Title Long: Look a Snappy Subtitle

Author One

One University

Author Two

University of Two

Author Three

Three College

Author Note

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Abstract

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An abstract of a report of an empirical study should describe the problem under investigation, in one sentence if possible; the participants, specifying pertinent characteristics such as age, sex, and ethnic and/or racial group; in animal research, specifying genus and species; the essential features of study method – you have a limited number of words so restrict your description to essential and interesting features of the study methodology particularly those likely to be used in electronic searches; the basic findings, including effect sizes and confidence intervals and/or statistical significance levels; and the conclusions and the implications or applications.

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Relevant Scholarship

Current Study

To summarize, the current study examines the relationship between APPLES and BANANAS, using CHARACTERISTICS OF THE SAMPLE sample. This examination extends the TOPIC literature in several key ways. We

1. DID THING ONE;
2. DID THING TWO; and
3. DID THING THREE.

We made the following predictions, based primary upon CITATION and CITATION:

1. QUESTION ONE. HYPOTHESIS ONE. REASONS FOR HYPOTHESIS ONE.
2. QUESTION TWO. HYPOTHESIS TWO. REASONS FOR HYPOTHESIS TWO.

Method

The Method section describes in detail how the study was conducted, including conceptual and operational definitions of the variables used in the study. Different types of studies will rely on different methodologies; however, a complete description of the methods used enables the reader to evaluate the appropriateness of your methods and the reliability and the validity of your results. It also permits experienced investigators to replicate the study. If your manuscript is an update of an ongoing or earlier study and the method has been published in detail elsewhere, you may refer the reader to that source and simply give a brief synopsis of the method in this section.

Subject Characteristics

Appropriate identification of research participants is critical to the science and practice of psychology, particularly for generalizing the findings, making comparisons across replications, and using the evidence in research syntheses and secondary data analyses. If humans participated in the study, report the eligibility and exclusion criteria, including any restrictions based on demographic characteristics. Describe the sample adequately. Detail the sample's major demographic characteristics, such as age; sex; ethnic and/or racial group; level of education; socioeconomic, generational, or immigrant status; disability status; sexual orientation; gender identity; and language preference as well as important topic-specific characteristics (e.g., achievement level in studies of educational interventions). As a rule, describe the groups as specifically as possible, with particular emphasis on characteristics that may have bearing on the interpretation of results. Often, panicipant characteristics can be important for understanding the nature of the sample and the degree to which results can be generalized. To determine how far the data can be generalized, you may find it useful to identify subgroups: Even when a characteristic is not used in analysis of the data, reporting it may give readers a more complete understanding of the sample and the generalizability of results and may prove useful in meta-analytic studies that incorporate the article's results.

When animals are used, report the genus, species, and strain number or other specific identification, such as the name and location of the supplier and the stock designation. Give the number of animals and the animals' sex, age, weight, and physiological condition.

Sampling Procedure

Describe the procedures for selecting participants, including (a) the sampling method, if a systematic sampling plan was used; (b) the percentage of the sample approached that participated; and (c) the number of participants who selected themselves into the sample. Describe the settings and locations in which the data were

collected as well as any agreements and payments made to participants, agreements with the institutional review board, ethical standards met, and safety monitoring procedures.

Sample Size, Power, and Precision

Along with the description of subjects, give the intended size of the sample and number of individuals meant to be in each condition, if separate conditions were used.

State whether the achieved sample differed in known ways from the target population. Conclusions and interpretations should not go beyond what the sample would warrant. State how this intended sample size was determined (e.g., analysis of power or pre- cision). If interim analysis and stopping rules were used to modify the desired sample size, describe the methodology and results.

When applying inferential statistics, take seriously the statistical power considerations associated with the tests of hypotheses. Such considerations relate to the likelihood of correctly rejecting the tested hypotheses, given a particular alpha level, effect size, and sample size. In that regard, routinely provide evidence that the study has sufficient power to detect effects of substantive interest. Be similarly careful in discussing the role played by sample size in cases in which not rejecting the null hypothesis is desirable (i.e., when one wishes to argue that there are no differences), when testing various assumptions underlying the statistical model adopted (e.g., normality, homogeneity of variance, homogeneity of regression), and in model fitting.

Alternatively, use calculations based on a chosen target precision (confidence interval width) to determine sample sizes. Use the resulting confidence intervals to justify conclusions concerning effect sizes (e.g., that some effect is negligibly small).

Measures and Covariates

Include in the Method section information that provides definitions of all primary and secondary outcome measures and covariates, including measures collected but not included in this report. Describe the methods used to collect data (e.g., written questionnaires, interviews, observations) as well as methods used to enhance the quality

of the measurements (e.g., the training and reliability of assessors or the use of multiple observations). Provide information on instruments used, including their psychometric and biometric properties and evidence of cultural validity.

Properties of Instrument A. Include in the Method section information that provides definitions of all primary and secondary outcome measures and covariates, including measures collected but not included in this report. Describe the methods used to collect data (e.g., written questionnaires, interviews, observations) as well as methods used to enhance the quality of the measurements (e.g., the training and reliability of assessors or the use of multiple observations). Provide information on instruments used, including their psychometric and biometric properties and evidence of cultural validity.

Properties of Instrument B. Include in the Method section information that provides definitions of all primary and secondary outcome measures and covariates, including measures collected but not included in this report. Describe the methods used to collect data (e.g., written questionnaires, interviews, observations) as well as methods used to enhance the quality of the measurements (e.g., the training and reliability of assessors or the use of multiple observations). Provide information on instruments used, including their psychometric and biometric properties and evidence of cultural validity.

Research Design

Specify the research design in the Method section. Were subjects placed into conditions that were manipulated, or were they observed naturalistically? If multiple conditions were created, how were participants assigned to conditions, through random assignment or some other selection mechanism? Was the study conducted as a between-subjects or a within-subject design?

Different research designs have different reporting needs associated with them. Information that should be reported for all studies that involve experimental manipulations or interventions is summarized in Table 2 of the Appendix, Module A: Reporting Standards for Studies With an Experimental Manipulation or Intervention (in Addition to Material Presented in Table 1) and Table 3 of the Appendix, Reporting

Standards for Studies Using Random and Nonrandom Assignment of Participants to Experimental Groups. When reporting studies that are not of the manipulation or intervention variety (e.g., observational, natural history studies), provide sufficient description of the study procedures to allow the reader to fully comprehend the complexity of the study and to be prepared to conduct a near replication of the study.

Experimental Manipulations or Interventions

If interventions or experimental manipulations were used in the study, describe their specific content. Include the details of the interventions or manipulations intended for each study condition, including controlgroups (if any), and describe how and when interventions (experimental manipulations) were actually administered.

The description of manipulations or interventions should include several elements. Carefully describe the content of the intervention or specific experimental manipulations. Often, this will involve presenting a brief summary of instructions given to participants. If the instructions are unusual or compose the experimental manipulation, you may present them verbatim in an appendix or in an online supplemental archive. If the text is brief, you may present it in the body of the paper if it does not interfere with the readability of the report.

Describe the methods of manipulation and data acquisition. If a mechanical apparatus was used to present stimulus materials or collect data, include in the description of procedures the apparatus model number and manufacturer (when important, as in neuroimaging studies), its key settings or parameters (e.g., pulse settings), and its resolution (e.g., regarding stimulus delivery, recording precision). As with the description of the intervention or experimental manipulation, this material may be presented in the body of the paper, in an appendix, in an online supplemental archive, or as appropriate. When relevantsuch as, for example, in the delivery of clinical and educational interventionsthe procedures should also contain a description of who delivered the intervention, including their level of professional training and their level of training in the specific intervention. Present the number of deliverers along with the

mean, standard deviation, and range of number of individuals or units treated by each deliverer.

Provide information about (a) the setting where the intervention or manipulation was delivered, (b) the quantity and duration of exposure to the intervention or manipulation (i.e., how many sessions, episodes, or events were intended to be delivered and how long they were intended to last), (c) the time span taken for the delivery of the intervention or manipulation to each unit (e.g., would the manipulation delivery be complete in one session, or if participants returned for multiple sessions, how much time passed between the first and last session?), and (d) activities or incentives used to increase compliance.

When an instrument is translated into a language other than the language in which it was developed, describe the specific method of translation (e.g., back-translation, in which a text is translated into another language and then back into the first to ensure that it is equivalent enough that results can be compared).

Provide a description of how participants were grouped during data acquisition (i.e., was the manipulation or intervention administered individual by individual, in small groups, or in intact groupings such as classrooms?). Describe the smallest unit (e.g., indi- viduals, work groups, classes) that was analyzed to assess effects. If the unit used for statistical analysis differed from the unit used to deliver the intervention or manipulation (i.e., was different from the unit of randomization), describe the analytic method used to account for this (e.g., adjusting the standard error estimates or using multilevel analysis).

Results

In the Results section, summarize the collected data and the analysis performed on those data relevant to the discourse that is to follow. Report the data in sufficient detail to justify your conclusions. Mention all relevant results, including those that run counter to expectation; be sure to include small effect sizes (or statistically nonsignificant findings) when theory predicts large (or statistically significant) ones. Do

not hide uncomfortable results by omission. Do not include individual scores or raw data, with the exception, for example, of single-case designs or illustrative examples. In the spirit of data sharing (encouraged by APA and other professional associations and sometimes required by funding agencies), raw data, including study characteristics and individual effect sizes used in a meta-analysis, can be made available on supplemental online archives. See section 2.13 for a detailed discussion of the use of supplemental online archives. Discussing the implications of the results should be reserved for presentation in the Discussion section.

