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Color Psychology is a Science
...But It Will Always Be an Art
Welcome to the most comprehensive resource on color psychology.

Until now, most commentary on color has been plagued with pseudoscience (i.e., pure anecdotal hooey).

That’s why I dug through 50 academic studies to compile everything that I could find. This article is a compilation of my findings.

I summarized all of my findings in the table on the following page (you can visit the original article for an enlarged version). Next time you need to choose a color, you can use that chart to guide your decision.
<table>
<thead>
<tr>
<th>Marketing Applications</th>
<th>Color Dimensions</th>
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</thead>
<tbody>
<tr>
<td>LEVEL OF AROUSAL</td>
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<tr>
<td>Relaxed</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Excited</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>TYPE OF PROCESSING</td>
<td></td>
</tr>
<tr>
<td>Systematic</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Heuristic</td>
<td>✓ ✓ ✓ ✓</td>
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<td>SELLING MECHANISM</td>
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<td>Auction</td>
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<td>Negotiation</td>
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<td>BRAND TRAITS</td>
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<td>Excitement</td>
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<td>INTENDED GOAL</td>
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<td>Gain</td>
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<td>GENDER</td>
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<tr>
<td>Male</td>
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<tr>
<td>Female</td>
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But that table is only scratching the surface. The rest of this article is divided into **three parts.**

In **Part 1: The Psychology of Color**, you’ll learn the science and theory behind color. The information won’t be immediately actionable. But it will set a foundation for the practical suggestions in the next two parts.

In **Part 2: Marketing Applications**, you’ll learn how to apply color psychology in marketing. I'll explain each section in the previous table so that you’ll know how to choose an appropriate color for specific situations.

In **Part 3: Putting It All Together**, you’ll learn how to integrate the information from both parts into a cohesive strategy.
Color is everywhere.

Open your eyes, and everything around you is radiating with color — blue, red, yellow, green — the list never ends. *We’re engulfed in color.*

With such a pervasive topic, a ton of research must exist, right?

Well...no. Not really.

I searched for “color psychology” in Google Scholar, and it returned **2,480 studies**. To give you perspective, I searched some other queries...

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Color psychology is on the same level as men’s underwear.
(We should ignore that, right? Yeah, let’s ignore it.)

After scouring the handful of studies available, I pieced together a model depicting the psychological effects of color: I call it the Kolenda Color Model (alas, I chose the narcissistic naming route).

The model describes how we come to evaluate a color. You might not understand the components right now. But this article will gradually break down each piece of the following model:
KOLENDA COLOR MODEL

HUE   VALUE   CHROMA

PERCEIVE COLOR

COOL COLOR   WARM COLOR

AROUSAL REACTION

BIOLGY

ASSOCIATIVE LEARNING

ATTRIBUTE MEANING

EVALUATE COLOR

AESTHETIC

APPROPRIATE

VALUE

NEGATIVE EVALUATION   POSITIVE EVALUATION
WHAT ARE THE COMPONENTS OF A COLOR?

In order to understand the foundation of that model, you need to understand the components that comprise the visual nature of color.

For example, all of these colors are blue:

But those colors look different. Why is that?

According to The Munsell System (Munsell, 1912), colors contain three components:

1. Hue
2. Value
3. Chroma

1. Hue

Hue is the overall color name.
Most marketers focus entirely on hue. And that’s a mistake. Research shows that the next two components play a larger role in emotional impact (Suk & Irtel, 2009).

2. **Value**

Value is the level of brightness. How *light* or *dark* is a color?

- Colors with **low value** are **darker** (called “shades”)
- Colors with **high value** are **brighter** (called “tints”)

![Value Diagram]

3. **Chroma**

Chroma is the level of saturation. How *vivid* is the color?

- Colors with **low chroma** look **washed out**
- Colors with **high chroma** look **vivid**

Again, value and chroma are often more important than hue — which is conducive for marketers:
“These findings are especially useful for brand managers who are confined in their choice of hue as they can alter value and saturation of that specific hue to achieve a desired brand personality.” (Labrecque, 2010, pp. 81)

If you ever want to adjust the value and chroma of a color, most software programs arrange those components like this:
WHY DO WE PREFER CERTAIN COLORS?

Across the globe, blue is the “favorite color” of most people (Valdez & Mehrabian, 1994). But why is that? And why is it uncommon to prefer black, gray, or brown? Where do those preferences originate?

Researchers propose three main theories:

1. Biology / Evolution
2. Gender Schema Theory
3. Ecological Valence Theory

1. BIOLOGY / EVOLUTION

We develop color preferences based on innate biological mechanisms — largely emerging from evolution.

