

# FORUM

## *Researchers Training Researchers: Ethics Training in Quantitative Applied Linguistics*

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### Abstract

This forum piece reports on a brief survey of current quantitative research ethics training materials in Applied Linguistics (AL). This survey was conducted as a step towards an increased understanding of

the ways in which we, as a field, train students and researchers to conduct quantitative research ethically. The survey was carried out in the process of creating research ethics training materials as part of a grant-funded project related to questionable research practices (QRPs). Through manual and computer-assisted searches in twenty-four textbooks and twenty-three course syllabi from the past five years, three themes emerged: (1) research ethics is most often conceptualized in terms of IRB-related topics, (2) when ‘ethical gray-zone’ issues are mentioned, the focus is primarily on methodological transparency, data sharing/open science, and selecting the appropriate research design and statistical tests, and (3) materials tend to address the topic of research ethics in a single section or chapter, or in a single day or week of a course. Against this background, we provide three recommendations that our field can implement to provide more robust and thorough research ethics training for students and researchers in TESOL and Applied Linguistics: (1) expand our conceptualization of research ethics to include ethical gray-zone issues, (2) be thorough and explicit in our discussion of ethical issues related to research decisions, and (3) incorporate research ethics as a recurring theme throughout textbooks and courses.

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## INTRODUCTION AND BACKGROUND

■ As part of a funded three-year project,<sup>1</sup> we set out to create training materials for issues related to research ethics and questionable research practices (QRP), that is, the gray area between acceptable research practices and research misconduct. Our intention was not to reinvent the wheel but instead to provide additive content that could supplement any research methods textbook or course. Our first objective, therefore, was to survey the current state of research ethics training presented in textbooks and discussed in research methods courses. Surveying these texts allowed us to have a better understanding of how research ethics training is treated by the field. However, we did not want this information to exist only in our private documents and conversations, and so felt that sharing a summary of the information in this forum would be appropriate and potentially helpful to researcher trainers and textbook writers. Our goal was *not* to conduct

<sup>1</sup> We would like to thank the Swedish Research Council, the Bank of Sweden Tercentenary Foundation, and the Royal Swedish Academy of Letters, History and Antiquities (Project ID: FOE20-0017).

a systematic survey of all possible training material, but instead to better understand how research ethics is treated in research methodology courses and textbooks. The findings of this survey fit well with prior research on research ethics training in Applied Linguistics (Sterling & Gass, 2017; Sterling, Winke, & Gass, 2015).

The larger grant project was aimed at understanding research ethics behavior, with particular interest in QRPs among other aspects of research ethics (Fanelli, 2009; Hall & Martin, 2019; Isbell et al., 2022; Plonsky et al., *in press*; Ravn & Sørensen, 2021; Tauginiene et al., 2019). A QRP-based approach to understanding research ethics differs slightly from other conceptualizations as it places emphasis on researcher decisions. These decisions are often not straight forward, and the researcher may have to consider contextual factors to arrive at the most ethical decision. In many instances, these decisions have a direct impact on the findings that are shared with the larger scientific community. Other conceptualizations of research ethics such as the responsible conduct of research (RCR) (Steneck, 2006) and similar approaches (see Emanuel, Wendler, & Grady, 2013; Pimple, 2002) tend to focus more on outlining ways to conceptualize what is or is not ethical. A QRP-based approach tends to place the researcher as the central focus and looks at decisions made at all stages of research (prior, during, and after). As an example, a researcher picking a convenient data collection method instead of one with stronger validity arguments would not be considered an ethical issue to an IRB, and does not fall easily under any of the categories of RCR either. Yet, using poor methods to collect data is potentially a waste of resources which can also be considered a questionable practice.

Research methods courses often focus on researcher decisions, though not through a research ethics lens. Past research has found that research methods courses, along with IRB training and informal discussions with mentors, are one of the few spaces where research ethics are discussed in academic training (Sterling & Gass, 2017). In order to better our own understanding of the current state of research ethics training, this survey had the following goals:

1. To get a general understanding of how research ethics, in relation to QRPs, is presented in existing Applied Linguistics and TESOL research methods textbooks and courses.
2. To provide recommendations about how we as a field can improve our ethics training, and how we can better integrate research ethics and QRPs into our materials.

