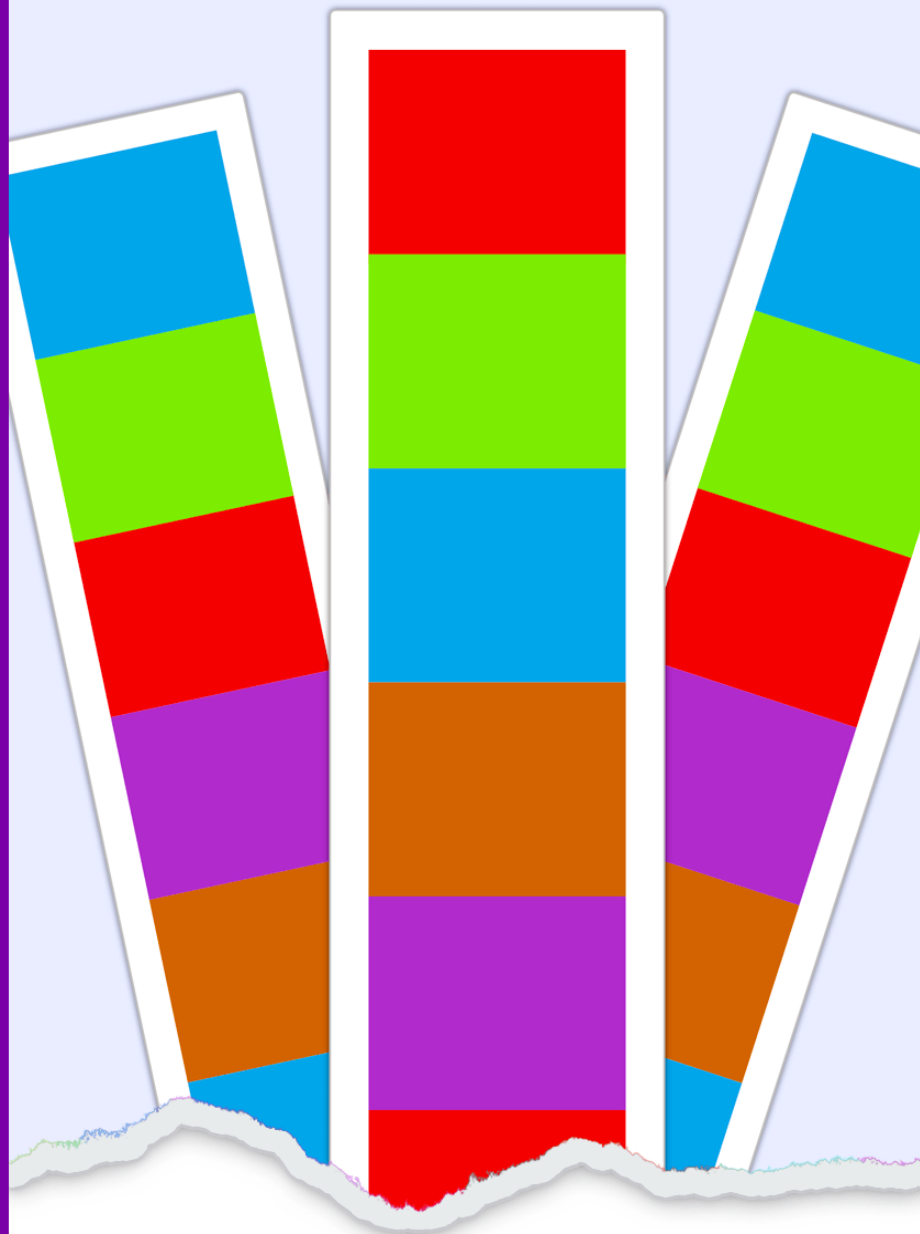


THE PSYCHOLOGY OF

COLOR



What does each color
mean and why?

Nick Kolenda

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NICK KOLENDA

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CHOOSE A COLOR TEMPERATURE

Warm colors are activating; cool colors are relaxing.

People assume that each color has a meaning:

- Blue means _____.
- Brown means _____.
- Yellow means _____.

However, any meaning depends on individual experience. The entirety of your color preferences — from most favorite to least favorite — falls in direct accordance with your past experience with each color (Palmer & Schloss, 2010).