Recruitment

Provide dates defining the periods of recruitment and follow-up and the primary sources of the potential subjects, where appropriate. If these dates differ by group, provide the values for each group.

Statistics and Data Analysis

Analysis of data and the reporting of the results of those analyses are fundamental aspects of the conduct of research. Accurate, unbiased, complete, and insightful reporting of the analytic treatment of data (be it quantitative or qualitative) must be a component of all research reports. Researchers in the field of psychology use numerous approaches to the analysis of data, and no one approach is uniformly preferred as long as the method is appropriate to the research questions being asked and the nature of the data collected. The methods used must support their analytic burdens, including robustness to violations of the assumptions that underlie them, and they must provide clear, unequivocal insights into the data.

Historically, researchers in psychology have relied heavily on null hypothesis statistical significance testing (NHST) as a starting point for many (but not all) of its analytic approaches. APA stresses that NHST is but a starting point and that additional reporting elements such as effect sizes, confidence intervals, and extensive description are needed to convey the most complete meaning of the results. The degree to which any journal emphasizes (or de-emphasizes) NHST is a decision of the

individual editor. However, complete reporting of all tested hypotheses and estimates of appropriate effect sizes and confidence intervals are the minimum expectations for all APA journals. The research scientist is always responsible for the accurate and responsible in reporting of the results of research studies.

Assume that your reader has a professional knowledge of statistical methods. Do not review basic concepts and procedures or provide citations for the most commonly used statistical procedures. If, however, there is any question about the appropriateness of a particular statistical procedure, justify its use by clearly stating the evidence that exists for the robustness of the procedure as applied.

Similarly, missing data can have a detrimental effect on the legitimacy of the inferences drawn by statistical tests. For this reason, it is critical that the frequency or percentages of missing data be reported along with any empirical evidence and/or theoretical arguments for the causes of data that are missing. For example, data might be described as missing completely at random (as when values of the missing variable are not related to the probability that they are missing or to the value of any other variable in the data set); missing at random (as when the probability of missing a value on a variable is not related to the missing value itself but may be related to other completely observed variables in the data set); or not missing at random (as when the probability of observing a given value for a variable is related to the missing value itself). It is also important to describe the methods for addressing missing data, if any were used (e.g., multiple imputation).

When reporting the results of inferential statistical tests or when providing estimates of parameters or effect sizes, include sufficient information to help the reader fully understand the analyses conducted and possible alternative explanations for the outcomes of those analyses. Because each analytic technique depends on different aspects of the data and assumptions, it is impossible to specify what constitutes a "sufficient set of statistics" for every analysis. However, such a set usually includes at least the following: the per-cell sample sizes; the observed cell means (or frequencies of cases in each category for a categorical variable); and the cell standard deviations, or

the pooled within-cell variance. In the case of multivariable analytic systems, such as multivariate analyses of variance, regression analyses, structural equation modeling analyses, and hierarchical linear modeling, the associated means, sample sizes, and variancecovariance (or correlation) matrix or matrices often represent a sufficient set of statistics. At times, the amount of information that constitutes a sufficient set of statistics can be extensive; when this is the case, this information could be supplied in a supplementary data set or appendix. For analyses based on very small samples (including single-case investigations), consider providing the complete set of raw data in a table or figure. Your work will more easily become a part of the cumulative knowledge of the field if you include enough statistical information to allow its inclusion in future meta-analyses.

For inferential statistical tests (e.g., t, F, and χ^2 tests), include the obtained magnitude or value of the test statistic, the degrees of freedom, the probability of obtaining a value as extreme as or more extreme than the one obtained (the exact p value), and the size and direction of the effect. When point estimates (e.g., sample means or regression coefficients) are provided, always include an associated measure of variability(precision), with an indication of the specific measure used (e.g., the standard error).

The inclusion of confidence intervals (for estimates of parameters, for functions of parameters such as differences in means, and for effect sizes) can be an extremely effective way of reporting results. Because confidence intervals combine information on location and precision and can often be directly used to infer significance levels, they are, in general, the best reporting strategy. The use of confidence intervals is therefore strongly recommended. As a rule, it is best to use a single confidence level, specified on an a priori basis (e.g., a 95% or 99% confidence interval), throughout the manuscript. Wherever possible, base discussion and interpretation of results on point and interval estimates.

For the reader to appreciate the magnitude or importance of a study's findings, it is almost always necessary to include some measure of effect size in the Results section.

Whenever possible, provide a confidence interval for each effect size reported to indicate the precision of estimation of the effect size. Effect sizes may be expressed in the original units (e.g., the mean number of questions answered correctly; kg/month for a regression slope) and are often most easily understood when reported in original units. It can often be valuable to report an effect size not only in original units but also in some standardized or units-free unit (e.g., as a Cohen's *d* value) or a standardized regression weight. Multiple degree-of-freedom effect-size indicators are often less useful than effect-size indicators that decompose multiple degree-of-freedom tests into meaningful one degree-of-freedom effectsparticularly when the latter are the results that inform the discussion. The general principle to be followed, however, is to provide the reader with enough information to assess the magnitude of the observed effect.

Ancillary Analyses

Report any other analyses performed, including subgroup analyses and adjusted analyses, indicating those that were prespecified and those that were exploratory (though not necessarily in the level of detail of primary analyses). Consider putting the detailed results of these analyses on the supplemental online archive. Discuss the implications, if any, of the ancillary analyses for statistical error rates.

Participant Flow

For experimental and quasi-experimental designs, there must be a description of the flow of participants (human, animal, or units such as classrooms or hospital wards) through the study. Present the total number of units recruited into the study and the number of participants assigned to each group. Provide the number of participants who did not complete the experiment or crossed over to other conditions and explain why. Note the number of participants used in the primary analyses. (This number might differ from the number who completed the study because participants might not show up for or complete the final measurement.) The flowchart in the Appendix (Figure 1) provides a useful device for displaying the flow of participants through each stage of a study (see also Figures 5.3 and 5.4, pp. 154-155).

Intervention or Manipulation Fidelity

If interventions or experimental manipulations were used, provide evidence on whether they were delivered as intended. In basic experimental research, this might be the results of checks on the manipulation. In applied research, this might be, for example, records and observations of intervention delivery sessions and attendance records.

Baseline Data. Be sure that baseline demographic and/or clinical characteristics of each group are provided.

Statistics and Data Analysis. In studies reporting the results of experimental manipulations or interventions, clarify whether the analysis was by intent-to-treat. That is, were all participants assigned to conditions included in the data analysis regardless of whether they actually received the intervention, or were only participants who completed the intervention satisfactorily included? Give a rationale for the choice.

Adverse Events. If interventions were studied, detail all important adverse events (events with serious consequences) and/or side effects in each intervention group.

Discussion

After presenting the results, you are in a position to evaluate and interpret their implications, especially with respect to your original hypotheses. Here you will examine, interpret, and qualify the results and draw inferences and conclusions from them. Emphasize any theoretical or practical consequences of the results. (When the discussion is relatively brief and straightforward, some authors prefer to combine it with the Results section, creating a section called Results and Discussion.)

Open the Discussion section with a clear statement of the support or nonsupport for your original hypotheses, distinguished by primary and secondary hypotheses. If hypotheses were not supported, offer post hoc explanations. Similarities and differences between your results and the work of others should be used to contextualize, confirm, and clarify your conclusions. Do not simply reformulate and repeat points already

made; each new statement should contribute to your interpretation and to the reader's understanding of the problem.

Your interpretation of the results should take into account (a) sources of potential bias and other threats to internal validity, (b) the imprecision of measures, (c) the overall number of tests or overlap among tests, (d) the effect sizes observed, and (e) other limitations or weaknesses of the study. If an intervention is involved, discuss whether it was successful and the mechanism by which it was intended to work (causal pathways) and/or alternative mechanisms. Also, discuss barriers to implementing the intervention or manipulation as well as the fidelity with which the intervention or manipulation was implemented in the study, that is, any differences between the manipulation as planned and as implemented.

Acknowledge the limitations of your research, and address alternative explanations of the results. Discuss the generalizability, or external validity, of the findings. This critical analysis should take into account differences between the target population and the accessed sample. For interventions, discuss characteristics that make them more or less applicable to circumstances not included in the study, how and what outcomes were measured (relative to other measures that might have been used), the length of time to measurement (between the end of the intervention and the measurement of outcomes), incentives, compliance rates, and specific settings involved in the study as well as other contextual issues.

End the Discussion section with a reasoned and justifiable commentary on the importance of your findings. This concluding section may be brief or extensive provided that it is tightly reasoned, self-contained, and not overstated. In this section, you might briefly return to a discussion of why the problem is important (as stated in the introduction); what larger issues, those that transcend the particulars of the subfield, might hinge on the findings; and what propositions are confirmed or disconfirmed by the extrapolation of these findings to such overarching issues.

Tables

Figures

References

Beta. (1900). Alpha. *Gamma*.

Delta. (1999). *Gamma* (Unpublished doctoral dissertation).