Our goal in this forum piece is not to criticize current research methods courses or training materials, but to get a better

understanding of how we are teaching research ethics in our field. We use this information to suggest ways that we can build upon and enhance existing materials.

## METHOD

### Sample

A sample of research methods textbooks and course syllabi were collected to help us better understand how research ethics are currently integrated into training materials in the field. We compiled the textbook sample based on the following inclusion and exclusion criteria:

1. The textbook must be published within the last 5 years (2018–2022).
2. The textbook must be focused on quantitative methodology.
3. The textbook must be contextualized within the field of Applied Linguistics, TESOL, or a closely related subfield (e.g., SLA).
4. The textbook must be focused on aspects and/or stages of conducting quantitative research more broadly. Textbooks focused on a singular research method (e.g., multi-dimensional analysis, questionnaires), or on a singular construct (e.g., fluency, formulaic language) were not collected for the sample.
5. Edited volumes were included in the sample only if the chapters contributed information on various aspects of research methodology. Edited volumes reporting on empirical studies using different research designs or methodology were not collected for the sample.

Searches on online platforms such as Google Scholar and Amazon were used to collect a sample of textbooks. We aimed to cast a wide net in an attempt to capture all volumes that met the inclusion criteria. The search terms used to locate target textbooks included *Research Methodology in Applied Linguistics*, *Applied Linguistics Research Methods*, *Quantitative Research Methods for Applied Linguistics*, and variations of these terms to target TESOL, other AL subfields, and statistics textbooks (i.e., replacing *research methods* with *statistics* or *statistical techniques*).

The resulting reference list comprised thirty-one textbooks that met our criteria. Eighteen of these were open access textbooks or owned in hardcopy by members of the research team. Eight were accessed through direct correspondence with the authors of the textbook. We were unable to access five textbooks from the compiled list, and they

were removed from the sample. Of the twenty-six textbooks that we were able to access, an additional two were screened out of the sample on the basis that they did not meet the inclusion criteria upon closer examination of the full text. One textbook was not focused specifically on AL or a related subfield and one edited volume primarily concerned qualitative or mixed method approaches. This resulted in a sample of twenty-four quantitative research method textbooks (three statistics textbooks and twenty-one general research method textbooks) published in the past 5 years.

To collect the sample of course syllabi, we used personal correspondence and posted requests for additional syllabi in various social media groups (e.g., the Facebook group *Applied Linguistics Research Methods–Discussion*). As a result of the Facebook requests in particular, we collected a sample of syllabi used in courses taught at a variety of universities around the world, including the United States, Iran, Turkey, Colombia and Singapore. Thirty-five syllabi were collected through this process. The syllabi sample was then screened for the same inclusion and exclusion criteria applied to the textbook sample, and twelve syllabi were removed: three syllabi primarily covering qualitative or mixed methods research, three syllabi pertaining to fields or subfields outside of AL, and six syllabi pre-dating 2018. This screening process resulted in a final sample of twenty-three quantitative research methods course syllabi.

We acknowledge that the size of the textbook and syllabus sample is limited, and do not make claims about the comprehensiveness of this sample. As the original intent of this project was to inform ourselves about the nature of research ethics in AL textbooks and courses, we feel that the collection method described above provided a representative sample of material that a faculty member would likely have access to when selecting a textbook or creating syllabi for their research methods course. Our intention in this forum piece is to share our findings based on this sample. This piece is not intended to be a comprehensive meta-synthesis, but instead a report on our internal investigation. A more rigorous sampling frame would be needed for future studies attempting any form of meta-synthesis on the topic.