If you enjoy the *beach*, you probably enjoy the color *ocean blue*:

(see fig 1)

But your preferences can change. Get hit by a blue car? Suddenly blue is less appealing because of this new connection.

(see fig 2)

Certain colors will mean the same meaning across the

world if — and only if — everyone sees this color in the same context.

Temperature is a vital aspect of color meaning because it's one of the few (maybe only) universal sources of meaning. Red, yellow, and orange are universally seen in the sun, so these colors will inherit all meanings related to warmth.

CHOOSE WARM COLORS FOR

→ **Excitement.** Warm colors resemble the sun, so they trigger *alertness* and *awakeness* (Crowley, 1993). In fact, blue is more effective for loading screens because users feel more relaxed; red heightens their awareness toward each passing second (Gorn et al., 2004).

→ **Impulsiveness.** People spend less time rationalizing or debating because arousal inhibits their cortical functioning (Walley & Weiden, 1973; Crowley, 1993).

→ **Aggression.** In sports, players in red uniforms are more likely to win because (a) they behave more aggressively, and (b) opponents perceive them to be more dominant (Hagemann et al., 2008; Elliot & Aarts, 2011). Interestingly, eBay auctions with red backgrounds get

higher bids because of aggressive bidding (Bagchi & Cheema, 2013).

→ **Detailed Focus.** Details are more noticeable because of the heightened alertness. Customers preferred a red advertisement that described the details of a camera, yet a blue advertisement that described an overview of it (Mehta & Zhu, 2009).

→ **Attraction.** People in red shirts seem more attractive (Elliot & Niesta, 2008; see Pazda et al., 2012). Two types of warmth — *physical* and *social* — became connected in our brain when our parents held us as babies: "for an infant, the subjective experience of affection is typically correlated with the sensory experience of warmth, the warmth of being held...the associations are automatically built up between the two domains" (Lakoff & Johnson, 1999, p. 46; see Inagaki & Eisenberger, 2013). Today, lonely people subconsciously prefer warm food and showers because of this overlapping circuitry (Bargh, & Shalev, 2012; Zhong & Leonardelli, 2008). Perhaps red shirts increase attraction because this physical warmth feels like social warmth.

→ **Females.** Females prefer reddish colors because they needed to identify warm colors on green foliage across evolution: "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" (Alexander, 2003, p. 11). Plus, gender preferences are reinforced when parents give "typical" colors to each child: Girls feel positive emotions when they play with pink toys.

Alexander, G. M. (2003). An evolutionary perspective of sex-typed toy preferences: Pink, blue, and the brain. *Archives of sexual behavior*, 32(1), 7-14.

Bagchi, R., & Cheema, A. (2013). The effect of red background color on willingness-to-pay: the moderating role of selling mechanism. *Journal of Consumer Research*, 39(5), 947-960.

Bargh, J. A., & Shalev, I. (2012). The substitutability of physical and social warmth in daily life. *Emotion*, 12(1), 154.

Crowley, A. E. (1993). The two-dimensional impact of color on shopping. *Marketing letters*, 4(1), 59-69.

Elliot, A. J., & Niesta, D. (2008). Romantic red: red enhances men's attraction to women. *Journal of personality and social psychology*, 95(5), 1150.

Gorn, G. J., Chattopadhyay, A., Sengupta, J., & Tripathi, S. (2004). Waiting for the web: how screen color affects time perception. *Journal of marketing research*, 41(2), 215-225.

Inagaki, T. K., & Eisenberger, N. I. (2013). Shared neural mechanisms underlying social warmth and physical warmth. *Psychological science*, 24(11), 2272-2280.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought* (Vol. 640). New York: Basic books.

Mehta, R., & Zhu, R. J. (2009). Blue or red? Exploring the effect of color on cognitive task performances. *Science*, 323(5918), 1226-1229.

