Instructions for Replication Paper Series reports

Original version: June 2015 - Revised version: February 2017

In this document, we provide guidance on what should appear in your final Replication Report as well as an overview of the requisite style and structure of that report. We hope that this document leads to clear understanding between the grantees and 3ie on what standards we set for Replication Reports, which will be published in 3ie's Replication Paper Series and posted to the 3ie website.

This document first provides a template for Replication Papers and a sample Table of Contents. You are not required to use this exact structure for your paper but we find it helps ensure that Replication Papers are appropriate for the intended audience, including non-technical readers.

This document also provides guidance on style for

- The format and running order of the report front matter
- Font and pagination
- Tables, graphs, and figures
- References and citations

All required items are marked with check boxes. Compliance with this guidance will help ensure a smoother posting process of replication papers to the Replication Paper Series.

1. Template for the body of a replication paper

Abstract

Describe your overall replication research and an overview your findings. Be sure to include a discussion of your pure replication results. 3ie's goal is for an individual with an intermediate-level background in economics to understand your replication study (although exceptions will be made for certain replication studies).

Introduction

Provide an overview of your replication paper. It's good to also mention (and cite) your posted replication plan.

Motivation (and literature review)

Motivate the replication study and introduce your research methodology. This is a good place to introduce your replication plan. If important to motivating your research, a focused literature review should be presented here.

Push button replication

Following 3ie's push button replication (PBR) protocol, briefly discuss your push button replication results. Using the push button replication final report template, produce the PBR report and PBR appendices, which should be included as separate appendices to your replication study. Within the report, be clear about any necessary adjustments you made to the original code (e.g. renaming directories). Provide the classification (*comparable replication, minor differences, major differences* or *incomplete*) and provide a detailed justification for the classification. Reference the appendices within the replication study itself.

Pure replication

Briefly introduce the intervention and the data. Keep in mind that some readers may not have read the original paper or may not remember its details if they have. The pure replication results are central to the overall study and often the most interesting for some readers, so please make sure to report them fully. Be clear about your own data manipulations. In your discussion of differences in results, please keep in mind the guidance from the blog post copied below. Provide a clear conclusion to this section that summarizes your pure replication findings.

Additional analysis

Present the methods and results for any measurement and/or estimation analysis and any theory of change analysis here. See "Quality evidence for policymaking: I'll believe it when I see the replication" (3ie RPS 1) for a description of these three types of replication analysis. The motivation for your additional analysis should be included in the motivation section above, along with a link to your posted replication plan. Here, please include separate sections for each type of analysis, and for each you should separate the presentation into methods and results (see the table of contents). When presenting your methods, be clear about departures from your original replication plan.

Discussion

In this section, discuss your replication study findings, the importance of your results, and your research takeaways for the pure replication and the additional analysis taken together.

Limitations

In this section report any important limitations to your research that could influence the findings and interpretation of those findings. For example, if the data you received was already clean and only included the final variables without the original variables used to construct them, there is a limit to what the pure replication can attempt to reproduce.

Conclusions

Present your conclusions from the replication study including the implications for policy recommendations within the context of the original article.

Annette N. Brown and Benjamin D.K. Wood. "When is an error not an error?" www.blogs.worldbank.org/impactevaluations/, January 15, 2014.

Thomas Herndon, Michael Ash, and Robert Pollin (HAP) in their now famous replication study of Reinhart and Rogoff's (R&R) seminal article on public debt and economic growth use the word "error" 45 times. The study sparked a tense debate, summarized by the *Financial Times* (FT) between HAP and R&R about which differences in HAP's analysis really point to *errors* in RR's original work. At 3ie, we are more than a year into our replication programme, and we are seeing a similar propensity for replication researchers to use the word "error" (or "mistake" or "wrong") and for this language to cause contentious discussions between the original authors and replication researchers. The lesson we are learning is:

To err is human, but to use the word "error" in a replication study is usually not divine.

Some would ask, isn't that the point of internal replication? Yes. As we argue in our forthcoming paper, one of the four reasons why internal replication is important for validating evidence is because "to err is human". Original authors do occasionally make mistakes and correcting them is major benefit of replication.