“Researchers have suggested that color associations may have been formulated early in human history when man associated dark blue with night, and therefore, passivity and bright yellow with sunlight and arousal.” (Grossman & Wisenblit, 1999, pg. 2)
That’s also why males prefer blue, whereas females prefer pink. Researchers argue that those differences emerged from an evolutionary bias grounded in a hunter-gatherer mindset (Hurlbert & Ling, 2007).

Back in the day, females were the gatherer. They needed to find food sources by identifying red and yellow fruit among green foliage (Regan et al., 2001). Consequently, that role influenced color preferences for future female generations:

“...color vision and, in particular the ability to discriminate red wavelengths, may have a greater adaptive significance for foragers (i.e., females) than for resource protectors (i.e., males) and so contribute to contemporary visual biases and object preferences.” (Alexander, 2003, pp.11)

In other words, female brains developed a preference for reddish colors because of their ancestral duties in gathering food sources.

Is it far-fetched? Possibly. Evolution definitely plays a role in the arousal reaction to color (explained later). But in terms of color preferences, the next two theories offer a more promising explanation.
2. Gender Schema Theory

Gender also dictates color preferences. Why? Because of gender schema theory:

“...once children recognize their own gender, they actively seek out gender-related information and integrate that information into their developing concept of gender.” (LoBue & Deloache, 2011, pp. 658)

When our children are young, we reinforce gender stereotypes.

- We dress boys in blue clothes
- We dress girls in pink clothes

Children then integrate those colors into their schema for “male” and “female.”

Because children feel a need to conform to their gender, males become drawn to blue, whereas females become drawn to pink.
In one study, researchers analyzed different aged children (ranging from 7 months to 5 years old). They wanted to study their preference for pink over time.

The result? As children grew older, girls became increasingly attracted to pink, whereas boys became increasingly distant of pink (LoBue & Deloache, 2011). *Their preferences evolved as they learned more information about their gender.*

### 3. Ecological Valence Theory

The previous theories can explain *some* color preferences. But those explanations are limited.

For instance, why do people prefer different variations of a hue, such as light blue vs. dark blue? Since we all possess the same biological composition — more or less — shouldn’t we share the same color preferences? Why do differences emerge?

**Ecological valence theory (EVT)** can explain those differences (Palmer & Schloss, 2010). According to that theory, we develop preferences for colors, based on our emotional experiences with those colors over time.

> “The more enjoyment and positive affect an individual receives from experiences with objects of a given color, the more the person will tend to like that color.”

(Palmer & Schloss, 2010, pp. 8878)

Classical conditioning supports that notion. In one study, a researcher paired different colored pens with pleasant or unpleasant music. At the end of the experiment, participants were more likely to take home a colored pen that was paired with pleasant music (Gorn, 1982).

EVT can also explain gender differences. Instead of thinking about it in terms of clothing, think about it in terms of toys:

- We give **blue toys** to **boys**
• We give **pink toys to girls**

![Image](image_url)

From a young age, children attach positive emotions to those respective colors. Males attach positive emotions to blue, whereas females attach positive emotions to pink. **Those positive emotions, in turn, dictate their color preferences.**
HOW DO COLORS GET THEIR MEANING?

Ecological valence can explain the emotional impact of colors. But how do colors acquire semantic meaning? Why do we associate red with passion and romance? Or why do we associate black with mourning?

The answer lies in **associative network theory** (Bower, 1981).

Our brain contains an **associative network** — an interconnected web of knowledge.

In that network, each circular node represents a unit of knowledge, whether it’s an:

- **Emotion** (e.g., happiness)
- **Sensory experience** (e.g., smell of the ocean)
- **Semantic meaning** (e.g., the term, “beach”)
Those nodes are connected to other nodes, based on the degree of similarity between them. *Stronger* similarities generate *stronger* connections.

For example, your node for cars would be connected to many other nodes:

- Some connections would be **strong** (e.g., tires, driving, roads)
- Some connections would be **weak** (e.g., trains, radio, metal)

![Diagram of associative network](image)

Throughout your life, you’re constantly growing your associative network. With each new experience, you (a) create new nodes (b) form new connections, or (c) strengthen existing connections.

*That’s great, Nick. But how does that relate to color?*
I’m glad you asked.

Your brain contains a node for each color. Each time you encounter a color, you modify that node based on your experience.

Suppose that you get hit by a blue car. You’ll likely adjust your node for the color blue:

You can make that adjustment consciously or subconsciously. Either way, you’ll attribute a new meaning to the color blue.

That new association, in turn, can influence your perception and behavior. How? We’ll revisit that answer later, so keep this concept in mind (pun intended).
WHY DO COLORS HAVE DIFFERENT MEANINGS?

Let’s address a common myth. Too many psychology “gurus” attach specific meanings to specific colors.

For example:

- Blue is calm
- Brown is earthy
- Yellow is cheerful

Don’t get me wrong — those associations are correct. And we’ll go over those meanings in a later section. But color psychology isn’t that simple.

