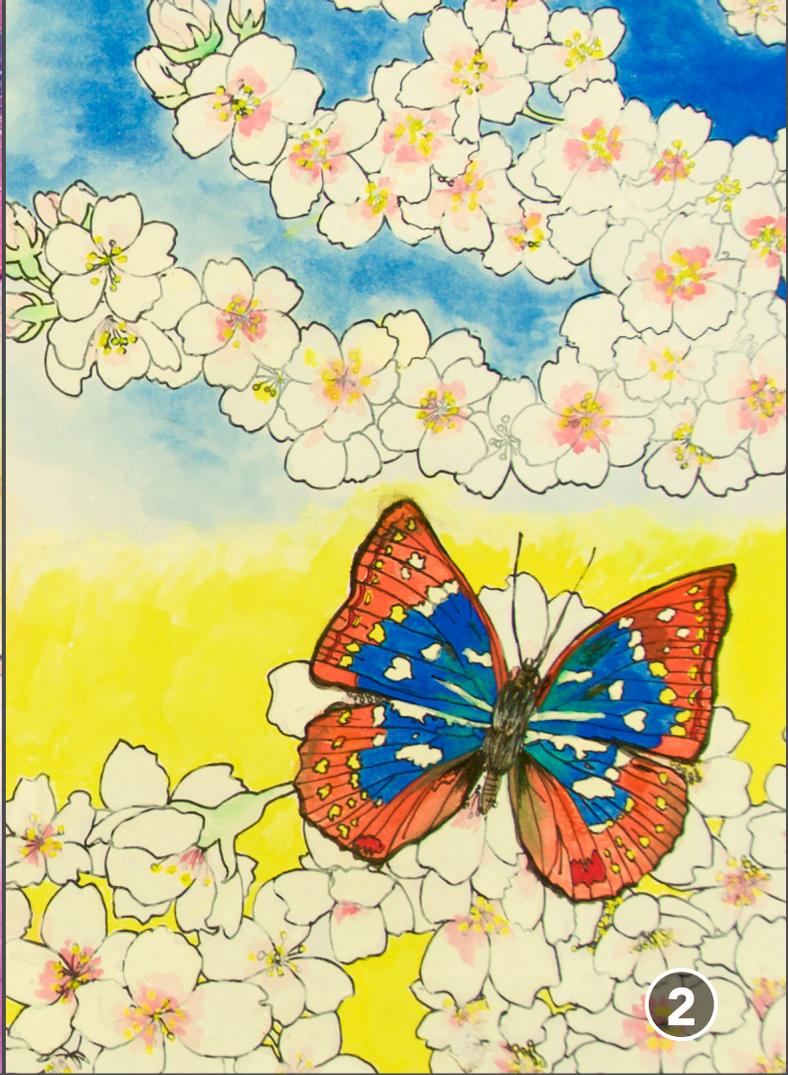


Teaspoon



Flashlight that
emits white light

- 1 Fill the glass with water.
- 2 Point the light at the side of the glass. What color is the liquid?
- 3 Add a teaspoon of milk to the glass of water and stir.
- 4 Again point the light at the side of the glass. What happens to the color of the liquid?
- 5 Now try and point the light from the top of the glass. What color do you see now?



