Beauty and the Brain

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The phrase “easy on the eyes” may hit closer to the mark than we suspected. Experiments led by Piotr Winkielman, of the University of California, San Diego, and published in the current issue of *Psychological Science*, suggest that judgments of attractiveness depend on mental processing ease, or being “easy on the mind.”

“What you like is a function of what your mind has been trained on,” Winkielman said. “A stimulus becomes attractive if it falls into the average of what you’ve seen and is therefore simple for your brain to process. In our experiments, we show that we can make an arbitrary pattern likeable just by preparing the mind to recognize it quickly.”

The research follows up on earlier studies establishing that prototypical images are rated as more beautiful or appealing than variations of the same thing. The phenomenon – sometimes known as the “beauty-in-averageness effect” – was first discovered in the late 1800s and was perhaps most dramatically illustrated by Judith Langlois’ lab, at the University of Texas at Austin, in the 1990s, when people scored computer composites of 16 faces higher than any of the individual component faces (i.e. the very faces that had gone into creating the mathematically averaged image in the first place).

Other work has since demonstrated that humans have similar preferences for prototypes in a wide variety of other categories, including dogs, birds, fish, cars and even watches.

Yet the question “why?” has remained open. A popular explanation has

been an evolutionary, sexual-selection one that goes something as follows: Like symmetry (another reliable predictor of attractiveness), prototypicality signals health and fitness – unusually protuberant eyes might be a clue to disease, for example – and so is a kind of shorthand for the value of a potential mate.

But whereas that explanation makes intuitive sense when it comes to human faces, Winkielman said, it strains credulity when applied to inanimate objects or animals of a different species, which we are presumably not assessing for reproductive purposes.

So Winkielman, with colleagues from the University of Otago, New Zealand, and the University of Denver, wondered if there wasn't a more basic mechanism at work.

It is well-known that prototypes are attractive, the researchers reasoned. It is also well-known that prototypes are easy for the brain to process (as measured by the speed with which people are able to categorize what it is they're looking at). So, could it be, they asked, that prototypes are beautiful because they're easy to process?

Working with random-dot and geometric patterns – in an attempt to "use stimuli that were free of reproductive content," Winkielman says, and would "get at a general principle of cognition" – Winkielman and his colleagues first "prepared" participants' brains to perceive a prototype and then asked them to categorize different degrees of variations around that same prototype and rate their appeal.

"As predicted," the researchers write, "participants categorized patterns more quickly and judged them as more attractive when the patterns were closer to their respective prototypes."

And: "Critically, the less time it took participants to classify a pattern,

the more attractive they judged it."

Even more significant, Winkielman said, is that when processing ease was controlled – when, that is, the categorization speed was factored out of the equation – much of the relationship between closeness to prototype and attractiveness disappeared.

A third experiment – again with abstract, random-dot images – was performed with electrode measurements at cheek and brow muscles (to detect the formation of incipient smiles or frowns) and, without having to rely on reported ratings, confirmed a genuine positive response to those images that were closest to prototype.

"It seems you don't need to postulate an unconscious calculator of mate value or any other 'programmed-brain' argument to explain why prototypical images are more attractive," Winkielman said. "The mental mechanism appears to be extremely simple: facilitate processing of certain objects and they ring a louder bell.

"This parsimonious explanation," he said, "accounts for cultural differences in beauty – and historical differences in beauty as well – because beauty basically depends on what you've been exposed to and what is therefore easy on your mind."

Source: University of California, San Diego

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