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How Do We Learn to Write?

By Cindi May and Michael Scullin

Treiman R. Learning to Write Words. *Current Directions in Psychological Science*. September 2020. https://doi.org/10.1177/0963721420951585

Mastery of any complex skill—playing the piano, riding a bike, or cooking a gourmet meal—requires integrating many basic skills. Writing, it seems, is no exception. In her recent *Current Directions article*, Rebecca Treiman explores how children learn to write. She examines the knowledge and skills related to writing that children demonstrate long before they can scrawl out legible, grammatical sentences.

Early Knowledge About Writing

Most typically developing kids begin writing their names between the ages of 4 and 6. But evidence suggests that writing skills emerge well before then. Treiman and colleagues believe that children as young as 2 develop an understanding of the visual appearance of writing. Ask your students what kind of findings might support this claim, then review some of the supporting evidence.

First, download this slideshow for use in class. Have your students look carefully at slide 2, which shows a drawing created by a 2½-year-old. Ask your students if any part of the picture resembles writing. The artist identified the part with small squiggles in the bottom left portion of the picture as writing. Although there are no letters present, that portion of the drawing is small and dense, much like written words, suggesting that even young children recognize that writing looks different from pictures.

Next, show students the images on slide 3. These images were drawn by a 2-year-old who was asked to write the word “sun” and draw a picture of it. Although neither image contains letters, most students will find it fairly easy to correctly identify the image on the left as the drawing and the one on the right as the word. Otake, Treiman, and Yin (2017) found that very young children asked to write a word drew smaller scribbles than did those asked to draw a picture. When writing “words,” children were also more likely to choose a pen or pencil than a crayon. Both findings suggest some understanding of the visual

appearance of writing.

If children develop expectations about the appearance of written language, those expectations may lead children from different countries to produce drawings that resemble their native language's writing. That is precisely what Otake and colleagues demonstrated in a series of studies with young children (2–5 years old) from the United States and China (Otake et al., 2017; 2018). Children from both countries were asked to write specific words in their native language, and adults who knew both English and Chinese were asked to judge whether each sample was made by an American or Chinese child. To help students understand what these drawings looked like, show them slide 4, which includes sample drawings from an American and a Chinese child writing the word "sun" in English and Chinese, respectively. The bilingual adults in the study could determine the native language of the writers with better-than-chance accuracy, even for 2- and 3-year-old artists; see if your students can do the same.

Representing Sounds in Words

Treiman and colleagues also show that learning to write, particularly the spelling component of writing, is heavily influenced by personal experience. Children who can spell their own name, for example, use that knowledge in writing other words. Thus, a child named Lily is likely to be good at using the letter "l" and so will be better at spelling words like "lip" and "letter" (Zhang & Treiman, 2020). Similarly, children who know letter names are often better at spelling words that sound like the letters (e.g., they may find "deal" easier to spell than "dirt" because the first two sounds of the word "deal" sound like the letter "d"; Treiman & Wolter, 2020). Some of these influences are evident in slides 5 through 7, which show sample writings from a kindergarten student just learning to write. On slide 6, for example, note how well the child writes his friends' names (which are commonly displayed in kindergarten classrooms). In reviewing these slides, your students might also note some common errors made by young writers, including the omission of middle letters and confusion of upper- and lowercase letters.

Given the influence of experience on writing, it is not surprising that direct instruction improves fluency in writing and reading. Students who learn phonics, with a specific emphasis on the correspondence between letters and their sounds, are better at spelling and reading (Ehri, Nunes, Stahl, & Willows, 2001). The same is true for those who receive explicit instruction in spelling (Graham & Santangelo, 2014; Ouellette, Martin-Chang, & Rossi, 2017).

The benefit of direct instruction runs both ways. Teachers and parents who understand the knowledge that children glean about language can provide better writing support. Have students examine the image in slide 8, which shows a child's attempt to write the word "triangle." To adults with a solid grasp of phonics, the child's use of "chR" at the beginning of "triangle" might seem way off the mark; however, the first sound in "triangle" is similar to the sound typically spelled with "ch" (as in "cherry"), so instructors should congratulate the child for listening well to the first sound in the word.

Knowledge about language can also help instructors understand when spelling errors do (or do not) signal broader concerns. Have students review slide 9, which shows a child's attempt to spell the word "diamond" ("bimn"). Teachers and parents might worry that the reversal of the letter "d" to a "b" indicates that the child has dyslexia. However, many typically developing children make such errors, which may reflect the knowledge that letters of the alphabet with a vertical stem more often have an appendage that faces right (e.g., "E," "f," "h," "L") than an appendage that faces left.