our artists

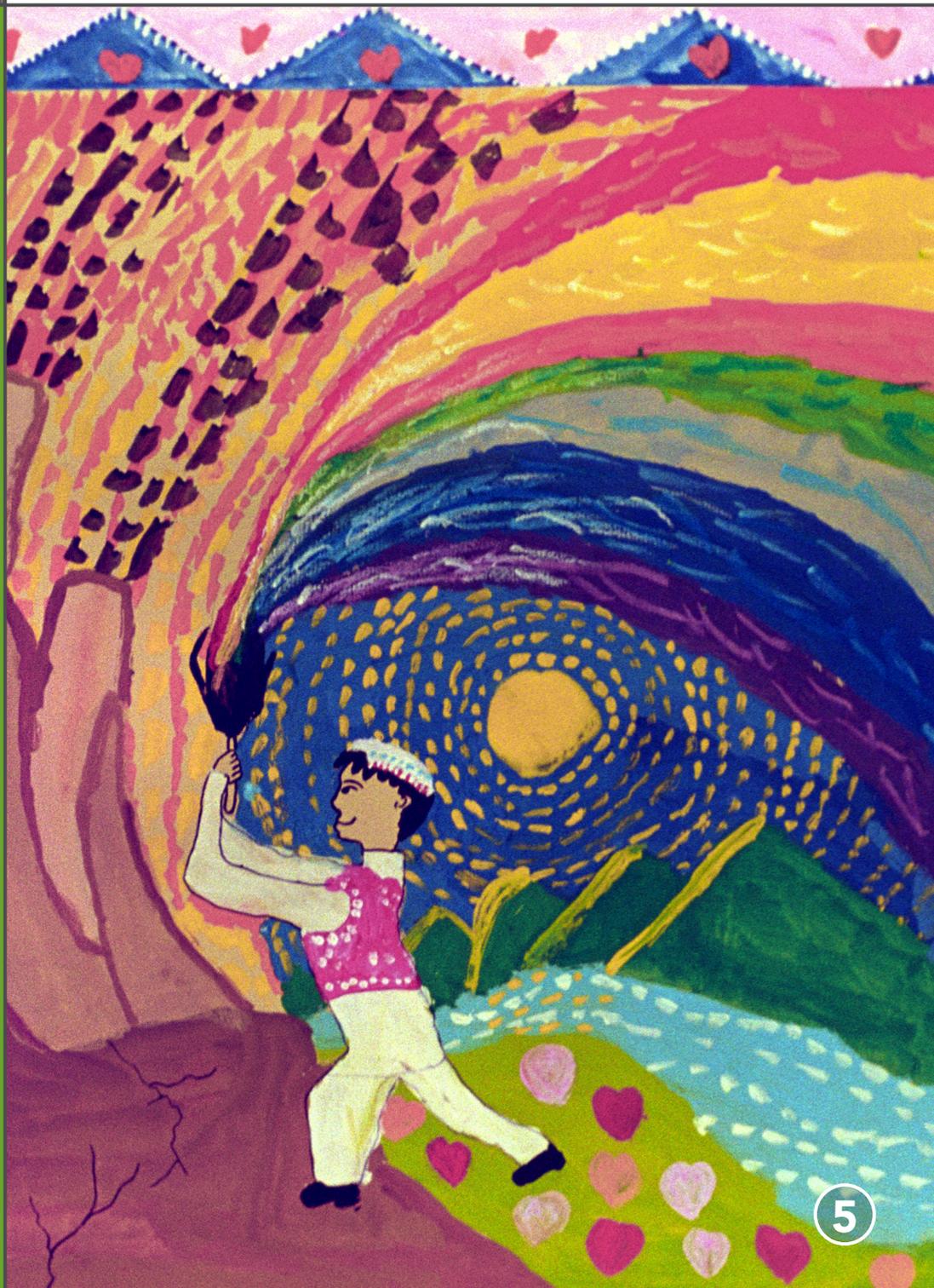


INTERNATIONAL
CHILD ART
FOUNDATION

4

See the use of color by young artists who submitted their works to the International Child Art Foundation.

1. Dana Anderson, 11, Illinois
2. Ishiwata Momoka, 12, Japan
3. Kamiichi Moka, 10, Japan
4. Zacharay Cyganek, 9, Tennessee
5. Salar Khan, 11, Pakistan



5

our contributors



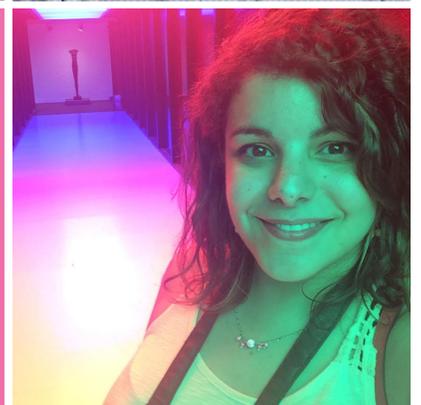
Sophia Ahmad is the creator of The Colorist, a website that shares immersive color inspiration. She is a graduate of Parsons School of Design and the University of Virginia. Currently, she works in color research and development for Macy's fashion brands. She lives in Brooklyn, New York. sophianahmad.com
Instagram @sophianahmad.



