



# Color



Image Source <https://www.pexels.com/photo/woman-sitting-on-the-floor-using-a-laptop-4050299/> by Vlada Karpovich



Image Source <https://www.wallpaperflare.com/round-grey-speaker-on-brown-board-gadget-google-assistant-google-home-wallpaper-azrel>



Image Source <https://www.wallpaperflare.com/indoors-room-kitchen-minimal-kitchen-le-creuset-modern-kitchen-wallpaper-eagjm>

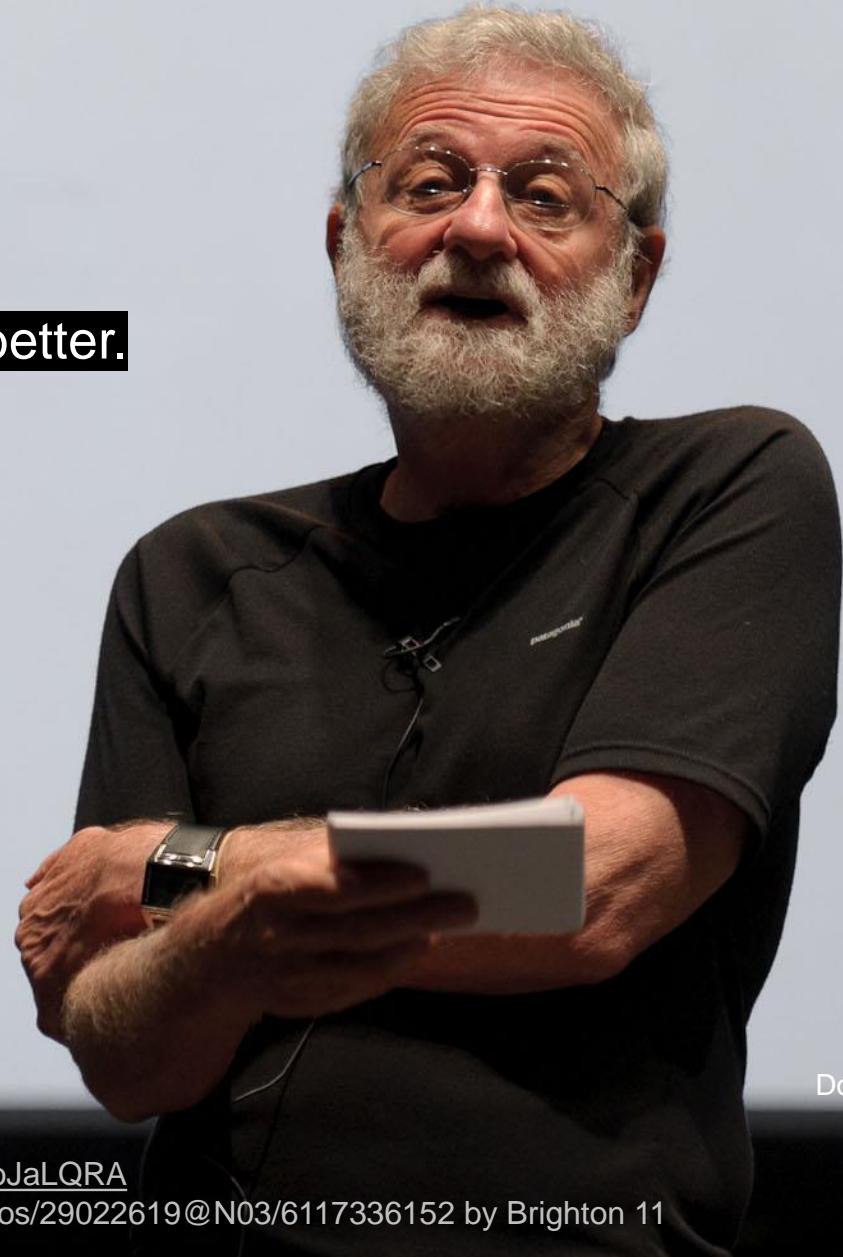


Image Source <https://www.wallpaperflare.com/black-2-burner-stove-cooker-design-minimal-imola-italy-table-wallpaper-ekerm>

# Everyday Product Design

- No manuals & no time investment to understand UIs
- Lifestyle & design artifacts instead of pure tech devices

Attractive things work better.



