

# Teaching: Benefits of Education / Rewards of Regret

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**Edited by C. Nathan DeWall**

Teaching *Current Directions in Psychological Science* offers advice and guidance about teaching a particular area of research or topic covered in this peer-reviewed APS bimonthly journal, which features reviews covering all of scientific psychology and its applications.

[Education Matters: Making the Mind's Muscles](#)

[Reaping the Rewards of Regret](#)

## Education Matters: Making the Mind's Muscles

By David G. Myers

[Bunge, S. A., & Leib, E. R. \(2020\). How does education hone reasoning ability? \*Current Directions in Psychological Science\*, 29\(2\), 167–173. <https://doi.org/10.1177/0963721419898818>](#)

As athletic coaches and trainers understand, training matters. Skill practice, weight training, and aerobic conditioning transfer to enhanced performance on the field or the court.

Does educational training similarly help students learn, reason, and solve problems?

You could ask your students:

- Has schooling changed the way you think and how well you think?
- Is your mind different, or somehow more adept, as a result of your high school or college experience?
- How would you think differently if, like so many, you had ended your schooling in your early teens?

The expectation that education imparts more than facts—that it hones cognitive skills—dates back to Plato, who believed that math training could strengthen reasoning about politics and ethics. Others assume that a liberal education that trains students in reasoning, languages, and values develops their general mental faculties and prepares them to engage issues of civic life, ethics, and meaning.

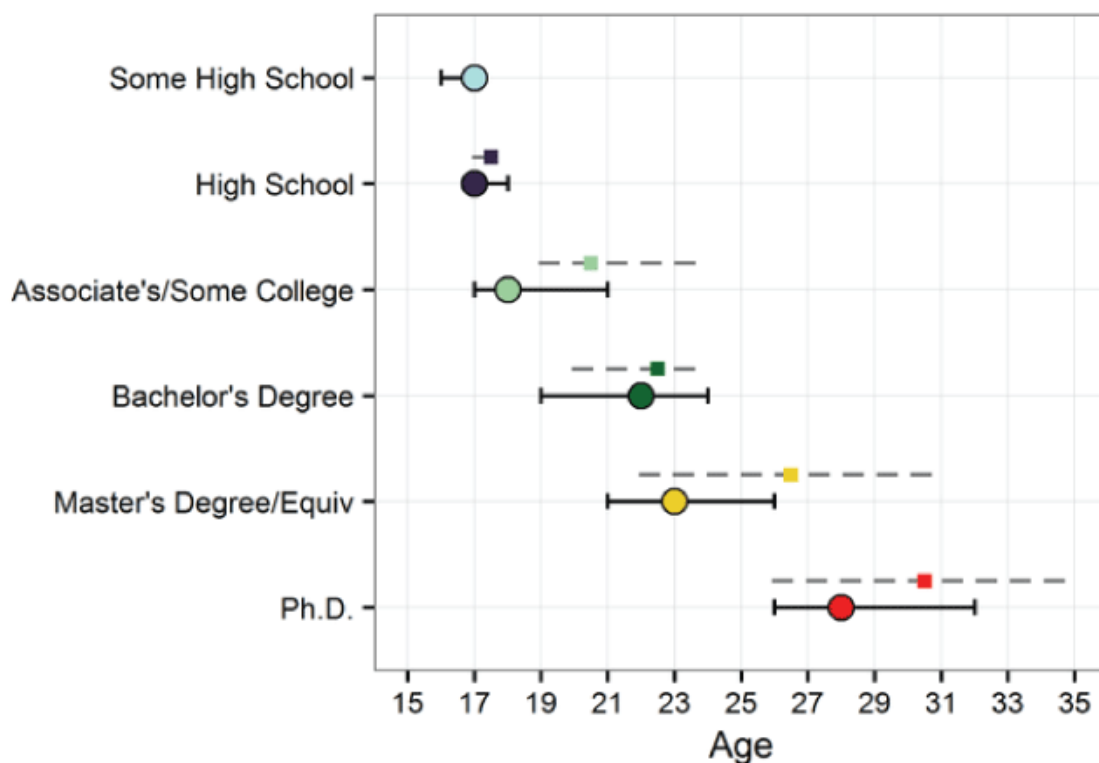
Studies by cognitive science researchers, including Silvia A. Bunge and Elena R. Leib (2020), reveal that Plato was right: Education strengthens the muscles of the mind. Schooling's boost to reasoning transfers to improved performance on aptitude tests, higher scholastic achievement, and more successful practical problem-solving. Consider:

- *The start of schooling.* Between ages 5 and 7, children begin formal schooling, whereupon their

cognitive abilities surge—especially for those with birthdays close to the cutoff for entry into school, who may be significantly younger than their peers.