Colors don’t have one cumulative meaning. People attribute different (and sometimes contradictory) meanings to the same color, depending on various factors. So what are those factors? They include...

EXPERIENCE

People have different experiences with colors. And those experiences can influence the meaning that they attribute to a color:

That’s why colors can trigger different meanings, depending on the person:

- **Black**: Funeral directors develop a stronger association between black and mourning. If they see black in a different context, it could trigger feelings of death and sadness.
- **Yellow**: Custodians develop a stronger association between yellow and urine. If they see yellow in a different context, it could trigger feelings of disgust.
- **White**: Frequent skiers develop a stronger association between white and exhilaration. You get the idea.
Even though most people possess those same associations, the intensity of those connections will depend on past experience.

Always consider your target market before choosing a color scheme. Do those people have frequent experience with a particular color? If so, is that association helpful or harmful?

**Culture**

Meanings also vary by culture. For example, in Western cultures, most people's favorite color is blue (Valdez & Mehrabian, 1994). But that's not the case in East Asia. In fact, it's the opposite:

> “...America's prime corporate color, blue, is considered in East Asia to be a cold color and carries associations of evil and sinister behavior.” (Schmitt, 1995, pp. 33)

This article can't address all cultural differences (I'll be focusing on color meanings in the Western world).
However, if you expand internationally, you'll need to research culture-specific colors before you (a) distribute your product or (b) create marketing campaigns targeted toward specific ethnicities. Certain colors might possess harmful meanings in that culture.

**CONTEXT**

Third, colors possess different meanings depending on the context:

> “...context helps determine which related nodes are activated in the network...A black kitchen appliance seems unlikely to trigger a mourning-related association, because dishwashers have no natural connection to funerary rituals.” (Labrecque, 2010, pp. 20)

Red is another example. In a dating context, red elicits feelings of passion and attraction. That’s why women find men to be more attractive in online dating if those men are wearing red in their picture (Elliot et al., 2010).

However, red holds different meanings elsewhere. In achievement contexts, we associate red with failure — partly due to the frequent use
of red pens in grading. And that’s why people perform worse on achievement tasks (e.g., IQ tests) after being exposed to the color red (Elliot et al., 2007).

Past experience, culture, and context are a few factors that determine the meaning of a color. But despite those varying factors, people generally share a similar set of meanings. We'll discuss those meanings next.
<table>
<thead>
<tr>
<th>COLOR</th>
<th>MEANINGS AND ASSOCIATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Anxiety, Arousing, Daring, Dominant, Energy, Excitement, Health, Life, Love, Passion, Power, Protection, Spirited, Stimulating, Strength, Up-To-Date</td>
</tr>
<tr>
<td>Orange</td>
<td>Abundance, Arousing, Comfort, Daring, Excitement, Extraversion, Fun, Happiness, Lively, Security, Sensuality, Spirited, Warmth</td>
</tr>
<tr>
<td>Yellow</td>
<td>Arousing, Cheerful, Confidence, Creativity, Excitement, Extraversion, Friendliness, Happiness, Optimism, Self-Esteem, Sincerity, Smiley, Spirited</td>
</tr>
<tr>
<td>Blue</td>
<td>Calm, Comfort, Competence, Coolness, Dignified Duty, Efficiency, Intelligence, Logic, Peace, Reflection, Relaxation, Reliability, Security, Serenity, Soothing, Successful, Tender, Tranquility, Trust</td>
</tr>
<tr>
<td>Purple</td>
<td>Authenticity, Charming, Dignified, Exclusive, Luxury, Quality, Regal, Sensuality, Sophistication, Spiritual, Stately, Upper Class</td>
</tr>
<tr>
<td>Pink</td>
<td>Charming, Cheerful, Feminine, Gentle, Nurturing, Sincerity, Soft, Sophistication, Tranquility, Warmth</td>
</tr>
<tr>
<td>Black</td>
<td>Dignified, Efficiency, Elegance, Emotional Safety, Glamour, Power, Richness, Ruggedness, Security, Sophistication, Stately, Substance, Tough, Upper Class</td>
</tr>
<tr>
<td>White</td>
<td>Calm, Clarity, Cleanliness, Down-to-Earth, Happiness, Heavens, Honest, Hygiene, Innocence, Peace, Purity, Serenity, Sincerity, Soothing, Tender</td>
</tr>
</tbody>
</table>
WHAT DOES EACH COLOR MEAN?

In a few paragraphs, I’ll present a chart of all color meanings. These meanings were compiled from a multitude of academic studies.

How did the researchers derive those meanings?

For most studies, researchers asked participants to rate certain colors on various dimensions. For example, Labrecque (2010) presented participants with different colored logos. Participants were then asked to evaluate that logo on various factors relating to personality and likability.