Don Norman 2001

<https://www.youtube.com/watch?v=RIQEoJaLQRA>

Image Source <https://www.flickr.com/photos/29022619@N03/6117336152> by Brighton 11



Image Source [https://upload.wikimedia.org/wikipedia/commons/1/11/Fall\\_and\\_Winter%2C\\_1890-91\\_Fashion\\_Catalogue\\_-\\_H.\\_O%27Neill\\_and\\_Co.\\_%281890%29\\_%2814598233778%29.jpg](https://upload.wikimedia.org/wikipedia/commons/1/11/Fall_and_Winter%2C_1890-91_Fashion_Catalogue_-_H._O%27Neill_and_Co._%281890%29_%2814598233778%29.jpg)

# Learning Goals

- Influence of color on perception and cognition
- Affects of color
- Symbolic meaning of color
- Interplay of complementary colors



Image Source <https://publicdomainvectors.org/de/kostenlose-vektorgrafiken/K%C3%BCchen%C3%BCle/79158.html>



Image Source <https://www.wallpaperflare.com/blue-wall-city-and-urban-chair-chairs-color-colour-door-wallpaper-aziep> & after <https://www.pexels.com/photo/close-up-photography-of-body-of-water-1439227/> by Tim Mossholder

Paper on color affects: Ho, Hsin-Ni. (2015). Color-temperature correspondence and its impact on object temperature perception.

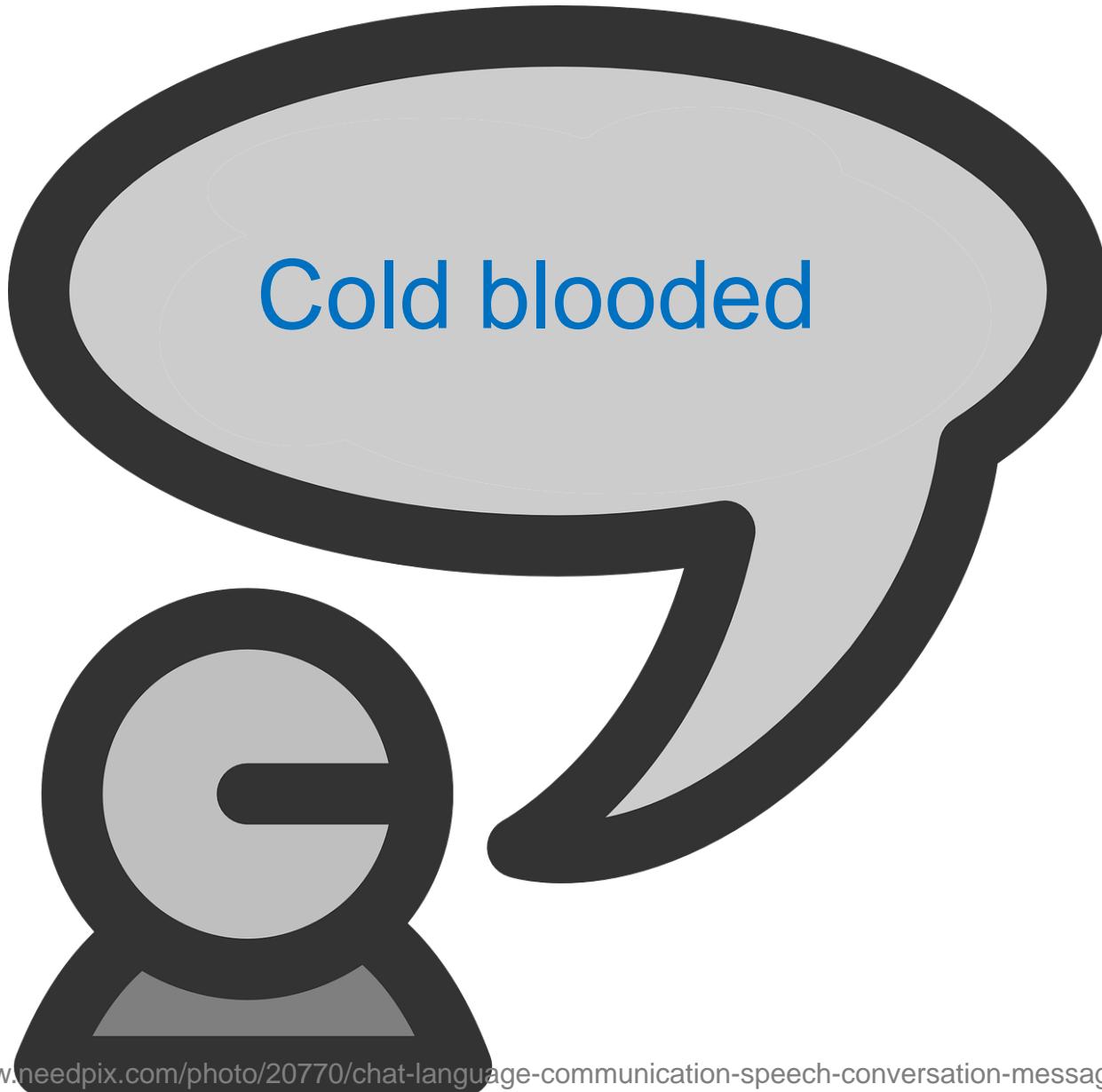


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<https://upload.wikimedia.org/wikipedia/de/c/c8/Glut.jpg> by Summi



Image After <https://www.needpix.com/photo/20770/chat-language-communication-speech-conversation-message-symbol-sign>

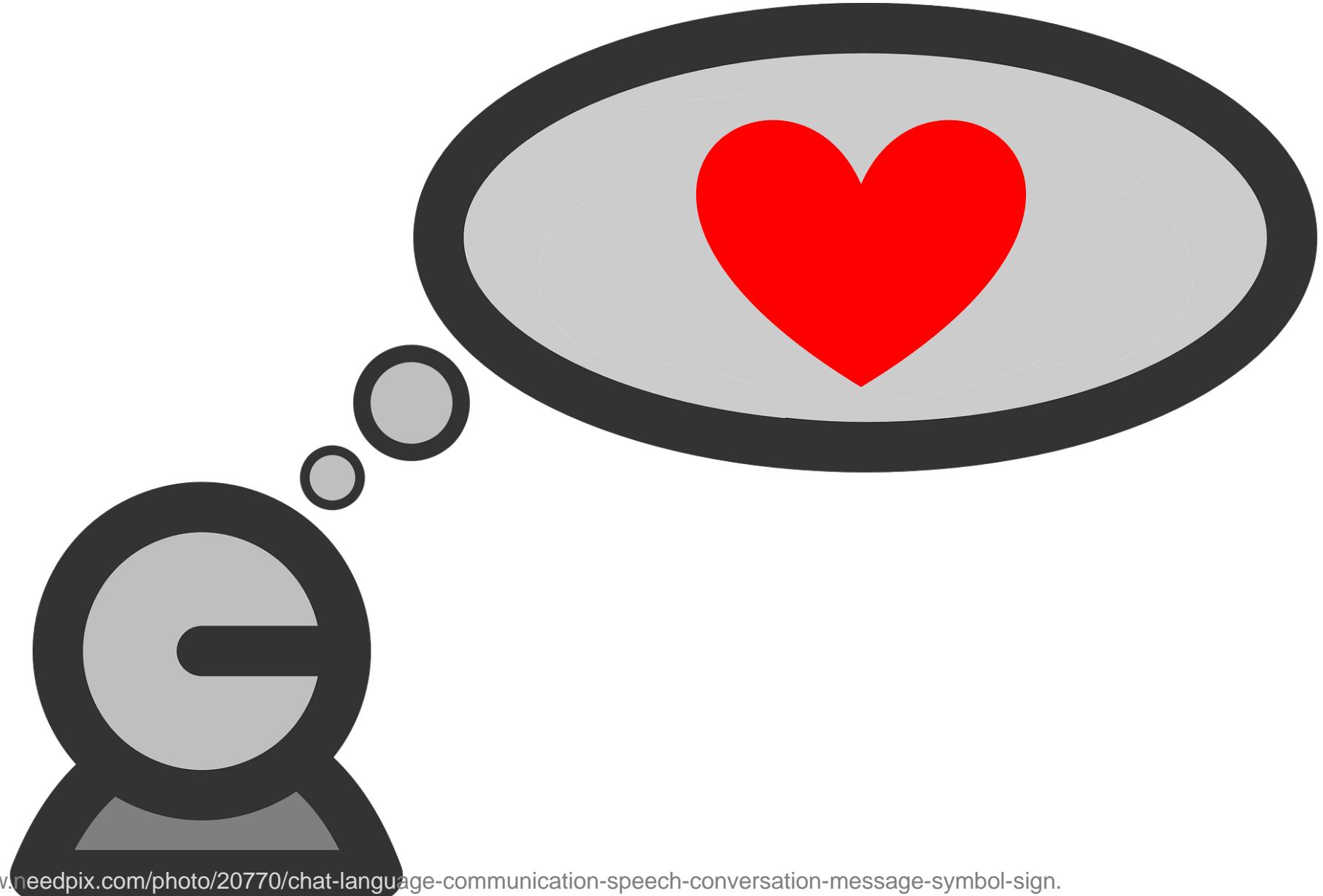


Image After <https://www.needpix.com/photo/20770/chat-language-communication-speech-conversation-message-symbol-sign>.

