

Chapter 3 QUANTITATIVE Workbook for a Comparative/Ex Post Facto Study

Introduction (no heading is used for this section, as per APA)

A. Background Reading for This Section

None.

B. Critical Points to Address for this Section

Begin by stating the purpose of the chapter, how it fits in the dissertation, and the organization of the chapter. Briefly preview the Chapter III focus. Identify the major topical areas to be covered in the Chapter.

Restate the purpose of the study, consistent with information provided in Chapter I. Provide a brief synopsis of the research purpose using present tense. For example, “The purpose of the proposed quantitative ex post facto study is to examine differences in GPAs and retention between male and female first generation, second generation, and third or higher generation college students using institutional archival data.” “The purpose of the proposed quantitative descriptive comparative study is to examine differences in math anxiety, as measured by scores on the Mathematics Self Efficacy and Anxiety Scale, between incoming male and female first generation and second or third generation college students.”

Briefly describe the method of inquiry used (quantitative), the specific research methodology chosen (quantitative), and how it derives logically from the problem, the purpose, and the Research Questions. End with a transitional sentence to the Research Method and Research Design sections.

C. Considerations for Alignment

- The research purpose should match the statement of the purpose in the Chapter I Purpose Statement.
- The method of inquiry and the specific research design (quantitative descriptive comparative or quantitative ex post facto) must match the information in Chapter I.

D. Suggested Resources for Enrichment

None.

In the box below, please write the section on the introduction.

Introduction

State your introduction, including the purpose of the Chapter and an overview of the contents, the purpose of the study, and the research method and research design.

Note to Student: Ensure that your entry is cohesive. The ideas should flow logically and with appropriate transitions between sentences.

E. Self Check Your Work to the Dissertation Handbook

Introduction

- Begins with the purpose of the chapter, how it fits in the dissertation, and the organization of the chapter
- Describes the method of inquiry used (quantitative)
- Describes the specific research methodology chosen and how it derives logical from the **Statement of the Problem** and the Research Questions

F. Tips from the Research Review Board

None.

Methodology Selected

A. Background Reading for This Section

Architecture Map (Quant)

Dissertation Field Guide

Chapter 7, Sections 7.1-7.2, pp. 102-109; Section 7.4, pp. 111-115, Section 7.6, pp. 121-122

Chapter 11, Section 11.1, p. 185

F. Critical Points to Address for this Section

In this section, you will describe and justify the quantitative research method and either (a) a descriptive comparative or (b) an ex post facto design. First you will demonstrate your understanding of the nature of quantitative research. Rather

than providing an extensive tutorial, you should demonstrate your understanding of how the quantitative research method supports measuring variables using numeric data, describing variables statistically, and examining statistical relationships and comparisons using analytic techniques. Avoid describing what quantitative researchers do, instead focusing on the nature of quantitative research. Back all statements with major and foundational sources in quantitative research.

Describe how the problem that drives your research indicates the need for a quantitative investigation in order to generate information to resolve the problem. Explain why a quantitative study is most appropriate.

Describe how the quantitative method is congruent with the purpose of your study. Explain why conducting a quantitative study will support achieving the research purpose. Avoid circular reasoning. Instead, explain how the nature of quantitative research, as described in Section 11.1 of the *Dissertation Field Guide*, aligns with the information needed to achieve the purpose of your study. Draw connections between the aspects of quantitative research described in the table and the aspects of your study purpose. Do not provide detail on other methodological decisions, which you will cover in later sections of the chapter.

Next, you will provide an elaborate description and justification of either (a) a descriptive comparative design, or (b) an ex post facto design, and describe the nature of non-experimental research and how it differs from experimental research. Next, describe the nature of comparative or ex post facto research. Explain how comparative or ex post facto research differs from each other and from correlational designs.

Read and cite sources in quantitative research to support your design choice and develop deep understanding of descriptive comparative or ex post facto research and its application in a research study. Do not rely on general research textbooks.

Align your decision to choose either (a) a descriptive comparative design or (b) an ex post facto design with the specific problem that drives your research focus and the purpose of the study. First, describe how the problem that drives your research indicates the need to examine statistical differences between groups formed by one or more naturally occurring independent variables in order to generate information to resolve the problem. Explain why a descriptive comparative design or an ex post facto design is most appropriate to address the problem.

Next, describe how either (a) a descriptive comparative design or (b) an ex post facto design is congruent with the purpose of your study. Explain why conducting a descriptive comparative or ex post facto study will support achieving

the research purpose. Avoid circular reasoning. Instead, explain how the nature of comparative or ex post facto research, as described in Table 7.6 of the *Dissertation Field Guide* and in the sources you've been reading, aligns with the information needed to achieve the purpose of your study.

