

Neural Underpinnings of Aesthetic Experience: What Can We Learn from Neuroaesthetics?

Seung-Eun Lee and Alyson VanderPloeg
Central Michigan University, USA

Keywords: beauty, brain, fashion, neuroaesthetics

Purpose and Background

The purpose of this research is to provide an overview of neuroaesthetics that enhances our understanding of consumer responses to the aesthetics of fashion products. Neuroaesthetics is a developing domain within cognitive neuroscience that focuses on understanding the biological basis of aesthetic experiences (Chatterjee & Vartanian, 2014). Aesthetically pleasing objects greatly vary from one another, making it challenging to determine which of their aspects cause people to define them as beautiful. While a variety of object categories (e.g., faces, landscapes, music, perfumes, and even mathematical proofs) and emotional, cultural, and social factors may influence one's definition of beauty, universal aspects of beauty are likely to have distinct neural footings (Chatterjee, 2010). Neuroaesthetics suggests that beauty is not in objects themselves but is a result of a phenomenon that occurs inside the brain (Conway & Rehding, 2013). For example, previous studies have found that the effects of facial attractiveness on an infant's gaze can be generalized across race, sex, and age. Young brains that had not been modified greatly by social and cultural experiences had the same disposition to engage attractive faces (Slater et al., 1998).

Brains Behind Beauty

Our aesthetic experience is first engaged through the senses. While we are not indifferent to the experience because sensory perceptions are connected to emotions, different aesthetic experiences are generated by engaging personal memories, prior knowledge, and evaluative judgments. The brain processes and organizes visual information in multiple areas to determine attractiveness. First, processing an object's basic visual features involves the occipital regions of the brain. Second, the frontal-parietal parts of the brain are employed when determining different visual attributes, such as color, shape, and composition. Specific areas of the brain's temporal lobe then combine this information to form a whole image and use stored memory to identify the object, face, or scene. For example, when one views a portrait of another person, this action activates the brain's face-recognizing area, the fusiform gyrus. Similarly, when one views a landscape in a painting or photograph, the parahippocampal gyrus, which is the area in the brain that determines places, is activated. Lastly, emotional experience is developed in the brain's reward systems. When people view stimuli they consider to be beautiful, they typically experience pleasure. The pleasure that one derives from viewing beautiful objects unconsciously activates reward circuitry in the brain. Previous studies report that attractive faces trigger neural circuitry in the reward systems, including the orbitofrontal cortex, the ventral striatum, the nucleus accumbens (Ishai, 2007), and the amygdala (Winston et al., 2007). In addition, selected parts of the object are examined thoroughly, memories are activated, and the object is identified

and associated with meanings during this phase. This results in emotions associated with the aesthetic experience, which guide decisions related to the object (Chatterjee & Vartanian, 2014).

What the Brain Finds Beautiful

Neuroaesthetics researchers found that certain visual elements are objectively more attractive and aesthetically pleasing to the human brain than others. For example, people typically view symmetrical patterns as more beautiful than asymmetrical patterns. In regards to the human face, perceptual features, such as averageness, symmetry, the structure of the cheekbones, the relative size of the lower half of the face, and the width of the jaw, have been found to influence people's judgments of facial beauty. Another standard that the brain may use to judge beauty is the golden ratio, which is approximated as 1.618 and plays a prominent role in math, science, and art. The brain also finds levels of beauty based on how colors are used and their level of contrast in comparison to one another. Warm colors, which consist of shades of red, yellow, and orange, represent fire and create a stimulating effect in consumers' minds. On the other hand, cool colors, which consist of shades of gray, blue, and green, represent water and create a relaxing effect. Shapes can also convey beauty and communicate various concepts and ideas to the brain. Softer and rounder shapes provide more pleasure to the brain than angular shapes. The brain can also interpret sounds and scents as beautiful. For example, Upbeat, neutral, and slow music each trigger distinct brain areas and affect the listener's mood at a level greater than visual art (Zurawicki, 2010).

Conclusions

While neuroaesthetics is still an emerging field, it offers promising insights into how the brain processes certain emotions and sensations, which broadly encompass aesthetic appreciation. The present research focused on addressing principles of neuroaesthetics and why some design elements are objectively more attractive and aesthetically pleasing to human brains than others. This study's findings will help build a bridge between neuroaesthetics and fashion studies and offer a potential guide for future fashion research.

References

- Chatterjee, A. (2010). Neuroaesthetics: A coming of age story. *Journal of Cognitive Neuroscience*, 23(1), 53-62.
- Chatterjee, A., & Vartanian, O. (2014). Neuroaesthetics. *Trends in Cognitive Sciences*, 18(7), 370-375.
- Conway, B.R., & Rehding, A. (2013). Neuroaesthetics and the trouble with beauty. *PLOS Biology*, 11(3), 1-5.
- Ishai, A. (2007). Sex, beauty and the orbitofrontal cortex. *International Journal of Psychophysiology*, 63(2), 181-185.
- Slater, A., Von der Schulenburg, C., Brown, E., Badenoch, M., Butterworth, G., & Parsons, S., & Samuels, C. (1998). Newborn infants prefer attractive faces. *Infant Behavior and Development*, 21(2), 345-354.
- Winston, J. S., O'Doherty, J., Kilner, J. M., Perrett, D. I., & Dolan, R. J. (2007). Brain systems for assessing facial attractiveness. *Neuropsychologia*, 45(1), 195-206.
- Zurawicki, L. (2010). *Neuromarketing: Exploring the brain of the consumer*. Berlin, Germany: Springer-Verlag.