All of the following traits have emerged through similar methodologies. So hopefully these color meanings will be more accurate than the commentary you’ll find elsewhere.

I excluded citations for the sake of clarity. But if you want to see the academic studies comprising this table, you can refer to Table 3.2 in Labrecque (2010).
I wanted to include that table because some of you will be looking for that information. However, don’t place too much weight on it.

Those associations emphasize hue, but they neglect value and chroma. And that’s a mistake. As I mentioned, **value and chroma generate stronger effects than hue:**

“...brightness and saturation had substantially greater effects on emotions than hue...early experiments that studied and specified only hues must be read with discernment.” (Rider, 2009, pg. 7)

So don’t rely entirely on the information in that table. Instead, use the suggestions in the next two parts of this article. Those applications incorporate value and chroma, so the information will be more accurate.
WHY DOES COLOR INFLUENCE US?

We know that colors possess certain meanings. But why (and how) does color influence our perception and behavior?

According to Crowley (1993), color produces two reactions:

1. Arousal Reaction
2. Evaluative Reaction

1. AROUSAL REACTION

Arousal is a physiological state, characterized by higher adrenaline, blood pressure, and heart rate. You feel more activated.

Multiple studies have shown that warm colors increase arousal. For example, Crowley (1993) found a U-shaped relationship between arousal and color wavelength:

![Graph showing the relationship between arousal and color wavelength]

Amount of Activation

High

Low

Red Orange Yellow Green Blue Purple

(Long) Color Wavelength (Short)
When you’re exposed to warm colors (e.g., red, orange), you experience an immediate biological reaction. Your adrenaline starts flowing. Your blood pressure rises. You experience a greater sense of stimulation.

Depending on your marketing goals, **higher arousal can either help or hurt you.** And we’ll discuss those situations later.

### 2. Evaluative Reaction

In addition to arousal, the other reaction is evaluative: *do consumers “like” your choice of color?*

Crowley (1993) found a positive linear trend between evaluation and color wavelength. People tend to “like” colors with shorter wavelengths. So let’s integrate that finding with the previous graph.
But here’s a question: *why* does color produce an evaluative reaction? The answer involves your associative network.

Whenever you’re exposed to a color, your node for that color becomes activated.

Once that node becomes activated, it triggers spreading activation (Collins & Loftus, 1975). Activation spreads to all of the nodes that are connected to it.

When those surrounding nodes become activated, all of those concepts become temporarily integrated in your perception of the world.

So let’s apply that insight to color. Earlier I mentioned that women find men to be more attractive if those men are wearing red (Elliot et al., 2010). Why does that happen? There are two mechanisms at play.
First, when women are browsing dating profiles, their node for passion and romance becomes activated. Due to spreading activation, all similar nodes become activated as well — including their node for “red.”

Now, that diagram is an oversimplification. In reality, all of those concepts would be interconnected. In fact, some of those nodes are also associated with red (e.g., roses, hearts, Valentine’s Day). So those nodes would further amplify the activation of “red.”

Regardless, once the “red” node becomes activated, women can temporarily identify red stimuli more quickly and easily. And that’s the key.
If a woman sees a man wearing a red shirt, she’ll be able to process the picture more easily.

That increased processing fluency generates a pleasant sensation in her brain. Because she feels good processing the man’s picture, she falsely infers that he is more attractive (see Alter & Oppenheimer, 2009).

So that’s one mechanism. But the influence also works in reverse.

If women are exposed to the color red, activation spreads to all surrounding nodes — including their node for passion and romance.

Once the “romance” node becomes activated, women temporarily perceive stimuli to be more congruent with passion and romance. **So they’ll perceive a man’s picture to be more attractive.**

I know I’m biased, but I think spreading activation is one of the most fascinating concepts in psychology. If you want a deeper explanation of it, I recorded [this quick video](#).
But in terms of color psychology, the underlying concept is important to grasp. Most people assume that the visual nature of color is important. But that’s not the case. Research shows that merely thinking about a color can produce the same effect as visually perceiving it.

In one study, thinking about the color yellow produced the same neurological changes —activation of the left fusiform gyrus — as did visually seeing the color yellow (Simmons et al., 2007).

That means exposing people to written colors (e.g., the word “yellow”) can produce corresponding changes in perception and behavior (Lichtenfeld et al., 2009).

If you understand spreading activation, that finding make sense. Colors are influential because of our conceptual knowledge. Hues are almost meaningless. Color meanings (and their subsequent influence) depend on the emotional and semantic meanings that we associate with a color.

However, one piece of the puzzle still remains. What factors influence our evaluation of a color? In other words, what makes our evaluation positive or negative? We'll discuss those factors next.
WHAT MAKES A “GOOD” COLOR?

