We all know that our emotions can dictate whether we like or dislike a cartoon. But research shows that emotions can also affect learning, particularly when those emotions are prompted by design choices. Case in point, one study on educational immune cell diagrams found that certain colors and shapes evoked positive emotions when compared to a neutrally designed diagram, fostering cognitive processes and recall after learning.

And the science says there may be a physiological reason for this too; a study on emotion and memory demonstrated how epinephrine, an emotion-evoking hormone (e.g. fear, excitement, anger, etc.), was able to enhance the recall of presented images. With emotional design, we can use similar strategies to help a viewer connect with—and remember—a story we’re trying to tell.

For starters, let’s discover how shapes can be used as emotional prompts in educational comics. A number of studies suggest that characters with rounded features, large eyes, and attributes suggesting innocence, naivety, and honesty have been shown to induce positive emotions (aka. baby-face bias). If you’ve seen the Japanese art style called Chibi, often found in anime and manga, this visual strategy may be familiar to you. Likewise, “attractiveness” (aka. halo effect) or human traits in non-human entities (aka. anthropomorphism) have been shown to also boost emotional appeal. Furthermore, pareidolia—or the phenomenon where we see a pattern where there is none (like a surprised face in an electrical outlet)—can also trigger these kinds of subliminal emotional responses, so long as the viewer can pick up on the hidden forms.

Images (from top to bottom):

Example of emotional design from Um, Plass, Hayward, & Homer (2012). The diagram on the left lacks most emotional design elements, while the image on the right employs shape, color, and anthropomorphism to evoke emotion.

An example of the Japanese Chibi art style.
Source: https://commons.wikimedia.org/wiki/File:Dibujo-20-2.png

Example of Pareidolia: The Jurist by Guiseppe Archimboldo. What looks like a human face is actually a fantasy of fish and poultry.
Source: https://commons.wikimedia.org/wiki/File:Giuseppe_Arcimboldo_-_The_Jurist_-_WGA00837.jpg
But it’s not all rainbows and lollipops. For as the epinephrine study suggests, negative emotions also impact how we process information. For example, in an early study on subliminal affect, researchers demonstrated how participants were more likely to rate ideographs (e.g. Chinese characters) as likeable or unlikeable when shown smiling and frowning faces beforehand. And in opposition to those cuter, rounder shapes, sharp or square characters are suggested to have a negative affect, as compared to those more appealing baby-faced ones.

Yet the charm of our characters doesn’t end here. Quite the contrary, artists have relied on mental shortcuts, or heuristics, for centuries to subtly “hack” into their viewers’ mental schemas (aka. the memory structures we build over our lives through experience). Historically called physiognomy, the exploitation of one’s outward appearance to infer a person’s character stems from our innate desire to categorize and stereotype encounters. Today in cartoons, we call these caricatures. While stereotyping is not recommended in real social situations, the assumption that physical traits can give us insight on a person’s personality still lives on in both our language (e.g. terms like “thick-headed”, “stiff-necked”, and “stuck-up”) and our artwork, be they political cartoons, the Sunday funnies, or your favorite commercial graphic novel. By understanding what shapes and features pair with readers’ most popular assumptions, the savvy cartoonist can reinforce (or quash) expectations with great emotional effect.

Shapes are one thing, but what about color? Well, the literature on color can also guide us in making good decisions while we aim to evoke the right emotions in our audience. For instance, a study on children showed that brighter colors were more associated with positive emotions, and darker colors were more connected to negative emotions. Likewise, higher levels of saturation and value were shown to influence feelings of excitement and relaxation, which generated positive attitudes in readers. Not only are these helpful guidelines for creating lovable or detestable types, but by inverting the association, we can further break rules, creating a jarring perceptual contrast which can enhance the richness and the emotional complexity of characters.
Coloring characters is one thing, but setting is another beast entirely. One study on learning games shows that a digital maze lit with warm colors (e.g. orange and yellow) generated greater arousal and quicker completion times than a maze lit with cooler colors. And as for red…well, this rosy hue was actually shown to impair performance in high-stakes tasks, like test-taking for instance. In comics, a blazing red background could help create a stressful setting for your plot’s third and final act.

Lastly, when it comes to color, there’s one more thought to entertain, and that is the concept of culture. Oftentimes, we find that colors have varying significances when viewed through different cultural lenses. For example, in Anglo-Saxon contexts, the color white evokes happiness and purity—but in some Eastern cultures, the color white may also imply death and mourning. Because of this, and the occasionally contrary connotations therein, it’s important to consider our target audiences before tackling a comic’s design.

In sum, so long as we’re well versed on the science, we as artists have the power to strategically affect how our readers interact with our content. We can create evocative characters and settings—manipulating color, shape, and context to foster greater emotional appeal—and enhance our cartooning potential in education and beyond. Bring on all the feels!

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References: