

# Teaching *Current Directions in Psychological Science*

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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.

[Connectivity Creates Costs: How Smartphones Hinder Well-Being](#)

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## **Connectivity Creates Costs: How Smartphones Hinder Well-Being**

*By C. Nathan DeWall*

[Kushlev, K., Dwyer, R., & Dunn, E. W. \(2019\). The social price of constant connectivity: Smartphones impose subtle costs on well-being. \*Current Directions in Psychological Science\*, 138–144. doi:10.1177/0963721418815685](#)

How would you describe an ideal conversation? Each person would gaze into the other person's eyes, noticing subtle shifts in emotions and attention. The exchange would eat up each person's attentional bandwidth, leaving both partners deeply interested, intrigued, and in touch with everything the other person said. The conversational dance would take as long as it needed, with little regard for any other personal responsibilities or world events. Leaving the conversation, both parties would feel a warm rush of happiness, social connection, and meaning.

If you owned something that threatened your ability to live up to this social ideal, would you limit your exposure to it?

According to Kostadin Kushlev, Ryan Dwyer, and APS Fellow Elizabeth Dunn (2019), most of us own and use something that does disrupt our social interactions in this way: a smartphone. Through constant connectivity. Kushlev and colleagues argue that, through constant connectivity, smartphones change social life in two ways. First, smartphones get in the way of us giving our interaction partners the attention they deserve, robbing us of the emotional benefits that accompany active social participation. Second, smartphones make some social interactions seem unnecessary, thereby limiting the number of opportunities people have to experience the many emotional, cognitive, and behavioral benefits linked to social connection.

Taking a family outing to a museum offers numerous benefits, both intellectually and socially. In one experiment, parents either maximized or limited their smartphone use while they toured a museum with their children (Kushlev & Dunn, 2019). Which group of parents felt least distracted and reported the highest levels of social connection and meaning? Those who limited their smartphone use. Ditto for university students who minimized their smartphone use while eating with friends at a café (Dwyer, Kushlev, & Dunn, 2018). Smartphones distract us from our social partners, making us feel more isolated and meaningless.

Planning a drive across the country, would you rather rely on your smartphone's global positioning system (GPS) or a paper map? Relying on your smartphone's GPS simplifies your life. But using a GPS removes social interactions that occur when you inevitably get lost while using a paper map and need to ask for directions. Kushlev and colleagues (2017) examined this in an experiment in which students found an unfamiliar university building by either using their smartphone's GPS or publicly posted signs and maps. Finding a building seems like a solitary activity, but students who used their smartphone's GPS when finding the building felt more socially disconnected when they arrived at the building. They arrived at the building earlier than did the students who didn't have access to GPS directions, but they also missed out on opportunities to have social interactions.

To take this cutting-edge research into the classroom, students can complete the following activity.

Kushlev suggests first getting students to realize how much they're using their smartphones. At the end of a class session, ask students to retrieve their smartphones. Next, depending on the type of smartphone the students use, have them read the following directions:

On Android devices, download the [Digital Wellbeing](#) app from the Google Play Store. To find the app, head to the Settings app and scroll down to Digital Wellbeing (it should be listed between "Accessibility" and "Google"). Tap it and you will be taken to a screen where you can see visual representations of how much time you've used your phone that day, as well as how many times you've unlocked your phone and the number of notifications you have received.

On iPhones, go to Settings > Screen Time. Tap "Turn On Screen Time." Tap "Continue." That's it! Do *not* activate "Share Across Devices," or switch it off if it's already activated. Avoid setting app limits for now. There is no dedicated app icon for Screen Time, but you can access the app in Settings by adding it to your Widget Screen (accessible by swiping right from your home screen). Click on the widget to see full stats.

Ask half of the students to try to limit their smartphone use as much as possible until the next class session. Ask the rest of the students to continue using their smartphone as they normally would. At the beginning of the next class session, ask students to report how many hours each day they used their smartphones. This will serve as a manipulation check on which group the students are in. Ask students to pair up and discuss how many hours each day they spent using their smartphones.

"The numbers are striking," said Kushlev, "so just showing those to students is a great class conversation starter."

Were students surprised at how much they were using their smartphones? Did students spend as much

time on their smartphones as they spent studying, exercising, or eating? For students who limited their smartphone use, did they feel less distracted and more socially connected? How might seeing their smartphone usage levels change how they approach their future smartphone use?