Draw connections between the purpose of comparative or ex post facto research and your study purpose. Do not provide detail on other methodological decisions, such as the data analysis plan, which you will cover in later sections of the chapter. Next, explain the congruence between your comparative research questions and hypotheses (see DDD) and the nature of comparative or ex post facto research.

As you write other sections of Chapter III, keep in mind that the methodological decisions you will make about your particular study must reflect the nature of quantitative descriptive comparative or ex post facto research. The decisions must align with the application of either (a) a descriptive comparative design or (b) an ex post facto design you have selected and with your research problem, your research objectives, and your research questions. Use the sources identified above to support methodological decisions later in the chapter.

Another thing you should keep in mind is that you should describe the methodological plan – what will occur – rather than who will be implementing each stage of the study. Students are often tempted to model their chapters after research textbooks, which describe what researchers do. You should focus on describing the methodology, not the actor. “The researcher” as actor is implicit.

C. Considerations for Alignment

- Alignment means congruence between and across all elements of a study, from the problem and purpose to the research questions, research method, research design, and research methodology.
- Good alignment is critical.
- The quantitative method must be appropriate to address the specific problem that drives the research focus.
- The descriptive comparative design or the ex post facto design must be appropriate to address the specific problem that drives the research focus.
- A quantitative method and either (a) a descriptive comparative or (b) an ex post facto design must be congruent with the research purpose and the form of the research questions and hypotheses.
- An ex post facto design does not involve data collection from human subjects; archival data only are used in ex post facto studies.

D. Suggested Resources for Enrichment

- Black, T. R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement and statistics*. London, England: Sage Publications.
- Cozby, P. C., & Bates, S. (2015). *Methods in behavioral research* (12th ed.). Boston, MA: McGraw-Hill.
- Fisher, R. A. (1970). *Statistical methods for research workers* (14th ed.). Edinburgh, Scotland: Oliver & Boyd.
- Fisher, R. A. (1974). *Statistical methods and scientific inference* (3rd ed.). New York, NY: Hafner Press.
- Kerlinger, F., & Lee, H. (2000). *Foundations of behavioral research* (4th ed.). Fort Worth, TX: Harcourt College Pub.
- Vogt, W. P. (2007). *Quantitative research methods for professionals*. Boston, MA: Pearson.

Sage Little Green Books available through the Sage Research Methods Collection in the University of the Rockies library.

In the box below, please write the section on the Methodology Selected

Methodology Selected

Identify and describe the research method in detail.
Justify the research method.
Identify and describe the research design in detail.
Justify the research design.
Demonstrate that the research method and the research design derive logically from the problem statement and are appropriate to achieve the purpose and answer the research questions.
Support your methodological decisions with major and foundational sources.

Note to Student: Ensure that your entry is cohesive. The ideas should flow logically and with appropriate transitions between sentences.

E. Self Check Your Work to the Dissertation Handbook

- Includes a description of the research design and approach
- Provides justification for using the research design and approach
- Demonstrates that the research design and approach derive logically from the problem or issue statement
- Supports the research design and its application with major and foundational sources

Commented [Anon1]: IMO, the checklist should match the RRB re: research method and research design.

F. Tips from the Research Review Board

Describes and justifies the research method and design as appropriate to the problem, purpose, and research questions/hypotheses.

The methodology description in Chapter 3 aligns fully and is consistent with methodology description in Chapter 1.

Methodology description is aligned across chapters, consistent, clear, and detailed.

Research Questions and Hypotheses

A. Background Reading for This Section

Dissertation Field Guide, Chapter 5, Sections 5.1 -5.8, pp. 55-72 (focus on relational comparative questions); Chapter 6, Sections 6.1-6.8, pp. 73-100 (focus on relational-comparative hypotheses)

B. Critical Points to Address for this Section

In a descriptive study, you may have one or more purely descriptive research questions. Whether your study is comparative or ex post facto, you will definitely have one or more comparative research questions pertaining to between-group differences, along with a null and alternative hypothesis pair for each comparative research question.

You first developed and proposed comparative research questions and hypotheses in your Letter of Intent. In Chapter 1, you described and justified the form and focus of your research questions. In Chapter III, you will restate your comparative research questions and your hypotheses, which must match your research questions and hypotheses as stated in Chapter I. A common mistake students make is to change the research questions in one chapter but not revise them in the other places they appear in the proposal. For example, your research questions and hypotheses must reflect a consistent set of variables. Thus, if you

revise your research questions and hypotheses in Chapter III, you should go back to Chapter I and update the research questions and hypotheses accordingly.

