Self-awareness can drive behavior change, reprogram the brain's reward system

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For many people, the new year marks a demarcation line for a fresh start, when they set goals for better health or greater productivity. But changing behavior isn't easy and can sometimes lead to harsh self-

criticism, says Vera Ludwig, a research associate in the Platt Labs at Penn.

"People often say, "I want to exercise more," or "I can't eat chocolate anymore. I had so much over the holidays, and it's not good." And they force themselves to make changes," she says. "Those last for two or three weeks, and then usually people go back to their old habits."

But there can be another way, one based on the neuroscience of reward learning and intrinsic motivation, Ludwig says.

She studies mindfulness and self-regulation and has published a framework in the journal *Perspectives on Psychological Science* that places awareness at the forefront of goal setting and behavior change. "There's this idea that there are two systems at work in the brain: the impulses and desires trying to tempt us and the cognitive control processes trying to reign in those desires and impulses," she says. "We were interested in how this can happen in a more harmonious way. Rather than fighting against impulses, why not try to align those with our values?"

The idea built on research from Judson Brewer of Brown University's Mindfulness Center, where Ludwig was before she arrived at Penn, and was further developed with Virginia Commonwealth University's Kirk Warren Brown, an expert on self-determination theory, which focuses on what drives human motivation. The framework is a seven-step process that "helps people regulate behaviors to align with their values and goals. It also generates many hypotheses that need to be rigorously tested in future research," she says.

Step 1 focuses on realizing that a particular action doesn't make sense, that perhaps it doesn't match up with someone's goals or doesn't contribute to that person's overall well-being. Ludwig and colleagues call

this "goal-incongruent behavior." Say someone eats beyond the point of being full. In Ludwig's framework, the first step entails acknowledging that overeating.

From there, the framework moves through phases from understanding the outcome of the action and what triggers it—in the food example, what causes someone to keep eating and how the body feels afterward—to exploring alternative behaviors and how to enact them.

"In the final step, you become aware of how the new behavior feels physically and emotionally," she says. "The idea is that the brain reward system will then update the reward signal to encode the reward value of the new option as higher. Then we may effortlessly act this way in the future." For mindless eating, a new behavior might look like assessing how a 15-minute pause feels to the body before deciding whether to have seconds.

"Studies show that behaviors that are aligned with our goals and values subjectively feel better than those that are not. The hope is that simply by paying attention, we can notice that the new behavior is really beneficial," Ludwig says. "When we get a positive outcome, the new behavior gets reinforced" in the brain.

Mindfulness isn't the opposite of productivity and goal-achieving, she adds. "Some people are opposed to developing their mindfulness skills. They think they won't reach their goals because they're just sitting around meditating," she says. "But we can combine the two. We can use awareness to reach our goals and be happier."

To that end, Ludwig offers six pointers for anyone attempting to keep New Year's resolutions:

1. Pay attention

She suggests people observe their bodies, thoughts, and emotions daily. "With mindfulness, we can observe our habits instead of trying to force ourselves to do things differently," she says. "Ask yourself, "What does my body feel like? Does it have a desire to move more? To stretch more? How does it really feel when I eat all this food?" And then just observe the answers. That allows us to try out different behaviors."

2. Write it down

A few years ago, Ludwig did what she describes as a "one-person self-observation study." Nearly every day for eight weeks, she went out for a run. But each day, she also wrote down any thought she had that might have prevented her from meeting her goal: It was too cold out. She was too tired. She didn't feel like running. "The funniest thought that kept repeating was this feeling of dread," she says. "I did finish what I set out to do, but I also observed that I had set a goal that was too hard for me."

3. Set reasonable goals

This may still mean, for instance, a desire to increase exercise frequency or duration in the New Year. Do it in a way that's not forceful but "self-loving and friendly," Ludwig says. "It can be an experiment. What happens to my body and my well-being if I take a more self-compassionate approach to changing habits?"

4. Give it time

Reprogramming the brain's reward circuits won't happen instantaneously. In an unpublished study by colleagues at Brown to which Ludwig contributed, the authors found that repeated awareness of a behavior changed its reward value. However, paying attention fewer than 10 times did not always lead to desirable changes for the study

subjects. That was in relation to cravings for unhealthy food, but Ludwig says this might apply across the board.

5. Practice meditation

Ludwig understands this isn't for everyone. But she's also a big fan of mindfulness and says it's beneficial even just five or 10 minutes. Practice mindfulness while sitting, walking, doing routine activities, even listening to music, she says.

"Mindfulness means that you're not judging yourself. You're observing what is there and letting it be. You're in the moment and seeing whatever is there—negative or positive—and you accept it," she says. "Paradoxically, being present with an immediate experience might allow you to start acting in ways that will help you achieve your goals without forcing yourself. After all, you can only work toward your goals in the here and now; being present might make the process more enjoyable."

6. Cut yourself some slack

By all accounts, 2020 was a challenging year. Experience the emotions, Ludwig says. "Fear is a bodily response that can't be stopped by willpower. Then it just gets worse. If we allow it and say, "I'm scared of death'—which is normal and with something like a pandemic, confronts us every day—it can pass. When you allow the emotions to happen, they're more likely to dissolve after a while."

More information: Vera U. Ludwig et al. Self-Regulation Without Force: Can Awareness Leverage Reward to Drive Behavior Change?, *Perspectives on Psychological Science* (2020). DOI: 10.1177/1745691620931460

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