So how do people evaluate a color? They consider three main factors:

1. Appropriateness
2. Aesthetics
3. Value

1. APPROPRIATENESS

Marketers often choose colors based on preferences — i.e., the colors that they think people will prefer. However, that’s usually the wrong approach. **You need to consider the appropriateness of a color.**

For example, most people prefer blue to brown. But suppose that you’re buying a table. What color would you want? Most people would choose brown because it seems more appropriate.
Colors need to be appropriate on two dimensions: **emotion** and **semantic meaning**.

For example, people often choose to paint the walls of their home based on the **emotion** that they want to feel in that room (Schloss, Strauss, & 2012).

In terms of **semantic meaning**, Kauppinen-Raisanen and Luomala (2010) asked people to evaluate pain-relieving medication in a red package. The comments revealed a heavy focus on semantic meaning:

- “If you have a headache and want to have something that relieves the pain and cures it, then you do not want to have something that reminds you of blood”
- “If you have to put something in your throat, then red is too burning. It does not feel good in your throat”

### 2. AESTHETICS

This article has focused on associations and color meanings. But you can't ignore aesthetics.

Never choose a color *solely* based on its emotional or semantic meaning. At the end of the day, **your product or design needs to be visually appealing**.

Aesthetically pleasing designs can...

- Influence brand choice (Bloch, Brunel, & Arnold, 2003)
- Attract more attention (Stoll, Baecke, & Kenning, 2008)
- Increase brand loyalty (Cyr, Head, & Ivanov, 2006)
- Improve design usability (Tractinsky, Katz, & Ikar, 2000)
- Enhance perceived credibility (Robin & Holmes, 2008)

That’s why color psychology will never be a formulaic science — and rightly so.
3. **Value**

The third factor is value. And it has two components: **social** and **functional**.

In terms of **social value** — is your color useful from a **social** standpoint? For example, certain clothing styles are “in fashion” (and would have high social value).

Luckily, I’m known for my trendy sense of fashion:

![My outfit with high social value](image)

In terms of **functional value** — is your color useful from a **pragmatic** standpoint?

For example, silver cars can hide dirt and scratches. So silver would have high functional value. Black cars — because they accentuate dirt and scratches — would have low functional value.
PART 2: MARKETING APPLICATIONS

In the previous part, I traced the steps that determine someone's evaluation of a color.

In this part, I'll explain the table that I presented at the beginning of the article. I'll break down each section of that table so that you'll know how to choose the best color(s) for specific marketing applications.
LEVEL OF AROUSAL

Earlier I described how colors influence arousal:

- Cool colors **decrease** arousal
- Warm colors **increase** arousal

But when should you increase vs. decrease arousal? This section will explain.

**LOW AROUSAL (RELAXATION)**

When you’re relaxed, time passes more quickly:

> “Anything that increases feelings of relaxation during a wait should make the time pass more quickly; conversely, feelings of anxiety or tension should lead to lowered perceptions of speed.” (Gorn et al., 2004, pp. 215)

For example, people who were afraid of spiders reported a longer time duration in the presence of a spider (Watts & Sharrock, 1984). In another study, people reported a longer time duration when they made eye contact with someone scowling (Thayer & Schiff, 1975).

That shift in time perception involves their internal clock:

> “…stress or anxiety may accelerate a person’s internal clock” (more time passes on that clock than may actually be the case), which results in a
Because of that effect, **cool colors reduce perceived loading times on websites** (Gorn et al., 2004).

That effect can also apply to shopping behavior. Cool colors encourage relaxation, so people will want to spend more time shopping. They'll also perceive a shorter wait at checkout:

> “...the uniforms of the checkout employees might influence perceived ease and time spent during the transaction...a store like Target, with its almost overwhelming, saturated red atmosphere at the checkout area, may need to reconsider its interior color choices.” [Labrecque, 2010, pp. 30]

**HIGH AROUSAL (EXCITEMENT)**

Low arousal can speed up time. But high arousal can spur action – like impulse buying:

> “An activated consumer may be more likely to engage in impulse buying. For this type of situation, the more activating colors such as red and blue are most
appropriate, while moderate wavelength colors such as green should be avoided." (Crowley, 1993, pp. 67)

Arousal increases impulsivity because it inhibits cortical functioning (Walley & Weiden, 1973). People spend less much time rationalizing or debating, and they’re more likely to act now.

So if you want someone to make an immediate decision, increase their arousal through warm colors.

---

**Decreases Impulsive Actions**

- Purple
- Blue
- Green

**Increases Impulsive Actions**

- Yellow
- Orange
- Red
Because arousal reduces rationale thinking, you can use that insight for another marketing application.

Generally, we process information in two ways:

- **Heuristic Processing**: Quick and simple-minded analysis
- **Systematic Processing**: Thorough and rational analysis

If your arguments are weak, you'll want people to use **heuristic processing**. So use warm colors to increase their arousal (so that you decrease cortical functioning).