Smartphones are everywhere. They have made the world more connected than ever, but those connections come with social costs. Being mindful of our smartphone use can help us make maximum use of their features while maintaining the benefits of social interaction.

## References

Dwyer, R. J., Kushlev, K., & Dunn, E. W. (2018). Smartphone use undermines enjoyment of face-to-face social interactions. *Journal of Experimental Social Psychology*, 78, 233–239.

<https://doi.org/10.1016/j.jesp.2017.10.007>

Kushlev, K., & Dunn, E. W. (2019). Smartphones distract parents from cultivating feelings of connection when spending time with their children. *Journal of Social and Personal Relationships*, 36, 1619–1639. <https://doi.org/10.1177/0265407518769387>

Kushlev, K., Proulx, J. D. E., & Dunn, E. W. (2017). Digitally connected, socially disconnected: The effects of relying on technology rather than other people. *Computers in Human Behavior*, 76, 68–74.

<https://doi.org/10.1016/j.chb.2017.07.001>

## Repeating Is Believing: Understanding the Repetition-Induced Truth Effect

*By Cindi May and Michael Scullin*

[Unkelbach, C., Koch, A., Silva, R., & Garcia-Marques, T. \(2019\). Truth by repetition: Explanations and implications. \*Current Directions in Psychological Science\*, 28, 247–253. doi: 10.1177/0963721419827854](https://doi.org/10.1177/0963721419827854)

Concerns about fake news seem to be everywhere these days. From phony Facebook accounts and untruthful tweets to altered photos and edited videos, we are bombarded with disinformation daily. Christian Unkelbach and colleagues (2019) explain how such repeated exposure to false “facts” feeds misinformed beliefs.

One key influence on our belief system is repetition. If we hear a piece of information numerous times, we come to believe it. This repetition effect is incredibly robust, and occurs with all sorts of information, including:

- Trivia questions (e.g., “The thigh bone is the longest bone in the human body”; Hasher, Goldstein, & Toppino, 1977)
- Consumer opinions (e.g., “Billabong shampoo leaves hair shiny with no residue”; Johar & Roggeveen, 2007)
- Disinformation news items (e.g., “Donald Trump sends his own plane to transport 200 stranded

marines”; Pennycook, Cannon, & Rand, 2018)

Warning people about this repetition-induced truth effect doesn’t seem to inoculate them against it (Nadarevic & Aßfalg, 2017), nor are people immune to it when they are highly motivated to be accurate (Garcia-Marques, Silva, & Mello, 2016). The repetition of information can occur within very short intervals — just a few minutes — or over longer durations, such as weeks or months (Brown & Nix, 1996; Schwartz, 1982). Like it or not, if we hear a piece of information numerous times, we come to believe it.

To illustrate this effect with students, first download this PowerPoint demonstration, called the Truth Game, which we created for use in class: [tinyurl.com/yyhgg37t](https://tinyurl.com/yyhgg37t). The Truth Game includes two phases and is intended to show students how repetition can lead us to believe falsehoods. In Phase 1, students read individual trivia items and rate each one on a scale from 1 (definitely false) to 7 (definitely true). Once they have rated the Phase 1 sentences, ask students to calculate an average rating across all items. After a short delay (10–15 minutes), execute Phase 2 (as an alternative, run Phase 2 on the next day of class). Students will once again read and rate the veracity of trivia sentences, some of which will be repeated from Phase 1. What the students won’t know is that every repeated statement from Phase 1 is false, and every new statement in Phase 2 is true. Despite this, when you ask them to calculate their average rating for “old” items, not only will they be higher during Phase 2 than they were in Phase 1, they may even be higher than the new (all true) items from Phase 2! The repetition-induced truth effect is so powerful that it can lead us to have more confidence in disinformation than in truth.

Once students experience this repetition-induced truth effect for themselves, ask them to posit potential drivers of the effect. Identifying these drivers is essential not only for understanding how we come to believe information, but also for creating interventions to change false beliefs. Unkelbach and colleagues explore a number of processes thought to contribute to the repetition-induced truth effect, including:

- Frequency: Items experienced more frequently are rated as more true
- Recognition: Recognition of an item as old increases its believability
- Familiarity: Increased familiarity confers greater validity
- Processing fluency: Repetition enhances ease of processing, which in turn increases perceived truth
- Coherent references: Exposure to information builds consistent memory references; repeated exposure strengthens those references, resulting in higher subjective truth

There is evidence suggesting that each of these processes can contribute to higher ratings of truth for repeated information, and that these processes may be competitive or cooperative, depending upon the context (Unkelbach & Rom, 2017). For example, in a study by Garcia-Marques and colleagues (2015), participants in Phase 1 read a statement (e.g., “Crocodiles sleep with their eyes open”) that was followed by a similar but contrasting statement in Phase 2 (“Crocodiles sleep with their eyes closed”). The similarity of these statements increases processing fluency, which should result in higher subjective truth.

