Validity and Reliability [1]

Assistert Selvhjelp - Få bedre psykisk helse via internett [2]lest 738.1K ganger

The principles of validity and reliability are fundamental cornerstones of the scientific method.

Together, they are at the core of what is accepted as scientific proof, by scientist and philosopher [3] alike.

By following a few basic principles, any experimental design [4] will stand up to rigorous questioning and skepticism.

What is Reliability?

The idea behind reliability [5] is that any significant results [6] must be more than a one-off finding and be inherently repeatable [7].

Other researchers must be able to perform exactly the same experiment [8], under the same conditions and generate the same results. This will reinforce the findings and ensure that the wider scientific community will accept the hypothesis [9].

Without this replication of statistically significant results [6], the experiment [10] and research [11] have not fulfilled all of the requirements of testability [12].

This prerequisite is essential to a hypothesis establishing itself as an accepted scientific truth.

For example, if you are performing a time critical experiment, you will be using some type of stopwatch. Generally, it is reasonable to assume that the instruments are reliable [13] and will keep true and accurate time. However, diligent scientists take measurements [14] many times, to minimize the chances of malfunction and maintain validity and reliability.

At the other extreme, any experiment that uses human judgment is always going to come under question.

For example, if observers rate certain aspects, like in Bandura's Bobo Doll Experiment [15], then the reliability of the test is compromised. Human judgment can vary wildly between observers [16], and the same individual may rate things differently depending upon time of day and current mood.

This means that such experiments are more difficult to repeat and are inherently less reliable. Reliability is a necessary ingredient for determining the overall validity [17] of a scientific experiment and enhancing the strength of the results.

Debate between social and pure scientists, concerning reliability, is robust and ongoing.

What is Validity?

Validity encompasses the entire experimental concept and establishes whether the results obtained meet all of the requirements of the scientific research method.

For example, there must have been randomization of the sample groups [18] and appropriate care and diligence shown in the allocation of controls [19].

Internal validity [20] dictates how an experimental design is structured and encompasses all of the steps of the scientific research method [21].

Even if your results are great, sloppy and inconsistent design [4] will compromise your integrity in the eyes of the scientific community. Internal validity [20] and reliability are at the core of any experimental design.

External validity [22] is the process of examining the results and questioning whether there are any other possible causal [23] relationships.

Control groups [19] and randomization will lessen external validity problems but no method can be completely successful. This is why the statistical proofs of a hypothesis [24] called significant [25], not absolute truth.

Any scientific research design [26] only puts forward a possible cause for the studied effect.

There is always the chance that another unknown factor [27] contributed to the results and findings. This extraneous causal relationship may become more apparent, as techniques are refined and honed.

Conclusion

If you have constructed your experiment to contain validity and reliability [28] then the scientific community is more likely to accept your findings.

Eliminating other potential causal relationships, by using controls and duplicate samples, is the best way to ensure that your results stand up to rigorous questioning.

Validity and Reliability

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