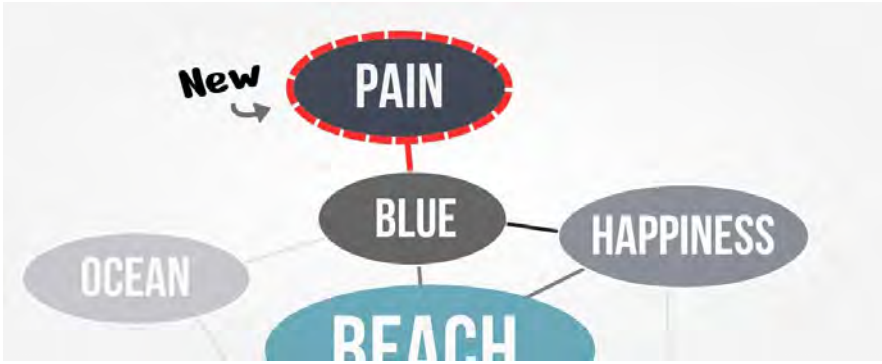
Palmer, S. E., & Schloss, K. B. (2010). An ecological valence theory of human color preference. *Proceedings of the National Academy of Sciences*, 107(19), 8877-8882.

Schmitt, B. H. (1995). Language and visual imagery: Issues of corporate identity in East Asia. *The Columbia Journal of World Business*, 30(4), 28-36.

Walley, R. E., & Weiden, T. D. (1973). Lateral inhibition and cognitive masking: a neuropsychological theory of attention. *Psychological review*, 80(4), 284.

Zhong, C. B., & Leonardelli, G. J. (2008). Cold and lonely: Does social exclusion literally feel cold?. *Psychological Science*, 19(9), 838-842.





2



CHOOSE ANY HUE IN THIS TEMPERATURE

It should be distinct or similar to competitors, whichever trait is more helpful to your brand.

You'll need a hue *within* your temperature.

But it probably doesn't matter too much. Hue is less meaningful than lightness and saturation (which we'll handle later).

Plus, every hue depends on individual experience. Yellow will be appealing to somebody with a garden of sunflowers, yet disgusting to a custodian who associates yellow with urine.

Use this deciding factor. *Do you want to be:*

→ **Distinct From Competitors?** Choose a hue that doesn't exist in the marketplace.

→ **Similar to Competitors?** Perhaps you're a new entrant who wants market share from an established brand. Obviously you should differentiate your company to avoid confusion, but you can reduce the risk of your new offering by adopting a similar color as your competitor. Your brand will *feel similar*, thus less risky.



SEGMENT THIS HUE BY LIGHTNESS AND SATURATION

Lightness and saturation are more meaningful than hues.

All of these colors are blue:

(see fig 1)

Yet those colors look different. Why? Because color has three components:

1. **Hue.** Blue, red, yellow, etc.
2. **Saturation.** Vividness
3. **Lightness.** Shades are dark; tints are bright.

Most software will let you adjust each component:

(see fig 2)

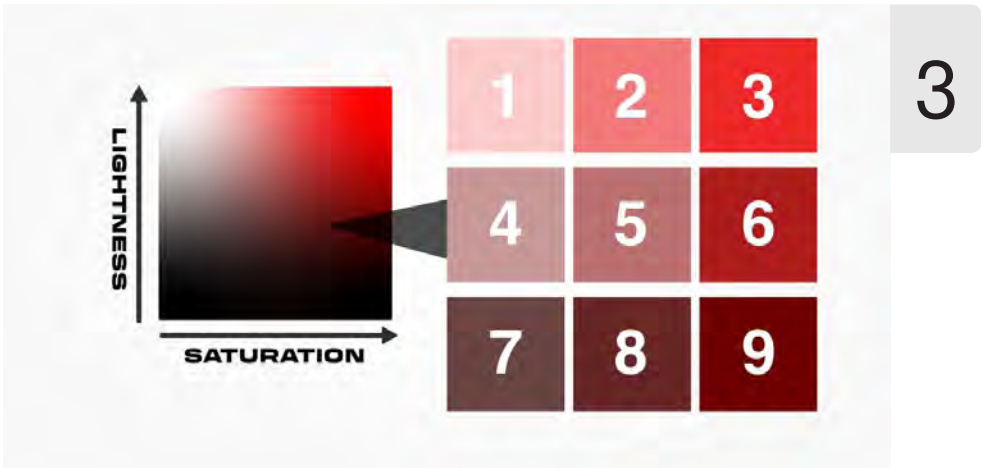
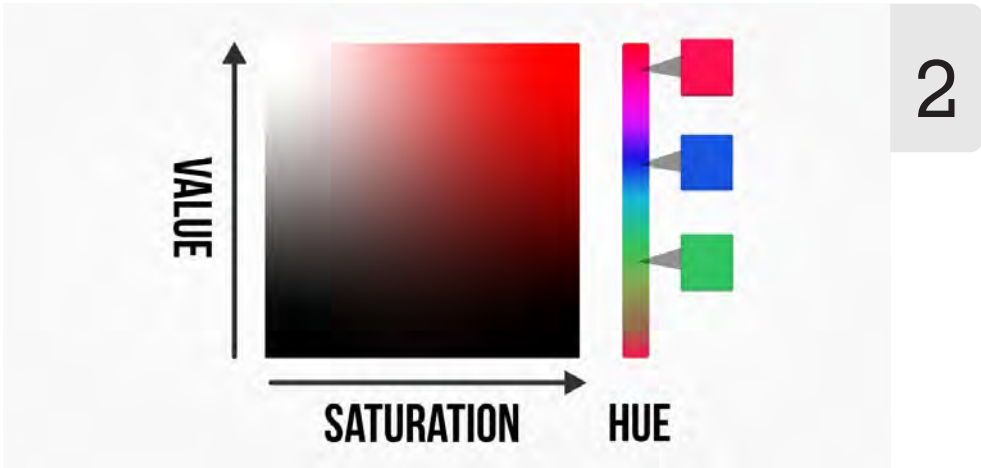
Contrary to popular belief, lightness and saturation are more meaningful than hues (Suk & Irtel, 2009).

