# RELIABILITY AND VALIDITY

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Consistency of the results obtained from research.</th>
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| Internal reliability | - The consistency of data collection, analysis, and interpretation.  
                   |   - “Would an independent researcher, on reanalyzing the data, come to the same conclusion?”                       |
| External reliability | - Extent to which independent researchers can reproduce a study and obtain results similar to those obtained in the original study.  
                   |   - “Would an independent researcher, on replicating the study, come to the same conclusions?”                        |

<table>
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<tr>
<th>Validity</th>
<th>Extent to which a piece of research actually investigates what the researcher purports to investigate.</th>
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| Internal validity  | - Interpretability of the research: Can any differences which are found actually be ascribed to the treatments under scrutiny?  
                   |   - “Is the research design such that we can confidently claim that the outcomes are a result of the experimental treatment?” |
| External validity  | - The extent to which the results can be generalized from samples to populations.  
                   |   - Is the research design such that we can generalize beyond the subjects under investigation to a wider population?” |
| Construct validity | - A construct is a psychological quality that we cannot directly observe but that we assume to exist in order to explain behavior we can observe.  
                   |   - Extremely important to define constructs that are being investigated in such a way which would enable an outsider to identify these characteristics if they came across them. |

“Internal validity has to do with factors which may directly affect outcomes, while external validity is concerned with generalizability. If all variables, such as treatments and sampling of subjects, are controlled, then we might say that laboratory conditions pertain and that the experiment is more likely to be internally valid. However, what occurs under such conditions may not occur in typical circumstances, and the question arises as to how far we may generalize from the results.”
Checklist for critiquing a statistical study

I. Abstract (optional heading). Has the author correctly summarized the article? Are the following items included?
   A. Statement of the topic and purpose.
   B. Description of the participants and materials and procedures
   C. Explanation of the statistical analyses
   D. Summary of results and implications

II. Introduction (optional heading). Is the framework for the study clear?
   A. Literature Review. Can you tell where the study fits in?
      1. Is the background or rationale provided?
      2. Is the relationship to previous research clear?
   B. Statement of Purpose. Can you tell where the study is heading?
      Are any of the following included?
      1. Purpose.
      2. Research questions
      3. Research hypotheses

III. Methods. Is the study replicable?
   A. Subjects
      1. Is the description of participants adequate?
      2. Is the method of selection clear?
   B. Materials
      1. Is there a description of tests, questionnaires, rating scales, and so forth?
      2. Do the variables represent reasonable operational definitions of the underlying constructs or characteristics involved?
      3. Is there a description of any equipment (when applicable)?
   C. Procedures
      1. Is there a description of the preparation of materials, administration, scoring, and so on?
      2. Is there a description of the conditions during the study?
   D. Analyses
      1. Is there a description of the arrangement and grouping of the data?
      2. Are the statistical tests listed in order of use?

IV. Results
   A. Are all the statistical tests previously listed represented as results?
   B. Is there a prose explanation (optional)?

V. Discussion/Conclusion
   A. Is the original research question, or questions, answered?
   B. Is there an explanation of why the results were as they were?
      1. If the conclusion is based on previous research, is it well supported and reasoned?
      2. If the conclusion is speculative, is it qualified as such and well reasoned?
   C. Are suggestions for further research provided?

VI. References, Notes, or Footnotes
   A. Are all the references cited in the text included?
   B. Are any pertinent references missing?

VII. Appendixes
   A. Are they necessary?
   B. Are they complete?