## Survey process and data analysis

To get a general understanding of how research ethics is presented in textbooks, both table of contents (TOCs) and indices were checked for a direct mention of ethics and other select words or phrases related to ethical gray-zone issues (e.g., “outliers”). These select terms were informed by the taxonomy of QRPs presented in Larsson et al. (2023) and Plonsky et al. (in press). In order to be as thorough

as possible with our search, textbooks in electronic format were searched for these terms using the document search command. This approach allowed us to locate relevant discussion of ethical gray-zone issues in textbooks that had less detailed indices. Search terms included *ethic\** (ethics, ethical), *transparen\** (transparency, transparent), *report\** (report, reporting), *select\** (selection, selection), *shar\** (share, sharing), *hypothesiz\** (*hypothesize*, *hypothesizing*), *appropriate*, *convention\** (*convention*, *conventional*), *outlier*, *missing data*, *p-hacking*, *HARKing*<sup>2</sup>, *publication bias*, *file-drawer*, *author*, *open science*, *open access*.

Syllabi were read in their entirety with special attention paid to three sections: (1) course descriptions and course objectives, (2) weekly or daily topics in course schedules, and (3) requirements and grading criteria for course assignments. The latter two were particularly useful as we were able to infer topics that might be addressed verbally in the class sessions but were not explicitly stated in course schedules.

To identify overarching themes in the way that research ethics is presented, a chart was compiled to record textbook excerpts located in the search process. Each textbook was assigned a row, and each individual search term or topic was assigned a column. When a potentially relevant excerpt was located in a textbook, it was recorded in the appropriate cell. A similar chart was created for course syllabi. These charts were then qualitatively evaluated by the research team for themes. This resulted in a consensus of the three themes presented in the following section.

As it was not feasible to read the textbooks in our sample cover-to-cover, it is likely that some relevant information was overlooked. It is for this reason that we do not make direct claims concerning what is *not* present in textbooks. Instead, we focus on what we *did* find in our sample, and provide some recommendations on how this information could be built upon.

The following section will present three overarching themes that emerged in the survey of our research methods textbook and syllabus sample.

## THE THREE THEMES

### Theme 1: Research ethics as exclusively IRB and participant-focused

Twenty-two of the twenty-four textbooks in the sample either did not explicitly discuss research ethics ( $n = 8$ ), or discussed ethics only

<sup>2</sup> HARKing = hypothesizing after results are known.

in relation to IRB-related issues ( $n = 14$ ). This theme aligns well with Sterling and Gass's (2017) finding that applied linguists often consider research ethics to be synonymous with IRB. Issues discussed from this perspective include harm and beneficence, informed consent, participant/researcher relationships, confidentiality and anonymity, participant ownership of data, and considerations of working with vulnerable populations, such as children. Two textbooks in the sample represent an exception to this theme, explicitly mentioning questionable research practices, and squarely placing them in the conversation of research ethics (McKinley & Rose, 2019; Phakiti, De Costa, Plonsky, & Starfield, 2018).

Theme 1 applies relatively loosely in the syllabus sample, where nine of the twenty-three syllabi did not indicate that research ethics would be a topic of discussion in the course. Nine syllabi explicitly used the term "ethics" in relation to the IRB. Encouragingly, three of the twenty-three syllabi in the sample used the term "ethics" directly in relation to researcher decisions outside of IRB requirements, as seen in the syllabus excerpts below (syllabi anonymized).

**Syllabus Excerpt 1:** "Seminar Contents: Overview of research approaches and data analyses in applied linguistics: [...] Research ethics (e.g., report of true results derived from data analysis)"

**Syllabus Excerpt 2:** "The course addresses a range of topics critical to the accurate and ethical use of quantitative research methods, including (a) the purposes and roles of research; (b) literature review and research questions; (c) the use of statistical significance testing..."

Three syllabi in the sample named ethics as a topic of discussion, but did not give further indication of the types of issues that would be covered in the sessions.

## Theme 2: Topics related to researcher decisions

There are four recurring topics related to researcher decisions in the textbook and syllabus sample:

1. Selection of appropriate research designs
2. Selection of appropriate statistical tests
3. Methodological transparency/reproducibility/replicability
4. Data sharing and open science practices

These topics were very rarely framed as matters of ethical consideration (with the exception of Phakiti et al., 2018 and McKinley &

Rose, 2019). In the textbook sample, it was common to find excerpts encouraging the reader to carefully select the appropriate research design or statistical test to measure their construct (Textbook Excerpts 1–2). Potential risks to the quality of the research if inappropriate designs or tests are selected was less often discussed. There were exceptions, however, as seen in Textbook Excerpt 2, which warns about the risk of producing “inaccurate and misleading results.”

**Textbook Excerpt 1:** “The strength of the research that we produce and consume is dependent upon the appropriateness of the methodologies we employ. This makes it necessary for researchers to be aware of not only the methodologies available to them, but also the appropriate application of each” (De Costa, Crowther, & Maloney, 2018, p. 17)

**Textbook Excerpt 2:** “The article demonstrated that inappropriate use of statistical tests can lead to very inaccurate and misleading results. In principle, there is nothing wrong with using the chi-squared test or log likelihood test if the data is suitable for this. We, however, need to critically evaluate the assumptions of the tests before applying them” (Paquot & Gries, 2021, p. 492)

When these topics appeared in course syllabi, they were generally communicated as course objectives, as seen in Syllabus Excerpts 3 and 4. While we expect to see the topics of “research design” and “statistical tests” appear in quantitative methodology courses, phrases such as “appropriate” and “making decisions” indicate a focus on the selection process itself, not simply the design or statistical test.

**Syllabus Excerpt 3:** “Students should be able to: 1. know which statistical procedures are appropriate for a given data set (...)”

**Syllabus Excerpt 4:** “Students will become familiar with (...) making decisions related to research design, instrumentation, and data analysis.”

Methodological transparency was most often presented in conjunction with replicability and reproducibility. McKinley and Rose (2019) devoted a full section of the book to the topic of methodological transparency, titled, “What is the state of play of methodological transparency in applied linguistics?” This section comprised several subsections, among them, “Consequences of poor transparency on replicability, reproducibility, and syntheses.” Many of the textbooks simply focused on transparency as a necessary step for replication (Textbook Excerpt 3):

**Textbook Excerpt 3:** “...[a] precondition for replication is that the authors of the original study transparently report the methodology

used in their research, including the selection of subjects and tasks, the task instructions, and the coding and analyses of data” (McGregor & Plews, 2022, p. 36)

The phrase “transparency” appeared in just one syllabus. However, three syllabi commented on the importance of justifying and thoroughly describing methodological choices in course assignments, and six syllabi mentioned replicability and reproducibility in either their course descriptions, course schedules, or required readings (Syllabus Excerpt 5):

**Syllabus Excerpt 5:** “The procedures covered in this course will help beginning researchers assure the integrity of their data, as well as apply the general principles of transparency, reproducibility, and replicability – collectively known as open science – to their own work.”

Compared to the previous three recurring topics, it was less common to see textbooks encourage readers to share data. The discussion of data sharing was at times framed within the topic of open science (Textbook Excerpt 4). Occasionally, authors included brief explanations about why data sharing is important and the reasons that researchers may be hesitant to do so (e.g., McKinley & Rose, 2019; Winter, 2020).

**Textbook Excerpt 4:** “The minimal requirement for reproducible research is that the data and scripts are shared (“open data, open code”). The scientific community, including the linguistic community, needs to rethink what it means to “publish” a result. The following mindset may be helpful in the long run: without publishing data and code, a publication is *incomplete*” (Winter, 2020, p. 48)

Two textbooks addressed data sharing within larger sections that were entirely devoted to open science (Mackey, 2020; McKinley & Rose, 2019). Only three syllabi in the sample mentioned open science and/or data sharing.

While these four topics were most often not framed as matters of ethical consideration, it is encouraging to see that the research community appears to collectively acknowledge the importance of these four researcher-focused topics.