Briefly explain how answering the research questions will address the problem, research objectives, and purpose of the study. Then briefly explain how answering the research questions will address the knowledge gap in the literature. The knowledge gap should match the knowledge gap you identified in Chapter I and in the literature review in Chapter II.

C. Considerations for Alignment

- Research questions must inform the gaps identified in the literature
- The potential answers to the research questions must contribute toward addressing the problem and achieving the research objectives.
- The focus of the research questions must address the purpose
- The research questions and hypotheses must pertain to differences between two or more groups of subjects or data
- Research questions and hypotheses must be consistent across chapters

D. Suggested Resources for Enrichment

Black, T. R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement and statistics*. London, England: Sage Publications.

Cozby, P. C., & Bates, S. (2015). *Methods in behavioral research* (12th ed.). Boston, MA: McGraw-Hill.

In the box below, please write the section on Research Questions and Hypotheses

Research Questions and Hypotheses

Restate your research questions and your hypotheses, which must match your research questions and hypotheses as stated in Chapter I.

Briefly justify the alignment of the research questions and hypotheses to the research objectives, purpose, and the knowledge gap.

E. Self Check Your Work to the Dissertation Handbook

Research Questions/Hypotheses

Describes specific research questions and hypotheses (where appropriate) that

- _____ Are clear and succinct
- _____ Are congruent with the **Statement of Problem**
- _____ Are answerable/testable
- _____ Correspond to the number of variables of interest
- _____ Have hypotheses that correspond to research questions
- _____ Are clearly stated
- _____ Are open-ended (*not* yes/no questions)

F. Tips from the Research Review Board

If hypotheses are included, they align with the research questions. Hypotheses are testable.

Population and Sampling

A. Background Reading for This Section

Dissertation Field Guide, Section 11.5, pp. 195; Chapter 10, Sections 10.1 – 10.10, pp. 172-178; Chapter 11, Section 11.5

B. Critical Points to Address for this Section

The specific population is the body of human subjects, organizations, or archival data from which you will select a sample or conduct a census. Ex post facto studies do not involve any human subjects, only archival data, whereas descriptive comparative studies involve selecting human subjects from the population. In this section, you will identify and describe the specific population for your study, which must match the population you identified in Chapter I. For example, the specific population may be mid-level managers in the manufacturing sector in Detroit, Michigan, or archival data about substance abuse treatment outcomes housed by the Substance Abuse and Mental Health Services Administration (SAMHSA). Describe the population characteristics, such as known demographic information or other descriptive traits of the population.

Some populations are publicly accessible, such as parents encountered in a public park or data posted on a website for public access, such as school district data posted on a state education website. Other populations, such as employees, teachers, students, association members, social media group members, organizational data, etc., are accessible via organizational permission. Indicate whether the population is publicly accessible, or if the population will be accessed with permission. You should also identify the size of the available population.

Once you have described the population and the plan to access it, you will identify and describe the major type of sampling approach – probability or nonprobability - you plan to use to select your sample from the population. Then identify and describe the specific sampling technique, such as simple random sampling (probability) or purposive sampling (nonprobability). If you propose random sampling, the characteristics of the sample will match the characteristics of the specific population. Explain how participants or data will be selected, such as every 10th manager on the list or every 5th patient record in an archival database. If you propose purposive sampling, identify and describe the sample characteristics. Next, justify the sampling approach and technique appropriateness to your study, keeping in mind that while probability sampling is the gold standard in quantitative research, its use is not always feasible or appropriate.

You will need to identify and justify the anticipated sample size(s) for each type of participants or data source. For example, if you plan to collect data from managers and non-management employees, you will need to identify the estimated sample size for both categories of participants. If you plan to collect institutional data from nursing homes and acute care facilities, you will also need to identify the estimated sample size for both categories. Explain the sufficiency of the sample size relative to the size of the available population. If you are proposing a type of probability sampling, identify the confidence interval(s).

You will also identify the power and effect size for the proposed analyses. Justify the sample size as sufficient to support the proposed comparative analyses, such as an independent t-test or Analysis of Variance, with adequate statistical power. Download and use a free sample and power calculator, such as G*Power 3. [<http://www.gpower.hhu.de/>]

C. Considerations for Alignment

- The specific population must match the population identified in Chapter I.
- Ex post facto studies do not involve human subjects, only archival data.
- The population must be appropriate to answer the research questions.

- The sampling criteria should not exceed the characteristics of the population.
- The justification of the sample size must address the specific comparative analyses proposed.

