

Student

Reliability vs Validity

Name _____

Period _____

Date _____

① _____ is getting the same results in an experiment every time you do the experiment

In other words, it is ② _____ and you can expect the same outcome every time. We could talk about a worker being reliable because she came to work every day and completed each task that was given to her on time.

① _____

② _____

③ _____ is the believability of the research/experiment. Is the test or experiment testing what you want tested?

For instance we could test your hand strength. Would your hand strength be a good measure of your intelligence? No. So the test for hand strength cannot validly measure your intelligence since there is no relationship between the two.

③ _____

Reliability vs Validity

As clearly shown already, validity and reliability are two very different standards of a test. For instance:

A researcher creates a new test to measure IQ more quickly than current IQ tests

- If the new test gives score of 87, 65, 143, & 102 for the same person, then the test is not reliable or valid.
- If the test gives a score of 100 every time the person takes it, but their IQ is 120, the test is reliable, but not valid.
- If the test gives a consistent score of 118, then that is pretty close, and the test can be considered both reliable and valid.

For a test or experiment to be 4 it HAS to be 5, however, a 6 test is NOT always 7.

4

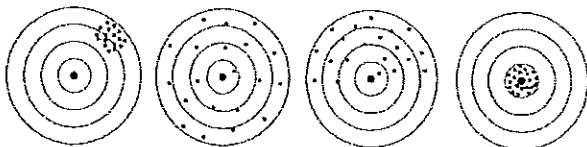
5

6

7

In simple terms, reliability describes the repeatability and consistency (always getting the same results) of a test. Validity describes whether the results are accurate and true to the question.

If the test is to determine the accuracy of a new bow, your goal is to hit the target, preferably the bullseye.



Reliable
Not valid

Valid
Not reliable

Not reliable
Not valid

Reliable
Valid

The scientific community engages in certain quality control measures to eliminate bias.

Results are verified by independent duplication and publication in a peer-reviewed journal.

Independent duplication = Two or more scientists from different institutions investigate the same question separately and get similar results.

Peer-reviewed journal = A journal that publishes articles only after they have been checked for quality by several expert, objective scientists from different institutions.

Data Sources

1. University Research
2. Corporate Research
3. Government Research
4. Research by Special Interest Groups

All organizations produce unbiased data. However, it is important to understand the organization's motivation to be able to identify potential bias. In some situations, the need to promote special interests or make profits may lead to bias.

Examining the Data Source

Investigations of Passive Smoking Harm:
Relationship between Article Conclusions & Author Affiliations

Article Conclusion	Number (%) of Reviews	
	Tobacco Affiliated Authors (n=31)	Non-Tobacco Affiliated Authors (n=75)
Passive smoking harmful	2 (6%)	65 (87%)
Passive smoking not harmful	29 (94%)	10 (13%)
Significance	$X^2=60.69; P<.001$	

Barnes, Deborah E. 1998. Why review articles on the health effects of passive smoking reach different conclusions. *JAMA* 279(19): 1566-1570.

Skepticism

Skepticism

To be skeptical is to doubt the truthfulness or accuracy of something. Because of skepticism, science can be self-correcting. If someone publishes results or if an investigation gives results that don't seem accurate, a skeptical scientist usually will challenge the information and test the results for accuracy.

Identifying Facts

The prices of the pillows and the savings are facts. A fact is a measurement, observation, or statement that can be strictly defined. Many scientific facts can be evaluated for their validity through investigations.

Learn Algebra While You Sleep!

**Have you struggled to learn algebra?
Struggle no more.**

Math-er-ific's new algebra pillow is scientifically proven to transfer math skills from the pillow to your brain while you sleep. This revolutionary scientific design improved the algebra test scores of laboratory mice by 150 percent.

Dr. Tom Equation says, "I have never seen students or mice learn algebra so easily. This pillow is truly amazing."

For only \$19.95, those boring hours spent studying are a thing of the past. So act fast! If you order today, you can get the algebra pillow and the equally amazing geometry pillow for only \$29.95. That is a \$10 savings!

Identifying Opinions

An opinion is a personal view, feeling, or claim about a topic. Opinions are neither true nor false.

Mixing Facts and Opinions

Sometimes people mix facts and opinions. You must read carefully to determine which information is fact and which is opinion.