### **Theme 3: Compartmentalization of research ethics in training materials**

The final theme that emerged pertains to the amount of time and space explicitly devoted to the topic of research ethics in textbooks and

syllabi. The topic was rarely recurring; instead, research ethics was generally allocated a single paragraph or section of the book, or was simply mentioned alongside topics related to the IRB. Encouragingly, four books included one section devoted entirely to the topic of ethics (as indicated by the section title): “Ethics and Equity” (Bernhardt & Kamil, 2022), “Data Collection: Ethical and IRB Concerns” (Culpeper, Mackey, & Taguchi, 2018), “Ethical Practices” (Mackey & Gass, 2022) and “Ethical Considerations” (Paquot & Gries, 2021). Three books devoted a full chapter entirely to ethics, including Litosse-liti (2018) (“Ch. 3: Ethics in Linguistics Research”), Phakiti et al. (2018) (“Ch. 8: Ethical Applied Linguistics Research”), and McKinley and Rose (2019) (“Ch. 10: Ethics in Applied Linguistics Research”).

Syllabi tended to have a single week or day devoted to research ethics, as indicated in course schedules (Figures 1 and 2) (syllabi anonymized):

One syllabus in the sample represented an exception to this pattern, with research ethics recurring as a topic of discussion in Weeks 1, 5, and 10. While we cannot know how research ethics was framed in these class sessions, it is encouraging to see the topic revisited throughout the course.

Tentative schedule

<b>BACKGROUND</b> (RESEARCH DESIGNS & BASIC STATISTICAL CONCEPTS)	
Week 1 (Aug. 24):	Introduction to course & to resources (labs, statistical and other software, corpora); Research ethics, IRB, Journals in the field; Accessing articles online; Defining Research; Overview of methods of inquiry; Qualitative, quantitative, and mixed methods research.
<b>Reading for class:</b> MB; PP\$ (Mixed-methods design). <b>Optional reading:</b> D Chs. 1 & 2 (only if you purchased it – listed on the recommended reading list)	

FIGURE 1. Syllabus course schedule excerpt 1.

<i>Week</i>	<i>Topic</i>
1	Why do quantitative research?
2	IRB, Ethics Variables, Validity, and Reliability
3	Basic statistics in Excel Reading Graphs

FIGURE 2. Syllabus course schedule excerpt 2.

## THREE RECOMMENDATIONS FOR THE FUTURE OF RESEARCH ETHICS TRAINING MATERIALS

Based on the themes discussed in the previous section, we propose three recommendations for future developments in research ethics training materials for quantitative applied linguistics. In this section, we detail each of these recommendations in turn.

### **Recommendation 1: Frame researcher decision making as a matter of ethical concern**

Our first recommendation is that we extend the discussion of research ethics beyond IRB requirements and treatment of participants to include ethical issues pertaining to researcher decisions and conduct. Researchers face a number of challenging decisions throughout the research process, which have the potential to result in unethical practices. A majority of these ‘ethical gray-zones’ would not fall within the purview of an IRB, and are overwhelmingly left out of research methods training materials.

These ethical gray-zone issues appear at all stages of research, from applying for funding to write up and dissemination of the study. For example, in the process of applying for funding, we face decisions concerning the framing of our studies: is it okay to select the literature that most clearly demonstrates the gap that our proposed study fills? How should we select our variables of interest? Can we remove outliers?

These decisions come with potentially detrimental consequences to the quality of our research, such as producing fundamentally flawed or inaccurate results. Therefore, we suggest that we frame researcher decision making as a matter of *ethical* concern in our research ethics training materials. A complete taxonomy of QRPs that we suggest be treated as matters of ethical concern, including those examples above, can be found in Plonsky et al. ([in press](#)).

### **Recommendation 2: Be explicit, clear, and thorough in the conversation of ethics related to researcher decisions**

Our second suggestion pertains to the way that we package and present these ethical issues. These decisions are fundamentally challenging because the “correct” or “ethical” decision may differ based on context. To use an example from above, there may be times when it is appropriate to focus more on some studies than others when framing our argument, but in what context is this appropriate and when it is not? The

lack of a clearcut answer to this question is very fertile ground for classroom discussion and for research method training more generally.