D. Suggested Resources for Enrichment

SMARTLab Unit 1. Samples and Populations

Daniel, J. (2012). Chapter 2: Choosing between taking a census and sampling. In *Sampling essentials: Practical guidelines for making sampling choices*. Thousand Oaks, CA: Sage.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. [Download PDF](#)

Mayr, S., Buchner, A., Erdfelder, E., & Faul, F. (2007). A short tutorial of GPower. *Tutorials in Quantitative Methods for Psychology*, 3(2), 51-59. Retrieved from http://www.gpower.hhu.de/fileadmin/redaktion/Fakultaeten/Mathematisch-Naturwissenschaftliche_Fakultaet/Psychologie/AAP/gpower/GPowerShortTutorial.pdf

Mugo, F. W. (n.d.). *Sampling in research*. Retrieved from https://www.uonbi.ac.ke/fridah_mugo/files/mugo02sampling.pdf

In the box below, please write the section on Population and Sample

Population and Sample

Identify and describe the specific population and its source. Identify permission to access the population, if needed. Describe and justify the sampling technique(s), appropriateness, and sampling characteristics. Identify and justify the sufficiency of the sample to represent the population and to support the proposed analyses.

E. Self Check Your Work to the Dissertation Handbook

- Identifies and describes the source of the specific population and the population's characteristics
- Identifies that permission has been obtained to access the population, if relevant
- Describes the sampling method, its appropriateness, and the sampling frame
- Identifies the sample size as sufficient in terms of statistical power to support the analyses
- Identifies the criteria for selecting subjects
- Describes the sample characteristics

F. Tips from the Research Review Board

Clearly describes the population and how it is being accessed.

The sampling approach is clearly identified and the sample size is justified and sufficient to either have adequate power

Ethical Concerns

A. Background Reading for This Section

Dissertation Field Guide

Chapter 11, Section 11.6 Informed Consent, Anonymity, and Confidentiality Issues in Quantitative Research, pp. 198-199.

B. Critical Points to Address for this Section

In this section, you will describe processes and procedures for protection of human subjects and confidentiality and privacy. First, identify whether or not the study involves human subjects. If so, identify and describe procedures proposed for their protection and ethical treatment. If participants belong to a protected class, or are vulnerable, or if the study involves collecting any personal or sensitive information, explain and justify the risks in light of the potential benefits. Explain how the level of risk will be minimized to the extent possible.

Describe the two-part informed consent process – (a) how potential participants will learn about the nature of the proposed study and their involvement in it, and (b) how they will indicate their active informed consent, such as via an ink signature or an online survey portal. Do not use a passive consent process, such as returning a completed survey, as the IRB will not approve it. Keep in mind that no data collection may occur prior to receipt of informed consent, including data for screening purposes.

Whether your study involves collecting archival data or data from human subjects, you will need to address confidentiality and privacy concerns.

Describe all procedures to protect confidentiality and privacy during data collection and analysis. Explain whether the data will be collected anonymously or if identifiers will be assigned to participants and their data. If archival data will be used, explain whether personal identifiers are contained in the dataset or if the identifiers will be stripped prior to accessing the data. If the dataset will contain identifiers, you must describe procedures to protect confidentiality and privacy.

Explain how privacy and confidentiality will be protected when reporting the results. Explain who will have access to the data, for what purpose, and how access will be limited. Describe the plans for data storage.

C. Considerations for Alignment

- The descriptions of the nature of the study, the risks and benefits, and the processes and procedures match the types of data to be collected and the data collection techniques described throughout the proposal.
- The risks should not outweigh the benefits
- If you are proposing an ex post facto study, you will not have any human subjects involvement; informed consent is not pertinent
- Protecting privacy and confidentiality is important regardless of whether the study involves archival data or human subjects

D. Suggested Resources for Enrichment

Dissertation Field Guide, Chapter 13
CITI Training Modules

In the box below, please write the section on Ethical Concerns

Ethical Concerns

Identify whether or not the study involves human subjects. If so, identify and describe procedures for their protection and ethical treatment.

Describe the two-part informed consent process – information then consent.

Describe all procedures to protect confidentiality and privacy during data collection and analysis and in reporting and storage. If archival data will be used, explain whether personal identifiers are contained in the dataset. If so, address procedures to protect confidentiality and privacy.

Note to Student: Ensure that your entry is cohesive. The ideas should flow logically and with appropriate transitions between sentences.

E. Self Check Your Work to the Dissertation Handbook

Ethical Concerns

- Identifies procedures for protection and ethical treatment of human subjects
- Describes the informed consent process in detail, including how human subjects will provide their informed consent, where applicable.
- Includes Informed Consent Letter in Appendix
- Describes procedures to protect confidentiality and anonymity in data collection, analysis, reporting, and storage.
- Where applicable, describes in detail any treatment or intervention to which human subjects will be exposed
 - Identifies concealment or deception as part of the treatment, if used
 - Identifies the process for debriefing human subjects following use of concealment or deception
 - Identifies if a control group will be used, if the group will receive a standard intervention, and the nature of that intervention

Commented [Anon2]: Should be privacy; anonymity is not always possible.