If your arguments are strong, you'll want people to use **systematic processing**. So use cool colors to decrease their arousal.
SELLING MECHANISM

Color plays a role in two different sales mediums: auctions and negotiations.

Auctions

In one study, researchers analyzed background colors of various eBay auctions. Oddly, they found that red backgrounds generated more revenue (Bagchi & Cheema, 2013). Do you know why? Hint: it involves arousal.

Give up? Red increases arousal, which triggers more aggression. Those aggressive tendencies influence people to keep bidding so that they outbid their competition.

“...in situations in which consumers compete with each other to buy a scarce or a limited-edition product, firms may increase consumers’ willingness-to-pay by exposure to red versus blue backgrounds." (Bagchi & Cheema, 2013, pp. 956)

Negotiations

If you sell products through negotiation, you’ll want to use the opposite colors.

Since you are the competition, you should use cool colors to reduce the amount of aggression in your counterpart.
Even small factors — like clothing — can make a difference. Researchers analyzed penalty data in the NFL and NHL, and they found that teams with black uniforms received more penalties (Frank & Gilovich, 1988). You might want to wear blue to your next job interview.
Most marketers use color to convey the personality of their brand. Whenever you want to convey a certain trait, you can use the table above to pinpoint a suitable color.

Those traits were grounded in research from Aaker (1997), who outlined five key dimensions of brand personality:

- **Competence** (e.g., The Economist)
- **Excitement** (e.g., Spartan Race)
- **Ruggedness** (e.g., Wrangler jeans)
- **Sincerity** (e.g., Hallmark)
- **Sophistication** (e.g., Apple)

But what if you want to convey traits that are more specific?

I created another table dividing those five traits into specific facets. Researchers often use a different set of facets, but I handpicked the following characteristics, based on their practicality:
<table>
<thead>
<tr>
<th>BRAND TRAIT</th>
<th>FACET</th>
<th>HUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPETENCE</td>
<td>Efficiency</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Intelligence</td>
<td>✓</td>
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<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>✓</td>
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<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Trust</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Up-to-Date</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EXCITEMENT</td>
<td>Arousing</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>Cheerful</td>
<td>✓</td>
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<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Daring</td>
<td>✓</td>
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<td></td>
<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>Happiness</td>
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<td></td>
<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>Passion</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>RUGGEDNESS</td>
<td>Nature</td>
<td>✓</td>
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<td></td>
<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>Tough</td>
<td>✓</td>
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<tr>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>SINCERITY</td>
<td>Down-to-Earth</td>
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<td>Peace</td>
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<td></td>
<td>Tranquility</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>SOPHISTICATION</td>
<td>Charming</td>
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<td>✓</td>
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<td>Elegance</td>
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<td>Luxury</td>
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</tr>
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<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>Comfort</td>
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<td>✓</td>
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<td>Extraversion</td>
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<td>✓</td>
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<td>Health</td>
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<td>Power</td>
<td>✓</td>
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<tr>
<td></td>
<td>Sensuality</td>
<td>✓</td>
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<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
INTENDED GOAL

Depending on your situation, you’ll usually be trying to accomplish a specific goal with your marketing efforts. This section will explain how color can help you achieve three distinct goals: **attention**, **action**, and **liking**.

**ATTENTION**

Sometimes you want color to capture people’s attention.

- Will your product stand out on retail shelves?
- Will people notice your image in social media?
- Will people notice the CTA button on your page?

Kawasaki and Yamaguchi (2011) exposed people to various colors, and they studied their brains through an EEG. When a favorite color was present in the background, their brains became activated *before* they consciously noticed it. **Color subconsciously captures our attention.**

But how can you capture that attention?

Some studies suggest using warm colors (e.g., Garber, 2000). However, as I mentioned in [this CRO article](#), oftentimes the best solution is **contrast**.

Your attention is naturally guided toward stimuli that are visually salient (Parkhurst, Law, & Niebur, 2002). If you want to guide attention
toward a stimulus (e.g., a CTA button), **choose a color that contrasts with the surrounding environment.**

That concept can also apply to packaging. To stand out on retail shelves, your packaging should be novel:

> “Research has examined how packaging can make a product stand out visually against its competitors. Novel packaging grabs consumers' attention and increases the probability of an involuntary attention response.” (Labrecque, 2010, pp. 31)

**ACTION**

Sometimes you want color to trigger behavioral responses — whether it’s buying your product, sharing your content, or subscribing to your blog.

