

Open Your Class With This Tomorrow

The Worth Expert Guide to Scientific Literacy: Thinking Like a Psychological Scientist

Are you Scientifically Literate?

Directions: Take a brief quiz to test your science literacy (knowledge) and scientific literacy (process).

- *The Christian Science Monitor* published a 50 question quiz that tests your scientific knowledge. An example is listed below. www.csmonitor.com/Science/2011/1209/Are-you-scientifically-literate-Take-our-quiz/
 1. Composing about 78 percent of the air at sea level, what is the most common gas in the Earth's atmosphere?
 - a. Carbon dioxide
 - b. Oxygen
 - c. Nitrogen
 - d. Hydrogen
 - Answer C- Nitrogen. Oxygen is the second most abundant gas, at about 20 percent, followed by argon at about 1 percent.
- Richard Carrier published a 24 true or false question quiz that tests your knowledge of the scientific process. Two examples are listed below. https://infidels.org/library/modern/richard_carrier/SciLit.html
 1. True or false? An experiment can prove a theory true.
 - False. A theory represents the most complete explanation for a body of knowledge.
 2. True or false? Scientists accept the existence of theoretical entities that have never been directly observed.
 - True. Physicists have never seen gravity, but have documented the effects of gravity.

Try Your Hand at Scientific Literacy

What happened to Little Albert? This question has plagued many introduction to psychology classes. In a classroom at Appalachian State University, Professor Hall P. Beck and his students wanted to know the answer. Together they set out on a seven-year journey to find the fate of Little Albert. Similar to students in that class, do you have questions about a study in psychology? Are you willing to be brave and question what you are learning?

Directions: Use your scientific literacy. Select one psychological study discussed in class and pick apart its methodology.

Questions to consider

1. What type of research was conducted?
2. What are the pros and cons of the research method used?
3. Were ethical considerations followed?
4. Was the scientific method followed?
5. Are there confounds that have not been addressed?
6. Has the research been replicated?
7. Is there a recent update?

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Little Albert Sample

1. Was it appropriate to use an orphan for research?
2. The study was conducted before institutional review boards became necessary. However, confidentiality was still maintained. Who is Albert B.? What does that name stand for?
3. Who is Baby Albert's mother?
4. Should Watson have tried hard to find Baby Albert and offer an appropriate debriefing?
5. Does the video offer any clues?
6. Did Watson offer clues in his research papers?
7. Follow the update at
 - a. <https://www.chronicle.com/interactives/littlealbert>
 - b. <http://journals.sagepub.com/doi/abs/10.1177/0098628314562668>

Addressing the Replication Crisis in Psychology

The Reproducibility Project was initiated in 2011 by psychologist Brian Nosek, co-founder of the Center for Open Science. A collaboration of 270 contributing authors repeated 100 published studies from 2008 to check for reliability. Of the 100 published studies that were repeated, 39 had the same outcome, 24 had moderately similar results, and a little over one third had patterns noticeably discrepant from the original. The results of his study gained considerable news coverage. Since then, the current replication crisis has caused controversy in all the sciences, but especially psychology and medicine. Have you ever been faced with the question, "What studies in psychology have been questioned?" While this is not an exhaustive list, several topics and studies that have been called into question have been provided below.

Topics and Studies Addressed in *The Worth Expert Guide to Scientific Literacy: Thinking Like a Psychological Scientist*

1. Child vaccines cause autism.
 - a. The additional research did not find a link between vaccines and autism and the original research was fraudulent.
2. Short-term memory has a capacity of 7+/-2 items.
 - a. Recent research suggests the capacity for short-term memory is only 3 or 5 items.
3. Kitty Genovese was attacked and killed while bystanders did not step in to help.
 - a. It was believed that 38 neighbors watched and no one intervened. It has been found that at most two or three witnessed the entire episode, there were two, not three attacks, one person called out the window and temporarily scared the attacker, and some claim to have called the police or intervened.
4. Oxytocin is called the "love hormone" because of its connection to positive emotions like empathy, bonding, and personal trust.
 - a. Oxytocin is more complex than originally thought. It is responsible for increased levels of cheating when an individual's in-group would benefit from that cheating. When only the single individual would benefit in the experimental task, oxytocin did not increase cheating.
5. Domestic violence increases by 40% on Super Bowl Sunday and it is the worst day of the year for women's use of hotlines or shelters as a result of abuse.
 - a. The researchers reported that the news got it wrong. There might be a slight increase in emergency room visits, but nowhere near 40 percent. Also, the researcher who reported increases in the use of hotlines and shelters said he did not make that claim.
6. James Vicary claimed to present *Hungry? Buy Popcorn* and *Drink Coca-Cola* subliminally in the movie *Picnic*, which resulted in increased sales.
 - a. He never actually did the research. He used this fictitious research to generate publicity.

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Other Topics and Studies of Controversy to Address in Class

Directions: Select one of the items listed below. Find out why it is being questioned and provide a short summary for class.

1. Stanford Prison Experiment
2. Robbers Cave Study
3. Stanley Milgram Shock Experiment
4. Marshmallow Test
5. Superman Pose by Amy Cuddy
6. Koko knows language
7. Social priming: People who read "old"-sounding words were more likely to walk slowly
8. Facial feedback hypothesis
9. Stereotype threat
10. Mozart effect
11. Narcissism epidemic among millennials
12. Warrior gene causes aggression
13. The brain uses 10% myth
14. Multiple Intelligences