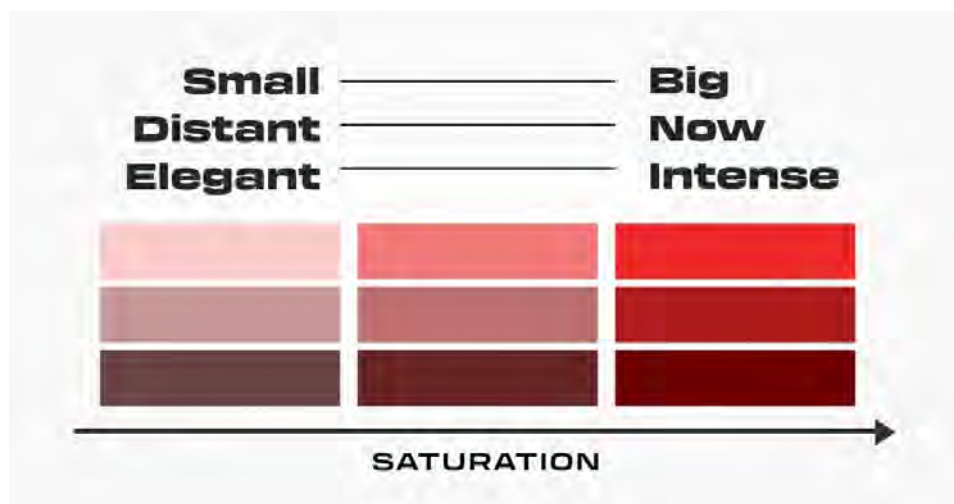
So let's divide your hue into variations of lightness and saturation.

(see fig 3)

Suk, H.-J. and Irtel, H. (2010), Emotional response to color across media. *Color Res. Appl.*, 35: 64-77.







CHOOSE THE SATURATION LEVEL

Saturated colors seem bigger, immediate, and intense.

Hues are rarely meaningful because they appear in universally different contexts.

But saturation is similar everywhere. Saturated colors are more:

- Intense
- Noticeable
- Stimulating

Everybody has this same experience. And activating these ideas will activate all related ideas. Like these ideas:

- **Larger.** Saturated objects seem physically larger because this vivid color grabs your attention, and you blame this attention on the size of the object: *Well, it must be bigger.* Saturated orange is preferred if customers want a large suitcase, yet a dull orange is preferred if they want a small suitcase (Hagtvedt & Brasel, 2017).
- **Closer.** Imagine a wedding in 6 months. Now imagine a wedding in 2 days. Your mental imagery for the 6-month wedding has less color because it's

harder to imagine (Lee et al., 2017). This effect has been replicated with fMRI devices (Stillman et al., 2020). Running a promotion? Your deadline will seem closer in a saturated font, which might increase conversions. Need a decision for the future? A distant fundraiser received more donations when it advertised in gray-scale (Lee et al., 2017).

(see fig 1)

- **Luxury.** Luxury brands are desired *because* they feel distant, as if we can't possess them. You should typically lower the saturation of these brands (see Chu et al., 2021).

But it all depends on your goals.

Launching a food brand?

- Saturated packaging will convey an intense flavor.
- Muted packaging will convey healthiness and natural ingredients.

Choose whichever saturation *feels right* with your goals.

Chu, X. Y., Chang, C. T., & Lee, A. Y. (2021). Values created from far and near: Influence of spatial distance on brand evaluation. *Journal of Marketing*, 85(6), 162-175.

Hagtvedt, H., & Brasel, S. A. (2017). Color saturation increases perceived product size. *Journal of Consumer Research*, 44(2), 396-413.

Lee, H., Fujita, K., Deng, X., & Unnava, H. R. (2017). The role of temporal distance on the color of future-directed imagery: A construal-level perspective. *Journal of Consumer Research*, 43(5), 707-725.

Stillman, P., Lee, H., Deng, X., Unnava, H. R., & Fujita, K. (2020). Examining consumers' sensory experiences with color: A consumer neuroscience approach. *Psychology & Marketing*, 37(7), 995-1007.





CHOOSE THE LIGHTNESS LEVEL

Light colors seem light and easy; dark colors seem heavy and serious.

Should your hue be *light* or *dark*?

Just like saturation, lightness has universal meanings.

DARK COLORS ARE:

→ **Heavy**. White is called a *light color* because it looks physically lighter. Food looks light and healthy in white packaging, yet rich and filling in dark packaging.

(see fig 1)

(see fig 2)

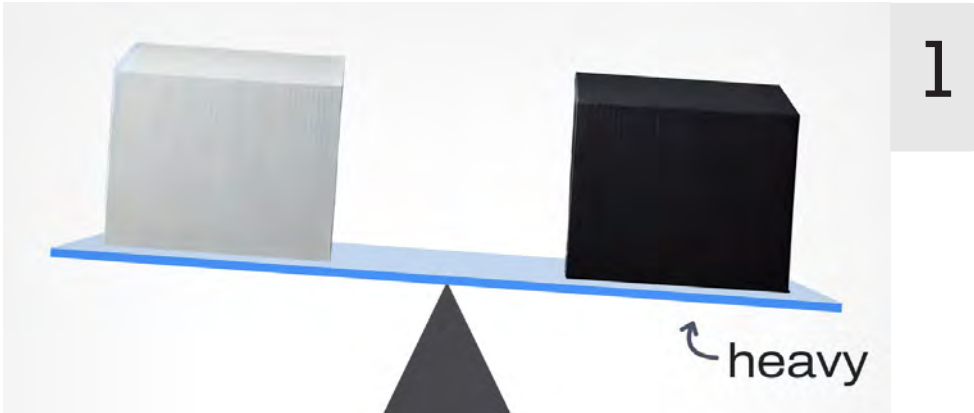
→ **Durable**. Dark colors inherit aspects of heaviness, like *durability* or *density* (Hagtvedt, 2020).

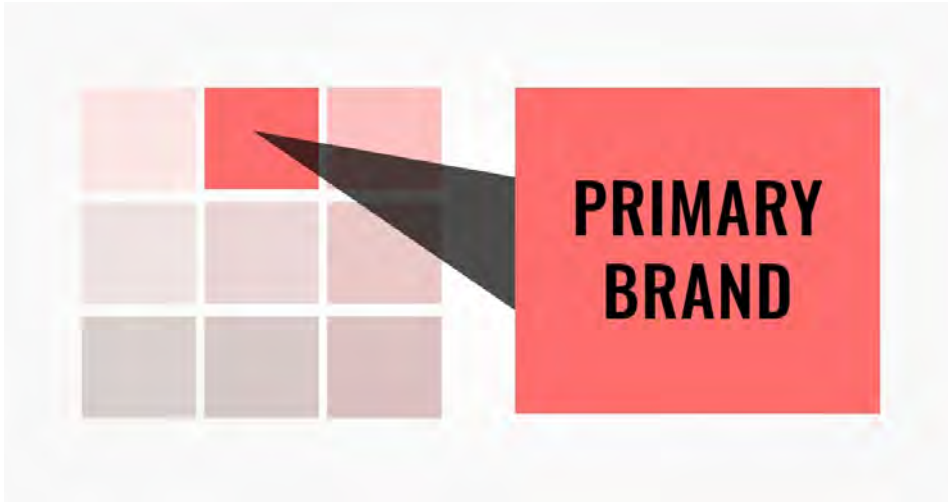
(see fig 3)