Commented [Anon3]: This item and sub-items are not applicable to descriptive comparative or ex post facto studies

F. Tips from the Research Review Board

All processes and procedures are clearly described.

Instrumentation

A. Background Reading for This Section

Dissertation Field Guide

Chapter 11, Section 11.7 Instrumentation, pp. 200-203

B. Critical Points to Address for this Section

In this section, you will describe and justify the instrumentation for your study and the variables to be measured using these instruments. You will also address evidence of reliability and validity of instrumentation.

Identify and describe the instruments and data collection forms to be used to collect data from human subjects. If you are going to use an existing instrument(s), identify each instrument by name and cite the author or developer. Identify the specific type of instrument(s), such as a survey questionnaire, psychological assessment, or test.

If you plan to access archival data, such as test scores or survey data, identify and describe the instrument(s) that was used to collect those data. If published evidence of reliability or validity exists, present and cite the evidence.

If you are planning on using or modifying an existing instrument to collect data, identify that permission is granted. If you are creating a new instrument, explain why no existing instruments are suitable to measure the variables in the study. If you are modifying an existing instrument, explain and justify how. Justify the appropriateness of these instruments to the variables to be measured.

Whether you are planning to collect data or use archival data originally collected with a given instrument, explain the types of questions on the instrument. Describe the scoring of each instrument – such as subscales, scales, typologies. Explain what each instrument measures – which constructs, concepts, or variables. Explain in detail how the value of each variable will be derived from a given instrument. Operationally define each variable as it will be measured, and identify its level of measurement (nominal, ordinal, interval, or ratio).

If you are going to collect data, identify, describe, and cite published evidence of reliability and validity for each existing instrument if such evidence

exists. If no evidence exists, if you plan on modifying an existing instrument, or if you are planning on creating a new instrument, present a detailed plan to examine the modified or new instrument for evidence of reliability and validity.

D. Suggested Resources for Enrichment

SMARTLab Unit 2. Variables and Scales of Measurement

American Psychological Association. (2015). *PsycTESTS® database*. Available at <http://www.apa.org/pubs/databases/psyc-tests/index.aspx>

Black, T. R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement and statistics*. London, England: Sage Publications.

Carlson, J. F., Geisinger, K. F., & Jonson, J. L. (Eds.). (2014). *The nineteenth mental measurements yearbook*. Lincoln, NE: University of Nebraska-Lincoln Buros Center for Testing. Retrieved from <http://buros.org/mental-measurements-yearbook>

Gliem, J. A., & Gliem, R. R. (2003). *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales*. Paper presented at the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education, The Ohio State University, Columbus, OH, October 8-10, 2003. Retrieved from <http://pioneer.netserv.chula.ac.th/~ppongsa/2013605/Cronbach.pdf>

Keyser, D. J. (Ed.). (2005). *Test critiques* (Vol. 11). Austin, TX: Pro-Ed.

Maddox, T. (2008). *Tests: A comprehensive reference for assessments in psychology, education, and business* (6th ed.). Austin, TX: Pro-Ed. Retrieved from <http://www.proedinc.com/customer/ProductView.aspx?ID=4244&sSearchWord=>

Murphy, L. L., Geisinger, K. F., Carlson, J. F., & Spies, R. A. (2011). *Tests in print VIII: An index to tests, test reviews, and the literature on specific tests*. Lincoln, NE: University of Nebraska-Lincoln Buros Center for Testing. Retrieved from <http://buros.org/tests-print>

In the box below, please write the section on Instrumentation

Instrumentation

Identify and describe the survey, assessment, questionnaire, or test instruments and data collection forms to be used to collect data or with which archival data were collected. Justify the appropriateness of these instruments to the variables to be measured.

Identify, describe, and cite published evidence of reliability and validity for each instrument or a plan to examine the instrument to be used to collect data for evidence of reliability and validity.

Note to Student: Ensure that your entry is cohesive. The ideas should flow logically and with appropriate transitions between sentences.

E. Self Check Your Work to the Dissertation Handbook

Instrumentation

List and describe the survey, research, or testing instruments and data collection forms to be used in gathering data for the study. The reason for the use of these instruments should also be given. Defend the choice of instruments and address reliability, validity, and utility of the instruments.

