APPENDIX

Journal Article Reporting Standards (JARS), Meta-Analysis Reporting Standards (MARS), and Flow of Participants Through Each Stage of an Experiment or Quasi-Experiment

Journal Article Reporting Standards (JARS)

Information Recommended for Inclusion in Manuscripts That Report New Data Collections Regardless of Research Design

Table 1
Journal Article Reporting Standards (JARS): Information Recommended for Inclusion in Manuscripts That Report New Data Collections Regardless of Research Design

Paper section and topic	Description
Title and title page	Identify variables and theoretical issues under investigation and the relationship between them
	Author note contains acknowledgment of special circumstances:
	Use of data also appearing in previous publications, dissertations, or conference papers
	Sources of funding or other support
	Relationships that may be perceived as conflicts of interest
Abstract	Problem under investigation
	Participants or subjects; specifying pertinent characteristics; in animal research, include genus and species
	Study method, including:
	Sample size
	Any apparatus used
	Outcome measures
	Data-gathering procedures
	Research design (e.g., experiment, observational study)
	Findings, including effect sizes and confidence intervals and/or statistical significance levels
	Conclusions and the implications or applications
Introduction	The importance of the problem:
	Theoretical or practical implications
	Review of relevant scholarship:
	Relation to previous work
	If other aspects of this study have been reported on previously, how the current report differs from these earlier reports
	Specific hypotheses and objectives:
	Theories or other means used to derive hypotheses
	Primary and secondary hypotheses, other planned analyses
	How hypotheses and research design relate to one another
Method	
Participant characteristics	Eligibility and exclusion criteria, including any restrictions based on demographic characteristics
	Major demographic characteristics as well as important topic-specific characteristics (e.g., achievement level in studies of educational interventions), or in the case of animal research, genus and species
Sampling procedures	Procedures for selecting participants, including:
	The sampling method if a systematic sampling plan was implemented
	Percentage of sample approached that participated
	Self-selection (either by individuals or units, such as schools or clinics)
	Settings and locations where data were collected
	Agreements and payments made to participants
	Institutional review board agreements, ethical standards met, safety monitoring

Table 1 (*continued*)

Paper section and topic	Description
Method (*continued*)	
Sample size, power, and precision	Intended sample size
	Actual sample size, if different from intended sample size
	How sample size was determined:
	Power analysis, or methods used to determine precision of parameter estimates
	Explanation of any interim analyses and stopping rules
Measures and covariates	Definitions of all primary and secondary measures and covariates:
	Include measures collected but not included in this report
	Methods used to collect data
	Methods used to enhance the quality of measurements:
	Training and reliability of data collectors
	Use of multiple observations
	Information on validated or ad hoc instruments created for individual studies, for example, psychometric and biometric properties
Research design	Whether conditions were manipulated or naturally observed
	Type of research design; provided in Table 3 are modules for:
	Randomized experiments (Module A1)
	Quasi-experiments (Module A2)
	Other designs would have different reporting needs associated with them
Results	
Participant flow	Total number of participants
	Flow of participants through each stage of the study
Recruitment	Dates defining the periods of recruitment and repeated measurements or follow-up
Statistics and data analysis	Information concerning problems with statistical assumptions and/or data distributions that could affect the validity of findings
	Missing data:
	Frequency or percentages of missing data
	Empirical evidence and/or theoretical arguments for the causes of data that are missing, for example, missing completely at random (MCAR), missing at random (MAR), or missing not at random (MNAR)
	Methods for addressing missing data, if used
	For each primary and secondary outcome and for each subgroup, a summary of:
	Cases deleted from each analysis
	Subgroup or cell sample sizes, cell means, standard deviations, or other estimates of precision, and other descriptive statistics
	Effect sizes and confidence intervals
	For inferential statistics (null hypothesis significance testing), information about:
	The a priori Type I error rate adopted
	Direction, magnitude, degrees of freedom, and exact *p* level, even if no significant effect is reported
	For multivariable analytic systems (e.g., multivariate analyses of variance, regression analyses, structural equation modeling analyses, and hierarchical linear modeling) also include the associated variance–covariance (or correlation) matrix or matrices
	Estimation problems (e.g., failure to converge, bad solution spaces), anomalous data points
	Statistical software program, if specialized procedures were used
	Report any other analyses performed, including adjusted analyses, indicating those that were prespecified and those that were exploratory (though not necessarily in level of detail of primary analyses)
Ancillary analyses	Discussion of implications of ancillary analyses for statistical error rates
Discussion	Statement of support or nonsupport for all original hypotheses:
	Distinguished by primary and secondary hypotheses
	Post hoc explanations
	Similarities and differences between results and work of others
	Interpretation of the results, taking into account:
	Sources of potential bias and other threats to internal validity
	Imprecision of measures
	The overall number of tests or overlap among tests, and
	Other limitations or weaknesses of the study
	Generalizability (external validity) of the findings, taking into account:
	The target population
	Other contextual issues
	Discussion of implications for future research, program, or policy

Table 2
Module A: Reporting Standards for Studies With an Experimental Manipulation or Intervention (in Addition to Material Presented in Table 1)

Paper section and topic	Description
Method	
Experimental manipulations or interventions	Details of the interventions or experimental manipulations intended for each study condition, including control groups, and how and when manipulations or interventions were actually administered, specifically including: Content of the interventions or specific experimental manipulations Summary or paraphrasing of instructions, unless they are unusual or compose the experimental manipulation, in which case they may be presented verbatim Method of intervention or manipulation delivery Description of apparatus and materials used and their function in the experiment Specialized equipment by model and supplier Deliverer: who delivered the manipulations or interventions Level of professional training Level of training in specific interventions or manipulations Number of deliverers and, in the case of interventions, the *M*, *SD*, and range of number of individuals/units treated by each Setting: where the manipulations or interventions occurred Exposure quantity and duration: how many sessions, episodes, or events were intended to be delivered, how long they were intended to last Time span: how long it took to deliver the intervention or manipulation to each unit Activities to increase compliance or adherence (e.g., incentives) Use of language other than English and the translation method
Units of delivery and analysis	Unit of delivery: How participants were grouped during delivery Description of the smallest unit that was analyzed (and in the case of experiments, that was randomly assigned to conditions) to assess manipulation or intervention effects (e.g., individuals, work groups, classes) If the unit of analysis differed from the unit of delivery, description of the analytical method used to account for this (e.g., adjusting the standard error estimates by the design effect or using multilevel analysis)
Results	
Participant flow	Total number of groups (if intervention was administered at the group level) and the number of participants assigned to each group: Number of participants who did not complete the experiment or crossed over to other conditions, explain why Number of participants used in primary analyses Flow of participants through each stage of the study (see Figure 1)
Treatment fidelity	Evidence on whether the treatment was delivered as intended
Baseline data	Baseline demographic and clinical characteristics of each group
Statistics and data analysis	Whether the analysis was by intent-to-treat, complier average causal effect, other or multiple ways
Adverse events and side effects	All important adverse events or side effects in each intervention group
Discussion	Discussion of results taking into account the mechanism by which the manipulation or intervention was intended to work (causal pathways) or alternative mechanisms If an intervention is involved, discussion of the success of and barriers to implementing the intervention, fidelity of implementation Generalizability (external validity) of the findings, taking into account: The characteristics of the intervention How, what outcomes were measured Length of follow-up Incentives Compliance rates The "clinical or practical significance" of outcomes and the basis for these interpretations

Table 3
Reporting Standards for Studies Using Random and Nonrandom Assignment of Participants to Experimental Groups

Paper section and topic	Description
	Module A1: Studies using random assignment
Method	
Random assignment method	Procedure used to generate the random assignment sequence, including details of any restriction (e.g., blocking, stratification)
Random assignment concealment	Whether sequence was concealed until interventions were assigned
Random assignment implementation	Who generated the assignment sequence Who enrolled participants Who assigned participants to groups
Masking	Whether participants, those administering the interventions, and those assessing the outcomes were unaware of condition assignments If masking took place, statement regarding how it was accomplished and how the success of masking was evaluated
Statistical methods	Statistical methods used to compare groups on primary outcome(s) Statistical methods used for additional analyses, such as subgroup analyses and adjusted analysis Statistical methods used for mediation analyses
	Module A2: Studies using nonrandom assignment
Method	
Assignment method	Unit of assignment (the unit being assigned to study conditions, e.g., individual, group, community) Method used to assign units to study conditions, including details of any restriction (e.g., blocking, stratification, minimization) Procedures employed to help minimize potential bias due to nonrandomization (e.g., matching, propensity score matching)
Masking	Whether participants, those administering the interventions, and those assessing the outcomes were unaware of condition assignments If masking took place, statement regarding how it was accomplished and how the success of masking was evaluated
Statistical methods	Statistical methods used to compare study groups on primary outcome(s), including complex methods for correlated data Statistical methods used for additional analyses, such as subgroup analyses and adjusted analysis (e.g., methods for modeling pretest differences and adjusting for them) Statistical methods used for mediation analyses

Meta-Analysis Reporting Standards (MARS)

Information Recommended for Inclusion in Manuscripts Reporting Meta-Analyses

Table 4
Meta-Analysis Reporting Standards (MARS): Information Recommended for Inclusion in Manuscripts Reporting Meta-Analyses

Paper section and topic	Description
Title	Make it clear that the report describes a research synthesis and include "meta-analysis," if applicable
	Footnote funding source(s)
Abstract	The problem or relation(s) under investigation
	Study eligibility criteria
	Type(s) of participants included in primary studies
	Meta-analysis methods (indicating whether a fixed or random model was used)
	Main results (including the more important effect sizes and any important moderators of these effect sizes)
	Conclusions (including limitations)
	Implications for theory, policy, and/or practice
Introduction	Clear statement of the question or relation(s) under investigation:
	Historical background
	Theoretical, policy, and/or practical issues related to the question or relation(s) of interest
	Rationale for the selection and coding of potential moderators and mediators of results
	Types of study designs used in the primary research, their strengths and weaknesses
	Types of predictor and outcome measures used, their psychometric characteristics
	Populations to which the question or relation is relevant
	Hypotheses, if any
Method	
Inclusion and exclusion criteria	Operational characteristics of independent (predictor) and dependent (outcome) variable(s)
	Eligible participant populations
	Eligible research design features (e.g., random assignment only, minimal sample size)
	Time period in which studies needed to be conducted
	Geographical and/or cultural restrictions
Moderator and mediator analyses	Definition of all coding categories used to test moderators or mediators of the relation(s) of interest
Search strategies	Reference and citation databases searched
	Registries (including prospective registries) searched:
	Keywords used to enter databases and registries
	Search software used and version
	Time period in which studies needed to be conducted, if applicable
	Other efforts to retrieve all available studies:
	Listservs queried
	Contacts made with authors (and how authors were chosen)
	Reference lists of reports examined
	Method of addressing reports in languages other than English

Table 4 (*continued*)

Paper section and topic	Description
Search strategies (*continued*)	Process for determining study eligibility: Aspects of reports were examined (i.e, title, abstract, and/or full text) Number and qualifications of relevance judges Indication of agreement How disagreements were resolved Treatment of unpublished studies
Coding procedures	Number and qualifications of coders (e.g., level of expertise in the area, training) Intercoder reliability or agreement Whether each report was coded by more than one coder and if so, how disagreements were resolved Assessment of study quality: If a quality scale was employed, a description of criteria and the procedures for application If study design features were coded, what these were How missing data were handled
Statistical methods	Effectsizemetric(s): Effect sizes calculating formulas (e.g., *M*s and *SD*s, use of univariate *F* to *r* transform) Corrections made to effect sizes (e.g., small sample bias, correction for unequal *n*s) Effect size averaging and/or weighting method(s) How effect size confidence intervals (or standard errors) were calculated How effect size credibility intervals were calculated, if used How studies with more than one effect size were handled Whether fixed and/or random effects models were used and the model choice justification How heterogeneity in effect sizes was assessed or estimated *M*s and *SD*s for measurement artifacts, if construct-level relationships were the focus Tests and any adjustments for data censoring (e.g., publication bias, selective reporting) Tests for statistical outliers Statistical power of the meta-analysis Statistical programs or software packages used to conduct statistical analyses
Results	Number of citations examined for relevance List of citations included in the synthesis Number of citations relevant on many but not all inclusion criteria excluded from the meta-analysis Number of exclusions for each exclusion criterion (e.g., effect size could not be calculated), with examples Table giving descriptive information for each included study, including effect size and sample size Assessment of study quality, if any Tables and/or graphic summaries: Overall characteristics of the database (e.g., number of studies with different research designs) Overall effect size estimates, including measures of uncertainty (e.g., confidence and/or credibility intervals) Results of moderator and mediator analyses (analyses of subsets of studies): Number of studies and total sample sizes for each moderator analysis Assessment of interrelations among variables used for moderator and mediator analyses Assessment of bias including possible data censoring
Discussion	Statement of major findings Consideration of alternative explanations for observed results: Impact of data censoring Generalizability of conclusions: Relevant populations Treatment variations Dependent (outcome) variables Research designs General limitations (including assessment of the quality of studies included) Implications and interpretation for theory, policy, or practice Guidelines for future research

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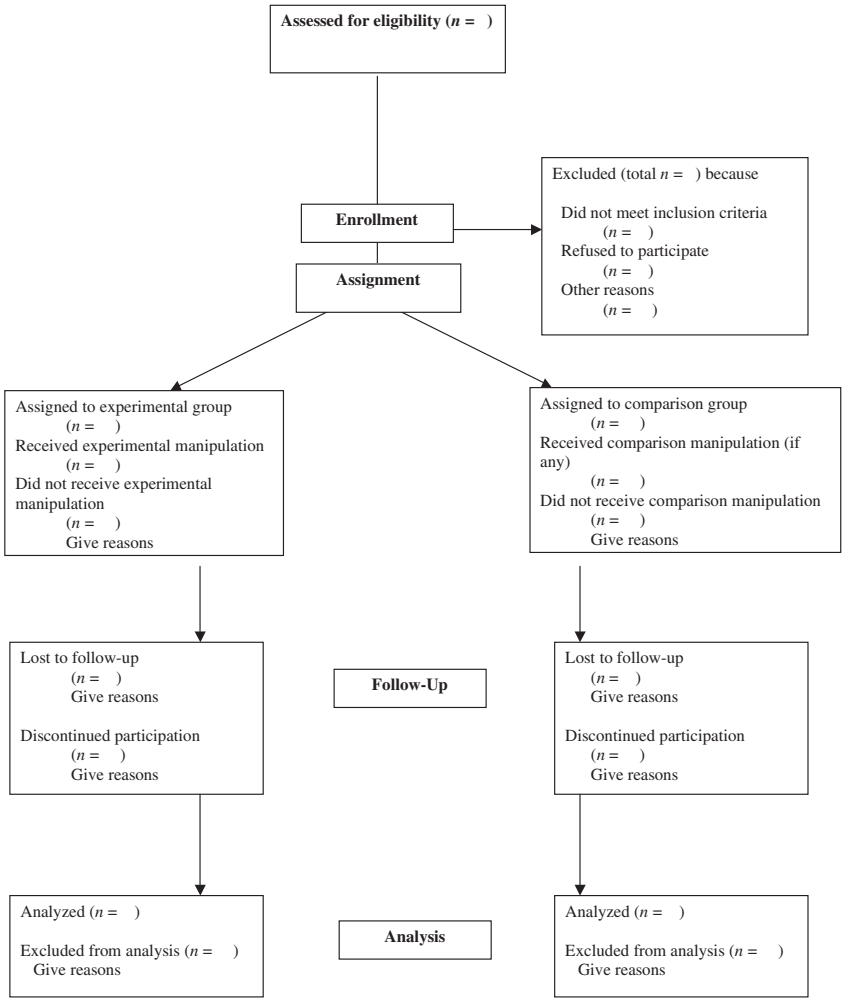
Flow of Participants Through Each Stage of an Experiment or Quasi-Experiment

Figure 1
Flow of Participants Through Each Stage of an Experiment or Quasi-Experiment



Note. This flowchart is an adaptation of the flowchart offered by the CONSORT Group (Altman et al., 2001; Moher, Schulz, & Altman, 2001). Journals publishing the original CONSORT flowchart have waived copyright protection.

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