Accomplished writers know that it takes a lifetime of practice to write effectively. Treiman's work shows why. People continue to learn more about morphology (word structures) and etymology (word origins) over time, and they benefit from both implicit exposure (e.g., reading) and explicit instruction. As a final reflection for students, ask them to rate their own spelling on a scale from 1 (very poor) to 10 (exceptional). Then ask them to reflect on the kinds of experiences that might influence spelling ability and what sorts of social advantages (or disadvantages) could create academic achievement gaps in reading and writing before children even reach school age.

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The Toxic Stress Stew: Adversity + Reactivity + Rumination + Time

By David G. Myers

Kiecolt-Glaser, J. K., Renna, M. E., Shrout, M. R., & Madison, A. A. (2020). Stress reactivity: What pushes us higher, faster, and longer—and why it matters. *Current Directions in Psychological Science.* https://doi.org/10.1177/0963721420949521

As longtime stress researcher Janice Kiecolt-Glaser and her collaborators Megan Renna, M. Rosie Shrout, and Annelise Madison of Ohio State University explain, adversity is the first ingredient in the

recipe for stress. Bad things happen. Relationships produce conflict. A new job entails pratfalls. A pandemic elicits anxiety. In these situations, feeling stress is a natural, adaptive response. Typically, Kiecolt-Glaser and her coauthors note, when the threat passes, the body returns to its resting state: "An adaptive response is flexible and short-lived."

But if the bad events endure, or the person is hyperreactive, stress may become toxic. When threats are "repeated, unpredictable, and uncontrollable"—when, say, a volatile boss berates an employee repetitively and capriciously—then the body's hormonal, cardiovascular, and inflammatory responses will accumulate. The result is "biological wear and tear," and sometimes a shortened life.

An example of the reach on inescapable stress comes from people who endured adversity or abuse early in life. Their stress experiences "are programmed into cells that regulate inflammation," Kiecolt-Glaser and her colleagues explain. The result is a lifelong increase in psychological and biological reactivity to stress. One of the researchers' studies compared people who had been abused as children with those who had not. After experiencing multiple stressors the previous day, those with a history of abuse had more than twice the level of interleukin-6, an inflammation-regulating protein, in their systems.

As this illustrates, what matters is not just adversity but also reactivity. Some people are dispositionally more reactive to stress than others. They experience an exaggerated and prolonged response to stress. Their sustained flight-or-fight reaction depletes energy, especially when exacerbated by pre-stress worry and post-stress rumination.

This overreaction is often compounded in close relationships. For better or worse, couples' stress can be contagious, such that partners catch and feed off each other's stress. And within a group, emotions and attitudes can be similarly amplified. If you catastrophize because you feel threatened by the pandemic or a worrisome election outcome, your stress will likely be intensified if your friends or roommates catastrophize, too.

When adversity meets reactivity and rumination and is sustained over time, it affects not just the body—increasing the risk of various ills and weight gain—but also the spirit. "Depression and stress reactivity have an unhealthy reciprocal relationship," note Kiecolt-Glaser and her coauthors. Reactivity increases vulnerability to both inflammation and depressive symptoms. And a ruminative, depressive tendency heightens stress responses.

To help students reflect on their own stress experiences and stress management, instructors might first invite them to complete Michael Renner and Scott Mackin's (1998) self-scoring College Undergraduate Stress Scale (tinyurl.com/CollegeStressScale). The scale names common stressors identified and rated for stress potency by college students.

Second, instructors could invite students to volunteer the strategies they use to manage their stress reactivity. Do they include the evidenced-based practices advised by Kiecolt-Glaser and colleagues?

- *Yoga and meditation*. The regular practice of yoga or meditation helps reboot and calm the autonomic nervous system, thus lowering inflammation, stress hormones, heart rate, and blood pressure.
- *Healthy lifestyle*. Aerobic exercise, a diet low in sugar and saturated fats, and ample sleep are

also antidotes to stress and depression.
- *Cognitive reappraisal*. Stress is not just what we experience but how we interpret it. Thus, reappraisal, sometimes guided by cognitive-behavioral therapy, helps reduce hyperreactivity.

To live is, indeed, to experience stress. To live a healthy lifestyle is to lessen stress. To practice cognitive reappraisal is to define stressors as challenges from which one can grow.

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