Neural Diversity

Everyone knows the best way to load cutlery into a dishwasher, right? The tines, bowls, and blades (of the forks, spoons, and knives) should be pointed downward into the cutlery basket so that the handles point up. It’s safer that way, and besides, what are the handles for if not for handling the cutlery?

Likewise, we all agree that the optimal way to place a roll of toilet paper on a horizontal holder is with the free end (the flap, if you will) on top. It’s prettier that way, even if you don’t fold the edges into those neat little triangles that greet you in upscale hotels.

Underwear and socks always live in the top drawer of a bureau, of course, and there’s little doubt that when showering, it’s most logical to shampoo and rinse your hair before lathering and rinsing your body.

However, there are some people — it’s true, I’ve met them — who place their cutlery into the dishwasher with the tines, bowls, and blades pointing up (they say that ensures that the parts likely to be dirtiest are likely to get cleaned).

Furthermore, I’ve occasionally visited homes whose inhabitants place their toilet paper with the free end in back (they say it provides optimal torque, increasing the distance between the plane of the paper being pulled and the axle support line).

Shockingly, SurveyCentral.org reports that nearly a fourth of its respondents don’t store their underwear and socks in their top bureau drawer, but rather in a lower drawer, leaving the top drawer for trinkets, jewelry, or other precious collectibles. And some bona fide eccentrics lather and rinse their bodies prior to shampooing and rinsing their hair.

I know what a few of you are thinking: What does it matter, if the task gets done? Sure, some modes of accomplishing a task might be more common, but the optimal mode for each individual is the mode that he or she employs best. Behavioral diversity is not to be criticized, but embraced.

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Numerous brain-imaging studies conclude with similar judgments. For example, Moriguchi et al. (2005) measured task-related brain activity while Japanese and American participants observed fearful facial expressions. The Japanese participants demonstrated more task-related activity in the right inferior frontal gyrus, premotor cortex, and left insula, whereas the American participants demonstrated more task-related activity in the posterior cingulate, supplementary motor cortex, and amygdala. The authors concluded that “Americans respond to fearful faces in a more direct, emotional way, whereas Japanese do not attach an emotional valence to the faces.”

Hugdahl et al. (2006) measured task-related activity while male and female participants were performing equally well on a mental rotation task (using Shepard & Metzler, 1971, stimuli). The male participants demonstrated more task-related activity in parietal areas, whereas the female participants demonstrated more task-related activity in inferior frontal regions. The authors concluded that “males may be biased toward a coordinate processing approach, and females biased toward a serial, categorical processing approach.”

When mothers viewed photos of their own children, task-related activity in the amygdala and insula was interpreted as “reflecting the intense attachment, vigilant protectiveness, and empathy that characterize normal maternal attachment” (Leibenluft et al., 2004). When boyfriends listened to sentences such as “my girlfriend gave a gorgeous birthday present to her ex-boyfriend,” task-related activity in the amygdala and insula was interpreted as identifying the “brain regions involved in sexual/aggressive behavior” (Takahashi et al., 2006).

When college-aged participants successfully retrieved episodic memories, task-related activity in frontal regions was considered a sign of higher-order reasoning; when participants of the modal age of APS members success-
and thought and emotion in turn have a powerful effect on the brain’s shape and operation. Michael Meaney, McGill University, has proven that the way mothers treat their offspring determines which genes in the children’s brains are turned on, making them shy or outgoing. Philip Shaver, University of California, Davis, has shown that a sense of safety and security in early childhood (or lack of it) determines adult relationships and attitudes and behavior toward others, including altruism.

Of the five scientists featured in Begley’s book, Richard Davidson, University of Wisconsin, is the one most directly involved in studying Buddhist practice and belief. He has used brain scanning technology to study the brains of accomplished Buddhist meditators, and has shown that positive emotions like compassion and joy are teachable. His work demonstrates, in effect, that disciplines such as meditation can alter the brain and mind in lasting ways— that we can willfully direct our emotions and attitudes. That’s an optimistic view that goes way beyond the Buddhist adepts: It means that we all have the potential to sculpt our brains in ways that make us happier, more benevolent people.

In 1913, the Nobel Prize-winning neuroscientist Santiago Ramon y Cajal proclaimed that “the nerve pathways are something fixed, ended, and immutable.” This was the reigning, and pessimistic, view of human potential. But he also added: “It is for the science of the future to change, if possible, this harsh decree.” As Begley’s fine study makes clear, the science of the future is here.

**References**