→ **Serious**. We pay more attention to heavy objects because they can impact us. *Hurt* us. Information on a heavy clipboard seemed more important because people ascribed more *weight* to it. Light objects don't *carry weight*, literally and metaphorically (Ackerman et al., 2010).

Ackerman, J. M., Nocera, C. C., & Bargh, J. A. (2010). Incidental haptic sensations influence social judgments and decisions. *Science*, 328(5986), 1712-1715.

Hagtvedt, H. (2020). Dark is durable, light is user- friendly: The impact of color lightness on two product attribute judgments. *Psychology & Marketing*, 37(7), 864-875.





SYMBOLIZE YOUR BRAND WITH THE CHOSEN COLOR

This color will feel meaningful.

Need help choosing saturation and lightness?

Rate the importance of the following traits from 0 to 10:

- Large
- Immediate
- Intense

Suppose it's 21 out of 30. Since it's 70%, set saturation in an HSL color picker to 70.

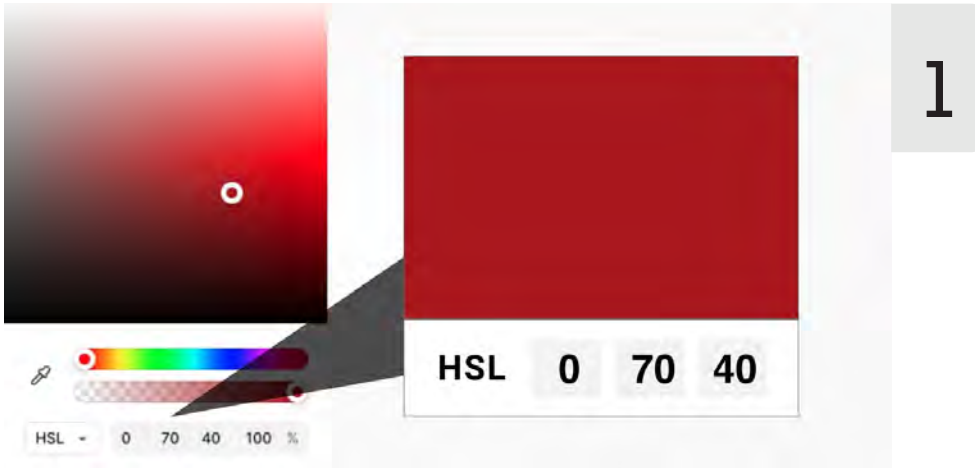
Now rate these traits:

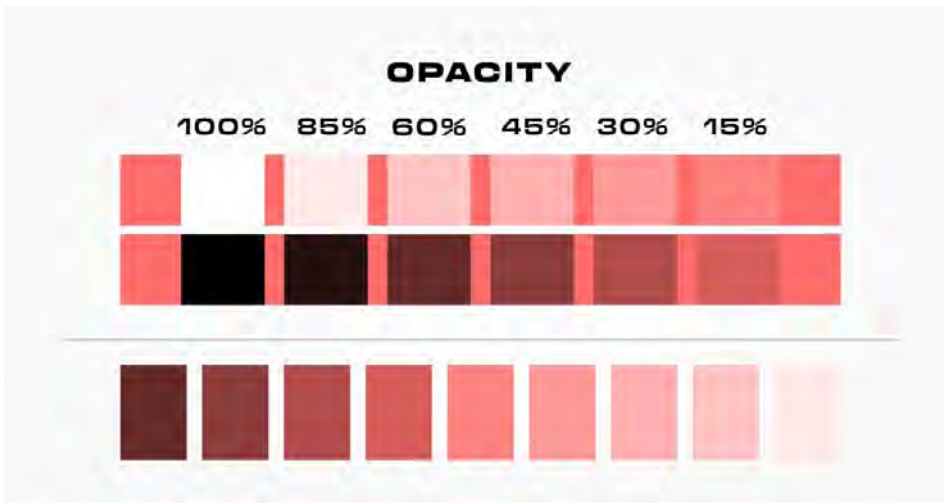
- Lightweight
- Easiness

Let's say 8 of 20. Set 40% as the lightness level.