- Describes in detail all instrumentation or data collection tools, including:
 - Instrument name, if using an existing instrument
 - Specific type of instrument
 - Instrument's measures in terms of constructs, concepts, or variables
 - Scoring of scales, subscales, typologies and their interpretation
 - Whether a new instrument is developed or an existing instrument is modified and describes its use
 - **Published reliability and validity statistics for existing instruments OR a detailed plan for statistically assessing the reliability and validity of new or modified instrument(s) or existing instruments without established reliability or validity**
- Includes a copy of any instruments used, in an appendix
- Includes a detailed description of data that comprises each variable in the study

Commented [Anon4]: Another criterion below is redundant to this one.

- Includes operational definitions of variables
 - Provides a clear explanation of how the value of each variable will be derived from the instrument
 - Identifies the level of measurement (NOIR) for each variable
- Either describes established (published) reliability and validity statistics or a clear plan to statistically validate the instrument (for modified or created instruments)

Commented [Anon5]: Already stated above

F. Tips from the Research Review Board

All instrumentation is described clearly. Pilot test is proposed for any instrumentation lacking prior validation. Face validation will occur for observation protocols.

All quantitative variables are operationally defined.

Data Collection

A. Background Reading for This Section

Dissertation Field Guide

Chapter 11, Section 11.8, Data Collection Techniques, Logistics, and Format, pp. 203-205.

B. Critical Points to Address for this Section

In this section, you will describe and justify the types of data you will collect and the techniques you propose to collect these data. First, describe the specific types of data to be collected. For example, types of data include archival survey data, scaled response data, archival financial data, test scores, psychological assessment data, etc.

Describe the plan to collect these data, step by step, from beginning to end. Describe and justify the specific data collection techniques proposed, such as an online or pencil and paper survey questionnaire or assessment. Describe how the technique aligns with the instrument(s) to be used to collect the data. If you will collect archival data, explain how, such as via downloading an Excel file from a government website. Use sufficient detail so that another researcher could replicate the data collection plan. For example, subjects might click on an email to access a URL with a web-based survey hosted on SurveyMonkey. Participants will indicate their informed consent to access the survey, the survey questions will load,

and the participant will select responses. Upon completion of the survey, the participant will click “submit.” Once data collection is complete, the data will be accessed in Excel format from the web host.

C. Considerations for Alignment

- The types of data identified must match what the instruments are intended to measure
- The data collection techniques must be appropriate to the type(s) of data to be collected
- The data collection techniques must be consistent across the proposal

D. Suggested Resources for Enrichment

Black, T. R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement and statistics*. London, England: Sage Publications.

Cozby, P. C., & Bates, S. (2015). *Methods in behavioral research* (12th ed.). Boston, MA: McGraw-Hill.

In the box below, please write the section on Data Collection

Data Collection

Describe the types of data to be collected. Describe the plan to collect these data, step by step. Describe and justify the specific data collection techniques proposed, explaining how you will use the instrument(s) to collect the data. Use sufficient detail so that another researcher could replicate the data collection plan.

E. Self Check Your Work to the Dissertation Handbook

Data Collection

- Describes any pilot study results, if applicable.
- States the sequence of steps followed in conducting the research from development of the research instrument(s) to data analysis

Commented [Anon6]: A pilot study before IRB approval is an ethical violation. This criterion should be removed.

Commented [Anon7]: The second criterion does not pertain to describing or justifying the data collection technique or its appropriateness.

- Details all steps such that another researcher could follow the steps to reproduce the study

Commented [Anon8]: This one should apply to the entire study

F. Tips from the Research Review Board

Technique is described and is justified.

Data Analysis

A. Background Reading for This Section

Dissertation Field Guide, Chapter 11, 11.9: Selecting Appropriate Data Analysis Techniques, pp. 205-209.

B. Critical Points to Address for this Section

First, in an introductory paragraph, preview the section focus and content. Then identify which specific descriptive statistics (e.g., frequency counts/percentages, cross-tabulations, specific measures of central tendency and variability) will be used to describe the sample and the variables, as appropriate to their level of measurement. See *Dissertation Field Guide*, Table 11.5, for an example.

Describe how the distribution of the data will be assessed statistically to determine if the distribution of the variables in the sample is normal. Normality is one of the assumptions you must meet in order to justify using a parametric statistical test. See <http://rt.uits.iu.edu/visualization/analytics/docs/normality-docs/normality.pdf>

Next, identify the specific comparative test to be used to test each of your hypotheses. Use full names. For example, instead of stating intent to use a t-test or ANOVA, refer to an independent t-test or a two-way ANOVA.

The type of test must be congruent with bivariate or multivariate hypotheses, a focus on between-group comparisons, and the level of measurement of the variables. You will need to justify the appropriateness of the analyses proposed for the specific null hypotheses to be tested and the number and levels of measurement of the variables in a given null hypothesis.