- *The summer slide.* Especially for children from socioeconomically disadvantaged backgrounds, measured aptitude backslides when education ends or lapses, such as over the long summer holidays (Ceci & Gilstrap, 2000).
- *Statistics education.* As Richard Nisbett (2015) and others have shown, statistics courses that address everyday problems of logic and social judgment enable people to reason more wisely about everyday events. With such training, social science students (more than natural science and humanities students) have been found to improve their statistical reasoning during their undergraduate education.
- *Reasoning courses strengthen reasoning.* As Bunge and Leib document, results from 74 studies with children, adolescents, and college students show that teaching reasoning skills produces lasting increases in reasoning ability.

There are limits to the schooling effect. For example, commercial “brain-training” games appear to produce limited transfer to unrelated mental and memory tasks (Simons et al., 2016). Yet Bunge and Leib’s research documents that reason *can* be trained. Pre-law students given 70 hours of explicit reasoning instruction and practice (as part of their LSAT test preparation) displayed improved general reasoning performance, with associated changes in brain network connections.



In a comparison of 196,000 participants enrolled in a cognitive training program, researchers found that individuals with higher levels of education reached their cognitive peak later in life (Guerra-Carrillo, Katovich, & Bunge, 2017). On this chart, the circles and solid lines represent the median age of peak performance with a confidence interval of 95%. The dotted lines indicate the range of age at graduate, and the squares the average age of graduation.

Moreover, the researchers' harvesting of data from nearly 200,000 people taking a cognitive test battery (administered by Lumosity) revealed a noteworthy result: With advanced higher education, cognitive abilities continue to develop. When schooling continues, the typical late adolescent peak in an aggregate "grand index" of cognitive-performance tests shifts to a later age (Guerra-Carrillo, Katovich, & Bunge, 2017, Figure 1).

These findings suggest additional questions for class discussion:

- If your study habits languished during the 2020 pandemic sheltering in place, did you (like disadvantaged children experiencing a "summer slump" in their learning) sense your mind atrophying—just a bit?
- Have you learned ways of thinking in one class (or in your major) that you have applied in other contexts?
- How do you anticipate—or hope—your completed college experience will have changed you?
- Have you experienced more development of your cognitive abilities because you participated in courses that focused on reasoning?
- Have you found yourself better off for having taken a challenging class that you did not enjoy at the time?

Reflecting on such questions might serve as a brief "wise intervention" that strengthens students' growth mind-set, or at least could help them value their college education.

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## Reaping the Rewards of Regret

By C. Nathan DeWall

[McCormack, T., Feeney, A., & Beck, S. R. \(2020\). Regret and decision-making: A developmental perspective. \*Current Directions in Psychological Science\*. <https://doi.org/10.1177/0963721420917688>](https://doi.org/10.1177/0963721420917688)

People instinctively avoid activities, people, and places that produce negative emotions. On the surface, this makes sense. People benefit more from positivity than from remaining mired in distress. Yet, according to Teresa McCormack, Aidan Feeney, and Sarah R. Beck (2020), a specific type of negative emotion can improve children's decision-making and prosocial behavior. They argue that people should recognize how children reap the rewards of regret.

Regret occurs when people feel upset that they have failed to think, feel, or act in agreement with their personal or cultural standards. When asked about their life's biggest regret, more than 50% of people report choices made in the context of their education or career (Roese & Summerville, 2005). Often, people regret their past *inactions* more than their *actions* (Davidai & Gilovich, 2018; Gilovich & Medvec, 1994). Dropping out of college hurts more than wasting time but still earning a college degree.

But today's regrets can inform tomorrow's decisions and actions (Richard, van der Pligt, & de Vries, 1996). A missed meeting may produce sadness because you realize that you haven't lived up to your self-defined strict standards. Far from being a liability, your regret is an asset: It spurs you to act better next time. This benefit of regret is true with adults, but psychologists have recently shown that children as young as age 6 benefit from regret.