So what's the problem? The problem is that pure replication of an original author's empirical analysis is often really complicated, not to mention time consuming. And what we're seeing is that even relatively successful pure replications end up with many estimates that are just not quite the same as in the original article. Replication researchers are often quick to call these "errors". But if two people conduct the same analysis on the same data, and they each get similar but not identical estimates, who is to say what is right and what is wrong?

Not surprisingly, the word "error" makes original authors defensive and leads to debate. But two sides arguing about a small difference in a point estimate does not help us achieve the objective of finding the best evidence for policy making and program design. To suggest that a small difference that happens to be around an arbitrary cut-off should change policy conclusions is to fall prey to the "cult of statistical significance". Whether in the original paper or in the replication study, we should focus instead on what is relevant and robust. As Pollin concedes in the *FT* interview, the real question is whether a conclusion is robust.

So when is an error truly an error? We submit that the word "error" only be used in replication studies when the replication researcher can identify the source of the mistake. The HAP replication study does point to some clear errors. For example, the original authors missed five rows of data in their estimations using their excel file. That was an error that was acknowledged by the original authors here and here.

When there are discrepancies in the estimates that cannot be explained, we recommend that replication researchers use the words discrepancy or inconsistency. We are not suggesting that discrepancies are not important. They are. A large number of discrepancies in the pure replication that cannot be explained by the original authors or by the replication researchers may call into question how well the underlying datasets are coded, labeled, documented, and stored. And that

should call into question the quality of the analysis that can be conducted with those data. One objective of the 3ie replication programme is to motivate authors to document and maintain their data more carefully. But unexplained discrepancies are not necessarily errors.

An error is also not an error if it results from a different decision made in the measurement or estimation analyses. Many researchers hold strong beliefs about which methods are appropriate and how they should be used. Sometimes what is right is pretty cut and dried. You need to use clustered standard errors when you have a cluster design. But often those choices are more discretionary. Jed Friedman's blog post on linear probability models (LPM) versus probits and logits describes his debate with a referee about whether it is "wrong" to use LPM in the case of binary responses. Friedman quotes Jörn-Steffen Pischke on the matter: "the fact that we have a probit, a logit, and the LPM is just a statement to the fact that we don't know what the 'right' model is."

Certainly a replication researcher should critically examine the methodological choices made by the original authors. The existence of multiple possible models should motivate a careful discussion of the underlying assumptions as well as provide an opportunity to test the original paper's result for robustness to model choice. Arguments about measurement and estimation are particularly important when the main conclusions from the study hinge on those choices. In the *Financial Times* interview, Pollin makes the more relevant critique of R&R that "their results are entirely dependent on using that particular methodology." This statement, and not the 45 uses of the word error, is a more divine approach to replication research.

Sample Table of Contents

Contents

Format and running order for the report front matter

Title page (Page 1)	☐ Title of study/report (sentence case and bold, 14pt. no colons). The title should include the country or region in which the original impact evaluation took place.
	☐ Authors of paper (11 pt. Arial); star (*) next to corresponding author.
	☐ Organisational affiliation of each author. Author names should appear as first name, last name; affiliations should appear under every author name, not in footnotes.
	☐ Email ID for corresponding author only.
	☐ Date the report was submitted.
Acknowledgements	☐ This section should include acknowledgements to 3ie for funding and for technical review and support throughout the study, as well as to any other funders of the study and to anyone else the authors wish to mention.
Abstract *Note: this will serve as the basis for the project summary posted on 3ie's website*	☐ 300 word limit ☐ Keywords and JEL codes optional
Contents page	☐ Capitalisation is sentence case (only capitalise the first letter of the first word and proper nouns); use number style for headings and sub-headings (e.g. 1.1, 1.2). ☐ Appendixes are listed in the table of contents ☐ Page numbers in the contents page: • Front matter through the list of tables and figures is Roman. • All pages need to be electronically linked in the contents section to the actual pages and be correct.
List of tables and figures	☐ All tables and figures must be placed in the main report where they are referenced, with the exception of tables that run more than two pages. ☐ All tables and figures in the report and appendixes must be numbered and titled listed on this page, with links to the pages on which they will be found.