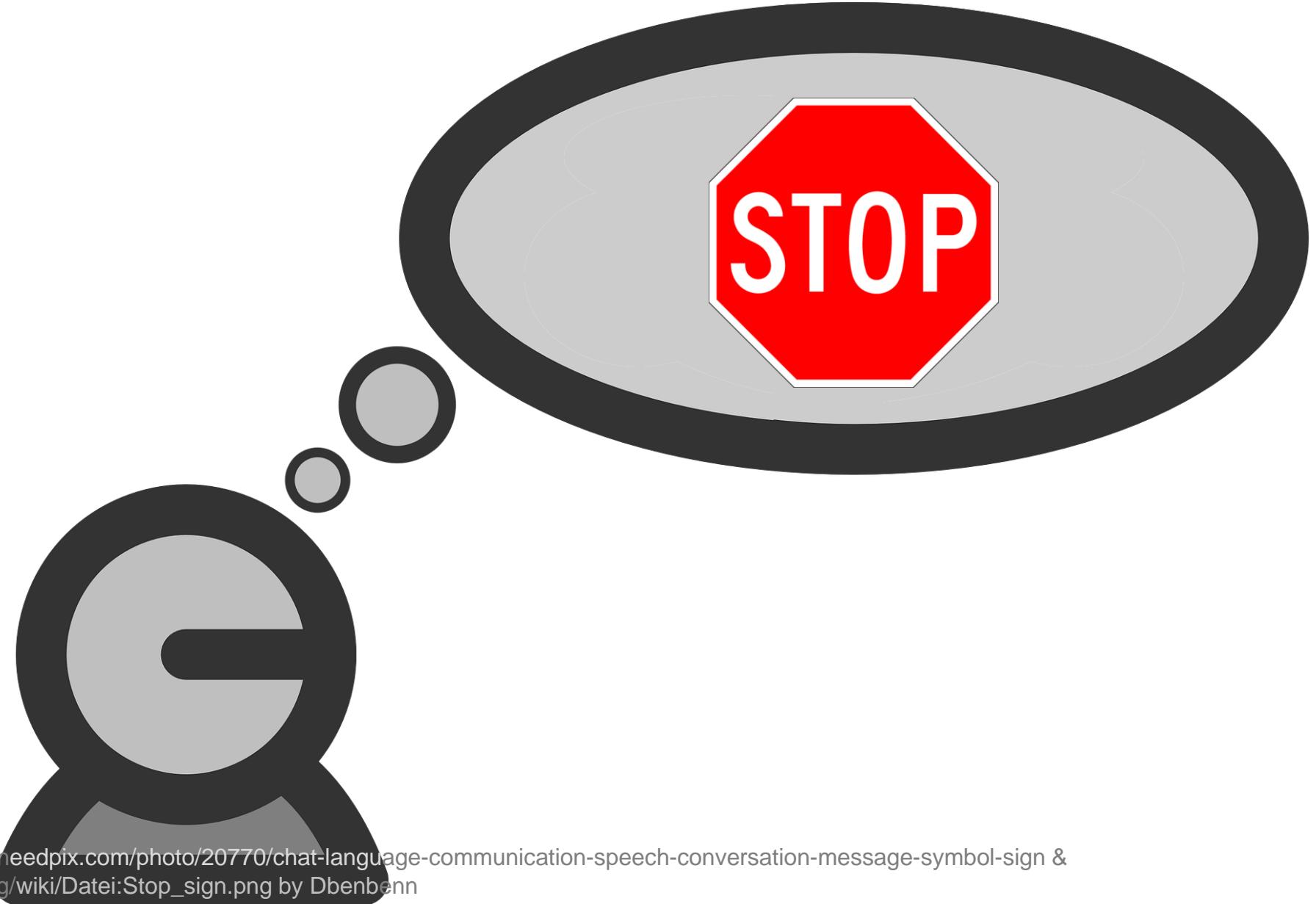


Image After <https://www.needpix.com/photo/20770/chat-language-communication-speech-conversation-message-symbol-sign> & [https://de.m.wikipedia.org/wiki/Datei:Stop\\_sign.png](https://de.m.wikipedia.org/wiki/Datei:Stop_sign.png) by Dbenbenn

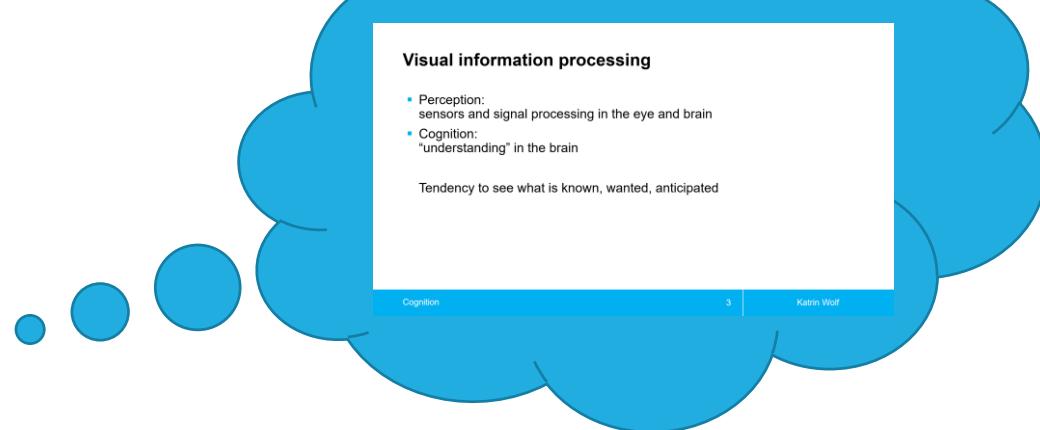


Image After <https://www.flickr.com/photos/160866001@N07/48913239888> by Marco Verch  
Paper on color affect S. Bayarri, C. Calvo, E. Costell, and L. Duran, "Influence of color on perception of sweetness and fruit flavor of fruit drinks," Food Science and Technology International, vol. 7, pp. 399–404, 2001..