McCormack and colleagues have devised a method to study children's regret (O'Connor, McCormack, Beck, & Feeney, 2015; O'Connor, McCormack, & Feeney, 2012). First, children learn that they can choose between two boxes to earn a sticker. If the kids choose one box, the sticker costs only one credit. Choosing the other box leaves the children far poorer, costing them six credits. Next, the researchers measure the children's feelings to determine their regret levels. Finally, the researchers give the children the same task again to determine whether they learned their lesson and will make a more optimal choice.

These experiments show two robust findings (McCormack et al., 2019; O'Connor, McCormack, & Feeney, 2014). The first is that children experience regret when making costly decisions, much in the same way that adults do. The second finding is that children's regret can become a boon to their future decision-making and behavior, predicting less risky and more rational decisions and more generous behavior.

To bring this cutting-edge research into the classroom, ask students to complete the following two activities. The first activity teaches students to recognize the benefits that accompany regret. The second activity shows students when to expect such benefits to emerge across the life span. Both activities utilize think-pair-sharing pedagogy. If teaching virtually using Zoom or another online platform, instructors can place students into breakout rooms with one or two partners. Instructors teaching in a face-to-face setting can encourage students to work with one person while maintaining local social-distancing and mask-wearing guidelines.

### Activity #1

Ask students to read the following scenario and answer a series of questions about it.

**Rose is 6 years old. She tested positive for SARS-CoV-2, the novel coronavirus. The doctors ordered her to remain quarantined at the hospital for at least 2 weeks. Rose understands that she is contagious, but she is also very lonely. She does not want to wait 2 weeks before socializing. Rose**

**finds a way to leave her room and find other children who want to talk and play.**

**Through contact tracing, the hospital staff later realize that Rose exposed 10 healthy children to SARS-CoV-2. Rose regrets her decision to disobey the doctors' orders to quarantine.**

How might Rose's regret affect her future decisions? If she became sick again, would she be likely to obey doctors' orders to keep her distance from healthy people? Will Rose's regret make her prone to delay gratification and engage in prosocial behavior? Or will her regret make Rose more impulsive and less generous? If you were Rose's parent, would you try to minimize her regret? What negative consequences might occur if you successfully reduced Rose's regret?

Instructors can lead the discussion by teaching students about McCormack and colleagues' findings on the benefits of regret. Explain how regret improves children's decision-making, increases their likelihood of delaying gratification, and boosts their prosocial behavior. Instructors can broaden the discussion by asking students to consider how effective parenting sometimes involves not minimizing children's negative emotions.

## **Activity #2**

This activity encourages students to consider how people develop different abilities to feel regret. It shows students how toddlers, children, and adolescents may experience the same situation but feel different levels and types of regret. Instructors can show students the following scenario:

**Alex (age 16), Bevy (age 6), and Ellis (age 2) are excited to play a candy game. They have saved their weekly allowance for 5 months, giving them each \$100. In the game, they choose to get their candy from one of three boxes. Once the kids make their selection, they learn the price that they will pay to obtain the candy: \$5 (low price), \$20 (medium price), and \$80 (high price).**



An activity involving choices with uncertain outcomes can help students consider how children develop different abilities to feel regret.

With a partner, students can discuss several questions related to regret. For example, would Alex, Bevy, and Ellis experience similar levels of regret, or is regret something that people experience more as they get older? In typical psychological studies, people experience more regret when they choose the option that costs the most money. Would you expect similar results from this scenario? Why or why not? How would the children's initial selections affect their subsequent selections? Which children's future decision-making would benefit the most from their initial selection? Why?

The road to a meaningful life is not defined by an absence of sadness, fear, anger, and anxiety. Indeed, psychologists have argued that limiting our exposure to upsetting experiences deprives people of *antifragility*—the tendency to become stronger after experiencing setbacks, uncertainty, and even minor trauma (Lukianoff & Haidt, 2018). We should teach our children well by giving them opportunities to experience uncomfortable emotions, including regret. By allowing our children to reap the benefits of regret, we are setting them up for a happier, healthier, and more productive life.

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