Abbreviations and Acronyms	☐ All abbreviations and acronyms used in the report must be listed here. Abbreviations of foreign language terms or names should be listed in the original and in English.
	• If a word to be abbreviated occurs only once or rarely in the text, do not abbreviate it.
	• Do not spell out or explain an abbreviation or acronym for the first time in the table of contents, abstract or a heading.
	• Once an abbreviation or acronym has been called out, use it consistently throughout the report.
References *Note: list only those works that are cited in the actual report. Additional works may be included in a separate bibliographic list, alphabetically.*	☐ All 3ie reports use the Harvard style of referencing. Please see examples of in-text citations and referencing below. ☐ In the text, spell out last names of authors. Do not abbreviate. It is Dickens and Jones not D&J or DJ. This includes the authors for the original article being studied. When the name is related to a reference, it is acceptable to use only the last name or names, e.g. Dickens and Jones (2004) ☐ In-text citation: When mentioning a particular part of the work, and making direct reference to this, include a page reference, for example, Cormack (1994 pp.32–33) ☐ Where there are several authors (four or more), only the first author should be used, followed by *et al.,* for example, Green *et al.* (1995) ☐ Referencing: Adams, RJ, Weiss, TD and Coatie, JJ, 2010. *The World Health Organization, its history and impact*. London: Perseus. (see full reference section for examples of all citation styles)
Additional material: Logos	☐ All non-3ie logos must be submitted in high-resolution, in the exact size and format required by a given institution or donor. Ideally, send EPS or vector versions of logos.

Font

- Arial is the official font for all 3ie reports.

- *Contents* – Arial 11 pt. (bold) for section headings, Arial 11 pt. for sub-headings and Arial 11 pt. (italicised) for sub-sub headings.

  - o   Note that sub-sub headings are not always necessary.

- *Main text* – Arial 11 pt.

- *Section headings* (main text) – Arial 14 pt. (bold)

  - o   Sub-headings – Arial 12 pt. (bold)

  - o   Sub-sub headings – Arial 12 pt. (italicised)

- *Titles of figures and graphs* – Arial 11 pt. or 10 pt. font (bold). If tables cannot be easily altered do not change font. Example: **Table 3 Field observations of improved stoves in three villages after eight months**

- *Footnotes* – Arial 10 pt.

- *Notes under tables* – Arial 10 pt., always preceded by Note: (singular and with a colon, not bold or italic).

- *Non-English words* - Italicise words and terms if they are in a language that is not English

- *Page numbers* – bottom of the page, centre, Arial 10 pt.

Spacing and margins

- *Paper size* - The report should be formatted to print on A4 paper.

- *Alignment* – The entire report should be left-aligned.

- *Line spacing* - 1.15 spacing between lines.

- *Margins*- 1.25-inch (or 3 cm) margins are required on the left and right, top and bottom.

- *Carriage space- add a 10pt space after each paragraph*

Additional guidance on tables, graphs and figures

- ☐ Note to authors, copy-editors, proofers: All reports must be submitted in Microsoft Word format. Regular Microsoft © updates should be enabled to avoid odd formatting issues that crop up that occasionally result from interactions between Apple Macintosh and personal computers using older versions of Microsoft Word.

- ☐ Establish copyrights and permissions. 3ie must be reasonably assured that copyright has been honoured by the authors. Especially in the Replication Paper series, the replication authors must show they have permission to use all graphics that come from the original study. **Special care needs to be taken when the source of a graphic appears to be from a published source.** The authors are responsible for securing all needed permissions. 3ie will request documentation of permission.

- ☐ All tables and figures must be placed in the main report where they are referenced, with the exception of tables that run more than two pages. Authors may request to have all tables and figures in an appendix instead of in the text if there are clear formatting complications to putting them in the text.

- ☐ Tables and graphs must be supplied in the original MS Excel file format to allow formatting for printing. If produced in Stata, submissions should include the Stata graph files to allow for editing.

- ☐ All equations must be in MS Word and not supplied as images. 3ie will contact authors if their material is not in the acceptable format.

- ☐ Avoid splitting tables across pages wherever possible. Note that tables running over many pages are likely to be dropped from a printed version.

- ☐ All tables, graphs and figures need titles, labels and numbers and other information that will allow the table to be interpreted without referencing the text. Each title should be above the table, graph or figure and use sentence case. Cite the source below tables, graphs and figures.

- ☐ Most 3ie reports are printed in black and white. Coloured graphs, figures and labelling need to be comprehensible when printed in greyscale.

- ☐ Figures that are not easily comprehensible when reproduced may be deleted.

- ☐ Font size of the text in tables may vary based on the size of the table and formatting required, but 9 or 10 pt. is standard and 8 pt. is the minimum acceptable size.