- The brain integrates visual biasing multimodal perception toward expectations<sup>1</sup>
- Color biases perception of
  - Temperature
  - Taste
  - Smell

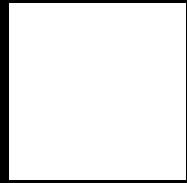
<sup>1</sup> M. O. Ernst and M. S. Banks, "Humans integrate visual and haptic information in a statistically optimal fashion," 2002.

# What we have learnt

- The brain stores memory in association with emotions (conditioning)
  - Color (also) biases cognition of cultural meanings as symbols
    - Black -> dead (in West Europe)
    - White -> dead (in Japan)
- In pre-attentive processing, some colors are harder to filter (red)
  - attention of some colors (red) is higher
- Colors serve as depth cues
  - blue -> far away

	<b>Attention</b>	<b>Depth perception</b>	<b>Affection</b>	<b>Symbolic meaning</b>
	Salient in contrast to dark	Objects appear larger & higher	Neutral	Innocence (Western world), mourning (JP, CN), purity (Catholicism)
Red	Very salient	Objects appear closer	Warm, arousing	Passion, love, fire, blood, power (Renaissance)
Orange	Salient	Obj. closer	Activating	
Yellow	Very salient	Obj. larger	Exhilarating	Sun, light, envy
Green	Little salient	Obj. further away	Calming	Spring, hope, paradise, ecology (lately)
Purple	Very little salient	Obj. appear far away	Cool, depressing	Truth, air, water, loyalty, poverty (Renaissance)
Violet	Little salient	Obj. smaller	Ceremonial	Magic, wealth (antiquity)
Brown	Not salient			Earth, autumn, humbleness (Cath.)
Black	Salient in contrast to light colors	Objects appear smaller & heavier	Scaring	Mourning (West. W.), night, death, damnation, contempt for the world

# Size & Weight



# Size and Weight

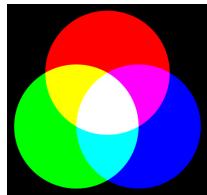




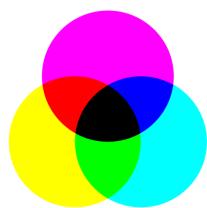
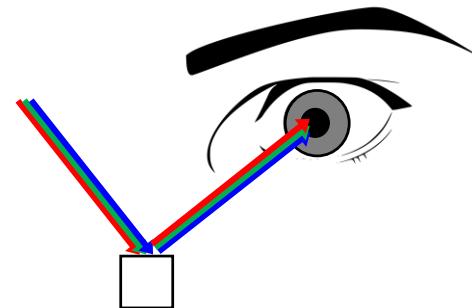
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# Complementary Colors

- Increase their perceived saturation in proximity



Add up to white in the additive color system



Add up to black in the subtractive color system

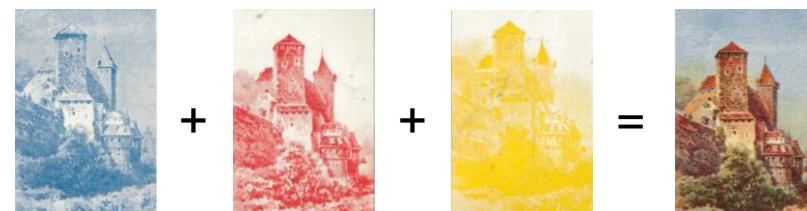


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by ToBeFree & <https://upload.wikimedia.org/wikipedia/commons/b/b6/NIEdot367.jpg> by Velocicaptor~commonswiki

