

# **“I shall wear the bottoms of my trousers rolled”**

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What do those words evoke for you? For me, because I still have fragments of T.S. Eliot’s poetry bouncing around my neurons, those lyrical words trigger the idea of growing old, with all its associated aches and pains and slowing down. Other words might do the same for you—*Florida*, *lonely*, *RV*, *Social Security*—depending on your experiences. Mere words have the power to shape our thinking and our judgments in hidden ways every day.

And not just our thinking—our actions as well. In a classic 1996 study, psychological scientists demonstrated that “priming” people with aging-related words actually led them to walk more slowly afterward—as if they were unconsciously taking the part of the elderly. The effect was subtle, but the concept was arresting. If words could prime such stereotypical thinking and behavior, what else might be primed without our awareness? Environmental cues are ubiquitous—both deliberate and random—shaping our views and actions as consumers, parents, professionals, and more.

Today the idea of unconscious priming is under intense scrutiny. It’s not that the notion is entirely implausible, critics say, but the scientific evidence is inconsistent and unreliable. Scientists have reported failed attempts to replicate studies supporting the idea, including a failed replication of Yale University scientist John Bargh’s original elderly priming study. Bargh himself has publicly defended the concept and his methods, pointing to successful if qualified replications. Most notably, Nobel laureate Daniel Kahneman, in an open letter to the field, singled out priming research as “the poster child for doubts about the integrity of psychological research.” He urged his colleagues to “do something about this mess.”

Enter Carnegie Mellon psychological scientists Roberta Klatzky and David Creswell to do just that—or at least to offer some insight into the mess. To understand priming, they reasoned, it would help to know precisely how—through which of the mind’s pathways—the effects are supposed to be mediated. That is, how do we get from the words *Florida* and *lonely* to actual shuffling down the corridor? Understanding that process might in turn explain why the positive findings from one experiment seem to vanish in another, apparently identical version of the study. Klatzky and Creswell are not priming experts, but they recognized that a well known theory from the field of human perception might illuminate the mechanisms underlying priming—and in the process explain the field’s uneven track record.

They describe their model of sensory integration in a forthcoming issue of the journal *Perspectives on Psychological Science*. In broad paraphrase, each of the senses gathers information about some external phenomenon: vision takes in photons of light; hearing, sound waves; and so forth. But the information coming through these various pathways must come together in the mind. According to theory, each sensation makes a “bid” on some physical property of the world, and these bids are weighted and integrated into the whole, everyday perceptual experience.

This is the basic sensory model, but the human mind is more complicated than this. The model extends

to include additional bids from memory and from inferences—called heuristic bidding. It gets fairly complicated, but to keep it simple, consider how this bidding model would explain the classical priming study of age stereotypes—the one in which mere words made volunteers walk slowly:

Words unrelated to action, but semantically connected—*Florida, lonely*, and so forth—trigger the concept of “elderly.” This effect has been well documented in the lab. The concept of “elderly” then prompts a heuristic bid on some dimension that ultimately affects walking speed. One candidate is energy resources. Age has been found to accentuate the steepness of hills, presumably because the elderly have less energy for climbing. So next, priming the concept of old age leads to a reduction in estimates of available energy—similar to the energy depletion of aging itself. Finally, this anticipated lack of energy has a direct effect on regulation of walking speed.

Given the complexity of this causal chain—plus the noise and randomness in all the input channels—it’s perhaps not surprising that replications of the walking effect have failed. According to Klatzky and Creswell, one replication attempt worked only when the experimenters *believed* that age priming had an effect on walking speed, suggesting that the experimenters themselves were an additional source of cues. They may have inadvertently given more weight to the heuristic bid linking old age and low energy. In general, this means that variations in cues will produce variations in heuristic availability, which will produce unreliable effects on walking—and all other primed behaviors.

Klatzky and Creswell’s bidding model identifies many factors that could undermine priming. Their hope is that an understanding of priming’s underlying processes will illuminate how certain effects that could happen, sometimes simply don’t.

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