Companies and health organizations spend millions of dollars on surveys, polls, and focus groups trying to suss out what people will like, buy, or do. But research shows that these techniques aren’t all that accurate. Can brain scans do any better? It’s possible, according to a new study that finds that neural activity predicts people’s responses to a public service ad about cigarette smoking better than simply asking a focus group.

Researchers led by neuroscientist Emily Falk at the University of Michigan, Ann Arbor, and Matthew Lieberman, a social neuroscientist at the University of California, Los Angeles, focused on the medial prefrontal cortex (MPFC), located at the front of the brain. Of the many roles its neurons play, scientists were most interested in the ones related to self-reflection, thinking of what you value, and identity. Activity in this region increases when people identify with what they see or try to determine the value of something as it relates to them. A previous study by Falk found that MPFC activity that was recorded while people viewed slides with messages urging regular sunscreen use predicted which individuals were most likely to comply. But Lieberman and Falk wanted to go a step further and see if activity in the MPFC in one group of people could predict the behavior of a much bigger population.

They looked at the effectiveness of three ad campaigns aimed at getting smokers to call the National Cancer Institute’s quit hotline. The researchers took functional magnetic resonance imaging scans of brain activity in 30 heavy smokers who intended to quit, evenly split between men and women and ranging from 28 to 69 years old, as they watched three ad campaigns. Then scientists asked participants to rank the campaigns according to how effective they thought they’d be for the public.

Participants thought one particular ad on the difficulty of quitting that featured a woman who imagines jumping out of a window to retrieve a lit cigarette would be the most effective at getting people to call the hotline. They ranked a humorous ad about a man learning to drink coffee without a cigarette, second, and thought a humorous ad with finger puppets would be the least effective. Health messaging experts also came up with the same rankings. But the brain scans showed a different pattern, the researchers report online this month in Psychological Science.

The finger puppet ad elicited the most activity in the MPFC of the smokers, followed by the jumping woman, and then the man drinking coffee. When the team looked at call volumes to the quit hotline 1 month before and after the campaigns to gauge the campaign's actual influence on behavior, they found that all campaigns increased calls to the hotline—but in the order predicted by the smokers’ MPFC activity. The finger puppets elicited a 32-fold increase, the jumping woman increased calls 11.5-fold, and the coffee drinker increased them only 2.3-fold.

"Overall, I thought it was a clever, provocative study," says psychologist Michael Sayette of the University of Pittsburgh in Pennsylvania. He cautions that the sample size was small, only 30 individuals, and that other regions of the brain may also forecast behavior changes.

Lieberman is currently working on a study of whether MPFC activity while viewing movie trailers can predict box.

office receipts. "Focus groups aren't a bad thing, [but] they aren't telling the whole story," he says.

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