

Risk of Bias Utilized for Surveys Tool (ROBUST) - coding guide

Items need to be adapted to the exact nature of the research question and field; suggestions for decision rules are proposed within each item. A criterion is either met or not, which is equivalent to receiving a score of 1 or 0, respectively. A final score can be calculated by aggregating the numbers across items, with 8 points representing the highest level of confidence in the results (low risk of bias) and 0 the lowest level (high risk of bias).

No.	Topic	Criterion
1.	Sampling frame	Is the sampling frame largely representative of the studied population? Yes = they are identical or the sampling frame is representative to a great extent (e.g., telephone directory) No = the sampling frame represents a much more specific group than the studied population or not reported
2.	Participant recruitment	Were appropriate methods utilized for participant recruitment? Yes = relatively low sampling bias (e.g., random selection or randomly addressing participants) No = high potential for sampling bias (e.g., convenience sample) or not reported
3.	Exclusion rate	Is the exclusion rate of participants acceptable? Yes = below a certain percentage (e.g., 10% or 20%) No = more than the chosen criterion or not reported
4.	Sample size	Is the final sample size sufficient for the research design? Yes = equal or above a certain number of participants (e.g., 30 or 120) No = less than the chosen criterion or not reported
5.	Sample characteristics	Are the characteristics of the sample reported (demographic variables)? Yes = both age and gender are reported No = one or both of them not reported
6.	Measurement validity	Do the relevant measures have adequate reliability? Yes = all measures have acceptable reliability (e.g., $\alpha > 0.7$ for a scale with 7 or more items) No = reliability of one measure or more is less than the chosen criterion or not reported
7.	Setting	Were the procedures included in the study conducted in a controlled setting? Yes = controlled environment (e.g., laboratory or university settings) No = uncontrolled environment (e.g., online) or not reported
8.	Data management	Are data cleaning and management procedures reported and/or acceptable? Yes = Reporting of either missing data, outliers, or invalid responses ¹ No = all unreported or unusual procedures utilized (e.g. irregular imputations)

¹ Although it would be reasonable to assign low risk of bias if all three were reported, we had no such studies in our analysis. Therefore, in order to create variability in this item, we decided that completely ignoring data management will indicate high risk of bias.