

Chapter 12 Exercises

1. Identify which one of the four types of validity—measurement validity, statistical conclusion validity, internal validity, or external validity—is violated in each of the following scenarios. Explain your decision.
 - a. A study finds that coffee drinking is protective against hair loss (RR=3.27, 95% C.I. 2.14-5.38). The study does not include any stratification or any other adjustment approach; however, authors do report that the coffee drinkers were more likely to be women than men, and that men were more likely to have hair loss than women.
 - b. Men who have experienced two or more adverse life events in the past year are 1.4 times as likely to have low sperm count compared to men who have experienced 1 or 0 adverse life events (95% CI: 0.96, 1.89)
 - c. After a successful Phase 3 clinical trial in which their new drug improved symptoms in children with asthma, the pharmaceutical company announced in a press release that it had developed an asthma drug that the whole family can use.
 - d. As a test of intelligence, researchers administered a 40-question American history exam to the study participants. The average score was 15 correct out of 40, thus researchers concluded that study participants are not very intelligent.
 - e. In a longitudinal study of exposure to formaldehyde and cancer, people from the Lower Ninth Ward who lived for more than six months in a FEMA trailer following Hurricane Katrina were compared to people whose homes were spared in the elegant Garden District of New Orleans.
 - f. Students were interviewed in a group setting and asked questions about their attitudes toward dating and sex. Researchers concluded that a majority of adolescents feel that they should wait until marriage to have sex, and all believe that safe sex should be practiced at all times.

- g. In a randomized controlled trial of hormone replacement therapy and risk of stroke, many women did not complete the study protocol based on their randomized assignment. Because so many of the postmenopausal women randomized to receive hormone replacement ended up not taking it and so many of the women randomized to take the placebo ended up asking their private doctors for prescriptions, the researchers reported the trial results according to how the women were actually treated.

- h. Citing a South African study that found that circumcision reduced men's risk of contracting HIV by 45%, the head of urology at a large Midwestern hospital encouraged his uncircumcised patients to undergo the procedure.

- i. There were 10 fewer cases of obesity for every 100 people who underwent the exercise intervention (95% CI: -0.25, 0.05).

- j. In a study of circadian rhythms and response time to a cognitive task, researchers ask study participants how many hours they slept the night before in order to divide them into groups based on sleepiness. They find that individuals who slept <7 hours do 2.0 times more poorly on cognitive tasks compared with individuals who slept ≥ 7 hours (95% C.I. 1.05-3.53), and conclude that sleepiness causes reduced cognitive ability.