To achieve that goal, use colors that increase arousal, such as warm colors with high saturation and low brightness. Because those colors trigger impulsivity, they **tend to increase behavioral responses.**

In one study, Bakhshi and Gilbert (2015) analyzed sharing data for 1 million Pinterest images. The results? People were more likely to share images that contained warm colors (e.g., red, pink), and they were less
likely to share images that contained cool colors (e.g., blue, green). The heightened activation may have sparked a greater impulse to share.

**LIKING**

Sometimes you want color to trigger a favorable impression of your product or brand.

To achieve that goal, use shorter wavelength colors:

“To obtain more positive responses for constructs such as attitude toward an advertisement, shorter wavelength colors such as blue are likely to be most effective.” (Crowley, 1993, pp. 67)

You also might want to consider using brighter colors, such as whites and light greys (Valdez & Mehrabian, 1994).
Which type of product do you have?

- **Utilitarian Product**: Provides functional benefits
- **Hedonic Product**: Provides social or sensory benefits

Bottomley and Doyle (2006) examined the role of color in those product classes. They surveyed a sample of people to determine the colors that people associate with functional vs. social-sensory benefits.

Here’s what they found:

- **Functional Colors**: Gray, Black, Blue, Green
- **Social-Sensory Colors**: Red, Yellow, Pink, Purple

In the study, people developed a stronger affinity toward products when colors were congruent with the product. Functional colors enhanced utilitarian products. Social-sensory colors enhanced hedonic products.
MESSAGE FRAMING

Advertisers typically describe their product using a particular frame:

- **Prevention**: Which problems will your product prevent?
- **Gain**: Which benefits will your product provide?

Certain colors can enhance those frames. As I explained in [this advertising article](#), we usually associate red with *avoidance*.

Because of that association, red activates an *avoidance* mindset. With that mindset activated, people identify problems more quickly.

On the other side, blue activates an *approach* mindset:

“...because blue is usually associated with openness, peace, and tranquility, it is likely to activate an approach motivation, because these associations signal a benign environment...” (Mehta & Zhu, 2009, pp. 1)

Mehta and Zhu (2009) tested those colors with two versions of a toothpaste advertisement:

- **Prevention Focus**: It prevents cavities
- **Gain Focus**: It whitens teeth
Red activated an avoidance mindset, and it enhanced the appeal of the prevention advertisement. Blue activated an approach mindset, and it enhanced the appeal of the gain advertisement.
Earlier I described three theories that shape our color preferences:

- **Evolution**: Females were the gatherer. So they developed the ability to identify red and yellow food sources (Alexander, 2003).
- **Gender Schema**: From a young age, males are guided toward blue, whereas females are guided toward pink (LoBue & Deloache, 2011).
- **Ecological Valence**: Based on our experience, we attach positive emotions to certain colors (Palmer & Schloss, 2010).

Based on those theories, it would seem like women prefer warmer colors, whereas males prefer cooler colors. And data supports those preferences:

“The mean hue preference curves for males and females differ significantly. The average female preference rises steeply to a sustained peak in the reddish-purple region, and falls rapidly in the greenish-yellow region, whereas the male preference is shifted towards blue-green...” (Hurlbert & Ling, 2007, pp. R624)
Other studies have found that males prefer high value and high saturation, whereas females prefer low value and low saturation (Radeloff, 1990).
PART 3: PUTTING IT ALL TOGETHER

This article has covered a ton of ground. So let’s fit the pieces together.

HOW TO USE THE MODEL

Now that you have a clearer understanding of the marketing applications, let’s walk through an example using the large table that I presented at the beginning of the article.

Suppose that you’re using a gain frame to sell a utilitarian product to a male demographic. You could follow these steps.

Step 1: Highlight all rows that fit your situation.

The image above is just a snippet from the full table. You could also highlight rows in other sections of the table as well. But if a section isn’t relevant, you can skip it.
Step 2: At the bottom of each column, tally the number of highlighted checkmarks.

Step 3: Look for the highest scoring colors.

Use those high scores to guide your color choice. If you need to choose a single color, the highest scoring color might be your best bet.

But what if you need to choose multiple colors? Well, let’s consider a few factors...
HOW MANY COLORS SHOULD YOU CHOOSE?

In this article you learned the semantic meanings of each color. However, the sheer number of colors can also convey semantic meaning. So how many colors should you choose?

The answer depends on two factors:

1. Type of Product
2. Amount of Content

1. TYPE OF PRODUCT

First, you should consider your product — whether it’s utilitarian or hedonic.

A small variety of color conveys utilitarian and serious qualities, whereas a large variety conveys hedonic and fun qualities (Bottomley & Doyle, 2006).

I guess more colors can convey uncomfortable creepiness too.
In general, you should follow that insight:

- Choose **fewer colors** for products that are **serious** in nature
- Choose **more colors** for products that are **lighthearted** in nature

### 2. Amount of Content

We all possess a finite amount of processing resources. That’s why you need to consider the amount of content vying for the observer’s attention.

Suppose that you're designing an advertisement.

If your ad contains a lot of text, consumers will need to devote more processing resources to evaluate your ad. And that can be problematic if your design contains a lot of color.

Colors require processing resources too. So if your ad contains a lot of content and a lot of color, your design becomes overwhelming. Research suggests that people will develop a worse impression of your product.

Meyers-Levy and Peracchio (1995) tested that possibility, and they found support for that claim:

“...if such processing or ad claim substantiation is relatively taxing, [then] attitudes are likely to be more favorable when ads are more simple and use only black-and-white or when they color highlight only those elements in the ad that are relevant to substantiating the ad claims.” (pp. 122)

Obviously it depends on the goals of your design, but you should consider this rule of thumb:

- If your design is **complex or heavy on content**, then reduce **color levels**
If your design is simple or light on content, then increase color levels

WHICH COLORS GO WELL TOGETHER?

How do people evaluate a stimulus containing multiple colors? Which colors, when combined, look visually appealing?

To appreciate the answer, you need to know the key elements of that judgment. And according to Schloss and Palmer (2011), it has three components:

- **Pair Preference**: How much someone likes the combination of colors
- **Pair Harmony**: How strongly someone believes the colors belong together
- **Figural Preference**: How much someone prefers the figural color when viewed against a background

Schloss and Palmer (2011) ran multiple studies and found that one factor influences all three components: the relationship between the foreground and background.

Colors in opposing planes (e.g., foreground vs. background) are more visually appealing when they have dissimilar hues:
“...clear effects of both hue contrast and lightness contrast are revealed: warmer figures are preferred on cooler backgrounds, cooler figures are preferred on warmer backgrounds, and figures are generally preferred on backgrounds of contrasting lightness.” (Schloss & Palmer, 2011, pp. 568)

Colors in the same plane (e.g., all in foreground) are more visually appealing when they have similar hues:

“Both pair preference and pair harmony vary primarily as a function of hue similarity, such that pairs with similar hues are, on average, both more preferred and more harmonious.” (Schloss & Palmer, 2011, pp. 567)

Obviously you can break those guidelines. But that insight can help you choose a color scheme — as you’ll see next.

**HOW TO CHOOSE THE RIGHT COLOR SCHEME**

Now that you understand the components of an aesthetically pleasing color scheme, how can you choose the right combination of colors?

Here are four popular color schemes:
1. Monochromatic

Monochromatic color schemes use different variations of the same hue.

Because of its simplistic nature, monochromatic color schemes are useful in communicating simple messages or conveying a sophisticated brand (Rider, 2009).

Also, because the variations are similar, you should consider using a monochromatic scheme when choosing colors in the same plane (see the previous section).

2. Analogous

Analogous color schemes use similar hues in close proximity on the color wheel.
Like monochromatic designs, analogous color schemes can increase the perceived harmony of your design because of the similarity in hue. So consider using this approach when choosing colors in the same plane.

3. TRIADIC

Triadic color schemes use three colors situated at 120 degrees on the color wheel.

This color scheme is perhaps the most popular choice:

“Triadic color harmony is considered to be the best color scheme. You could use one color for a background and the two remaining for content and the highlighted areas.” – Source: Kissmetrics

4. COMPLEMENTARY

Complementary color schemes use colors on opposing sides of the color wheel.

Because they fall on opposite sides, **complementary colors have high contrast**. Use that insight to your advantage. If you want to increase contrast between the foreground and background, choose a complementary color.
Or you can choose a complementary color if you want to push attention toward some element (e.g., CTA button). By choosing a color that contrasts with the surrounding content, you’ll naturally guide attention toward it.

To help you connect all of those pieces, you can use the chart below:
If you’ve read my articles, you’ll know that I enjoy cramming as much content down your throat as possible. And this article was no different.

However, I think it was needed. Color psychology is a fascinating topic — yet it’s plagued with so many inaccuracies. I’m sure this article has flaws too. But I’m hoping it’s a step in the right direction.

Before departing, I want to leave you with two main takeaways.

**COLOR PSYCHOLOGY IS A SCIENCE**

Marketers often choose colors arbitrarily. But not you anymore. Now that you understand the science and psychology of color, you can now strategically analyze your color choices.

Next time you choose a color, you can reference the models above to determine (a) how certain colors will influence observers, and (b) which colors will create your desired perception and behavior.

But now for the caveat. Color is grounded in science...

**...BUT IT WILL ALWAYS BE AN ART**

Although I gave you a table containing specific recommendations, you could argue that those suggestions are useless.

Within graphic design, no strict rules will ever exist. In fact, the best designs often *break* the rules. So you’ll always need a human. You’ll always need creativity. *Color psychology will always be an art form.*

But I hope that you learned some useful insights nonetheless.