When participants rated both statements on the same day, however, they judged the contrasting statement as *less true* than completely novel statements (despite its high fluency) because it was inconsistent with the initial reference. In this immediate condition, the need for consistency across memory references overrode processing fluency; a week later, when participants had forgotten many of

the initial references, they judged the contrasting statement as *more true* than novel statements because of its general familiarity or fluency.

Regardless of which process or processes are driving the effect in a given context, these findings regarding the repetition-induced truth effect inform our understanding of the conditions that foster the spread of disinformation, and suggest possible strategies for changing false beliefs. Because repetition increases belief, people should make efforts to escape “media bubbles” that tend to regurgitate the same news over and over, and they should also work to consider conflicting evidence.

Counterarguments, however, need to be made carefully. If one has a strong belief, for example, that vaccines cause autism, encountering the contradictory belief that “vaccines do not cause autism” may have the paradoxical effect of increasing the fluency of the erroneous link (vaccines–autism), thereby strengthening the initial false belief. Instead, it will be important to build novel coherent references (“Infectious diseases are at an all-time low for children”) that avoid repeating, directly contradicting, or reinforcing the misinformation.

As a final exercise, have students generate (or Google) common fake news items. Then, using what they know about the processes that reinforce false beliefs, have them generate strategies for combating this disinformation. The difficulty of combating false beliefs should serve as an important caution for students to choose their news outlets wisely, and to check information carefully before sharing on social media. The act of sharing (and thus repeating) misinformation will lead others to believe it!

## References

- Brown, A. S., & Nix, L. A. (1996). Turning lies into truths: Referential validation of falsehoods. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 22, 1088–1100. <http://doi.org/10.1037/0278-7393.22.5.1088>
- Garcia-Marques, T., Silva, R. R., & Mello, J. (2016). Judging the truth-value of a statement in and out of a deep processing context. *Social Cognition*, 34, 40–54. <https://doi.org/10.1521/soco.2016.34.1.40>
- Garcia-Marques, T., Silva, R. R., Reber, R., & Unkelbach, C. (2015). Hearing a statement now and believing the opposite later. *Journal of Experimental Social Psychology*, 56, 126–129. <https://doi.org/10.1016/j.jesp.2014.09.015>
- Hasher, L., Goldstein, D., & Toppino, T. (1977). Frequency and the conference of referential validity. *Journal of Verbal Learning and Verbal Behavior*, 16, 107–112. [https://doi.org/10.1016/S0022-5371\(77\)80012-1](https://doi.org/10.1016/S0022-5371(77)80012-1)
- Johar, G. V., & Roggeveen, A. L. (2007). Changing false beliefs from repeated advertising: The role of claim-refutation alignment. *Journal of Consumer Psychology*, 17, 118–127. [https://doi.org/10.1016/S1057-7408\(07\)70018-9](https://doi.org/10.1016/S1057-7408(07)70018-9)
- Nadarevic, L., & Aßfalg, A. (2017). Unveiling the truth: Warnings reduce the repetition-based truth effect. *Psychology Research*, 81(4), 814–826. <https://doi.org/10.1007/s00426-016-0777-y>

Pennycook, G., Cannon, T. D., & Rand, D. G. (2018). Prior exposure increases perceived accuracy of fake news. *Journal of Experimental Psychology: General*, 147, 1865–1880.  
<http://dx.doi.org/10.1037/xge0000465>

Schwarz, N. (2010). Meaning in context: Meta-cognitive experiences. In L. F. Barrett, B. Mesquita, and E. Smith (Eds.), *The mind in context* (pp. 105–125). New York: Guilford Press.

Unkelbach, C., & Rom, S. C. (2017). A referential theory of the repetition-induced truth effect. *Cognition*, 160, 110–126. <https://doi.org/10.1016/j.cognition.2016.12.016>