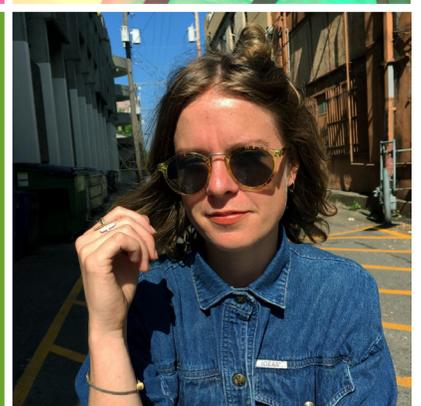
Eric H. Chudler, Ph.D. is a neuroscientist and Executive Director of the Center for Sensorimotor Neural Engineering in Seattle, Washington. He is a "basic researcher" performing experiments related to how the nervous system works and how Parkinson's disease affects the brain. He leads the Neuroscience for Kids website and hosts BrainWorks, a TV show about the brain. <http://faculty.washington.edu/chudler/neurok.html>



Alicia Mendez Cruz, grand-daughter of Carlos Cruz-Diez, grew up surrounded by art and color in his studio. She is now part of the Cruz-Diez Art Foundation, a non-profit organization created by the artist's family dedicated to preserving, promoting and sharing the conceptual legacy of the artist. She enjoys creating workshops to help kids understand her grandfather's work. www.cruzdiezartfoundation.org



Heidi Gustafson is an artist researcher and pigment forager who lives and works in Bellingham, Washington, USA. She collaborates with research scientists around the world to study the use of mineral pigments, especially iron-based ochres. More about her work can be found online. earlyfutures.com
Instagram @heidilynheidilynn.





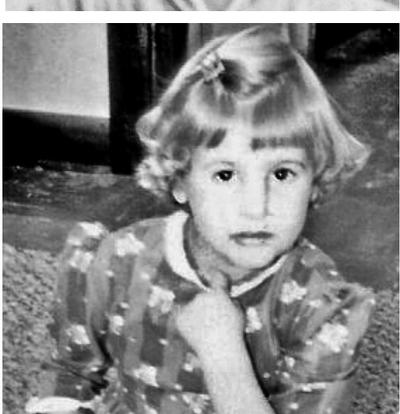
Karen Haller is a leading global authority in Applied Color Psychology. She specializes in using the power of color to effect positive change for mental health, wellbeing and the built environment. She is an advocate for children exploring and experimenting with color as a beautiful and pure form of self-expression. karenhaller.co.uk



Sara Kapadia, Ph.D. is the founder of The STEAM Journal, an open-access, academic, arts/science publication. A graduate of the University of Cambridge, the University of London, and Claremont Graduate University, Sara is an avid artist, science educator, serves as an advisor for the International Child Art Foundation and is fascinated by the color blue! Sara.kapadia.com



Goran Paunovic is the founder and Creative Director of ArtVersion Interactive Agency. He helps companies focus their branding and visual design on building stronger brands. As a respected member of the graphic design and web design industry, Goran's comments and insights are regularly published in newspapers, magazines, and national print publications. <https://artversion.com/>



Kate Smith is an artist, designer, writer and color fanatic. She is the expert behind Sensational Color. The depth of her expertise comes through in her ability to explain color concepts in a way that everyone can easily understand. Kate's tagline is Color Explained™ because selecting the right color doesn't need to be complicated. <http://www.sensationalcolor.com/>



have you ever imagined
a world without
COLOR?



The International Child Art Foundation invites your participation in the 6th Arts Olympiad—the world’s largest arts program for the creative and empathic development of students aged 8 to 12.

Please visit www.icafe.org/ArtsOlympiad to download the free lesson plan.

The Arts Olympiad winners will be the official delegates to the 6th World Children’s Festival in Washington, DC in June 2019.

To support children’s creative and empathic development, you can donate online at www.icafe.org or via check to:

**INTERNATIONAL
CHILD ART
FOUNDATION**

P. O. Box 58133
Washington DC 20037



**SUMMER OF 2019
WASHINGTON D.C.**