

DIRECTIONS: Write notes to the left margin (10), Underline important points (10), Circle things that you need clarification on (10), Write a summary, 2 to 3 sentences (20), Question for discussion (50).



The Yogurt Made Me Do It

There's nothing metaphorical about 'gut feelings'—bacteria influence our minds

By JONAH LEHRER SEPTEMBER 17, 2011

Many feelings and choices are actually shaped by the microbes in our gut and the palpitations of our heart. One of the deepest mysteries of the human mind is that it doesn't feel like part of the body. Our consciousness seems to exist in an immaterial realm, distinct from the meat on our bones. We feel like the ghost, not like the machine.

This ancient paradox—it's known as the mind-body problem—has long perplexed philosophers. It has also interested neuroscientists, who have traditionally argued that the three pounds of our brain are a sufficient explanation for the so-called soul. There is no mystery, just anatomy.

In recent years, however, a spate of research has put an interesting twist on this old conundrum. The problem is even more bewildering than we thought, for it's not just the coiled cortex that gives rise to the mind—it's the entire body. As the neuroscientist Antonio Damasio writes, "The mind is embodied, not just embrained."

The latest evidence comes from a new study of probiotic bacteria, the microorganisms typically found in yogurt and dairy products. While most investigations of probiotics have focused on their gastrointestinal benefits—the bacteria reduce the symptoms of diarrhea and irritable bowel syndrome—this new research explored the effect of probiotics on the brain.

The experiment, led by Javier Bravo at University College Cork in Ireland, was straightforward. First, he fed normal lab mice a diet full of probiotics. Then, Mr. Bravo's team tested for behavioral changes, which were significant: When probiotic-fed animals were put in stressful conditions, such as being dropped into a pool of water, they were less anxious and released less stress hormone.

How did the food induce these changes? The answer involves GABA, a neurotransmitter that reduces the activity of neurons. When Mr. Bravo looked at the brains of the mice, he found that those fed probiotics had more GABA receptors in areas associated with memory and the regulation of emotions. (This change mimics the effects of popular anti anxiety medications in humans.)

Furthermore, when he severed the nerve connecting the gut and brain in a control group of mice, these neural changes disappeared. The probiotic diet no longer relieved the symptoms of stress.

Though it might seem odd that a cup of yogurt can influence behavior, the

phenomenon has been repeatedly confirmed, at least in rodents. Earlier this year, Swedish scientists showed that the presence of gut bacteria shapes the development of the mouse brain, while French researchers found that treating human subjects with large doses of probiotics for 30 days reduced levels of "psychological distress." There's nothing metaphorical about "gut feelings," for what happens in the gut really does influence what we feel.



Nor is it just the gastrointestinal tract that alters our minds. Mr. Damasio has shown that neurological patients who are unable to detect changes in their own bodies, like an increased heart rate or sweaty palms, are also unable to make effective decisions. When given a simple gambling task, they behave erratically and lose vast sums of money. Because they can't experience the fleshy symptoms of fear, they never learn from their mistakes.

This research shows that the immateriality of mind is a deep illusion. Although we feel like a disembodied soul, many feelings and choices are actually shaped by the microbes in our gut and the palpitations of our heart. Nietzsche was right: "There is more reason in your body than in your best wisdom."

This doesn't mean, of course, that the mind-body problem has been solved. Though scientists have ransacked our matter and searched everywhere inside the skull, they still have no idea why we feel like a ghost. But it's now abundantly clear that the mind is not separate from the body, hidden away in some ethereal province of thought. Rather, we emerge from the very same stuff that digests our lunch.

SUMMARY:

QUESTIONS FOR DISCUSSION: