Recommended Reporting Standards for Experiments (Laboratory, Field, Survey)

This document describes recommended minimum reporting standards for experimental research. These are minimum standards and cannot anticipate all the particular things that are worth reporting in each study. Further, the reporting recommendations generally leave the question of how statistical analysis should be conducted and reported to the researcher, though there are several basic features of the data that we include as recommended minimum reporting standards. This document was put together by the Experimental Standards Committee of APSA's Organized Section on Experimental Research. (The committee members were Alan Gerber (Chair), Kevin Arceneaux, Cheryl Boudreau, Conor Dowling, Sunshine Hillygus, and Tom Palfrey.) We view this document as a tool for researchers who wish to communicate their work more effectively and a checklist that may be helpful to the researcher who wants to prepare a study that can be easily understood and evaluated. The standards are similar to the CONSORT reporting standards, which have been embraced by medical researchers conducting experimental research and now are the minimum reporting requirements for several major medical journals.

A. Hypotheses
- Specific objectives or hypotheses.
    - What question(s) was (were) the experiment designed to address?
    - What are the specific hypotheses to be tested?

B. Subjects and Context
- Eligibility and exclusion criteria for participants.
    - Why was this subject pool selected? Who was eligible to participate in the study? What would result in the exclusion of a participant? Were any aspects of recruitment changed (such as the exclusion criteria) after recruitment began?
- Procedures used to recruit and select participants.
    - If there is a survey: Identify the survey firm used and describe how they recruit respondents.
- Recruitment dates defining the periods of recruitment and when the experiments were conducted.
    - Also list dates of any repeated measurements as part of a follow-up.
- Settings and locations where the data were collected.
    - In the field, lab, classroom, or some other specialized setting?
    - Other relevant specifics of the population: e.g., large public university vs. small private university; geographic location; etc.
- If there is a survey: Provide response rate and how it was calculated.

C. Allocation Method
- Details of the procedure used to generate the assignment sequence (e.g., randomization procedures).
- If random assignment used, then details of procedure (e.g., any restrictions, blocking).
    - Note the unit of randomization (individuals, groups, households, etc). Pay careful attention to report clustered random assignment if subjects were assigned at some level other than the individual subject.
- If random assignment used, provide evidence of random assignment.
    - If demographic or other pretreatment variables were collected, a table (in text or appendix) showing baseline means and standard deviations for demographic characteristics and other pre-treatment measures by experimental group.
    - If blocking was used, and group assignment proportions were not equal across blocks, provide table for each of the blocks. If there are too many blocks for this to be practical,

combine blocks to present weighted averages of covariates using inverse probability weighting.

- Blinding: Were participants, those administering the interventions, and those assessing the outcomes unaware of condition assignments?
    - If blinding took place, include a statement regarding how it was accomplished and how the success of blinding was evaluated.

D. Treatments
- Description of the interventions in each treatment condition, as well as a description of the control group.
    - Descriptions should be sufficient to allow replication: Summary or paraphrasing of experimental instructions in the article text; verbatim instructions and/or other treatment materials provided in an appendix.
- How and when manipulations or interventions were administered.
    - Method of delivery: Pen-and-paper vs. computer or internet vs. face-to-face communication vs. over the telephone.
    - If computerized, the software should be described and cited. (If possible, programs should be included in appendix so as to be available for purposes of replication.)
    - For lab experiments (and other experiments, when relevant):
        - Report the number of repetitions of the experimental task and the group rotation protocol. Report the ordering of treatments for within-subject designs. Any piggybacking of other protocols should be reported. Report any use of experienced subjects or subjects used in more than one session or treatment.
        - Time span: How long did each experiment last? How many sessions were subjects expected to attend? If there were multiple sessions, how much time passed between them?
        - Total number of sessions conducted and number of subjects used in each session.
        - Was deception used?
        - Treatment fidelity: Evidence on whether the treatment was delivered as intended.
            - Report any instructional anomalies or inaccuracies.
            - Were subjects given quizzes on the experimental instructions?
            - Were there practice rounds? If so, how many and what were the results?
            - Did subjects complete a post-experiment debriefing, interview, or questionnaire? If so, is there evidence that subjects understood the instructions and treatments?
            - Did the experimental team observe aspects of the intervention?
            - Provide description of manipulation checks, if any.
        - Were incentives given? If so, what were they and how were they administered.

E. Results
1. Outcome Measures and Covariates
- Provide precise definition of all primary and secondary measures and covariates.
    - For indices, provide exact description of how they are formed. For survey items provide exact question wording in an appendix. Please provide a copy of the complete survey questionnaire (in an on-line appendix if it is long).
- Clearly state which of the outcomes and subgroup analyses were specified prior to the experiment and which were the result of exploratory analysis.

2. Complete CONSORT Participant Flow Diagram
- An example of a CONSORT flow diagram is attached. The flow diagram records the initial

number of subjects deemed eligible for the experiment and all losses of subjects during the course of the experiment. The flow chart follows the subjects from initial recruitment to the sample used in the main analyses, providing readers clear information on the amount of attrition and exclusions. The chart also reports the portion of each treatment group that received the allocated intervention and if not, why this was not accomplished. Naturally, in the event that there is zero or very trivial non-compliance with group assignment or zero or very trivial attrition, researchers may decide it is more convenient to report the information that would otherwise be shown in the CONSORT diagram in the text and omit the diagram.

Note that the CONSORT flow chart entries include:
- Number of subjects initially assessed for eligibility for the study.
- Exclusions prior to random assignment and reasons for the exclusions.
- Number of subjects initially assigned to each experimental group.
- The proportion of each group that received its allocated intervention and the reasons why subjects did not receive the intended intervention.
- The number of subjects in each group that dropped out or for other reasons do not have outcome data.
- The number of subjects in each group that are included in the statistical analysis, and the reasons for any exclusions.
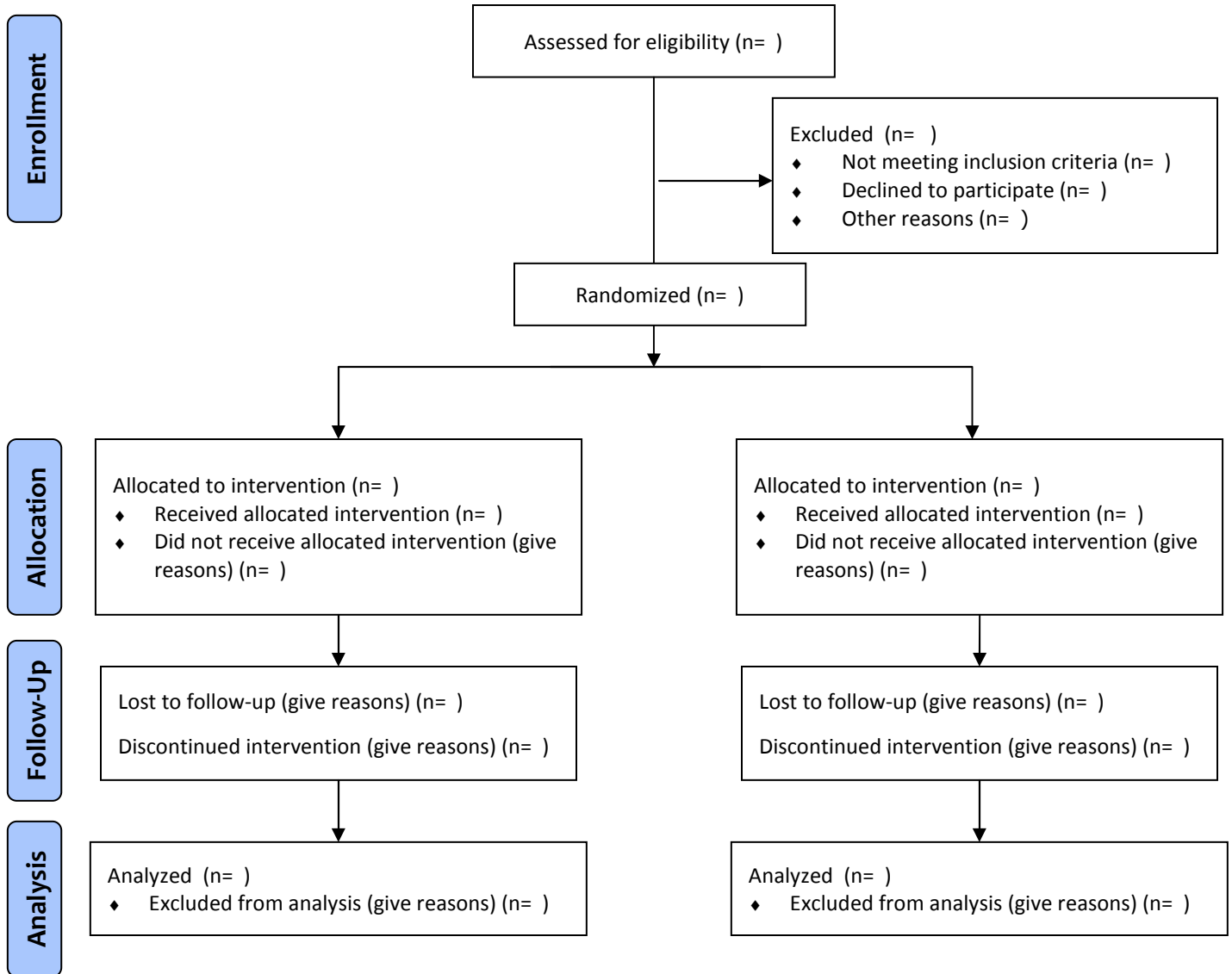
3. Statistical Analysis
- Researchers will conduct statistical analysis and report their results in the manner they deem appropriate. We recommend that this reporting include the following:
  - Report sample means and standard deviations for the outcome variables using intent-to treat (ITT) analysis (means for the entire collection of subjects assigned to a group, whether the treatment is successfully delivered or not).
    - If the experiment uses block randomization with unequal assignment rates, present ITT analysis by block or present overall means using inverse probability weighting.
  - Note if level of analysis differs from level of randomization and estimate appropriate standard errors.
  - If there is attrition, discuss reasons for attrition and examine if attrition is related to pre-treatment variables.
  - Report for other missing data (not outcome variables):
    - Frequency or percentages of missing data by group.
    - Methods for addressing missing data (e.g., listwise deletion, imputation methods).
    - For each primary and secondary outcome and for each subgroup, provide a summary of the number of cases deleted from each analysis and rationale for dropping the cases.
  - For survey experiments: Describe in detail any weighting procedures that are used.

F. Other Information
- Was the experiment reviewed and approved by an IRB?
- If the experimental protocol was registered, where and how can the filing be accessed?
- What was the source of funding? What was the role of the funders in the analysis of the experiment?
  - Were there any restrictions or arrangements regarding what findings could be published? Any funding sources where conflict of interest might reasonably be an issue?
- If a replication data set is available, provide the URL.

CONSORT Statement 2010 Flow Diagram

Enrollment

Assessed for eligibility (n=)

Excluded (n=)
- ♦ Not meeting inclusion criteria (n=)
- ♦ Declined to participate (n=)
- ♦ Other reasons (n=)

Randomized (n=)

Allocation

Allocated to intervention (n=)
- ♦ Received allocated intervention (n=)
- ♦ Did not receive allocated intervention (give reasons) (n=)

Allocated to intervention (n=)
- ♦ Received allocated intervention (n=)
- ♦ Did not receive allocated intervention (give reasons) (n=)

Follow-Up

Lost to follow-up (give reasons) (n=)

Discontinued intervention (give reasons) (n=)

Lost to follow-up (give reasons) (n=)

Discontinued intervention (give reasons) (n=)

Analysis

Analyzed (n=)
- ♦ Excluded from analysis (give reasons) (n=)

Analyzed (n=)
- ♦ Excluded from analysis (give reasons) (n=)

From Schulz KF, Altman DG, Moher D, for the CONSORT Group. CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. *BMJ* 2010;340:c332.

For more information, visit www.consort-statement.org.