You will address the appropriateness of using parametric tests or provide a rationale for using a nonparametric equivalent. You will either (a) justify the use of a parametric test based on the assumptions that must be met – interval or ratio

dependent variables and normally distributed data; or (b) if both of these assumptions cannot be met, propose a nonparametric alternative comparative analysis. You will identify the levels of measurement of your variables in the Chapter III variables section. You will explain how you will assess the distribution of the data above.

Identify the alpha level for the statistical tests proposed. You will identify the number of tails for your tests. Alpha of .05 is the standard maximum alpha level used for hypothesis testing. You will identify the number of tails for each analysis. The number of tails, one or two, will depend on whether a given hypothesis pair is directional or non-directional. Directional hypotheses are one-tailed, whereas non-directional hypotheses are two-tailed.

While you won't report the results in Chapter III, keep in mind the following caveats. When reporting the results of statistical tests, you must conform to APA style. Rather than copying and pasting SPSS outputs in the body of the paper or the appendix, you need to report and write up results in-text and in tables that conform to APA. Review resources that may help you to learn how to understand and report the results of your statistical analyses in APA style.

C. Considerations for Alignment

- The descriptive and inferential statistical procedures proposed must be appropriate to the level of measurement of the variables
- Comparative analyses must be appropriate to the relational-comparative hypotheses and the number of independent and dependent variables in a given hypothesis
- In order to use parametric tests, the dependent variables must be interval or ratio and the distribution of the data must be normal
- The sample must be sufficient to use a given test with adequate power and effect size

D. Suggested Resources for Enrichment

SMARTLab Unit 3. Charts and Graphs in Statistics

SMARTLab Unit 4. Measures of Central Tendency

SMARTLab Unit 5. Measures of Variability

SMARTLab Unit 6. Probability

SMARTLab Unit 7. Normal Distributions and z Scores

SMARTLab Unit 8. Hypothesis Testing

- Black, T. R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement and statistics*. London, England: Sage Publications.
- Henry, G. T. (1995). Graphical complements for T - tests and Analysis of Variance. In *Graphing data*. Thousand Oaks, CA: Sage Publications.
- Jaccard, J. (1998). *Interaction effects in factorial analysis of variance* (No. 118). Thousand Oaks, CA: Sage Publications.
- Lee, E. S., & Forthofer, R. N. (2006). *Analyzing complex survey data*. Thousand Oaks, CA: Sage Publications.
- Lee, E. S., Forthofer, R. N., & Lorimor, R. J. (1986). Analysis of complex sample survey data: Problems and strategies. *Sociological Methods & Research*, 15(1-2), 69-100.
- Johnson, N. J. (1978). Modified t tests and confidence intervals for asymmetrical populations. *Journal of the American Statistical Association*, 73(363), 536-544.
- Sirkin, R. M. (2006). *Statistics for the social sciences* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Steinberg, W. J. (2011). *Statistics alive!* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Turner, J. R. (2001). *Introduction to Analysis of Variance*. Thousand Oaks, CA: Sage Publications.
- Vacha-Haase, T., Nilsson, J. E., Reetz, D. R., Lance, T. S., & Thompson, B. (2000). Reporting practices and APA editorial policies regarding statistical significance and effect size. *Theory & Psychology*, 10(3), 413-425.
- Wendorf, C. A. (2014). *Statistics for psychologists: An online textbook*. Retrieved from <http://www4.uwsp.edu/psych/cw/statistics/textbook.htm>
- Wilkinson, L. Task Force on Statistical Inference, American Psychological Association, Science Directorate. (1999). Statistical methods in psychology journals: Guidelines and explanations. *American Psychologist*, 54(8), 594-604.

Williams, V. S. L., Jones, L. V., & Tukey, J. W. (1999). Controlling error in multiple comparisons, with examples from state-to-state differences in educational achievement. *Journal of Educational and Behavioral Statistics*, 24(1), 4269. doi:10.3102/10769986024001042

Sage Little Green Books (focus on between-group comparisons):

In the box below, please write the section on Research Questions and Hypotheses

Data Analysis

Describe and justify your data analysis plan in terms of descriptive and/or inferential statistical analyses to describe the sample, test hypotheses, and answer research questions.

Address the distribution of the data, the use of parametric vs. non-parametric tests, power and effect size for the analyses, the number of tails, and the alpha level for each test.

E. Self Check Your Work to the Dissertation Handbook

Data Analysis

Addresses how the data will be analyzed. What statistical methods will be used?

- Includes a detailed analysis plan that explains the descriptive and/or inferential analyses proposed
 - Descriptive statistical procedures
 - Whether the data are normally distributed or skewed
 - Parametric and/or nonparametric statistical procedures
 - Statistical power

F. Tips from the Research Review Board

Data analysis plan is clear, appropriate, and aligned with the specific research design, research questions, and hypotheses.