And *voila*. Your primary brand color.

(see fig 1)





GENERATE VARIATIONS OF YOUR PRIMARY COLOR

Reduce the opacity of white and black squares on top of it.

Your primary color won't look right in all scenarios.

7. Aim for 5–9 variations.

But how can you find variations that pair well? Follow these steps:

4. Add white and black squares on top of your primary color
5. Reduce the opacity of each square at varying levels
6. Eyedrop these new colors to grab their color values

TIPS

- **Adjust the Number of Variations.** Add more variations to convey variety and excitement; reduce variations to convey consistency and uniformity.
- **Use Primary Color When Possible.** Especially for logos or brand assets.



COMPILE NEUTRALS AND FUNCTIONAL COLORS

Create a broad and versatile foundation.

You need a *diverse* palette beyond your brand colors.

Most interfaces should be filled with neutral colors, injecting pops of color in relevant locations.

YOU'LL NEED:

→ **Neutral Colors.** Maybe 10 variations from white to black.

→ **Functional Colors.** Semantically meaningful colors (e.g., success, warnings, errors, links).

→ **Avoid Red Errors for Red Brands.** Don't associate your brand with negativity. Hell, blue errors might be better in *all* scenarios because you transform these negative mistakes into cautionary warnings. Just add icons and clarifiers so that colorblind users can still differentiate green successes and blue errors.

→ **Reuse Base Colors Across Projects.** You don't need to reinvent the wheel. Differentiate your brand through layouts, structural components, and a primary color.

→ **Blend Neutrals With Brand Color.** If you want to customize your base, mix grays with a *hint* of your primary color so they look more interesting.

(see fig 1)

TIPS

→ **Limit Black to Small Body Text.** Pure black is too strong for anything else.





CHOOSE A LIGHT OR DARK THEME

Light themes for conversion goals; dark themes for engagement goals.

Do you have a UI? Should it be *light* or *dark*?

Consider these factors.

ACTIONABILITY

White facilitates movement:

(see fig 1)

Plus, dark colors are less straining on the eyes. Spending time feels easier.

If you look around, you'll notice that popular websites cater to these goals:

→ White colors increase conversions (e.g., sign ups, purchases).

→ Dark colors increase engagement (e.g., duration)

(see fig 2)

VISIBILITY

White promotes visibility, while black obscures it.

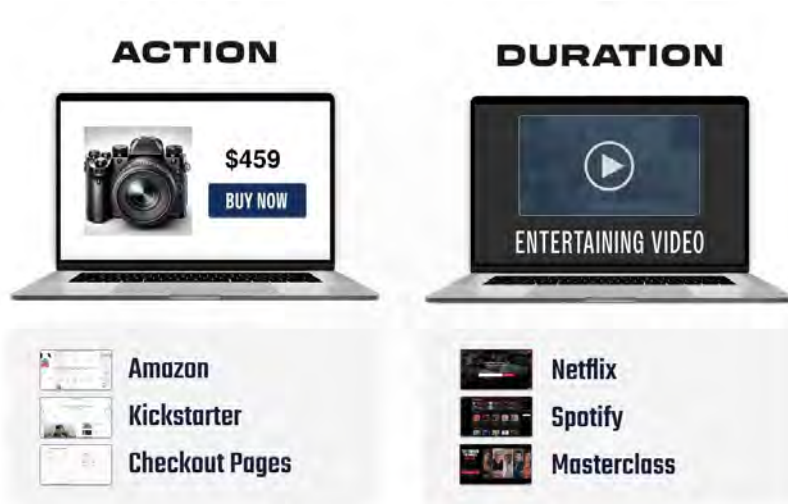
(see fig 3)

White colors are better for charities and nonprofits because they add visibility to these actions. For example, people donate more money while standing near an image of eyes because it feels like this donation will be seen by others (Bateson et al., 2006).

Perhaps dark colors can be used for adult content or vice purchases because it feels like this behavior will remain private and hidden.



1



2



3