

# A personality test for ads: Machine learning algorithms could personalize advertisements for individual consumers

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It's no surprise that images used for advertising on television and online play a powerful role in triggering emotions and shaping impressions of products or brands, but an ad that appeals to one person may seem irrelevant or distasteful to another. What if it was possible to start

personalizing ads viewed by different consumers based on their personality types?

The digital footprints people leave on Facebook, Twitter, text blogs and other online sites provide data to determine whether users are more extroverted or introverted by nature, or eager to try new things versus more conservative. In a new study published in the *Journal of Consumer Psychology*, researchers show how this [digital data](#) could be leveraged with machine learning algorithms to personalize ads based on [personality types](#).

"The goal is to tailor an experience to make it more relevant to a consumer," says study author Sandra Matz, Ph.D., an assistant professor of management and organizational behavior at Columbia Business School in New York. "It's a way of providing better service to a consumer because the experience is customized."

The researchers started by using computer algorithms to extract 89 features for images, including hue, saturation, color diversity, number of people and level of detail. They recruited 745 participants and asked them to rate how much they liked the images on a scale of one to seven. Then the participants completed a [personality test](#) that evaluated them in five areas: openness, conscientiousness, extroversion, agreeableness and neuroticism. The investigators used this data to determine which images appealed to each of these five [personality](#) traits.

They discovered, for example, that extroverted people preferred simple images and images that featured people, while open-minded people favored pictures with no people and with cool colors like blue and black. Perhaps not surprisingly, people high in neuroticism liked calm and minimally stimulating scenes. Then the researchers used this information to assign personality types for each image.

In the next study, the researchers explored whether the [personality traits](#) assigned to different images accurately predicted consumer preferences. Participants saw images related to products in one of three categories: holiday, beauty or phone. Then they rated the level of appeal for different images. As expected, matching the "personality" of an image to a participant's self-reported personality significantly predicted preference ratings.

The investigators were ultimately interested in learning whether this fit between image and personality could influence a consumer's interest in purchasing a product, and the data showed that this was the case. People not only preferred [images](#) that matched their personalities, but also reported more favorable attitudes and purchase intentions towards these brands.

Although brands often target a certain gender, age group or social group with advertisements, personality-matching ads could potentially allow marketers to tailor their products to a wider group of people. A consumer who might not consider shopping online at one store may discover that there are in fact items that would be appealing.

"It's essentially bringing the benefits of talking to a salesperson to the online world," says Matz. "Online marketers typically focus on a large audience, but now we could predict someone's psychological traits to give them an individualized experience."

**More information:** Sandra C. Matz et al. Predicting the personal appeal of marketing images using computational methods, *Journal of Consumer Psychology* (2019). [DOI: 10.1002/jcpy.1092](https://doi.org/10.1002/jcpy.1092)

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