Validity

Commented [Anon9]: The Dissertation Handbook checklist has past tense, which is not appropriate. I used only future tense here.

A. Background Reading for This Section

Dissertation Field Guide, Chapter 11, Section 11.10, pp. 210-212.

B. Critical Points to Address for this Section

In this section, you will identify and describe threats to internal, conclusion, and external validity as they apply to non-experimental research. Unlike experimental studies, which involve applying a treatment and examining its effect, descriptive comparative studies do not involve examining or inferring cause and effect, thus internal validity concerns pertinent to experimental studies do not apply in descriptive comparative studies. Unlike experimental studies, ex post facto studies involve searching backwards in time to explain current differences between groups based on a naturally occurring independent variable using archival data; the independent variable is not manipulated and no variables are under the researcher's control. Thus, internal validity concerns pertinent to experimental studies do not apply to ex post facto studies. Other threats to validity may apply to descriptive comparative studies and ex post facto studies involving archival survey data, such as self-selection and non-response bias (those persons who agree to participate may differ in unknown ways from those who do not), response bias (how people answer questions), and attrition (loss of subjects between rounds of data collection). Describe threats to validity in the areas above as they pertain to your study, and what approaches you will use to minimize their impact.

Additional threats in descriptive comparative and ex post facto research include conclusion validity, statistical conclusion validity, and external validity (generalizability). Conclusion validity pertains to the extent to which the conclusions you draw about any differences between groups are reasonable based on the available data. Statistical conclusion validity, a subset of conclusion validity, pertains to the extent to which the conclusions you draw about these differences, based on the results of your data analyses, are reasonable. Consider alternative explanations for potential significant results, such as other variables that may contribute to the differences found. Explain how you might minimize the contribution of these variables, if feasible.

External validity pertains to the extent that the results in a given study are generalizable, i.e., are applicable, to other persons in other settings and at other times. Describe how your specific population and the type of sampling technique you propose using may affect the external validity of your study, and how you might increase generalizability.

C. Considerations for Alignment

- Keep in mind the inability to measure or infer causality (cause and effect) in a non-experimental study
- Threats to validity are specific to the nature of the study – the population, sampling, the variables, the instrumentation, etc.
- Be explicit in connecting threats to validity to the nature of the proposed study

D. Suggested Resources for Enrichment

Black, T. R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement and statistics*. London, England: Sage Publications.

Statistical conclusion validity (n.d.) Retrieved from http://www.indiana.edu/~clcl/Q560/Lecture_3/Validity.pdf

Stone-Romerol, E. F., & Rosopa, P. J. (2008). The relative validity of inferences about mediation as a function of research design characteristics. *Organizational Research Methods, 11*(2), 326-352. doi:10.1177/1094428107300342

Trochim, W. M. K. (2006). Conclusion validity. Retrieved from <http://www.socialresearchmethods.net/kb/concval.php>

In the box below, please write the section on Validity

Validity

Describe threats to internal validity, including conclusion validity and statistical conclusion validity, and external validity.

Describe methodological steps to address these threats.

Note to Student: Ensure that your entry is cohesive. The ideas should flow logically and with appropriate transitions between sentences.

E. Self Check Your Work to the Dissertation Handbook

Validity

- Addresses internal and external validity threats and how they will be addressed.

F. Tips from the Research Review Board

Student describes threats to internal and external validity and how they will be addressed.

Summary

A. Background Reading for This Section

None.

B. Critical Points to Address for this Section

In this section, you will summarize key points in Chapter III. Summarize the proposed methodological plan for implementing the proposed research study to achieve the research purpose and generate answers to the research questions. Do not present any new information. Instead, briefly summarize the research method, the research design, and their appropriateness to the problem, purpose, and research questions.

Briefly summarize the population, the sample, the type(s) of data to be collected to measure the variables, and the data collection techniques. Identify the instrumentation. Briefly summarize the proposed analyses. End with a transition to Chapter IV.

C. Considerations for Alignment

- All information in the summary must be consistent with methodological decisions identified and described in the chapter.

D. Suggested Resources for Enrichment

None.

In the box below, please write the section on Summary

Summary

Summarize key points from Chapter III pertaining to the proposed methodological plan for implementing the study. End with a transition to Chapter IV.

Note to Student: Ensure that your entry is cohesive. The ideas should flow logically and with appropriate transitions between sentences.

E. Self Check Your Work to the Dissertation Handbook

Summary

- Summarizes key points in the chapter
- Transitions to Chapter IV
- Conforms to the recommended length of 10-25 pages for Chapter III.

F. Tips from the Research Review Board

None.