We suggest that our training materials go further in the explanation of *why* these are considered matters of ethical concern and *how* to make an ethically defensible decision. When these issues are addressed, we suggest that materials include the following details:

1. What is the context of the decision?
  - a. When is a decision problematic, and when is it considered the right decision?
  - b. If a decision is problematic, *why* is it problematic?
2. What are the consequences?
  - a. What is the direct effect that an unethical decision will have on your data, research, and results?
  - b. What is the potential effect on the research community and your field (both short term and long term)?

There were several instances in which textbooks provided good examples of these explanations. Pertaining to statistical literacy and the selection of appropriate statistical tests, Egbert, Larsson, and Biber (2020) warned against incorrect motivation for the use of a statistical method, providing two reasons and ending with a warning about “linguistically questionable conclusions”:

**Textbook Excerpt 5:** However, we would like to stress the fact that the most appropriate method for the task at hand should not be the most sophisticated method we have in our toolbox, unless absolutely necessary. Instead, we should always strive to choose minimally sufficient statistical methods, meaning that we should choose tests that are no more nor less sophisticated than the study design requires. The reason for this is twofold: (1) all descriptive and inferential statistical tests force us to abstract away from language to some extent and (2) there is often an inverse relationship between the level of sophistication of the method and the linguistic interpretability of the results. Even simple, seemingly straightforward statistical methods may lead to linguistically questionable conclusions caused by layers of abstraction between the data and the researcher (Egbert et al., 2020, p. 39)

### **Recommendation 3: Integrate the discussion of research methods throughout materials and courses**

Our third suggestion is that we integrate research ethics training *throughout* textbooks and research methods courses, and stress that all

researcher decisions carry ethical weight. This would not only ensure that research ethics becomes an underlying theme of research methods training materials, but it would allow us to contextualize ethical considerations by addressing them as they arise at every step of the research process. This includes IRB-related ethical issues and as well as ethical gray-zone issues that the researcher may be confronted with in later stages of research (e.g., data analysis and interpretation).

It seems that the current way in which we present and discuss research ethics makes it relatively inaccessible. The search process in this survey revealed as much – it was at times challenging to locate discussion of research ethics in textbooks. Integrating discussions of ethical decision making throughout a course or textbook would make the topic front and center and more accessible in our training materials.

## LOOKING FORWARD

We hope to have clearly communicated in this forum piece that research ethics pertains equally to decisions regarding research design, data collection, data analysis, interpretation, and write up (to name a few), as it does to the treatment of participants. Specifically, to further improve the field's understanding of research ethics, we suggest that: (1) we clearly frame researcher decisions as matters of ethical consideration, (2) we are explicit and thorough in the discussion of ethics pertaining to researcher decisions, (3) we integrate this information throughout our training materials to increase the accessibility and prominence of the topic in research methods courses.

Overall, we believe that it is a good time to broaden our conceptualization of ethics to involve those things that have potentially detrimental consequences to the quality of the research that we disseminate to the research community, and work towards providing more robust and thorough research ethics training for students and researchers alike.

Finally, readers might be interested in the training materials that we created partially based on the information presented here. All of the training materials are freely available on our website (<https://sites.google.com/view/qrp-humanities?pli=1>).

## AUTHOR CONTRIBUTIONS

Margaret Wood: Primary author, conceptualization, data collection, data analysis; Scott Sterling: Secondary author (responsible for Introduction), conceptualization, data collection, revisions to content, stylistic editing; Tove Larsson: Conceptualization, data collection, revisions

to content, stylistic editing; Luke Plonsky: Conceptualization, data collection, revisions to content, stylistic editing; Merja Kytö: Conceptualization, data collection, revisions to content, stylistic editing; Kate Yaw: Conceptualization, data collection, revisions to content, stylistic editing.

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## CONFLICT OF INTEREST

No conflicts of interest to report.

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