

Lesson 30: Evaluating Reports Based on Data from an Experiment

Classwork

Exercises 1–7

Pericarditis is an inflammation (irritation and swelling) of the pericardium, the thin sac that surrounds the heart. When extra fluid builds up between the two layers of the pericardium, the heart's actions are restricted. An experiment reported in the article "A Randomized Trial of Colchicine for Acute Pericarditis" in *The New England Journal of Medicine* (October 2013) tested the effects of the drug colchicine on acute pericarditis.

Read the abstract of the article, and answer the following questions:

Website: www.nejm.org/doi/full/10.1056/NEJMoa1208536

1. How many treatment groups are there?
2. What treatments are being compared?
3. Is there a placebo group? Explain.
4. How many subjects are in each treatment group?
5. Do you think that the number of subjects in each treatment is enough? Explain.

6. What method was used to assign the subjects to the treatment groups? Explain why this is important.

Suppose newspaper reporters brainstormed some headlines for an article on this experiment. These are their suggested headlines:

- A. “New Treatment Helps Pericarditis Patients”
 - B. “Colchicine Tends to Improve Treatment for Pericarditis”
 - C. “Pericarditis Patients May Get Help”
7. Which of the headlines above would be best to use for the article? Explain why.

Exercises 8–10

What you should look for when evaluating an experiment:

- Were the subjects randomly assigned to treatment groups?
- Was there a control group or a comparison group?
- Were the sample sizes reasonably large?
- Do the results show a cause-and-effect relationship?

Read the abstracts of the two articles below. Write a few sentences evaluating these articles using the guidelines above.

8. The study “Semantic Memory Functional MRI and Cognitive Function After Exercise Intervention in Mild Cognitive Impairment” (*Journal of Alzheimer’s Disease*, August 2013) was performed to see if exercise would increase memory retrieval in older adults with mild cognitive impairment (associated with early memory loss).

Website: <http://iospress.metapress.com/content/xm8t241628h37h7t/>

9. The article “Effects of Bracing in Adolescents with Idiopathic Scoliosis” (*New England Journal of Medicine*, October 2013) reports on the role of bracing patients with adolescent idiopathic scoliosis (curvature of the spine) for prevention of back surgery.

Website: www.nejm.org/doi/full/10.1056/NEJMoa1307337

10. View the report by Tom Bemis (Market Watch, *Wall Street Journal*, August 13, 2013) about the type of car driven by a person and the person’s driving behavior.

Website: <http://live.wsj.com/video/bmw-drivers-really-are-jerks-studies-find/29285015-BB1A-4E41-B0C0-0A41CB990F60.html#!29285015-BB1A-4E41-B0C0-0A41CB990F60>

Is the title “BMW Drivers Really Are Jerks” an accurate title for these reported studies? Why or why not? If not, suggest a better title.

Lesson Summary

- A cause-and-effect relationship can only be shown by a well-designed experiment.
- Randomly assigning the subjects to treatment groups evens out the effects of extraneous variables to create comparable treatment groups.
- A control group (which may be a placebo group) or a comparison group (a standard treatment) is sometimes included in an experiment so that you can evaluate the effect of the treatment.
- The number of subjects in each treatment group (sample size) should be large enough for the random assignment to experimental groups to create groups with comparable variability between the subjects.

Problem Set

Read the following articles and summaries. Write a few sentences evaluating each one using the guidelines given in the lesson.

1. The article “Emerging Technology” (*Discover Magazine*, November 2005) reports a study on the effect of “infomania” on IQ scores.
Website: discovermagazine.com/2005/nov/emerging-technology

2. In *The New England Journal of Medicine*, October 2013, the article “Increased Survival in Pancreatic Cancer with nab-Paclitaxel Plus Gemcitabine” reports on an experiment to test which treatment, nab-paclitaxel plus gemcitabine or gemcitabine alone, is the most effective in treating advanced pancreatic cancer.
Website: www.nejm.org/doi/full/10.1056/NEJMoa1304369

3. Doctors conducted a randomized trial of hypothermia in infants with a gestational age of at least 36 weeks who were admitted to the hospital at or before six hours of age with either severe acidosis or perinatal complications and resuscitation at birth and who had moderate or severe encephalopathy. The trial “Whole-Body Hypothermia for Neonates with Hypoxic–Ischemic Encephalopathy” tested two treatments, standard care and whole-body cooling, for 72 hours.
Website: www.nejm.org/doi/full/10.1056/NEJMcp050929