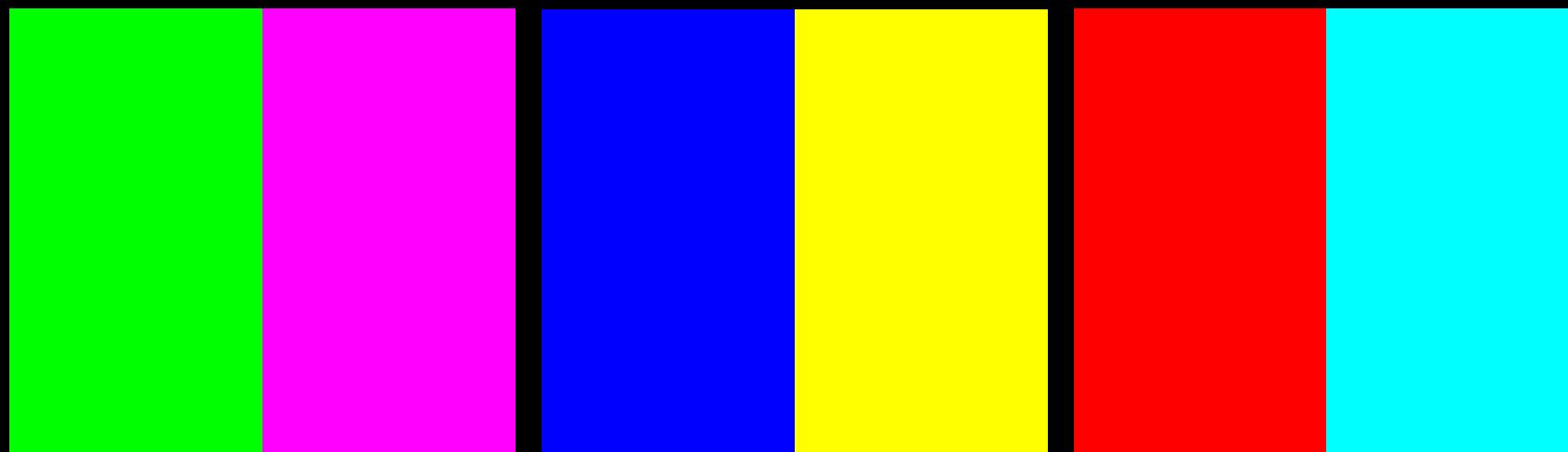
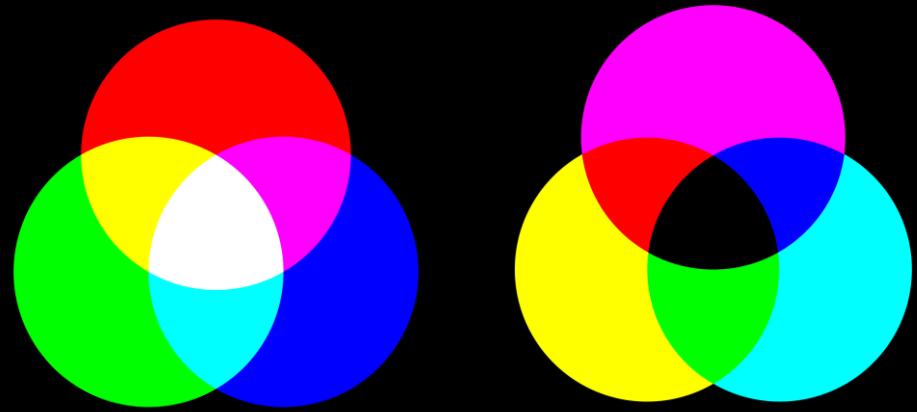


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