- ☐ Full page tables and figures may be formatted in landscape mode rather than portrait mode if necessary.

Reference and citation formatting

General Notes

All authors are listed for each citation

If there are citations from the same first author

- Go chronologically, even if there are different second/third/etc. authors (e.g. Duflo, E and Sachs, JD, 2008. Followed by Duflo, E, 2011.
- If the citation is by the same author and published in the same year go by the second author and add a lowercase letter after the year (e.g. Duflo, E, 2008a. Followed by Duflo, E and Sachs, JK 2008b)
- If all authors are the same and the year is the same go by alphabetical order of the title. Again, add a lowercase letter after the year (e.g. Duflo, E and Sachs, JK, 2008a. Always work hard. Followed by Duflo, E and Sachs, JK, 2008b. Better do well. Then Duflo, E and Sachs, JK, 2008. We all try hard.

There is no comma between the second-to-last author's initials and the last author's last name (e.g. Duflo, E, Sachs, JK and Khandeker, S, 2010)

Authors always go in order of how they are listed in the original paper

Use the same case as is used in the original paper (title or sentence case)

Page numbers are listed in full. Use a comma if appropriate (e.g. pp. 40-55 or pp. 1,040-1,055)

- For multiple pages use pp.
- For a single page use p.

For unpublished works or works without a date use (n.d.) in place of the year. If the work is in progress use (in press) in place of the year

Citation styles—note that anything in bold is automatically included

Books

Citation Style

Last Name, First Initials, Year. *Title*, Location city: publisher.

Example

Bloom, BS, 1956. *Taxonomy of Educational Objectives: Book 1 Cognitive Domain.* London, England: Longman, Inc.

Chapters of books

Citation Style

Last name, Initial, Year. Chapter Title. In: First Initial Last Name**,** ed. Year. *Title.* Publisher city: Publisher, pp. XX-XX.

Example

Alvarez, B, 2003. Secondary Education--The New Frontier for Basic Education. In: B Alvarez, ed. *Beyond Basic Education: Secondary Education in the Developing World.* Washington, DC: The International Bank for Reconstruction and Development. pp. 3-12

Journal Articles

Citation Style

Last Name, First Initial, Year. Title. *Journal Name*, Issue(Number), pp. XX-XX.

Example

Tripney, JS and Hombrados, JG, 2013. Technical and vocational education and training (TVET) for young people in low- and middle-income countries: a systematic review and meta-analysis. *Empirical Research in Vocational Education & Training*, 5(3), pp. 1-15.

Working papers/briefing/protocol/3ie publication—published works that are not journal articles

Citation Style

Last Name, First Initials, Year. *Title.* Paper description, Organization: City, State abbreviation/country if outside U.S.

Example

Nyirazinyoye, L, 2011. *Effect of a community-based mentoring program on behavioral and educational outcomes among children living in youth-headed households in Rwanda: Influential child and caregivers characteristics.* Dissertation, Tulane University: New Orleans, LA.

Published Report—anything that is published but not a journal article and not a working paper, etc. (does not have a description)

Citation Style

Last Name, Initiations, Year, *Title.* Organization: City, State initials/country if outside U.S.

Example

USAID, 2012. *Youth in development: Realizing the Demographic Opportunity.* USAID: Washington, DC.

Published report with institutional author (e.g. USAID, Results for Development, Etc.)

Citation Style

Organization Name, Year, *Title.* Organization: City, State initials/country if outside U.S.

Example

Results for Development, 2013. *Innovative Secondary Education for Skills Enhancement.* Results for Development: Washington, DC.

Paper prepared for presentation

Citation Style

Author, Initials, Year. Title. Prepared for Conference name: City, State/country if outside U.S.

Arnot, M and Hayfor, CL, 2010. The education outcomes gap for youth in Ghana: implications for government, development partners and civic society. Prepared for RECOUP Dissemination Conference, Cape Coast, South Africa.

Website

Citation Style

Author, Initial, Year. Title of webpage, [online]. Available at: <URL>. [Accessed Day Month Year].

Example

Results for Development, 2014. Innovation meets Evidence: A Gap Analysis Report, [online]. Available at: <http://r4d.org/focus-areas/innovative-secondary-education-skills-enhancement> [Accessed 12 June 2015].